



Natural
Resources
Commission

Supplementary pest control trial Evaluation of trial design



December 2014

Enquiries

Enquiries about this report should be directed to:

Name	Lauren Tapp
Phone	(02) 8227 4300
Fax	(02) 8227 4399
E-Mail	Lauren.Tapp@nrc.nsw.gov.au
Postal address	GPO Box 4206, Sydney NSW 2001
Website	www.nrc.nsw.gov.au

List of acronyms

NRC – Natural Resources Commission
NSW – New South Wales
NPWS – National Parks and Wildlife Service
OEH – Office of Environment and Heritage
SPC – Supplementary Pest Control
SSAA NSW – Sporting Shooters Association of Australia NSW Branch

This work is copyright. The *Copyright Act 1968* permits fair dealing for study, research, news reporting, criticism and review. Selected passages, table or diagrams may be reproduced for such purposes provided acknowledgement of the source is included.

Document No.D14/3493

ISBN: 978 1 925204 02 5

Table of Contents

1	Executive summary	1
	Recommendations	2
2	Background	4
2.1	Overview of the supplementary pest control trial	4
2.2	Overview of the NRC's evaluation	6
2.3	Overview of the report	8
3	Summary of findings	9
3.1	The design of the supplementary pest control trial is sound	10
3.2	The design of engagement with neighbours is sound	17
4	Opportunities for improvement during the remainder of the trial	19
4.1	Clarify and strengthen governance arrangements	19
4.2	Review ongoing appropriateness of trialling SPC in current reserves	20
4.3	Improve flexibility and responsiveness in design of individual operations	21
4.4	Build local relationships and volunteer capacity	21
4.5	Trial different supervisor to volunteer ratios	23
4.6	Assess the potential for night operations	24
4.7	Improve documentation for greater transparency and accountability	25

Attachments

Attachment 1: Terms of Reference

Attachment 2: Evaluation framework and logic

Attachment 3: Summary of evaluation methods

Attachment 4: Stakeholder engagement plan for NRC evaluation

Attachment 5: Legislative requirements

Attachment 6: Alignment with Government priorities

Attachment 7: Staff and volunteer qualification and training

Attachment 8: Case study – Queensland

Attachment 9: Case study – South Australia

1 Executive summary

The Premier and the Minister for the Environment (the Minister) requested that the Natural Resources Commission (NRC) evaluate the supplementary pest control (SPC) trial (the trial), according to an agreed Terms of Reference.¹

The main purpose of the NRC's evaluation is to assist the NSW Government in deciding whether, and how, to proceed with the supplementary pest control program beyond the three year trial period. This includes consideration of issues, such as:

- effectiveness of the trial in contributing to aims and objectives of existing pest control programs
- efficiency of the trial
- social impacts of the trial.

This report is the first in a series of three evaluation reports that will assess the program in accordance with the Terms of Reference. This report evaluates the trial in relation to whether:

- the trial design is sound
- there are opportunities for improvement within the three year trial period.

This report does not evaluate outcomes to date or make recommendations about whether the program should continue beyond the three year trial. An interim evaluation report on outcomes for the first half of the trial will be delivered in November 2015.

During the trial, NSW National Parks and Wildlife Service (NPWS) is partnering with volunteer shooters to help reduce pests and protect native species in 12 national parks and reserves across NSW. They are targeting removal of pest animals including feral goats, pigs, foxes and rabbits.

Overall, the NRC found that the design of the trial is sound and has been designed in a manner consistent with the program approved by government. The trial design comprehensively addresses risks to human safety and animal welfare, complies with all relevant legislation and is aligned with government policy.

The trial design integrates volunteer ground shooting with other pest control programs in the reserves. This allows ground shooting operations to add value to existing pest control programs by targeting residual pest populations that are not susceptible to other control methods, or where these methods cannot be effectively utilised.

Governance arrangements at the operational level are well defined, but the trial would benefit from stronger strategic oversight. The trial design provides for good communication with neighbours and is underpinned by a detailed monitoring plan.

The safety of all participants is paramount in the trial design. High levels of supervision are appropriate for this initial stage of the trial while risks are being assessed, protocols developed, and staff and volunteers build capacity and trust. Over time, as staff and volunteers develop

¹ Available online at: <http://www.nrc.nsw.gov.au/PDF/Supplementary%20Pest%20Control/SPC%20-%20TOR.pdf> and also at Appendix 1.

experience and familiarity with the protocols and procedures, processes could be refined and streamlined while maintaining existing risk tolerances.

Efficiency will be a key determinant of whether supplementary pest control continues beyond the trial period. NPWS should use emerging knowledge to adaptively manage the trial over the next two years to improve efficiency within acceptable risk limits. The monitoring program for the trial will produce ecological, economic and social data to inform adaptive management and evaluation of the trial.² The design of the ecological monitoring is restricted by a lack of existing data, and by resource constraints that reduce the range of monitoring techniques available. However, considering these limitations, the ecological monitoring program makes best use of available resources to produce useful ecological data.

The NRC has identified a number of opportunities for improvement during the trial period. Some of these opportunities warrant discussion of current trial constraints between NPWS and the Minister, to determine what scope exists for adaptive management of the trial design.

In considering the recommendations in this report, and when adaptively managing the trial, NPWS should be mindful of maintaining an appropriate level of risk. It is recommended that the SPC Project Control Group prioritise their responses to recommendations and implement them using a phased approach to manage any cumulative impacts on overall program risk.

Recommendations

The NRC has identified a number of opportunities for improvement during the trial period:

1. Clarify and strengthen governance arrangements

The NRC recommends that:

- a. NPWS develop procedures for the SPC Project Control Group to outline the roles and responsibilities of the group, standing agenda items and reporting obligations
- b. NPWS consider appointing an independent member to the SPC Project Control Group to provide objectivity and diversity of experience
- c. NPWS ensure that the Group is active (meeting at least quarterly) and provides appropriate trial oversight, particularly in relation to any changes in the risk profile of the trial
- d. NPWS consider establishing a technical reference group to provide expert input to adaptive management decisions.

2. Review ongoing appropriateness of trialling SPC in current reserves

The NRC recommends that:

- a. NPWS assess the results of operations in different reserves and reflect the findings in future operational planning, to appropriately focus trial resources
- b. NPWS document emerging knowledge on what the appropriate criteria should be for identifying suitable supplementary pest control locations.

² In evaluating the trial, the NRC will consider: the effectiveness of the trial in contributing to the aims and objectives of existing NPWS pest control programs; the efficiency of the trial, including costs and benefits of the trial and comparison with alternative uses of the available resources; and, the social impacts of the trial.

3. Improve flexibility and responsiveness in design of individual operations

The NRC recommends that:

- a. NPWS continue to trial varying lengths and intensities of shooting operations, to match local conditions
- b. NPWS continue to apply greater flexibility and responsiveness in regional-scale planning so that:
 - i. operations can be cancelled if they are unlikely to yield desired outcomes (giving due consideration to impacts on volunteers)
 - ii. operations can be planned at short notice if an opportunity arises (note that NPWS needs to provide neighbours with written notice at least four weeks prior to the commencement of any operations).

4. Build local relationships and volunteer capacity

The NRC recommends that:

- a. Sporting Shooters Association of Australia NSW Branch (SSAA NSW) and NPWS continue to focus on attracting and retaining local volunteers who are interested in participating in ongoing pest management activities
- b. SSAA NSW and NPWS hold more induction and training sessions in regional centres closer to the trial reserves where there is a higher likelihood that regional volunteers may participate
- c. SSAA NSW and NPWS support future devolution of appropriate supplementary pest control activities by fostering engagement and increasing trust between regional supplementary pest control staff and local branches of the SSAA
- d. NPWS consider involving volunteer groups in other stages of the pest management process. For example, in planning and monitoring, which allows for closer alignment of pest management needs and volunteer capabilities and capacity. It may also contribute to developing ongoing collaborative relationships between volunteers and NPWS staff at the local level.

5. Trial different supervisor to volunteer ratios

The NRC recommends that:

- a. NPWS continue to trial various supervision scenarios to identify optimum operating ratios
- b. NPWS continue to encourage and support long-term involvement of individual volunteers to build capacity, enhance trust and strengthen teamwork.

6. Assess the potential for night operations

The NRC recommends that:

NPWS undertake a risk assessment of night shooting that could inform a business case for the SPC Project Control Group to consider. If risks can be appropriately managed, it is recommended that NPWS pilot a number of night-shooting operations during the trial and assess whether night-shooting is feasible.

7. Improve documentation for greater transparency and accountability

The NRC recommends that:

NPWS develop documentation, and make documents publicly available, for the following aspects of the trial:

- i. engagement strategy, including Aboriginal stakeholders
- ii. ecological monitoring design.

2 Background

2.1 Overview of the supplementary pest control trial

In 2013, the Minister for the Environment announced a three year trial (the trial) of supplementary pest control (SPC) in NSW. The trial is targeting the removal of pest animals including feral goats, pigs, foxes and rabbits. The trial commenced in early 2014 and is operating in 12 national parks and reserves, covering an area of 485,000 hectares. These reserves are shown in **Figure 1**.

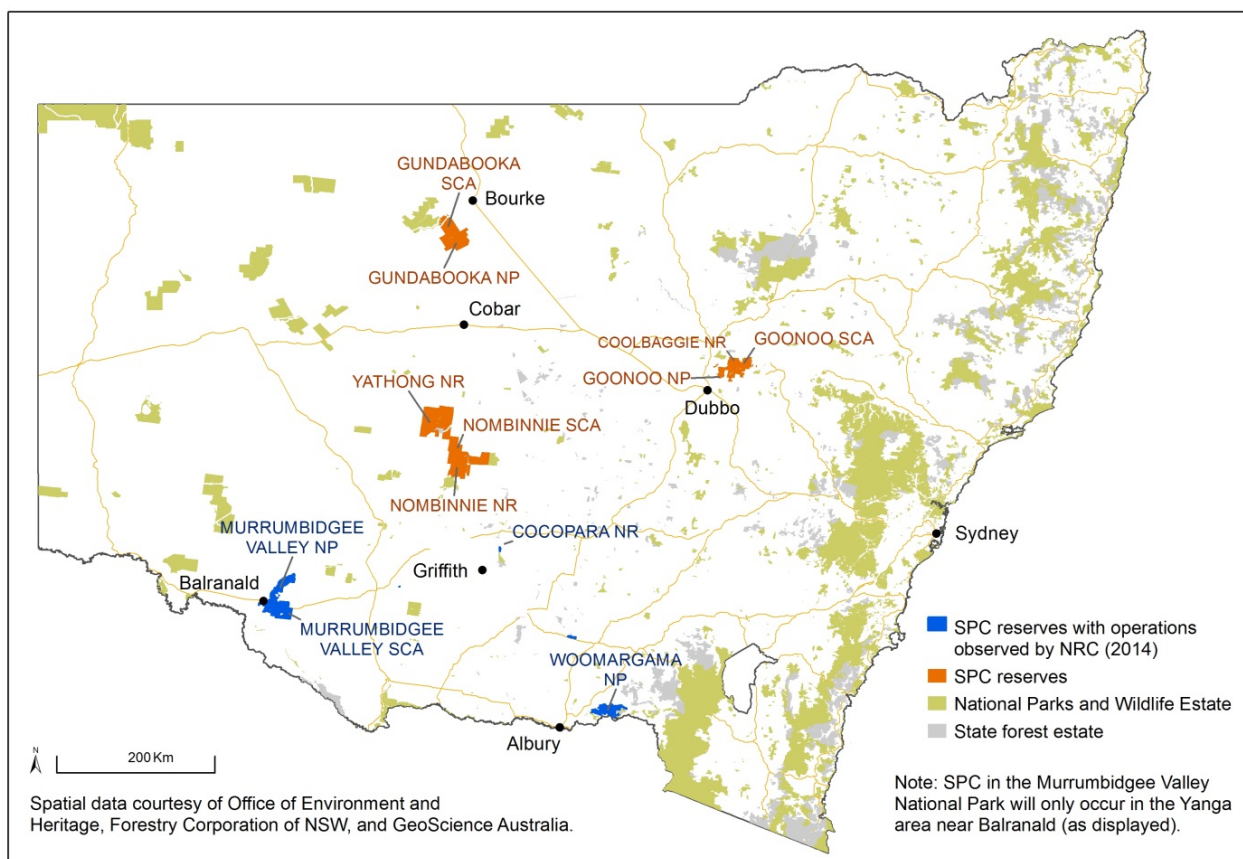


Figure 1: SPC reserves including where NRC staff have observed operations to date

The NPWS has partnered with volunteer shooters from Sporting Shooters Association of Australia NSW Branch (SSAA NSW) to help reduce pests in selected parks and reserves in central and western NSW. Volunteers are working under the direct supervision of NPWS staff.

Supplementary pest control operations are scheduled to strategically align with existing pest management programs already being undertaken through NSW regional pest management strategies. The trial is designed to test whether ground shooting using volunteers could be added to the existing suite of pest control techniques already used by NPWS to complement ongoing NPWS pest control programs. For a description of the trial see **Figure 2**.

