

REPORT TO  
DEPARTMENT OF ECONOMIC DEVELOPMENT, JOBS, TRANSPORT AND RESOURCES  
17 NOVEMBER 2017

# VICTORIAN RABBIT ACTION NETWORK

IMPACT ANALYSIS  
FINAL REPORT





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We also acknowledge the contribution of the Expert Panel members: Andrew Woolnough, Professor Ted Alter and Tereso Morfe. They provided guidance and skilled input throughout the project.



## LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACIL Allen	ACIL Allen Consulting
CaLP Act	Catchment and Land Protection Act 1994
DELWP	Victorian Department of Land, Water and Planning
DEPI	Victorian Department of Environment and Primary Industries
EIA	Established Invasive Animal Management
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FTE	Full-time equivalent
IA CRC	Invasive Animals Cooperative Research Centre
IGAB	2012 Intergovernmental Agreement on Biosecurity
NBC	National Biosecurity Committee
NEBRA	National Environmental Biosecurity Response Agreement
NRFP	National Rabbit Facilitator Project
RHDV1 K5 or K5	Current Korean strain of the rabbit haemorrhagic disease virus
TAP	Threat Abatement Plan
ToC	Theory of Change
VFF	Victorian Farmers Federation
VOC	Vehicle operating costs
VRAN	Victorian Rabbit Action Network



# EXECUTIVE SUMMARY

## Background

Rabbits cause serious agricultural and environmental harm in Australia. They are estimated to cause at least \$216 million damage to agricultural production each year. Victoria's share of this national damage is estimated to be 10 per cent annually: \$21.6 million. A rabbit density of only 0.5 rabbits per hectare can prevent plant regeneration.

The prevalence of rabbits across Australia, their impact on diverse communities, and their ability to cause large-scale, sustained environmental and economic damage is why rabbit management has been coined a 'wicked problem.' This understanding informed the establishment and approach of the National Rabbit Facilitator Project (NRFP) and the Victorian Rabbit Action Network (VRAN).

### National Rabbit Facilitator Project

In 2013, NRFP was established as a collaborative project between the Department of Economic Development, Jobs, Transport and Resources (the Department) and the Invasive Animals Cooperative Research Centre (IA CRC). The project was designed to enable more effective and sustainable community-led rabbit management.

This approach complements conventional approaches where landholders control rabbits individually and government focuses on legislative compliance and enforcement along with supporting research and development. At its core, NRFP's approach recognises rabbit management is very complex, difficult and costly – requiring stakeholders to collaborate systematically on an enduring basis.

NRFP used a *systems mapping, participatory-based* method to bring together diverse public and private stakeholders across Victoria's rabbit system to co-develop and implement a network of community-led rabbit management initiatives.

### Victorian Rabbit Action Network

In 2014, VRAN was established as a new network-based approach that grew out from NRFP. Its aim is to strengthen rabbit management via activities and strategies identified by stakeholders through the systems mapping exercise. This is reflected in its guiding principles:

1. *collaboration between diverse rabbit stakeholders*
2. *co-learning amongst diverse stakeholders*
3. *co-investment from government, community and the private sector.*

In essence, these three Cs are seen as vital to better manage the wickedness of rabbit problems.

A Steering Group of community and government representatives oversees VRAN and its activities.

VRAN's key initiatives to date include:

- Rabbit Boot Camp (Rabbit Leadership Program)
- 'Leaps and Bounds' Learning Network
- Rabbit Management Conference
- small grants program.

A formative evaluation of VRAN in 2016 found that:

- its approach has strengthened Victoria's rabbit management system, particularly through:
  - greater knowledge transfer and information flows
  - more effective cooperative relationships
- community awareness of the importance of a collaborative rabbit action approach has increased.

The formative evaluation recommended that an economic evaluation of VRAN be undertaken to further analyse its impact and inform its development.

## This impact analysis

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In line with the formative evaluation's recommendation, ACIL Allen Consulting (ACIL Allen) was commissioned by the Department to undertake this impact analysis of VRAN. The analysis explored three questions:

1. What is the value of the initiatives led by VRAN?
2. What is the value of the systems mapping approach in supporting successful community-led rabbit management, including the formation of VRAN as a facilitating institution?
3. Does VRAN's approach have the potential to inform other invasive species interventions in Victoria and other jurisdictions?