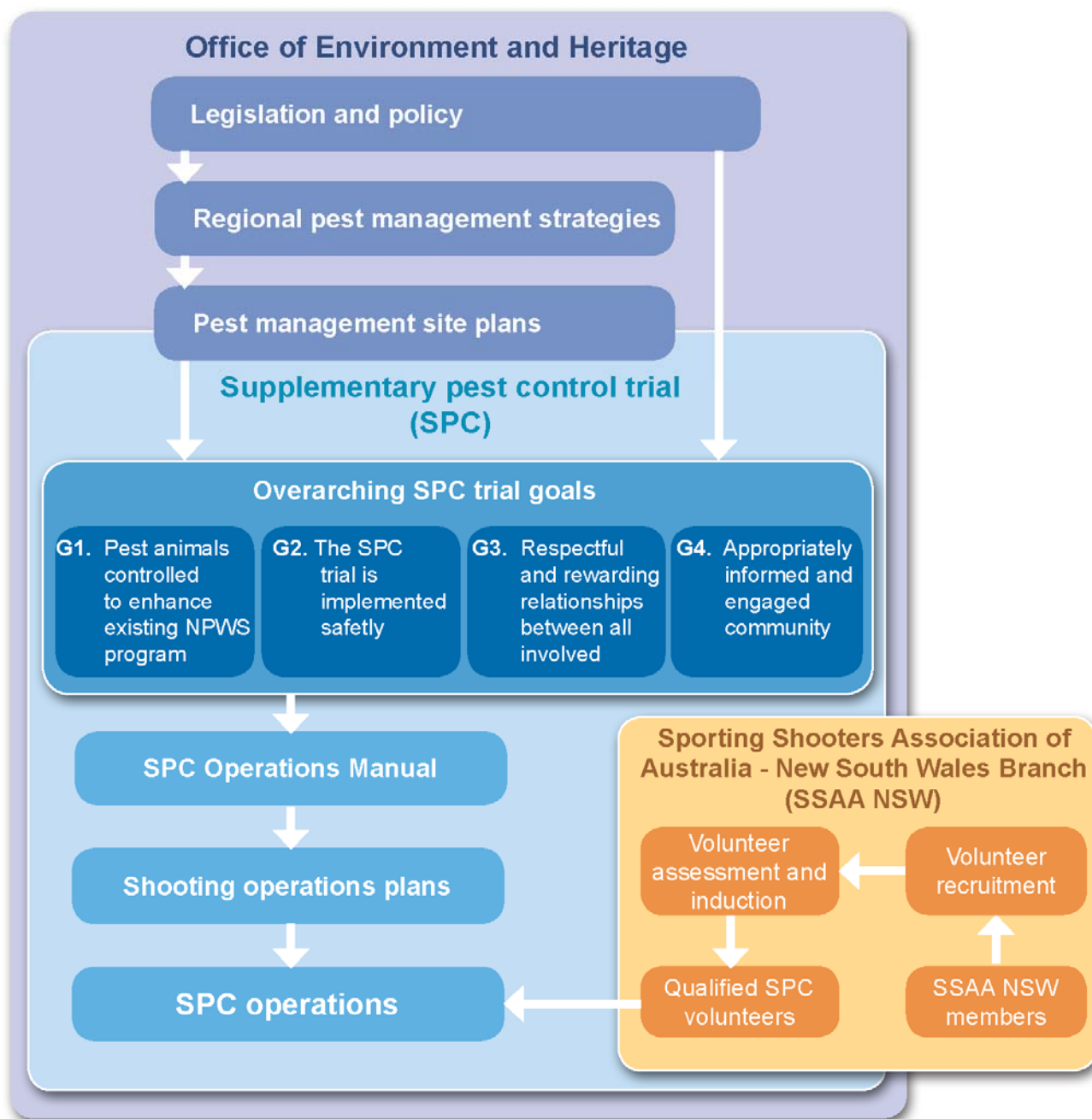


Figure 2: Description of the supplementary pest control trial

2.1.1 Ministerial requirements governing trial design

The government-approved program for the trial included a number of Ministerial requirements that constrained the trial design, including:

- the trial is to be conducted within the 12 selected reserves only
- NPWS staff are to directly supervise qualified volunteers (who must also be 18 years and over)
- operations are not to be conducted during school holidays or during the night
- volunteers are only to be permitted to use firearms that are currently approved for use by NPWS
- reserves are to be closed to visitors on the days of field operations with signs placed at entry and exit points to the reserve prior to the commencement of operations
- operations are to be announced four weeks prior to the day of the field operation and confirmed 48 hours prior.

2.2 Overview of the NRC's evaluation

Through a Terms of Reference, the Premier and the Minister for the Environment requested that the NRC evaluate the trial to assist the NSW Government in deciding whether, and how, to proceed with the proposed supplementary pest control program beyond the three year trial period.

The Terms of Reference is provided at **Attachment 1**. It requests that the NRC's evaluation considers issues such as (but not limited to):

- the effectiveness of the trial program in contributing to the aims and objectives of existing NPWS pest control programs
- the efficiency of the trial program
- the social impacts of the trial.

To fulfil the Terms of Reference, the NRC will deliver four reports, each of which has a different scope and purpose (see **Figure 3** for details). The NRC has already delivered a report outlining the evaluation framework (see **Section 2.3.2** and **Attachment 2** for more details).

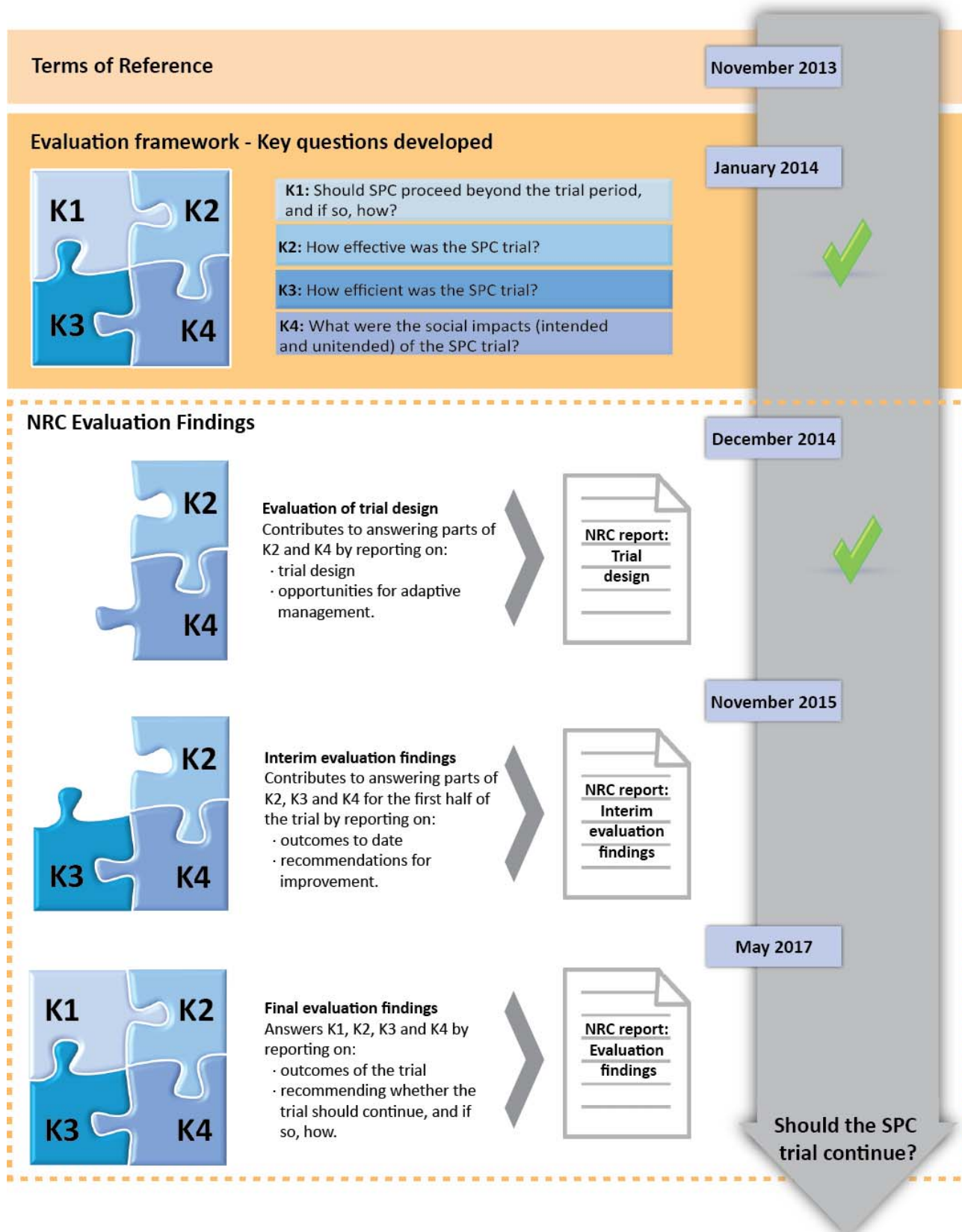


Figure 3: The NRC's evaluation reporting on the trial

2.3 Overview of the report

2.3.1 Objectives and scope

This report focuses on evaluating the design of the trial. The objectives are to:

- evaluate whether the trial has been designed to be effective
- ensure there will be sufficient data available to inform future evaluations of efficiency and effectiveness of the trial and to inform government decisions about the future of the trial
- make recommendations that could be used to improve efficiency and effectiveness of the trial within the three year trial period.

Given that the trial is at an early stage, this report does not comment on any outcomes or results, or make recommendations about the future of the trial. These objectives will be met in the subsequent interim and final evaluation reports.

2.3.2 Evaluation questions

The NRC has worked closely with stakeholders to design a robust evaluation framework, which is provided in **Attachment 2**. An *Overview of the Evaluation Framework* was submitted to the Minister for the Environment in August 2014, and is available online.³

The evaluation framework provides a set of questions that will be used to measure success against the four trial goals (see **Figure 2**). The evaluation questions were designed to fulfil the Terms of Reference, reflect best practice in evaluation, and be implemented efficiently.

As shown in **Figure 3**, each of the NRC's evaluation reports will focus on a subset of the evaluation questions. The evaluation questions relevant to this report are presented as part of the summary of findings provided in the next section of this report (see **Section 3, Table 1**).

The NRC's evaluation of the trial design has considered the constraints resulting from Ministerial requirements outlined in **Section 2.1.1** and their impact on effectiveness and efficiency of the trial.

2.3.3 Evaluation methods

The NRC developed the evaluation framework in collaboration with key stakeholders and used four main methods to evaluate the design of the trial:

- field observations
- document review
- interviews with stakeholders and other jurisdictions
- technical review.

Further details regarding the evaluation methods used can be found in **Attachment 3**.

The NRC's stakeholder engagement plan is outlined in **Attachment 4**.

³ Available online at: <http://nrc.nsw.gov.au/content/documents/SPC%20-%20Evaluation%20framework%20-%202024%20October%202014.pdf>

3 Summary of findings

The NRC has evaluated the design of the supplementary pest control trial. As explained in **Section 2.1.1**, a number of Ministerial requirements governed the design of the trial. The NRC found that:

- the trial has been designed in a manner consistent with the program approved by government
- the design of the trial is sound.

In addition, the NRC has reviewed the monitoring program designed for the trial that will collect ecological, economic and social data. Once collected, the monitoring data will allow for future evaluation of the efficiency and effectiveness of the trial, with some exceptions that are discussed further in **Section 3.1.7**.

A summary of findings against the key evaluation questions relevant to this report is presented in **Table 1**. See **Attachment 2** for further details of the evaluation framework.

Table 1: Summary of findings

Key evaluation questions and sub-questions relevant to evaluation of trial design		Finding
K2	How effective was the SPC trial?	
K2(i)	Is the trial designed to be compliant with legislation?	Yes
K2(ii)	Is it designed to be aligned with government priorities, particularly pest management and threatened species priorities?	Yes
K2(iii)	Is it designed to be aligned with existing pest management programs?	Yes
K2(iv)	Are governance arrangements, roles and responsibilities appropriate?	Yes
K2(v)	Are SPC staff and volunteers appropriately qualified and trained?	Yes
K2(vi)	Are appropriate risk management plans and processes in place for human safety and animal welfare risks?	Yes
K2(vii)	Will the planned monitoring provide data to report on ecological, economic and social outcomes of the trial and inform the evaluation of efficiency and effectiveness? ⁴	Yes
K4	What were the social impacts (intended or unintended) of the SPC trial?	
K4(i)	Are park neighbours being effectively engaged in order to identify any unintended (positive or negative) impacts?	Yes

⁴ This additional evaluation sub-question about the design of the trial's ecological Monitoring, Evaluation and Reporting (MER) framework has been added since the overview of evaluation framework was published.

3.1 The design of the supplementary pest control trial is sound

3.1.1 The trial is designed to be compliant with legislation

The trial explicitly considers and incorporates relevant legislative requirements. For example, the relevant requirements of the *Firearms Act 1996* and the *Firearms Regulation 2006* have been addressed in the *Supplementary Pest Control Operations Manual*, the *Operation Planning Checklist* and the *Shooting Operations Plan*.

Relevant legislation includes:

- *Work Health and Safety Act 2011* (WHS Act)
- *Work Health and Safety Regulation 2011* (WHS Regulation)
- *Prevention of Cruelty to Animals Act 1979*
- *Prevention of Cruelty to Animals Regulation 2012*
- *Firearms Act 1996*
- *Firearms Regulations 2006*
- *National Parks and Wildlife Act 1974*
- *National Parks and Wildlife Regulation 2009*
- *Threatened Species Conservation Act 1995*.

Attachment 5 provides further details regarding relevant legislation.

3.1.2 The trial is designed to align with government priorities, particularly pest management and threatened species priorities

The trial explicitly considers and incorporates relevant government priorities. For example, the pest management site plans for the trial reserves are aligned with the relevant regional pest management strategies.

The NRC reviewed relevant documentation and attended two operations at Murrumbidgee Valley National Park (Yanga precinct). The *Regional Pest Management Strategy 2012-2017: Western Rivers Region*, which covers the Yanga precinct, identifies feral pigs, rabbits and deer as critical management priorities in the Murrumbidgee Valley National Park due to their impact on migratory wetland birds, the southern bell frog (*Litoria raniformis*) and Sandhill Pine Woodland (listed as an Endangered Ecological Community).⁵

These target species are appropriately listed as the target species in the *Pest Management Site Plan for Murrumbidgee Valley National Park* due to the following:

- migratory wetland birds and the southern bell frog are adversely affected by pigs and deer through the fouling and cultivation of waterways and flood areas
- pigs consume surface nested eggs and young birds during breeding events
- rabbit grazing suppresses regeneration of Sandhill Pine Woodland Endangered Ecological Community.

⁵ Office of Environment and Heritage (2012) *Regional Pest Management Strategy 2012-17, Western Rivers Region: a new approach for reducing impact on native species and park neighbours*, OEH, Sydney.

Other relevant government policies are detailed in the following documents:

- DECCW Due Diligence Code of Practice for the Protection of Aboriginal Objects 2010
- DECCW Firearms Management Manual 2010⁶
- Fox Threat Abatement Plan
- NPWS Neighbour Relations Policy 2005
- NPWS Regional Pest Management Strategies 2012-2017 (Northern Plains, Western Rivers, Far West and Southern Ranges)
- NPWS Volunteer Operational Policy and Procedures 2013
- NSW 2021
- NSW Invasive Species Plan 2008
- OEH Work Health and Safety Risk Management System
- Threatened Species Priorities Action Statement
- Volunteer Program Management System (VOMS) User Guide 2013.

See **Attachment 6** for more information about relevant plans and policies.

3.1.3 The trial is designed to align with existing pest management programs

The trial is designed to strategically align at a regional scale with other pest control activities implemented by NPWS and neighbours. This is evidenced by:

- relevant regional pest management strategies, which identify priority pest species
- regional pest management strategies, which identify that to effectively control those species a range of complementary techniques are required, including ground shooting
- SPC operations in each reserve, which target priority species (feral goats, pigs, foxes and rabbits) as detailed in the pest management site plans.

Supplementary pest control activities in the reserves, within the constraints listed in **Section 2.1.1**, are also strategically aligned with other pest control actions for targeted threatened species. This is evidenced by:

- pest management site plans, which identify the threatened species consistent with their respective regional pest management strategies
- regional pest management strategies, which note that the protection of these threatened species requires the effective control of the priority pest species for each site.

The Cocopara Nature Reserve Pest Management Site Plan is an example of aligned pest control actions. The objective of the trial in this reserve is to reduce feral goat numbers to alleviate browsing pressure on the endangered plant *Pomaderris cocoparrana* and the In-land Grey Box

⁶ Best practice guidelines for ground shooting of pest animals can be found in the Australian Government Code of Practice and Standard Operating Procedures. These guidelines are incorporated into NPWS standard operating procedures, an interview with the RSPCA confirmed their awareness of and support for these procedures.

Woodland Endangered Ecological Community. In this plan “ground shooting by volunteers will target goats not removed through aerial shooting and trapping. Ground shooting operations will follow aerial shooting to have the greatest effect on the goat population. Ground shooting will also be used throughout the year to suppress the recovery of goat populations. These operations will also disturb goats and encourage their movement onto a neighbouring property through one-way gates to be trapped and sold.”

Supplementary pest control activities are also designed to be integrated with existing pest management activities. NPWS Regional Pest Management Officers schedule non-SPC pest management activities in consultation with broader pest management stakeholders, such as park neighbours, Local Land Services, and the Wild Dog Destruction Board. This means the scheduling of individual actions in reserves, including trapping, mustering or aerial shooting events, is coordinated with other pest management activities carried out by NPWS and other public and private sector land managers.

In reserves selected for the trial, an individual supplementary pest control operation is scheduled in consultation with regional and local pest management staff from NPWS. This allows the supplementary pest control operation to be integrated with the business-as-usual pest management activities. For example, a supplementary pest control operation targeting rabbits will be scheduled soon after a business-as-usual rabbit warren ripping event.

3.1.4 The design of governance arrangements, roles and responsibilities are mostly appropriate

From a review of NPWS documentation and the NRC’s observations at operations, it is apparent that the operational governance structure for the trial is detailed, with clear lines of accountability and well defined roles and responsibilities. Examples include a signed statement of volunteer duties, and a Shoot Operation Plan which describes command, communications and execution in detail for each operation.

However, the framework outlining who is responsible for overseeing the trial is less clearly defined, and improvements are required to strengthen and clarify governance arrangements at this level (see **Section 4.1**). The NPWS Project Management Framework sets out roles and responsibilities for a SPC Project Control Group. The Group has four members that are senior staff from NPWS, as well as the SPC Coordinator. The activities and actions of this group in overseeing the trial are unclear.

Roles and responsibilities of organisations involved in the trial are detailed through memorandum of understanding, including between:

- OEH and SSAA NSW – outlines roles in relation to the recruitment, training and management of volunteers
- NRC and OEH - outlines roles in trial evaluation.

3.1.5 Procedures for training and qualifying supplementary pest control staff and volunteers are appropriate

The supplementary pest control staff are appropriately trained and qualified. They have been trained in the supplementary pest control specific requirements that are relevant to their roles.

Supplementary pest control staff were recruited from existing NPWS staff on the basis of their experience with pest management, firearms handling and other relevant capabilities.

Where relevant to their role, all staff had, or have completed training to attain, certification in the following:

- firearms handling and safety
- work health and safety for supervisors
- NPWS volunteer supervisor course
- senior first aid.

Supplementary pest control volunteers are also appropriately qualified and trained. The NRC has reviewed documentation and observed theoretical and practical training held at the SSAA NSW range in St Marys, and observed that training is compliant with relevant requirements.

By the time they are issued with their qualified volunteer certification, all volunteers have received training, and been tested in, the following areas of capability:

- hunter responsibilities and ethics
- firearms safety
- wildlife management
- bushcraft
- first aid
- mapping and navigation
- practical marksmanship
- workplace health and safety.

The application and accreditation process for volunteers is well structured and thorough. Its rigour is in line with similar programs in other jurisdictions.

Training, induction and accreditation processes are reinforced by the following documentation signed by volunteers prior to their participation in an operation:

- qualified supplementary pest control Volunteer Code of Conduct (covers safety legislation; firearms handling; rules, policies and procedures; licensing and membership; quality service; and personal behaviour)
- qualified supplementary pest control Volunteer Agreement (includes professional conduct as well as compliance with relevant codes of conduct, laws, policies and procedures)
- NPWS statement of volunteer duties (includes understanding of health and safety, training, dress and equipment requirements).

Attachment 7 provides more details about staff and volunteer qualification and training.



Figure 4: SPC staff and qualified volunteers checking navigation and other equipment during pre-operation briefing

3.1.6 Appropriate risk management plans and processes are in place for human safety and animal welfare risks

The trial has been designed with a strong focus on addressing human safety risks, which is appropriate for a program of this type. The trial also comprehensively addresses risks to animal welfare. As such, the trial has detailed risk management plans and protocols to address these risks.⁷ These processes explicitly consider and incorporate the relevant legislative requirements, as detailed in **Section 3.1.1**.

Where appropriate, the trial has made use of existing risk management policy and procedure. For example, the trial complies appropriately with:

- the Office and Environment and Heritage Work, Health and Safety Risk Management System
- NPWS Volunteer Operational Policy and Procedures (2013)
- the Department of Environment, Climate Change and Water Firearms Management Manual (2010).

Where required, existing risk management policy and procedure has been adapted, or new policies and procedures have been created, to address the specific risk context of the trial. These adapted risk protocols are contained within specific supplementary pest control documents such as the Operations Manual, Operations Checklist, Shoot Operation Plan (command, communications and execution) and the Shoot Plan Safety attachment.

⁷ An Australia Workers Union representative confirmed support for the trial's human safety risk management procedures (the union represents NPWS field staff).

3.1.7 The planned monitoring will provide data to report on ecological, economic and social outcomes of the trial and inform the evaluation of efficiency and effectiveness

The NRC found that the monitoring data once collected will allow for future evaluation of the efficiency and effectiveness of the trial, with some exceptions (discussed further below).

Efficiency will be a key determinant of whether supplementary pest control continues beyond the trial period. The NRC worked collaboratively with NPWS and SSAA NSW to ensure that sufficient monitoring data will be available to address the Terms of Reference. The planned economic and social monitoring includes collecting data to answer questions such as:

- what were the costs and benefits of the trial to Government?
- how does the trial compare to alternative uses of available resources to achieve similar outcomes?
- what were the impacts of the trial on volunteers and associated organisations, park neighbours, Aboriginal communities, regional communities and park users?

The planned monitoring for the trial will continually collect ecological, economic and social data which will allow for evaluation of the efficiency and effectiveness of the trial over three years. NPWS should use this emerging knowledge to adaptively manage the trial over the next two years to improve efficiency within acceptable risk limits.

Ecological monitoring framework

The ecological monitoring framework has been designed to collect the best information possible with the resources available. The monitoring design is detailed and is sufficient to report on trial outputs, although results on ecological outcomes may be inconclusive.

It is the NRC's opinion that any ecological outcomes will be difficult to attribute as being a direct result of trial activities due to:

- weak baseline information on pests, pest control and assets in the trial reserves⁸
- unique pest and asset issues in each reserve
- the impact of other confounding variables such as climate and pest populations.

The use of 'scientific control' sites in the design of the ecological monitoring program may have addressed some of the issues outlined above, however the NRC understands that it is impractical to develop control sites as part of the trial monitoring program given:

- cost is usually prohibitive
- the current selection of reserves
- variability in the reserves
- complex interactions between pests, pest issues, the impact of pests on assets, and other environmental influences.⁹

⁸ Reddiex, B. & Forsyth, D. M. (2006). Control of pest mammals for biodiversity protection in Australia. II. Reliability of knowledge. *Wildlife Research* 33, 711-717. These constraints are typical of most pest control projects carried out across Australia. Research suggests that the majority of pest control actions in Australia are characterised by an overall lack of monitoring of pest and biodiversity conditions and levels.

Accordingly, in these instances, the best available alternative sources of evidence will be sought. The ecological framework designed for the trial employs the available opportunities to collect ecological data and will go some way to addressing the current constraints relating to weak baseline pest and asset information.

The NRC evaluation framework has been designed to accommodate the constraints outlined above and deliver on the Terms of Reference.

Table 2 explains what the NRC plans to assess in subsequent evaluation reports based on the trial's ecological monitoring program.

Table 2: Summary of constraints on ecological monitoring

Constraint	Evaluation approach
Reserve selection, and variability between reserves, may mean that results of the NRC's evaluation will only be able to be extrapolated to other reserves in NSW with sufficiently similar characteristics.	<p>The NRC, through key evaluation question 'K2 - How effective was the trial?', will describe the circumstances in which engaging volunteer shooters as a supplementary pest control measure would be most useful/successful (if at all).</p> <p>The NRC will also make recommendations that accommodate regional variability in pest and threatened species management.</p>
The three-year time period of the trial is not likely to be long enough for the ecological impacts of pest control activities to be seen in the pest or threatened species populations.	<p>The NRC will consider:</p> <ul style="list-style-type: none"> ▪ whether supplementary pest control contributes to the goals and objectives of existing pest management strategies and plans within the trial reserves ▪ how implementation of supplementary pest control could be adapted to improve efficiency if the program continues ▪ how supplementary pest control can be used to improve effectiveness of existing National Parks and Wildlife Services pest control programs if the program continues.
It may be difficult to quantify the <i>additional</i> impact of supplementary pest control on pests and threatened species given the complex interactions between pests, pest issues, assets and other environmental influences such as climate.	<p>The NRC will consider whether supplementary pest control has made a contribution to ecological outcomes by considering any overall increase in benefits from all National Parks and Wildlife Services pest control activities in trial reserves over the three years.</p> <p>For example, are better pest control outcomes achieved by adding supplementary pest control to the suite of existing pest control methods rather than 'doing more of' an existing pest control method.</p>

Whilst the rationale for the planned ecological monitoring at the reserve scale is well described in Pest Management Site Plans, the overarching design of the ecological monitoring for the trial

⁹ Reddiex, B. & Forsyth, D. M. (2006). Control of pest mammals for biodiversity protection in Australia. II. Reliability of knowledge. *Wildlife Research* 33, 711-717. A majority of pest control actions in Australia are also characterised by a lack of replication and randomisation of treatment and non-treatment areas.

has not yet been clearly documented. Documentation clarifying overarching ecological monitoring design will enhance community understanding of the trial and contribute to pest management practice across NSW (see **Section 4.7**).

3.2 The design of engagement with neighbours is sound

3.2.1 Procedures have been designed to engage park neighbours in order to identify any unintended (positive or negative) impacts

NPWS has designed operational procedures for engaging park neighbours.

This engagement is primarily undertaken through written notification about the trial and the operations schedule, and by phone and in person on a site-specific basis, as appropriate. For example:

- neighbours of the Cocopara Nature Reserve, of which there are 12, were sent a letter of notification four weeks prior to each operation and were contacted again by phone 48 hours prior (they have also been contacted in person and by phone at other times)
- neighbours of the Woomargama National Park were notified by mail four weeks prior to operations (they were not contacted by phone as there are 147 neighbours within one kilometre of the National Park).

In addition, NPWS work closely with neighbours who are involved in, or directly impacted by, pest management activity on the reserve. For example, one neighbour of the Cocopara Nature Reserve traps and sells goats coming from the reserve onto his private land (the neighbour has installed a one-way gate in the boundary fence).

One operation in Cocopara observed by the NRC was designed to target feral goats on the western side of the reserve. This had the additional effect of pushing those goats not dispatched towards the one-way gate in the neighbour's fence on the east side of the reserve. This engagement improved the pest reduction outcomes of the operation and enhanced the neighbour's satisfaction with the trial.

Engagement with other key stakeholders, such as the Aboriginal community, has occurred on a site-by-site basis and through direct liaison with relevant groups in each case.

Communication with the broader community is undertaken by notification of operations on relevant websites, particularly to advise of park closures.

Feedback on the trial is invited on the OEH website, via email or by contacting a local NPWS office.