To garner insights into the three questions, this analysis involved four components:

1. *Document review and consultation* – this included review of program documentation provided by the Department and interviews with key stakeholders to set the scene for the project.
2. *Stakeholder survey* – this included development and implementation of a stakeholder survey to provide a baseline understanding of VRAN's impact.
3. *In-depth case studies* – this included integration of findings from case studies undertaken by an external consultant.
4. *Impact and reach analysis* – this included data and economic analysis to assess VRAN's reach and impact.

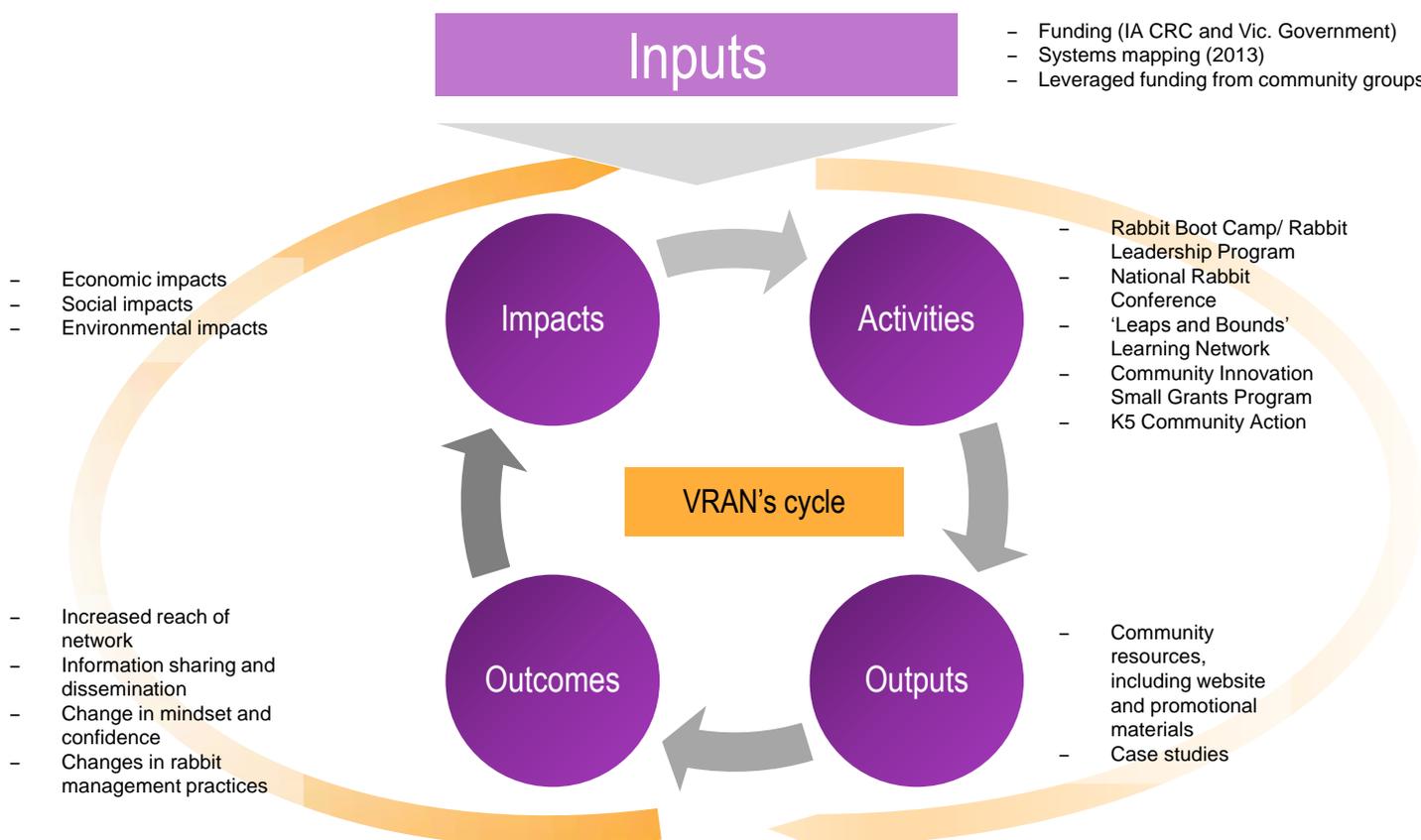
In short, this analysis sought to determine VRAN's social, environmental and economic benefits. Where possible, estimated monetary values were provided for these benefits. Importantly, this analysis is a *snapshot* in the embryonic stages of an evolutionary dynamic system.

## VRAN's dynamic impact cycle

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VRAN's inputs, activities, outputs, outcomes and impacts interact with one another through a dynamic cycle, as illustrated in Figure ES 1. The *enablers*, which include VRAN's governance and secretariat support, are across all elements in the cycle. *Inputs* are the financial (cash and in-kind), human and material resources underpinning the network. The *activities* are the means by which the network engages its participants, while *outputs* include informational materials created to engage the broader community. The *outcomes* of participation in VRAN's activities include increased network reach, enhanced information sharing and dissemination, changes in mindset and confidence levels, as well as changes in rabbit management practices. Collectively, these changes drive economic, social and environmental *impacts* via VRAN as a dynamic facilitating institution.

FIGURE ES 1 VRAN'S DYNAMIC IMPACT CYCLE



SOURCE: ACIL ALLEN

When VRAN's participants witness tangible outcomes and impacts, they are likely to become more motivated about participating in future activities. This thereby perpetuates the dynamic impact cycle. In short, this is like a feedback loop where observable results create the momentum to allocate on-going resources to manage rabbits collectively.

### Key findings

ACIL Allen's survey and analysis of VRAN's core participants and other rabbit management community members revealed the network has generated significant outcomes and impacts.

These results have evolved further since the formative evaluation and there are positive signs they could increase, given stakeholders' willingness.

Key results are summarised in the infographic and discussion overleaf.

# VRAN'S KEY IMPACTS

## REACH

- VRAN has:
- engaged more than 5,200 people
  - the potential to influence the management of over 2.5 million hectares of land.

## SURVEY RESPONDENTS

- 48% are farmers or other land owners.
- 34% are involved in Landcare.
- 20% work for the Victorian Government.

## MINDSET AND KNOWLEDGE-SHARING

Most survey respondents' participation in VRAN has changed their mindset towards managing rabbits.

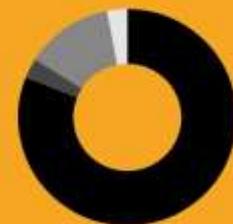
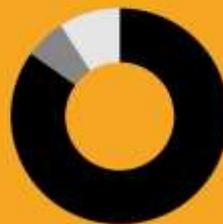
- 55% changed their views on collaboration in rabbit management.
- 59% increased their motivation to control rabbits.
- 84% shared knowledge gained through VRAN with others.
- 55% increased their confidence in managing rabbits.

## CHANGING PRACTICES

Many survey respondents changed the way they manage rabbits due to VRAN.

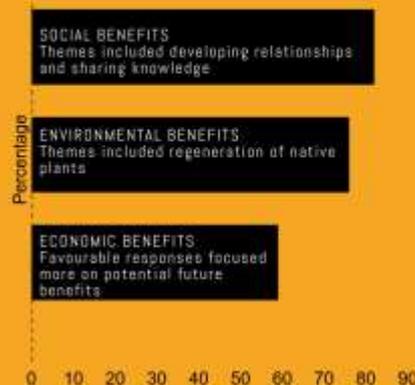
84% started, increased or made other changes to the way they use integrated approaches.

81% started, increased or made other changes to the way they use capacity building.



## BENEFITS

Most survey respondents consider VRAN led to social, environmental and economic benefits for their property, workplace, and/or community.



## COMMUNITY VALUE OF VRAN

VRAN and its activities are valued by the community.

- Community members contributed over \$200,000 in time and travel costs to participate in VRAN activities.
- On average, voluntary participants travelled 8.5 hours and approx. 281km (round trip) to and from VRAN events.
- Community groups contributed over \$74,000 (cash and in-kind) to projects funded through VRAN's innovation grants.