Figure 5: Supplementary pest control staff and qualified volunteers during an operation

4 Opportunities for improvement during the remainder of the trial

Overall, the design of the trial is sound, as detailed in **Section 3**. However, the NRC has identified some areas where improvements could be made to the trial design. These recommendations have been informed by observation, document review, expert advice, and consultation with stakeholders and other jurisdictions.

The NRC's evaluation of the design of the trial considers the impacts of the Ministerial requirements outlined in **Section 2.1.1**. The NRC's recommendations support adaptive management of the trial over the three years to capitalise on emerging knowledge about what is working well and what may need to change, including review of Ministerial requirements where appropriate.

4.1 Clarify and strengthen governance arrangements

As explained in **Section 3.1.4**, while operational-level governance is strong and clearly documented, governance at a strategic level is less clear.

The NPWS Project Management Framework sets out roles and responsibilities for a Project Control Group. The Group has four members that are senior staff from NPWS, as well as the SPC Coordinator. The activities and actions of this group in overseeing the trial are unclear.

In particular, evidence was not available to answer key questions around governance at the strategic level, for example:

- the activities of the Project Control Group, including
 - timing and frequency of meetings
 - reporting arrangements
- whether program level risk and budget management is regularly monitored, particularly in regard to changes from adaptive management of the trial
- who has responsibility for responding to evaluation findings and recommendations and implementing agreed actions.

NPWS will use monitoring data to inform adaptive management throughout the trial.¹⁰ It is important that adaptive management decisions are clearly considered and informed by the strongest available evidence. The Project Control Group's decision making may benefit from independent and expert technical input to inform these decisions.

¹⁰ Natural Resources Commission (2014). *Overview of Evaluation Framework*, August 2014.

1. The NRC recommends that:

- a. **NPWS develop procedures for the SPC Project Control Group to outline the roles and responsibilities of the group, standing agenda items and reporting obligations**
- b. **NPWS consider appointing an independent member to the SPC Project Control Group to provide objectivity and diversity of experience**
- c. **NPWS ensure that the Group is active (meeting at least quarterly) and provides appropriate trial oversight, particularly in relation to any changes in the risk profile of the trial**
- d. **NPWS consider establishing a technical reference group to provide expert input to adaptive management decisions.**

4.2 Review ongoing appropriateness of trialling SPC in current reserves

A primary goal of the trial is to strategically control pest animals in a way that complements existing NPWS pest control programs and enhances overall pest management outcomes.

A set of 12 reserves were chosen as part of the supplementary pest control program approved by government.¹¹ The NRC has not reviewed the process for choosing sites, but has considered the potential impact of these decisions on the trial's goal of complementing existing programs.

The NRC's observation from discussions with NPWS staff and attendance at a number of operations is that reserve selection may have a large impact on the effectiveness and efficiency of the trial. Observations reveal that in one reserve, three operations across different seasons have resulted in zero dispatched targets (and minimal sighted targets). Anecdotally, these results are due to a history of effective pest control activity in the park (reserve gazetted in 2002) and geographical characteristics which lead to low residual pest populations. Additionally, thick scrub and challenging terrain make it difficult to pursue pests during ground shooting.

The NRC acknowledges that the frequency and intensity of operations will vary across reserves. Where there is evidence that operations are more successful in some reserves than others, it is legitimate for operational planning to schedule a higher number of operations in reserves where the likelihood of the trial contributing to pest reduction and native asset protection is highest.

NPWS should review the results from operations to date in the 12 reserves. Adjustments could then be made to trial operations to respond to emerging knowledge about where and when supplementary pest control is most effective, and to maximise the efficiency and effectiveness of the trial in the remaining two years.

2. The NRC recommends that:

- a. **NPWS assess the results of operations in different reserves and reflect the findings in future operational planning, to appropriately focus trial resources**
- b. **NPWS document emerging knowledge on what the appropriate criteria should be for identifying suitable supplementary pest control locations.**

¹¹ See media release: <http://www.environment.nsw.gov.au/resources/MinMedia/MinMedia13103101.pdf>.

4.3 Improve flexibility and responsiveness in design of individual operations

Ground shooting can be a useful pest management tool as part of an overall pest management strategy that uses a range of techniques including aerial shooting, baiting and trapping.¹²

A range of factors can influence the effectiveness of a ground shooting operation, including local weather patterns (such as a regional rainfall event), longer-term climatic conditions (such as drought), season, terrain, current pest population densities, and the scale and intensity of other pest management activities.

These factors can influence the appropriate length and intensity of an individual operation. For example, scheduling a shorter operation during hot and dry conditions, or, increasing the intensity of an operation to respond to temporarily high numbers of targets species following rain or another control event such as rabbit warren ripping.

Currently operations are scheduled at a NPWS regional level with consideration of other operational commitments across the trial regions. This scheduling can be some months in advance, but is able to change with circumstance. This approach was appropriate for the early stages of the trial when processes and protocols for planning, notification, engagement with neighbours and deployment of resources were being tested. However, further flexibility regarding this advance scheduling is required to allow NPWS to fully take into account, and respond to, changes in situational factors.

Decisions about the best time and location to employ ground shooting require flexibility in order to respond to changing regional conditions. This ensures that volunteer ground shooting is used when it is the most effective and efficient option in the pest control 'tool kit' for any given site at any given time.

3. The NRC recommends that:

- a. NPWS continue to trial varying lengths and intensities of shooting operations, to match local conditions
- b. NPWS continue to apply greater flexibility and responsiveness in regional-scale planning so that:
 - i. operations can be cancelled if they are unlikely to yield desired outcomes (giving due consideration to impacts on volunteers)
 - ii. operations can be planned at short notice if an opportunity arises (note that NPWS needs to provide neighbours with written notice at least four weeks prior to the commencement of any operations).

4.4 Build local relationships and volunteer capacity

The trial reserves are located in central and western NSW, with one of these reserves being nine hours drive from Sydney.

¹² Norris, A. and Low, T. (2005) *Review of the management of feral animals and their impact on biodiversity in the Rangelands: A resource to aid NRM planning*. Canberra, Pest Animal Control CRC [online] available from <http://nrmonline.nrm.gov.au/catalog/mql:358>.

Recruitment, training and induction of volunteers has predominantly been carried out centrally by SSAA NSW and NPWS in Sydney. This is where the SSAA NSW headquarters are located and where the majority of SSAA NSW members reside. This was appropriate for the start of the trial in order for the quality of training to be maintained, selection of volunteers to be observed and to keep costs to a reasonable level while the process was refined.

Although six information sessions have now been held in six regional locations, as well as two induction days, the NRC's observation from attending operations is just over 50 percent of the currently qualified supplementary pest control volunteers are Sydney based.

As the trial matures, NPWS should identify ways to broaden the geographical reach of the volunteer base. Attracting volunteers who live closer to the trial reserves could increase the likelihood that volunteers may return to the same park for repeat operations.¹³ Long-term volunteers are likely to bring the following benefits:

- improved knowledge of local conditions and pest animal behaviour, leading to greater expertise and self-sufficiency
- stronger relationships with local NPWS staff, leading to increased trust between parties
- commitment to the reserve and its pest management outcomes.

Pest management programs using volunteer shooters are operating in other jurisdictions. Examples of these include Queensland and South Australia where programs are focussed on conservation outcomes and retain dedicated, long-standing volunteers (see case studies in **Attachment 8** and **9**). A key feature of these programs is the mutual trust that has developed between parks staff, state branches of SSAA (the organisation partnered with in Queensland and South Australia) and volunteers.

Over time, volunteer groups in other states have become involved in recommending, planning, evaluating and implementing pest management activities, including activities other than shooting such as baiting, trapping and monitoring. These programs initially had high levels of supervision, but the need for close supervision has decreased as trust and experience have increased.¹⁴

Whilst there are differences between the operational environments in each state, the experiences in Queensland and South Australia can inform the NSW trial design. Increasing the capacity of local volunteers to participate in a range of pest management activities on reserves in NSW allows NPWS to:

- reduce supervision levels as trust and experience increase over time
- capitalise on existing knowledge and skills in the community
- pool resources of NPWS and volunteer organisations to achieve pest management outcomes more efficiently
- promote, and foster community commitment to, conservation principles.

¹³ Interviews with stakeholders in other jurisdictions.

¹⁴ From interviews with South Australian and Queensland government staff.

4. The NRC recommends that:

- a. SSAA NSW and NPWS continue to focus on attracting and retaining local volunteers who are interested in participating in ongoing pest management activities**
- b. SSAA NSW and NPWS hold more induction and training sessions in regional centres closer to the trial reserves where there is a higher likelihood that regional volunteers may participate**
- c. SSAA NSW and NPWS support future devolution of appropriate supplementary pest control activities by fostering engagement and increasing trust between regional supplementary pest control staff and local branches of the SSAA**
- d. NPWS consider involving volunteer groups in other stages of the pest management process. For example, in planning and monitoring, which allows for closer alignment of pest management needs and volunteer capabilities and capacity. It may also contribute to developing ongoing collaborative relationships between volunteers and NPWS staff at the local level.**

4.5 Trial different supervisor to volunteer ratios

The safety of all participants is paramount in the trial design. High levels of supervision are appropriate for this initial stage of the trial, while risks are being assessed, protocols developed and staff and volunteers build capacity and trust. Over time, as staff and volunteers develop experience and familiarity with the protocols and procedures, processes could be refined and streamlined.

The experience of volunteer programs in other jurisdictions indicates that supervision levels are likely to decline. For example, case studies in Queensland (**Attachment 8**) and South Australia (**Attachment 9**) show a lower level of supervision of volunteer shooting operations has evolved in long-standing programs. South Australian staff described the supervision of volunteers during their early operations as involving 'every man and his dog'.¹⁵ Today, however, operations in South Australia run with minimal national parks staff, often in an emergency support and park closure role and usually not undertaking direct 'shoulder-to-shoulder' volunteer supervision. The decline in supervision has occurred as staff and volunteers develop experience and build trust in the protocols and procedures.

A decrease in support staff has already been observed in supplementary pest control operations from nine support staff at a shoot in May 2014 to four support staff at a shoot in October 2014.¹⁶ However, the direct 'shoulder-to-shoulder' minimum supervision ratio of one NPWS operations supervisor for every two volunteers (ratio of 2:1) has been consistently maintained throughout the operations observed by the NRC so far¹⁷. NPWS should continue to trial different supervision levels to identify the optimum ratios for a variety of operational scenarios which pose different risk management requirements.

¹⁵ Interviews with stakeholders in other jurisdictions.

¹⁶ May 2014: Murrumbidgee Valley (Yanga) support staff – officer in charge, assistant officer in charge, six staff in support vehicles, one staff conducting base communications; October 2014: Murrumbidgee Valley (Yanga) support staff – officer in charge, two staff in support vehicles, one staff conducting base communications.

¹⁷ At the two operations in Murrumbidgee Valley (Yanga) scheduled supervision ratios were four volunteers with two direct operations supervisors.

Developing good relationships with volunteer organisations and volunteers is likely to contribute to a further reduction in the need for high levels of supervision in the future.

5. The NRC recommends that:

- a. NPWS continue to trial various supervision scenarios to identify optimum operating ratios**
- b. NPWS continue to encourage and support long-term involvement of individual volunteers to build capacity, enhance trust and strengthen teamwork.**

4.6 Assess the potential for night operations

The trial has been designed to maximise pest management outcomes, while minimising safety risks, within the constraints outlined in **Section 2.1.1**. A key constraint was the restriction on operating at night.

Scientific research shows that supplementary pest control targeted pest species are more active at night. Four of the five target species (goat, rabbit, pig and deer) are more active in twilight at dawn and dusk than during daylight. Feral pigs, rabbits and deer are known to forage through the night whilst goats tend to rest in secure 'campsites'. Foxes are generally nocturnal.¹⁸

Additionally, cultural, historical and anecdotal information, including from the experience of sport hunters, suggests that there are benefits to night hunting (using spotlights) for certain species. Conducting operations at night would increase the number of targets active during the operational period and may result in increased numbers of dispatched targets.

Conducting supplementary pest control operations at night may have other benefits for the trial. Currently staff and volunteers spend up to 14 hours a day in the field, to cover both the dawn and dusk periods when pest animals are most active¹⁹. Between October and March, day time temperatures can reach high levels, particularly in the trial reserves. Conducting supplementary pest control operations at night would allow operations to occur over shorter periods (eight hours), in cooler conditions reducing the risk of fatigue and dehydration for volunteers and NPWS staff.

Shooting at night would introduce a range of risks that differ from daytime operating risks.²⁰ However, night shooting is currently carried out by volunteers in other jurisdictions.²¹ Additionally, NPWS staff and pest management contractors routinely engage in night shooting during NSW pest management operations. The NRC discussions with volunteers, whilst observing operations, indicate that a majority of supplementary pest control volunteers are also experienced in night shooting. This would suggest that it is possible for NPWS to manage the risks of night shooting to human safety and animal welfare to acceptable levels.

¹⁸ Allopurus Environmental (2014), *Research support – SPC shooting at night*, November 2014.

¹⁹ NRC observations from field operations.

²⁰ Interview with Australian Workers Union.

²¹ Interviews with government staff from South Australia.

6. The NRC recommends that:

NPWS undertake a risk assessment of night shooting that could inform a business case for the SPC Project Control Group to consider. If risks can be appropriately managed, it is recommended that NPWS pilot a number of night-shooting operations during the trial and assess whether night-shooting is feasible.

4.7 Improve documentation for greater transparency and accountability

From its review of documentation of the trial design, the NRC has identified two areas where additional documentation could improve transparency and clarify procedures for the trial.

The NSW Government Evaluation Framework sets out guidelines for establishing appropriate governance arrangements for programs and for documenting those arrangements.²² The guidelines recommend that evaluation documents be made available where suitable to ensure transparency and accountability.

The NRC considers that certain aspects of the trial are of interest to a broad group of stakeholders.