## MOST SIGNIFICANT CHANGE

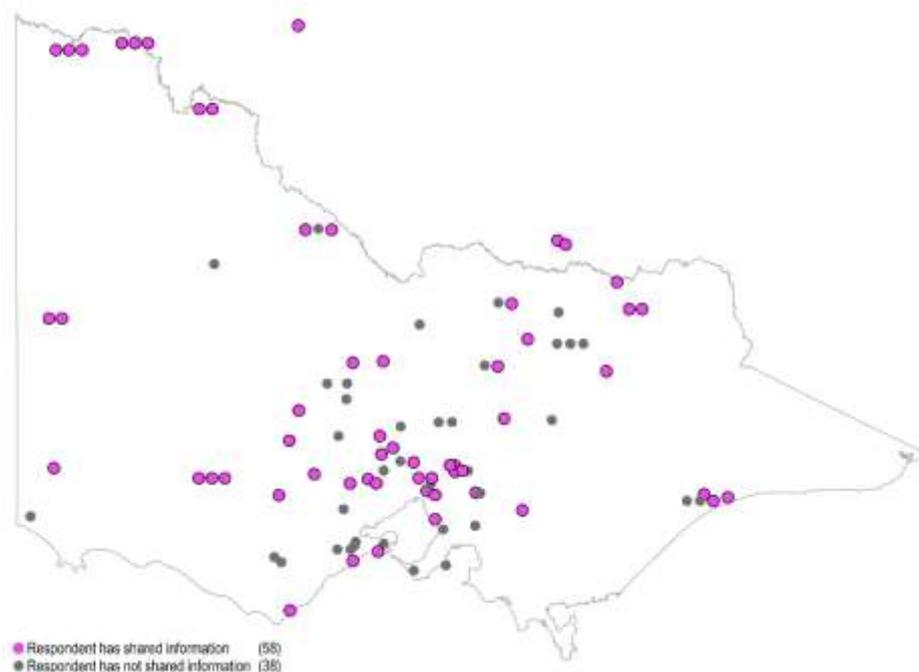
Survey respondents' most commonly reported changes were:

- increased knowledge and awareness
- development of supportive networks.

**VRAN's reach:** 84 per cent of survey respondents shared knowledge with people in their workplace, community groups or other networks. Those who shared knowledge are located throughout Victoria as well as interstate, as summarised in Figure ES 2.

Overall, VRAN has engaged more than 5,200 people directly via its events and programs, and indirectly, via other community members and online.

**FIGURE ES 2** VRAN'S REACH



SOURCE: ACIL ALLEN

**Mindset change:** over half of survey respondents either agreed or strongly agreed that their motivation and confidence regarding rabbit management has changed due to VRAN's activities (see first pane of Figure ES 3 overleaf).

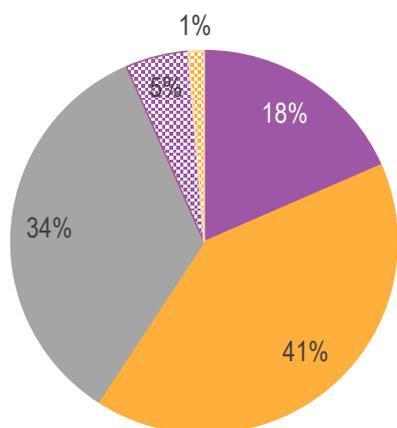
**Practice change:** 84 per cent of respondents changed the way they use an integrated approach and capacity building in rabbit management (see second pane of Figure ES 3).