The NRC recommends that NPWS provides more information about how it intends to engage with stakeholders throughout the trial, and what opportunities stakeholders will have to provide input and feedback for adaptive management of the trial over the three year period.

In addition, NPWS should also consider providing more information about the design of the ecological monitoring program. NPWS has made a significant investment in monitoring to measure and report on the trial and inform its evaluation.²³ NPWS should consider ways to extract the maximum value from this investment including publishing its ecological monitoring design to contribute to pest management practice across NSW.

7. The NRC recommends that:

NPWS develop documentation, and make documents publicly available, for the following aspects of the trial:

- i. engagement strategy, including Aboriginal stakeholders**
- ii. ecological monitoring design.**

²² NSW Government (2013) *NSW Government Evaluation Framework*, August 2013.

²³ SPC staff will monitor transects (using various methods such as cameras, pellet counts or spotlighting) in each of the six complexes twice per year. Based on current monitoring design, this amounts to approximately 96 person-weeks of monitoring annually for the SPC trial. The organisational chart for the trial currently includes 16 full time positions of which four (25%) are for Planning, Monitoring and Reporting Officers two (12.5%) are Information and Assessment officers.

Attachment 1: Terms of reference

TERMS OF REFERENCE FOR THE EVALUATION OF THE SUPPLEMENTARY PEST CONTROL TRIAL PROGRAM

Background

The NSW Government has decided to:

- implement a program of Supplementary Pest Control (SPC) in national parks and other reserves using volunteer shooters who will be regulated, scheduled and carefully managed by the National Parks and Wildlife Service (NPWS); the purpose of this program is to assist in controlling pest animals by complementing ongoing NPWS pest control programs;
- commence the program, initially as a trial, in 12 reserves;
- independently evaluate the trial before any further rollout of the program.

These Terms of Reference outline how this evaluation will be conducted.

Evaluation of the SPC trial

The Premier and the Minister for the Environment requests that the Natural Resources Commission (the Commission) evaluate the SPC trial program to assist the NSW Government in deciding whether, and how, to proceed with the proposed SPC program (beyond the trial period).

The Commission will independently evaluate the effectiveness and efficiency of the SPC trial program based on robust, evidence-based exploration of key issues. In developing its advice the Commission should consider issues such as (but not limited to):

1. the effectiveness of the SPC trial program in contributing to the aims and objectives of existing NPWS pest control programs, including
 - a) evidence that relevant native species populations have been additionally protected by the SPC trial
 - b) evidence that impacts of pest animals on neighbouring landholders and on the environment have been reduced
 - c) evidence that the number of pest animals taken by volunteers contributes to the existing NPWS pest animal programs (giving consideration to relative timing of control activities)
 - d) evidence that good animal welfare standards have been maintained
 - e) evidence that the SPC trial has been successfully aligned with and integrated into existing NPWS pest control programs, including evidence of any impacts on NPWS park operations
 - f) evidence that the SPC trial has been conducted in a manner consistent with the program approved by Government, that appropriately manages risk, that complies with relevant legislation and aligns with Government priorities (such as the NSW Biosecurity Strategy and NSW2021).

2. the efficiency of the SPC trial program, including
 - a) the costs and benefits of the trial to the NSW Government and to regional communities
 - b) how the SPC trial program compares to alternative uses of the available resources that may achieve similar outcomes
3. the social impacts of the SPC trial.

Any recommendations from the Commission should include potential improvements to the SPC program to enhance effectiveness and efficiency, if the program is to continue after the trial.

The Commission should also have regard to the following in undertaking the evaluation:

- any broader research carried out by the Department of Primary Industries on hunting as a pest control technique
- best practice in pest control programs and their evaluation in other jurisdictions.

The Commission should consult with relevant stakeholders in conducting their evaluation and in developing recommendations, including park neighbours, Aboriginal communities, Local Land Services, NPWS staff, volunteers and shooting organisations involved in the trial, other members of the hunting community, conservation and animal welfare groups, recreational users of parks and reserves, and tourism providers.

The Commission should also consult technical experts with pest management expertise and ecological, economic and social science skills including the Office of Environment and Heritage (OEH), Department of Primary Industries and universities conducting relevant research.

The Commission should work closely with the Office of Environment and Heritage (OEH) in designing and conducting the evaluation.

Evaluation outcomes and recommendations rely heavily on the design of the trial, the availability of existing data (including baselines) and information on existing NPWS pest control programs, as well as any additional data that can be collected during the three year trial. OEH will be responsible for the collection and quality of data from existing NPWS pest control programs and from the SPC trial, as required by the evaluation.

For some elements of the evaluation, conclusive, scientifically reliable evidence at all sites may not be achievable within the timeframe of the trial (three years). In this instance the best available alternative sources of evidence will be sought.

The Commission is to provide:

- interim evaluation reports, including draft findings
- a final evaluation report, including outcomes of the evaluation and recommendations to Government, by 31 May 2017.

Amendments

Any changes to these Terms of Reference may be made by the Minister for Environment and the Premier and will be published on the website of the Office of Environment and Heritage and the Natural Resources Commission.

Attachment 2: Evaluation framework and logic

Table A2. 1: Key evaluation, sub-evaluation and trial design questions for the NRC's evaluation reports

Evaluation framework questions	Questions on trial design addressed in this report	Interim report	Final report
K1: Should SPC proceed beyond the trial period, and if so, how?			
KS1: To what extent could SPC improve outcomes and/or reduce the cost of existing NPWS pest programs?			✓
KS2: Under what circumstances is SPC (as a technique) most useful?			✓
KS3: What improvements could be made so that SPC works better and costs less in the future?		✓	✓
K2: How effective was the SPC trial?			
KS4: To what extent has the SPC trial contributed to existing NPWS pest programs (including alignment and integration)?	K2(iii): Is it designed to be aligned with existing pest management programs? K2(iv): Are governance arrangements, roles and responsibilities appropriate?	✓	✓
KS5: To what extent have negative impacts of pest animals on neighbours been reduced?			✓
KS6: To what extent have relevant native species populations been additionally protected?	K2(ii): Is it designed to be aligned with government priorities, particularly pest management and threatened species priorities?	✓	✓
KS7: To what extent was the SPC trial implemented in compliance with relevant legislation and Government priorities?	K2(i): Is it designed to be compliant with legislation? K2(ii): Is it designed to be aligned with government priorities, particularly pest management and threatened species priorities? K2(iv): Are governance arrangements, roles and responsibilities appropriate?		✓
KS8: To what extent were human safety risks appropriately managed?	K2(i): Is it designed to be compliant with legislation? Are SPC staff and volunteers appropriately qualified and trained? K2(vi): Are appropriate risk management plans and processes in place for human safety and animal welfare risks?		✓
KS9: To what extent were animal welfare risks appropriately managed?	K2(i): Is the trial designed to be compliant with legislation? K2(v): Are SPC staff and volunteers appropriately qualified and trained? K2(vi): Are appropriate risk management plans and processes in place for human safety and animal welfare risks? K2(vii): Is the ecological monitoring framework designed to report on trial outputs and inform the evaluation?		✓
K3: How efficient was the SPC trial?			
KS10: What were the costs and benefits of the SPC trial to Government?		✓	✓
KS11: How does the SPC trial compare to alternative uses of the available NPWS resources that may achieve similar outcomes?			✓
KS12: Has the efficiency of the SPC trial improved over the period of the trial?		✓	✓
K4: What were the social impacts (intended or unintended) of the SPC trial?			
KS13: What were the impacts on volunteers and associated organisations?		✓	✓
KS14: What were the impacts on park neighbours and Aboriginal communities involved in joint management?	K4(i): Are park neighbours being effectively engaged in order to identify any unintended (positive or negative) impacts?	✓	✓
KS15: What were the impacts on regional communities including park users, local Aboriginal communities etc.?		✓	✓

Attachment 3: Summary of evaluation methods

Method	Details																					
Collaborative development of evaluation framework	<p>Two workshops were held to collaboratively develop the NRC evaluation framework. These were attended by NPWS SPC staff, Office of Environment and Heritage (scientist and economist), Department of Primary Industries (pest management), evaluation experts and NRC staff.</p> <p>The NRC has collaborated with NPWS and SSAA NSW to ensure that sufficient evidence will be available to respond to the Terms of Reference – exceptions are outlined in Section 3.1.7 on trial monitoring.</p>																					
Field observations	<p>NRC staff attended five of the eleven field operations conducted this year. This included at least one operation in each of the sites sampled in the document review (described below).</p> <table border="1"> <thead> <tr> <th>SPC complex</th> <th>No. operation days (2014)</th> <th>NRC observation (2014)</th> </tr> </thead> <tbody> <tr> <td>Cocopara NR</td> <td>6</td> <td>15-16 Feb, 1-4 Nov</td> </tr> <tr> <td>Goonoo Complex</td> <td>2</td> <td>–</td> </tr> <tr> <td>Gundabooka Complex</td> <td>3</td> <td>–</td> </tr> <tr> <td>Woomargama NP</td> <td>6</td> <td>15-16 Nov</td> </tr> <tr> <td>Murrumbidgee Valley NP</td> <td>5</td> <td>10-11 May, 24-27 Oct</td> </tr> <tr> <td>Yathong NR</td> <td>4</td> <td>–</td> </tr> </tbody> </table> <p>NRC staff recorded the following information of relevance to this report:</p> <ul style="list-style-type: none"> ▪ issues or concerns raised by staff and volunteers ▪ operational issues and how they were dealt with observations of safety or animal welfare issues. 	SPC complex	No. operation days (2014)	NRC observation (2014)	Cocopara NR	6	15-16 Feb, 1-4 Nov	Goonoo Complex	2	–	Gundabooka Complex	3	–	Woomargama NP	6	15-16 Nov	Murrumbidgee Valley NP	5	10-11 May, 24-27 Oct	Yathong NR	4	–
SPC complex	No. operation days (2014)	NRC observation (2014)																				
Cocopara NR	6	15-16 Feb, 1-4 Nov																				
Goonoo Complex	2	–																				
Gundabooka Complex	3	–																				
Woomargama NP	6	15-16 Nov																				
Murrumbidgee Valley NP	5	10-11 May, 24-27 Oct																				
Yathong NR	4	–																				
Document review	<p>The NRC engaged Roberts Evaluation Pty Ltd, to review all documentation associated with the design of the trial in relation to: legislative requirements; government priorities; governance structures; strategic alignment of SPC activities; and impacts of SPC engagement on neighbours.</p> <p>Two of the six complexes (the 12 SPC reserves are grouped into six operational complexes) were selected as a sample for document review at the site scale (sample gives 33 percent coverage of reserves).</p>																					

Method	Details
Interviews with stakeholders and other jurisdictions	<p>The NRC conducted separate interviews with representatives of organisations that were consulted with by Office of Environment and Heritage (OEH) in the design of the trial, including:</p> <ul style="list-style-type: none">▪ Australian Workers Union (AWU)▪ Public Service Association (PSA)▪ Royal Society for the Prevention of Cruelty to Animals (RSPCA). <p>These interviews sought stakeholder's views on the design of the trial. Interviews were also held individually with staff from other jurisdictions who have established programs that utilise volunteers in pest management on public land, including:</p> <ul style="list-style-type: none">▪ Queensland Parks and Wildlife Service▪ National Parks South Australia▪ Parks Victoria. <p>These interviews sought high level information on the design of established programs in other states that could be relevant to improvement of the design of the NSW trial. Additional stakeholders (including others listed in the Terms of Reference) will have opportunity to provide comment to the NRC on the trial in 2015. See Attachment 4 for the NRC's planned engagement with other stakeholders as part of evidence gathering for future evaluation reports.</p>
Technical review²⁴	<p>The evaluation framework was reviewed by a vertebrate pest expert and an expert in socio-economic evaluation.</p> <p>The reviewers looked at each of the issues the NRC is required to consider under the Terms of Reference. They assessed whether the evaluation framework developed by the NRC:</p> <ul style="list-style-type: none">▪ establishes an indicator for each issue that is appropriate or adequate (given technical and financial constraints)▪ uses indicators that, when taken together, can evaluate the effectiveness and efficiency of the program and provide a robust evidence base to inform government decisions about the future of the trial▪ could be modified to be made more effective or realistic.

²⁴ The Terms of Reference for the evaluation requires NRC to consult with technical experts with pest management expertise and ecological, economic and social science skills.

Attachment 4: Stakeholder engagement plan for the NRC's evaluation

The NRC is consulting with all stakeholders listed in the Terms of Reference in the process of evaluating the trial. The following table summarises the NRC's plan for engaging stakeholders during the evaluation. Broadly, the objectives of stakeholder engagement activities are to:

- provide an opportunity for stakeholders to give feedback
- use knowledge gained through the trial to improve existing pest control programs and future supplementary pest control
- understand the impacts of the trial on stakeholders
- understand safety, animal welfare or other concerns of stakeholders so that risks can be appropriately assessed and managed
- learn from the experiences of similar programs in other jurisdictions.

Category	Stakeholder	Engagement activities	Purpose of engagement	Timing of engagement	Trial design	Interim outcomes	Final outcomes
Park neighbours	Properties neighbouring trial reserves	Survey	To understand impacts of the trial	End of trial			✓
Aboriginal communities	Local Aboriginal groups	Interview	To understand cultural heritage management during trial and perceptions of trial	Mid-trial and end of trial		✓	✓
Regional communities	Regional community groups	Interview	To understand the impact of the trial on regional communities	Mid-trial and end of trial		✓	✓
Local Land Services	Local Land Services staff	Interview	To understand the impact of the trial on regional programs	Early in trial		✓	✓
NPWS staff	SPC field operations staff	Informal discussions	To understand staff views and concerns about the trial	Throughout trial (more than 25% of field operations will be attended by NRC staff)	✓	✓	✓
		Survey	To understand staff capacity to implement trial safely and humanely	Mid-trial		✓	

Category	Stakeholder	Engagement activities	Purpose of engagement	Timing of engagement	Trial design	Interim outcomes	Final outcomes
	SPC operation supervisors	Post-shoot surveys	To record feedback on each operation	Every operation		✓	✓
		Informal discussions	To record feedback on operations	Throughout the trial	✓	✓	✓
	Senior NPWS managers, NPWS Pest Management Officers, SPC Program Manager, SPC Program Coordinator and other NPWS and SPC staff	Workshop	Evaluation planning	Pre-evaluation	✓		
		Meetings and informal discussions	To record feedback on operations	Throughout the trial	✓	✓	✓
		Survey	To capture a representative view of staff at different levels about the trial.	End of trial			✓
Volunteers	All volunteers attending operations	Post-shoot surveys	To understand motivations, benefits and costs for volunteers	every operation	✓	✓	✓
		Conversations during field operations and post-shoot debriefs	To understand motivations, benefits and costs for volunteers	NRC staff will attend more than 25% of field operations	✓	✓	✓
Shooting organisations involved in the trial	Sporting Shooters Association of Australia (NSW)	Regular meetings	To understand motivations and any issues as they arise throughout the trial	Regularly throughout trial	✓	✓	✓
		Survey	To capture SSAA views of the trial	End of trial			✓
Other members of the hunting community	Australian Deer Association	Interview	To provide feedback on trial	Mid-trial and end of trial		✓	✓
	Field and Game Australia	Interview	To provide feedback on trial	Mid-trial and end of trial		✓	✓
Conservation and animal	RSPCA	Interview	To understand animal welfare issues or concerns	Early in trial, mid-trial and end of trial	✓	✓	✓

Category	Stakeholder	Engagement activities	Purpose of engagement	Timing of engagement	Trial design	Interim outcomes	Final outcomes
welfare groups	Invasive Species Council	Interview	To provide feedback on trial	Mid-trial and end of trial		✓	✓
	Nature Conservation Council	Interview	To provide feedback on trial	Mid-trial and end of trial		✓	✓
Recreational users of parks and reserves and tourism providers	National Parks Association	Interview	To provide feedback on trial	Mid-trial and end of trial		✓	✓
	Tourism Industry Council NSW	Interview	To provide feedback on trial	Mid-trial and end of trial		✓	✓
Technical experts with pest management expertise and ecological, economic and social science skills	Ecological expert (vertebrate pest)	Technical review	To provide expert advice on ecological aspects including pest management aspects of the trial and monitoring	Throughout trial as needed	✓	✓	✓
		Interview	To understand appropriateness and effectiveness of trial	End of trial			✓
	Economic and social science expert	Technical review	To provide expert advice on economic and social aspects of trial	Throughout the trial as needed		✓	✓
		Interview	To understand appropriateness and effectiveness of trial	End of trial			✓
	Evaluation experts	Technical review	To provide advice on the adequacy of evaluation framework and its implementation	Throughout the trial as needed	✓	✓	✓
	Office of Environment and Heritage scientists and economists	Workshop	Design of evaluation framework	Early in trial	✓		
		Informal discussions	To understand appropriateness and effectiveness of trial	Throughout the trial as needed	✓	✓	✓
		Interview	To understand appropriateness and effectiveness of trial	End of trial			✓

Category	Stakeholder	Engagement activities	Purpose of engagement	Timing of engagement	Trial design	Interim outcomes	Final outcomes
	Department of Primary Industries pest management experts	Workshop	Design of evaluation framework	Early in trial	✓		
		Informal discussions	To understand appropriateness and effectiveness of trial	Throughout the trial as needed	✓	✓	✓
		Interview	To understand appropriateness and effectiveness of trial	End of trial			✓
Other jurisdictions	Parks Victoria	Interview	To understand best practice elements of design of similar programs	Early and end of trial	✓		✓
	Queensland Parks & Wildlife Service	Interview	To understand best practice elements of design of similar programs	Early and end of trial	✓		✓
	National Parks South Australia	Interview	To understand best practice elements of design of similar programs	Early and end of trial	✓		✓
Other interested stakeholders	Public Service Association	Interview	To raise issues or concerns with the design of trial	Early and end of trial	✓		✓
	Australian Workers Union	Interview	To raise issues or concerns with the design of trial	Early and end of trial	✓		✓

Attachment 5: Legislative requirements

A review of trial documentation was conducted to determine the extent that the trial is being implemented in compliance with relevant legislation. It found that the trial explicitly considers and incorporates relevant legislative requirements (see **Section 3.1.1**). The table below details the relevant legislative requirements that have been complied with, including:

- *Work Health and Safety Act 2011 (WHS Act)*
- *Work Health and Safety Regulation 2011 (WHS Regulation)*
- *Prevention of Cruelty to Animals Act 1979*
- *Prevention of Cruelty to Animals Regulation 2012*
- *Firearms Act 1996*
- *Firearms Regulations 2006*
- *National Parks and Wildlife Act 1974*
- *National Parks and Wildlife Regulation 2009*
- *Threatened Species Conservation Act 1995.*

Table A5. 1: Legislation relevant to the supplementary pest control trial

Section/ clause of legislation	Requirement
<i>Work Health and Safety Act 2011</i>	
S3 - Object	The object of this Act is to provide a balanced and nationally consistent framework to secure the health and safety of workers and workplaces.
S18 – Reasonably practicable	‘Reasonably practicable’ refers to a means that is reasonably able to be done to ensure health and safety.
S19 – Primary duty of care Cl39 of Regulation	NPWS must ensure, so far as reasonably practicable, the health and safety of NPWS staff, qualified SPC volunteers and others whilst undertaking the SPC trial.
S20(1) – Duty of management or control	The NPWS person with management or control of the workplace must ensure, so far as reasonably practicable, that the workplace, the means of entering and exiting the workplace, and anything arising from the workplace are without risks to the health and safety of any person.
S28 and S29 – Duty of NPWS staff and other attendees	SPC shoot attendees must: <ul style="list-style-type: none"> a) take care for personal health and safety b) take care that personal actions do not adversely affect others c) comply with reasonable instruction from NPWS management.
S38(1) – Notification of incidents	NPWS must notify WorkCover immediately after becoming aware that a death, serious injury or dangerous incident arising from SPC trial activities has occurred. The notice containing incident details must be given in the fastest possible means by telephone or in writing.
S39(1) – Preservation of incident site	The person with management or control of the workplace must ensure, so far as reasonably practicable, that the site where the incident occurred is not disturbed until an authorised inspector arrives.
S46 – Duty to consult with duty holders	People with the same work health and safety duties must co-operate and co-ordinate with one-another, as far as reasonably practicable.
S47 – Duty to	NPWS must, so far as reasonably practicable, consult with workers who are, or

Section/ clause of legislation	Requirement
consult with others	likely to be, directly affected by a work health or safety issue.
Work Health and Safety Regulation 2011	
CI34, CI35, CI36, CI37 and CI38 - Duty to identify and control hazards	<p>A person with a duty to manage health and safety risks must:</p> <ol style="list-style-type: none"> identify reasonably foreseeable hazards eliminate or minimise risks to health and safety so far as reasonably practicable. <p>The duty holder must minimise risks, so far as reasonably practicable by:</p> <ol style="list-style-type: none"> substituting the hazard isolating the hazard implementing engineering and/ or administrative controls ensuring the provision and use of suitable personal protective equipment. <p>The duty holder must ensure control measures remain effective and must review and revise the control measures implemented.</p>
CI40 and CI41 - General working environment	<p>NPWS must ensure:</p> <ol style="list-style-type: none"> the layout and location of SPC shoot activities allows shoot attendees to enter, exit and move about without risk to health and safety under normal working conditions and in emergency attendees carrying out work in heat/cold extremes are able to carry out SPC shoot activities without risk to health and safety. <p>NPWS must also ensure, so far as reasonably practicable, the provision of clean, safe and accessible facilities for SPC shoot attendees.</p>
CI42 - First aid	<p>NPWS must ensure:</p> <ol style="list-style-type: none"> the provision of first aid equipment that each SPC shoot attendee has access to the equipment there is access to facilities for administration of first aid there is an adequate number of NPWS staff and qualified SPC volunteers who are trained to administer first aid or NPWS staff and qualified SPC volunteers have access to others that are adequately trained to administer first aid.
CI43 - Emergency	NPWS must ensure that an emergency plan is prepared for SPC shoot activities.
CI44, CI45, CI46, 47 - Protective equipment	<p>NPWS must provide personal protective equipment to SPC shoot attendees, and provide information, training and instruction in regard to:</p> <ol style="list-style-type: none"> the proper use of personal protective equipment storage and maintenance of the equipment.
Prevention of Cruelty to Animals Act 1979	
S3 - Objects	<p>The objects of this Act are:</p> <ol style="list-style-type: none"> to prevent cruelty to animals to promote the welfare of animals by requiring a person in charge of an animal to treat the animal in a humane manner and to ensure the welfare of the animal.
S5 - Cruelty to animals	A person shall not commit an act of cruelty or aggravated cruelty upon an animal.
S24 - Permissions	<p>SPC shoot attendees will not be held accountable to an offence if the action was done for the purpose of:</p> <ol style="list-style-type: none"> hunting, shooting, snaring, trapping, catching or capturing the animal in a manner that inflicted no unnecessary pain to the animal destroying the animal in compliance with a duty under another Act.
Firearms Act 1996	

Section/ clause of legislation	Requirement
S3 - Principles	The underlying principles of this Act are: <ul style="list-style-type: none"> a) to confirm and manage firearm possession b) to improve public safety by imposing strict controls on possession and use of firearms, and by promoting safe and responsible storage of firearms c) to facilitate a national approach to firearm control.
S7A - Unauthorised use	A SPC shoot attendee must not possess or use a firearm unless the person is authorised to do so by a licence or permit.
S12 - Reasons for having a licence	A licence cannot be issued unless the Commissioner of Police is satisfied the applicant has a genuine reason for possessing or using the firearm.
S19 and S40 - Conditions of licence	A licence holder must hold to the conditions of the licence, including: <ul style="list-style-type: none"> a) the licensee must not allow any unauthorised person to possess or use the firearm b) the licensee must not possess any ammunition that exceeds the prescribed amount c) the firearm licence cannot be transferred to another person d) the licensee must comply with safe keeping and storage requirements for category A and B licence.
Schedule 1 - Prohibited firearms	A person may not use or possess a prohibited firearm.
Firearms Regulation 2006	
CI25 - Interstate licences	An interstate resident who holds an equivalent of category A or B licence is authorised to possess or use a firearm for the purposes vermin or vertebrate pest animal control.
CI26 - Licences of government agencies	The licence of NPWS to possess firearms requires the agency to: <ul style="list-style-type: none"> a) keep in safe storage all firearms that are not in use b) keep secured in a manner that prevents its removal other than by an authorised employee c) not allow any unauthorised employees to possess or use an agency owned firearm d) notify the Commissioner of Police when a licence holding employee ceases to be employed by NPWS e) ensure firearms are inspected every three months and serviced once a year. <p>A licence holding NPWS staff member must return any firearm in their possession to approved storage at the end of their duty, or as otherwise organised, and comply with:</p> <ul style="list-style-type: none"> a) the firearm to only be carried by the NPWS staff member to and from the place of duty b) the firearm to be stored in accordance with approved arrangements with NPWS. <p>A licence holding NPWS staff member must undertake continuing firearms safety training courses.</p>
CI29 and CI30 - Vermin control in approved hunting clubs	A licence for vermin control to a member of an approved hunting club must comply with the genuine reason of vermin control as the sole use of the licence.
National Parks and Wildlife Act 1974	
S30E , S30G and S30J - National parks, state	National parks, state conservation areas and nature reserves must be managed in accordance with their purpose.

Section/ clause of legislation	Requirement
conservation areas and nature reserves	
S45 and S129 – Animals in national parks	A SPC shoot attendee must not harm an animal or use a prohibited weapon in a park unless authorised by licence or duty under this Act.
S56 and S129 – Animals in nature reserves	A SPC shoot attendee must not harm any animal or use any firearm or hunting device within a nature reserve unless authorised by licence or duty under this Act.
S98 – Harming protected fauna	A SPC shoot attendee must not: <ul style="list-style-type: none"> a) harm any protected fauna b) use any substance, animal, firearm, explosive, net, trap or hunting device for the purpose of harming protected fauna unless authorised by licence or duty.
S99 – Harming interstate fauna	A SPC shoot attendee must not: <ul style="list-style-type: none"> a) not harm any threatened interstate fauna b) use any substance, animal firearm, explosive, net, trap or hunting device for the purpose of harming threatened interstate fauna unless authorised by licence.
S99A – Directions to protected fauna	NPWS may give direction to SPC volunteers to stop any activity that is causing, or likely to cause, distress to protected fauna.
S110 – Use substances for harming fauna	SPC shoot attendees may not use any prescribed substance for the harming, or attempted harming, of any protected fauna without the written consent of the Director General.
S111 – Method for shooting fauna	SPC shoot attendees must not use any unauthorised firearm for harming of protected fauna.
S118C and S118D – Damage to habitat	A SPC shoot attendee must not: <ul style="list-style-type: none"> a) damage any critical habitat b) habitat of a threatened species, endangered population or an endangered ecological community.
S171 – Authority to harm animals	With authorisation from the Director General, a person is permitted to harm animals within a national park, nature reserve or state conservation area.
National Parks and Wildlife Regulation 2009	
Cl4 – Park regulation by notice	NPWS may regulate park use, access and conditions by public notice or oral direction.
Cl7 – Vehicle use	A SPC shoot attendee must not drive or use any vehicle unless authorised to do so by NPWS.
Cl11 – Littering and damage	A SPC shoot attendee must not litter in the park or damage natural and man-made park structures.
Cl12 – Protection of fauna	Without authority from NPWS, a SPC shoot attendee must not: <ul style="list-style-type: none"> a) carry or deposit a trap or poison b) hunt, shoot, poison, net, spear, pursue, injure, capture, destroy, trap or snare, or use an animal c) interfere with an animal’s nesting or resting place d) feed any animal.
Cl13, Cl14 and Cl15 – Conduct of	A SPC shoot attendee must not take part in offensive conduct within the park without authority of NPWS.

Section/ clause of legislation	Requirement
behaviour	A SPC shoot attendee must also not: <ol style="list-style-type: none"> a) consume alcohol in the park b) light a fire within the park, commensurate with the park's terms of notice, unless otherwise authorised by NPWS.
Cl16 – Cultural heritage	A SPC shoot attendee must not deposit or possess any object that may damage or interfere with an Aboriginal area or place.
Cl18 – Protection of flora	Without authority from NPWS, SPC shoot attendees must not: <ol style="list-style-type: none"> a) gather, pluck, pull up, poison, take, cut, fell, remove, damage or destroy any vegetation in the park b) have in possession any park vegetation c) introduce any vegetation into a park.
Cl20 - Weapons	Without authority from NPWS, an unauthorised SPC shoot attendee must not discharge or possess any firearm, explosive or knife.
Cl25 – Interference with park management	A person unauthorised to attend SPC shoot activities must not interfere with park management.
<i>Threatened Species Conservation Act 1995</i>	
S3 - Objects	The objects of this Act are to: <ol style="list-style-type: none"> a) conserve biological diversity and promote ecologically sustainable development b) prevent the extinction and promote recovery of threatened species, populations and ecological communities c) protect critical habitat of threatened species, populations and ecological communities d) eliminate or manage processes that threaten survival or evolutionary development of threatened species, populations and ecological communities e) ensure impacts of actions threatening species, populations and ecological communities are assessed f) encourage the conservation of threatened species, populations and ecological communities through co-operative management.
S8 and S13 – Threatening processes	A key threatening processes is listed if: <ol style="list-style-type: none"> a) it adversely affects threatened species, populations or ecological communities b) it could cause species, populations or ecological communities that are not threatened to become threatened.
S77 and S86 – Threat abatement plans	NPWS must take appropriate action available to implement measures included in a threat abatement plan regarding SPC trial key threatening processes.
S90A and S90B – Priorities Action Statement	In planning, a relevant Threatened Species Priorities Action Statement from the Director General must be adopted and considered throughout the SPC trial.

Attachment 6: Alignment with Government priorities

Review of trial documentation was conducted to determine the extent that the trial is implemented in compliance with government priorities. It found that the trial explicitly considers and incorporates relevant Government priorities (see **Section 3.1.2**). These priorities include:

- DECCW Due Diligence Code of Practice for the Protection of Aboriginal Objects 2010
- DECCW Firearms Management Manual 2010
- Fox Threat Abatement Plan
- NPWS Neighbour Relations Policy 2005
- NPWS Regional Pest Management Strategies (Northern Plains, Western Rivers, Far West and Southern Ranges)
- NPWS Volunteer Operational Policy and Procedures 2013
- NSW 2021
- NSW Invasive Species Plan 2008
- OEH Work Health and Safety Risk Management System
- Threatened Species Priorities Action Statement
- Volunteer Program Management System (VOMS) User Guide 2013.

Human safety

Table A6. 1: Relevant government priorities for human safety

Policy or plan	Priority
OEH Work Health and Safety Risk Management System	NPWS must establish and maintain the safest work environment practicable over the duration of the trial.
	NPWS managers are required to ensure Work Health and Safety Risk Management System is effectively implemented during the trial, and are to support others and hold them accountable for their specific responsibilities.
	NPWS supervisors must ensure that SPC shoot activities and the behaviour of SPC shoot attendees is safe and without risks to health and safety.
	All other shoot attendees and qualified SPC volunteers must cooperate with OEH's Work Health and Safety Policy to ensure their own and others' health and safety.
	NPWS must implement hazard identification, risk assessment and control throughout the trial.
	A risk assessment using the <i>Take 5</i> checklist is required before commencing any work in the field.
	Work Health and Safety risk management process must be adequately recorded to demonstrate due diligence and compliance with Work Health and Safety legislation.
	Any incidents must be reported via the OEH Safety Incident Reporting System. If a notable incident (serious injury or illness) occurs, WorkCover are to be notified immediately.
	In the event of a safety incident, SPC Operations Supervisor must ensure all reasonable action is taken to control the hazard and to commence emergency response.

Policy or plan	Priority
	<p>Induction of shoot attendees should be used as an opportunity to consult on Work Health and Safety matters.</p> <hr/> <p>All Volunteers must undertake relevant training or certification.</p> <hr/> <p>NPWS must ensure that all relevant Work Health and Safety information is available to shoot attendees.</p>
<p>NPWS Volunteer Operational Policy and Procedures 2013</p>	<p>Qualified SPC volunteer activities must be supervised by a trained NPWS staff member.</p> <hr/> <p>Qualified SPC volunteers must not be used to replace the work of paid employees. Qualified SPC volunteers are also not permitted to engage in:</p> <ol style="list-style-type: none"> a) law enforcement b) any activity in which the volunteers does not meet the OEH health and safety requirements placed on the activity. <hr/> <p>SPC shoot activities must be consistent with any relevant Pest Management Strategy.</p> <hr/> <p>All activities must be entered into the Volunteer Program Management System (VPMS) by NPWS for approval and the maintenance of volunteer data.</p> <hr/> <p>NPWS must prepare a Job Safety Analysis for all SPC volunteer activities.</p> <hr/> <p>NPWS must exercise good management practices when working with shoot attendees and SPC volunteers. NPWS must:</p> <ol style="list-style-type: none"> a) provide adequate and effective supervision b) ensure volunteers have the appropriate equipment and qualifications to perform duties c) consult with SPC volunteers in the preparation of Job Safety Analysis's d) ensure the Job Safety Brief is conducted e) ensure all qualified SPC volunteers complete the daily sign-on and reporting register. <hr/> <p>Under the <i>Work Health and Safety Act 2011</i> and its Regulations, SPC shoot attendees and volunteers are required to take reasonable care of their own health and safety. In addition, a volunteer must:</p> <ol style="list-style-type: none"> a) take reasonable care that their personal conduct does not adversely affect others b) comply with NPWS instructions c) cooperate with NPWS policies and procedures d) participate in required training e) comply with all volunteer statement of duties and agreements f) take care of, and wear personal protective equipment appropriate to trial activities. <hr/> <p>Qualified SPC volunteers may drive OEH motor vehicles for SPC shoot purposes only with prior approval of a relevant NPWS manager.</p> <hr/> <p>Qualified SPC volunteers must not make comments to any media regarding trial activities, or during an emergency operation.</p> <hr/> <p>Qualified SPC volunteers are requested to complete a survey on the trial. The SPC Operations Supervisor must complete a Volunteer Appraisal Form to assist evaluation of the trial.</p> <hr/> <p>All qualified SPC volunteers must be given an induction prior to the commencement of trial activities.</p> <hr/> <p>Qualified SPC volunteers must complete the sign-on and reporting register each day.</p>

Policy or plan	Priority
	A qualified SPC volunteers' engagement may be terminated at any time at the discretion of NPWS.
	Qualified SPC volunteers must be covered by OEH personal accident and public liability insurance before they can commence work with NPWS.
Volunteer Program Management System User Guide 2013	NPWS supervisors are required to manage and document volunteer programs electronically using the Volunteer Program Management System.
NPWS Neighbour Relations Policy 2005	NPWS must undertake management in active communication with neighbours.
	NPWS must advise and consult with neighbours in relation to proposed SPC management initiatives or activities which may affect them.
	NPWS must advise neighbours of available assistance to deal with management issues affecting them. Neighbours are to be provided with information to enhance understanding of NPWS responsibilities and their contributions as a neighbour.
DECCW Firearms Management Manual 2010	All NPWS regions required to possess and use a firearm are required to hold a NSW government agency firearms licence. All firearms within each region must be registered to the region's NSW government agency firearms licence.
	All NPWS officers who possess and use firearms as part of their duty must have the appropriate NPWS endorsed firearms licence and permits required to complete such duty.
	On-ground shooting activities of the operation require category A and B firearm licences.
	NPWS Regional Managers must approve other shoot attendees to undertake specific firearms related tasks on OEH managed lands. Approved non-NPWS shooters are not permitted to use NPWS firearms while undertaking SPC shoot activities.
	Appropriate planning and risk management is required for SPC operations to minimise risk to staff, equipment, public safety and private property.
	SPC Operations Supervisor or volunteers must not handle or use a firearm while under the influence of alcohol or illicit drugs, or use firearms for any law enforcement actions.
	All firearms related incidents or safety breaches must be reported immediately.
	NPWS, or other approved persons, may transport firearms, however must comply with Section 39 of the <i>Firearms Act 1996</i> to take all reasonable precautions to ensure: <ul style="list-style-type: none"> a) the safe keeping of the firearm b) the security of the firearm to prevent loss or theft c) that the firearm does not come into possession of an unauthorised person.
	NPWS firearms and accessories must be cleaned regularly and maintained to the highest possible standard during periods of use and storage.
	Only factory produced and loaded ammunition may be used in NPWS firearms.
	Only specified firearms of a certain calibre may be used in NPWS firearms.
	NPWS must keep an up-to-date register where records of the acquisition, servicing and dispersal of firearms.
	SPC Operations Supervisor and qualified SPC volunteers must have completed appropriate Firearms Safety Training.

Animal welfare

Table A6. 2: Relevant Government priorities for animal welfare

Policy or plan	Priority
DECCW Firearms Management Manual 2010	<p>SPC Operations Supervisor must ensure that pests shot during the operation are destroyed as quickly and humanely as possible.</p> <p>SPC shoot activities involving firearms must be conducted in accordance with the Australian Government's Codes of Practice (COPs) and Standard Operating Procedures (SOPs) for the humane capture, handling or destruction of feral animals.²⁵</p>

Pest management

Table A6. 3: Relevant Government priorities for pest management

Policy or plan	Priority
NSW 2021	Reduce the impact of invasive species at priority sites in NPWS parks and reserves, leading to a positive response of native biodiversity of 50 percent at these sites.
Invasive Species Plan 2008-2015	<p>Invasive species issues must be properly defined before any development and implementation of control strategies.</p> <p>Decisions must be based off the best available knowledge, and programs are developed with an informed and skilled community to respond early and cost effectively.</p>
Northern Plains Regional Pest Management Strategy	<p>Protect threatened species, populations and communities under the <i>Threatened Species Conservation Act 1995</i>, through implementing the regions highest priority programs. These programs aim to reduce the impact of:</p> <ul style="list-style-type: none"> ▪ feral goats and foxes on populations of brush-tailed rock wallabies ▪ foxes on malleefowl ▪ foxes and feral pigs on ground nesting birds in wetlands.
Western Rivers Regional Pest Management Strategy	<p>Specific pest management issues of the region are addressed in pest management programs which include:</p> <ul style="list-style-type: none"> ▪ strategic fox control under the Fox Threat Abatement Plan (TAP) and for threatened species recovery plans ▪ continuous feral pig control ▪ feral goat management ▪ rabbit control programs.

²⁵ Codes and Standards for foxes, rabbits, feral pigs, feral goats and feral deer are available at (online): www.environment.gov.au/biodiversity/invasive-species/publications/model-codes-practice-feral-animals (accessed 20 August 1014)

Policy or plan	Priority
Far West Regional Pest Management Strategy	<p>SPC program will refine how additional pest control options can complement programs already in place in the region.</p> <p>Programs in place that SPC can complement:</p> <ul style="list-style-type: none"> ▪ feral pig control ▪ feral goat control ▪ fox baiting.
Southern Ranges Regional Pest Management Strategy	<p>Programs aim to minimise adverse impacts from pests on biodiversity, protected areas and the community.</p>
NSW Fox Threat Abatement Plan	<p>NPWS are to sustain frequent, broad area fox control on public lands across state priority sites.</p> <p>The priority areas for fox control relevant to the trial are Goonoo and Central Mallee, to target threatened species conservation (Mallefowl).</p> <p>Monitoring is required to measure the population responses of target threatened species and foxes at Goonoo.</p> <p>Site plans for all priority sites must be developed to clarify the extent, frequency and methods of fox control required.</p>

Threatened species management

Table A6. 4: Relevant Government priorities for threatened species

Policy or plan	Priority
NPWS Volunteer Operational Policy and Procedures 2013	<p>NPWS supervisor must consider whether SPC shoot activities involves, or might impact on, species or communities listed under the <i>Threatened Species Conservation Act 1995</i>.</p>
NPWS Threatened Species Priorities Action Statement 2007	<p>The objectives of the Priority Action Statement relevant to the trial include:</p> <ol style="list-style-type: none"> a) to move as many species as possible from threatened to non-threatened conservation status b) to abate or eliminate the impacts of key threatening processes c) to involve stakeholders and the community to implement management activities. <p>The Priorities Action Statement requires abatement of key threatening processes.</p> <p>Collaboration with stakeholders is required to meet the needs of threatened species in specific habitats.</p> <p>Species may be affected by more than one threat and therefore, threat abatement requires an integrated approach that uses different strategies and actions.</p>

Cultural heritage management

From review of trial documentation, the NRC recommends NPWS document, and make publicly available, their strategy for engaging with stakeholder groups, including Aboriginal stakeholders (**Section 4.2.2**), to further demonstrate compliance with Government priorities for cultural heritage management as identified in **Table A6. 5**.

Table A6. 5: Relevant Government priorities for cultural heritage management

Policy or plan	Priority
NPWS Volunteer Operational Policy and Procedures 2013	NPWS must consider whether SPC shoot activities involves, or might impact on, cultural and heritage values. All volunteer activities must acknowledge Aboriginal people and heritage of Country in accordance with DECC Aboriginal Welcome to Country protocols and procedures.
DECCW Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW 2010	NPWS must ensure due diligence by taking reasonable measures to determine whether SPC shoot activities will harm an Aboriginal object, and if so, what measures can be taken to avoid that harm. NPWS may follow their own due diligence process to satisfy requirements of <i>National Parks and Wildlife Act 1975</i> to protect Aboriginal objects.

Attachment 7: Staff and volunteer qualification and training

NPWS staff

Supplementary pest control staff undertake the following qualification and training courses, where appropriate to their positions:

- Firearms 1 and 2
- Firearms Awareness
- Work Health and Safety for Supervisors
- NPWS Volunteer Supervisor Course
- Senior First Aid.

Sporting Shooters Association of Australia volunteers

Supplementary pest control volunteers are appropriately qualified and trained (see **Section 3.2.5**), and undergo a well-structured and thorough process as outlined in **Figure A7.1**.

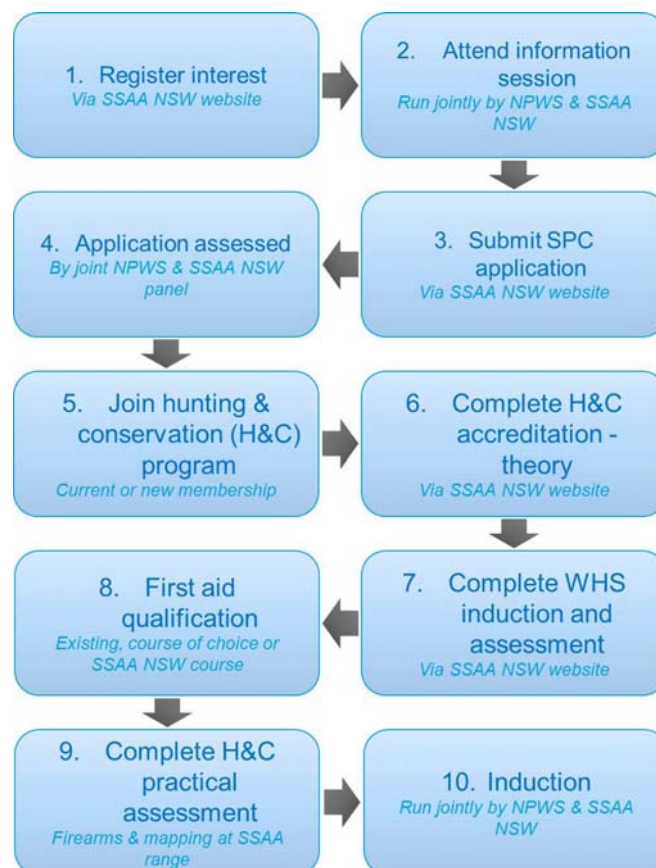


Figure A7. 1: SSAA application and accreditation process²⁶

²⁶ Figure obtained from SSAA documentation.

Steps 1 to 4

Steps 1 to 4 outline the process and governance arrangements of the application phase in the accreditation process for qualified SPC volunteers. In order to apply, volunteers must:

- be a current financial member of SSAA NSW
- abide by the SSAA NSW Hunter's Code of Ethics
- agree to meet a minimum level of accreditation and training.

Step 5: Join hunting and conservation program

The SSAA NSW Hunting and Conservation (H&C) Program provides training and accreditation to volunteers to meet the requirements of participating in SPC operations. To join the H&C Program volunteers must apply for membership.

Step 6: Hunting and Conservation accreditation - theory

To obtain H&C accreditation, volunteers must complete a course, including online assessment via the SSAA NSW website. The assessment comprises 35 short answer questions covering:

- hunter responsibilities and ethics
- firearms safety
- wildlife management
- bushcraft
- first aid
- mapping and navigation
- practical marksmanship.

Volunteer assessments are marked by two separate assessors. H&C theory accreditation is successful if the candidate achieves a mark of 80 percent or more from both assessors.

Step 7: Work health and safety induction and assessment

Volunteers are required to complete the OEH Workplace Health and Safety Induction Assessment to ensure volunteers:

- have an understanding of how safety is managed in the OEH workplace
- are introduced to Job Safety Analysis, Job Safety Briefing and Take 5 Assessments
- understand importance of reporting hazards, incidents and near misses.

The assessment is 15 multiple choice questions completed online through the SSAA website.

Step 8: First aid qualification

To meet the first aid qualification requirements, volunteers may choose one of the following:

- have a current equivalent first aid qualification recognised
- successfully complete an equivalent first aid qualification in the volunteers own time and at the volunteers own expense
- successfully complete a SSAA NSW subsidised first aid qualification.

Step 9: Hunting and conservation accreditation – practical assessment

Volunteers are required to successfully complete two practical components to gain H&C accreditation. The first component covers firearms safe handling and shot placement. Before practical assessment, volunteers are provided with a presentation on handling and shot

placement for pest animals. They are then required to complete an assessed demonstration where volunteers must:

- handle, carry and fire their firearm meeting **all** assessment criteria
- achieve 100 percent marksmanship at a range of targets.

The second component comprises mapping and navigation. Similarly, volunteers are provided with a presentation on map reading, grid references and compass use. Volunteers are then required to demonstrate their mapping knowledge using mapping tools and marked via an assessment sheet.

Step 10: Induction session

Following successful completion of the qualification steps 1 to 9 in **Figure A7.1**, volunteers are required to attend an Induction Day hosted by SSAA NSW and NPWS. At the Induction Day, the obligations of volunteers, SSAA NSW and NPWS are explained and the volunteers are required to sign a number of forms to complete the qualification process, which include:

- Statement of Volunteer Duties
- Qualified SPC Volunteer Agreement Form
- Qualified SPC Volunteer Code of Conduct.

Upon successful qualification, the volunteers are issued with an H&C Accreditation Certificate, Qualified SPC Volunteer ID Badge and Qualified SPC Volunteer shirt.

Attachment 8: Case study - Queensland

Queensland Parks and Wildlife Service partnership with the Sporting Shooters Association of Australia Queensland Branch (SSAA QLD)- Conservation and Wildlife Management Division

This case study highlights a pest management partnership involving volunteers that is currently operating in Queensland. This program has a number of operational differences compared with the NSW trial and programs running elsewhere in Australia. While it has been established under a different institutional and legislative environment, there are elements of this program that could inform adaptation of the NSW trial.

Conservation and Wildlife Management projects at a glance

Queensland National Parks and Wildlife Service (QPWS) has been working with the Sporting Shooters Association of Australia Queensland – Conservation and Wildlife Management Division (CWM) on pest management projects during the past seven years.

The CWM volunteers provide pest animal management services to private landholders, local and state governments, natural resource and conservation organisations. Projects are currently run on over 50 properties owned by government, conservation groups and private landowners.²⁷

The operations on state government land are implemented under an agreement between QPWS and SSAA QLD. QPWS staff supervise the initial operations at each site (supervision rates vary depending on the operation and staff availability), with future supervision levels at the discretion of the supervisor. QPWS will often accompany the volunteers during the operation, but this is not always the case.

Success factors

QPWS has advised that the program is considered successful as it is providing pest management outcomes which would not otherwise be achieved. Operations are established where labour is scarce or an activity is labour intensive and therefore may not have been undertaken, were it not for the volunteers efforts.

When the program commenced it was small, with four project sites operating during the first five years. This allowed for the development of trust between QPWS and SSAA QLD, refinement of procedures and demonstration of good performance. The consistent high level of performance by SSAA QLD and the volunteers has led to the number of projects being expanded significantly in recent years, with the latest agreement including 18 projects. There were over 30 separate deployments during the past two years to various project sites.

A number of factors have contributed to its success:

- **Operations are planned strategically** – taking account of season, location, weather conditions and the other relevant factors (for example night shooting where suitable). Ground shooting operations are implemented where the terrain or other factors make this approach more effective or efficient than other pest control activities.
- **Operations developed at the regional level** - they can also be proposed by either QPWS or CWM. For new projects both parties will meet locally to discuss the specifics of the proposal and ensure the needs and capabilities of both parties are aligned.

²⁷ Conservation & Wildlife QLD SSAA website - <http://cwm.ssaqld.org.au/2013/>

- **Conservation focussed volunteers recruited** – operations are not limited to ground shooting, but can also involve baiting, trapping (including maintenance and operation of traps) and monitoring activities providing broad pest management benefits.
- **Experienced volunteers** - the experience, dedication and professionalism of the volunteers is built up through local volunteer involvement over repeated operations, with experienced volunteers sharing their knowledge with new CWM members. Volunteers benefit from regular ongoing training and development which includes technical and practical competence with firearms, traps, 4WD, remote communications, animal welfare, hunter ethics, team work and conservation strategies and techniques.

Volunteers are self funded, but may receive some in-kind support such as accommodation in QPWS facilities.

Managing risks to human safety and animal welfare

There have been no safety or animal welfare incidents reported during this program. Strict management practices and guidelines are implemented by CWM for each field operation. Occupational health and safety, hunter ethics and animal welfare are key values that underpin all the activities. The volunteers operate under a strict 'code of conduct' and breaches of conduct are not tolerated by SSAA QLD.

A Volunteer Deed sets out protocols and codes of practice for the operations. These are specified by deployment and include the minimum and maximum numbers of volunteers, maximum number of consecutive days, number of operations to be conducted annually, supervision by QPWS staff (after the first visit the level of supervision is at the discretion of the QPWS supervisor) and other program details. All operations include pre and post operational briefings and a joint operational review is undertaken after 12 months.

All CWM members must pass accreditation courses which include bushcraft skills, written examination and high level marksmanship. All field volunteers are members of SSAA Conservation and Wildlife Management Queensland and hold appropriate firearm licences issued by the state authorities. Some volunteers are accredited senior first aid officers and others have environmental qualifications including the Property Based Game Management course offered by the Queensland University.

CWM members are covered by \$20 million public liability insurance.

Attachment 9: Case study - South Australia

National Parks South Australia partnership with the Sporting Shooters Association of Australia South Australia Branch - Conservation & Wildlife Management (SA) Inc.

This case study highlights a pest management partnership utilising volunteers that is currently operating in South Australia (SA). This program has a number of operational differences to the NSW trial and programs running elsewhere in Australia. While it has been established under a different institutional and legislative environment, there are elements of this program that could inform adaptation of the NSW trial.

Projects at a glance

The SSAA Conservation and Wildlife Management (SA) Inc. (CWM) Branch has worked with National Parks SA for over 20 years to manage pests. They also work with other government departments, research teams, conservation groups, private individuals and land owners throughout SA.

CWM Branch's primary aim is to provide efficient, reliable, species specific and cost neutral services in removing pests. As well as ground shooting to remove pests they are also involved in collection of research specimens, wildlife surveys, warren destruction, re-vegetation projects, or restoration of historic sites²⁸.

The program includes both pre-scheduled operations throughout the year and irregular activities as the need arises.

CWM achievements include significant feral goat reduction through regular operations in various locations. In the Flinders Ranges National Park, they were integral to efforts to achieve a fox-free status. This outcome has led to the recovery of the Yellow-footed Rock-wallaby population and allowed the reintroduction of the Quoll.

The CWM Branch and its members have been awarded conservation and environment awards and have proven to be one of the hardest working and committed friends of the National Parks groups.

National Parks SA undertakes aerial shooting as part of its pest management program. With the successful pest reduction achieved through the combined efforts of aerial and ground shooting, they are now assessing whether aerial shooting can be reduced or even ceased in some areas, if ongoing ground shooting by CWM is enough to maintain the low pest numbers. This represents a significant pest management outcome, of which an integral part was the volunteers efforts.

Success factors

Success factors included that:

- the initial operations were highly supervised by National Parks SA staff, however once performance was demonstrated and trust established, National Parks SA staff involvement was significantly reduced (one staff member to close the park) - reducing costs for government
- novice CWM volunteers are accompanied by experienced members to ensure competence.

Operations are designed to fit with the specific requirements required, for example:

²⁸ http://www.conservation-wildlife.asn.au/what_we_do_why.htm

- fox and cat control is undertaken at night, with the volunteers driving over transects to record monitoring data as well as target pests (goats are not targeted at night due to animal welfare concerns)
- when fox and cat control is undertaken in very remote areas it occurs without park closures – reducing government costs
- operations are often undertaken over a one week period, or whatever length and frequency is determined to be appropriate to achieve effective pest reduction outcomes.

Managing risks to human safety and animal welfare

Following the only significant safety incident in 20 years, where a volunteer not following gun handling protocols shot another volunteer in the ankle, operations were paused while the incident was investigated (2013). All projects have commenced operating again.

Membership of the CWM Branch is only open to current financial members of the SSAA South Australia Branch – which requires an undertaking to behave responsibly and ethically; to comply with all requirements for legal and safe ownership and use of firearms; and precludes membership of any organization which may have as any part of its program the overthrow of the government by force or violence.

The CWM Branch undergo rigorous training and operate under codes of practice. CWM Branch accreditation consists of three parts, including:

- Satisfactory completion of an eight hour theory course covering:
 - Hunters' Responsibilities,
 - Basic Safety Rules,
 - Hunting Ethics,
 - Hunting Laws,
 - Responsibilities to Landowners,
 - Responsibilities to Yourself,
 - Field Firearm Safety,
 - Principles of Wildlife Management,
 - Wildlife Management Tools,
 - Bush craft and First Aid,
 - Planning a Trip,
 - Communications,
 - Map Reading, Navigation Systems - Theory and Practice.
- The passing of a practical field shooting test (100 metres offhand)
- Satisfactory performance at a supervised and monitored field activity.

All activities have procedures and guidelines established on an individual basis. As the objectives and conditions of many activities vary, each new or major activity is preceded by a briefing where all members are provided with relevant information and procedures.

Accredited members are covered by \$10 million public liability insurance cover when undertaking CWM Branch approved activities.