FIGURE ES 3 VRAN'S CHANGES

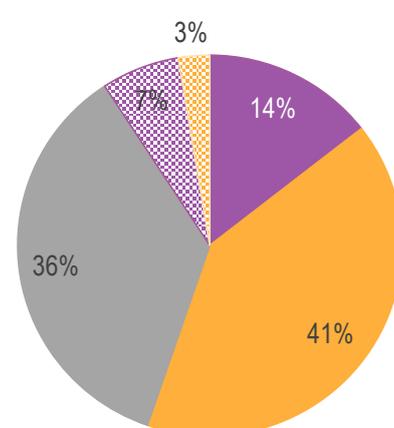


Mindset changes

Motivation has increased

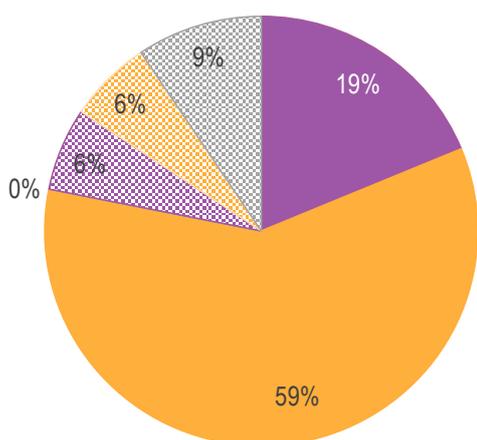


Confidence has increased

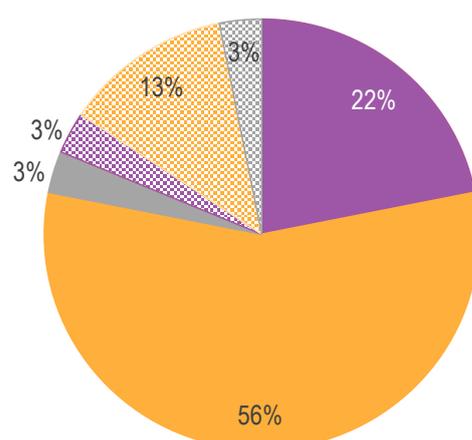


Practice changes

Integrated approach



Capacity building



SOURCE: ACIL ALLEN

**Economic benefits:** around 59 per cent of survey respondents either agreed or strongly agreed that VRAN's activities led to economic benefits to their property, workplace and/ or community (see Figure ES 4). On average, voluntary participants travelled 8.5 hours and approximately 280 kilometres to and from VRAN's events. In total, they contributed over \$200,000 in vehicle operating costs, travel time costs and the time costs associated with VRAN's activities. In addition, community groups funded via the Small Community Innovation Grants program contributed more than \$74,000 in cash and in-kind contributions.

**Social benefits:** more than 80 per cent of core respondents consider VRAN led to social benefits. Key benefits are:

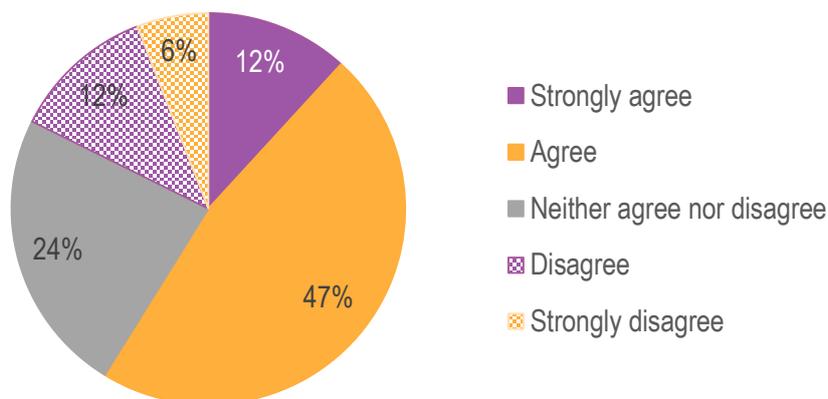
- developing and strengthening relationships
- opportunities for knowledge-sharing.

**Environmental benefits:** more than 75 per cent of core respondents consider VRAN has led to environmental benefits for their property, community or workplace. The regeneration of native plants is the most commonly reported benefit.

FIGURE ES 4 VRAN'S IMPACTS



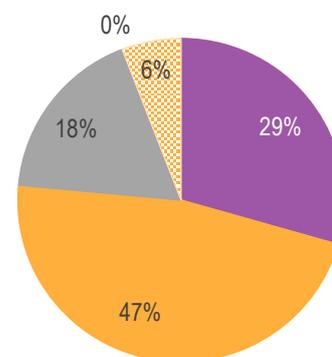
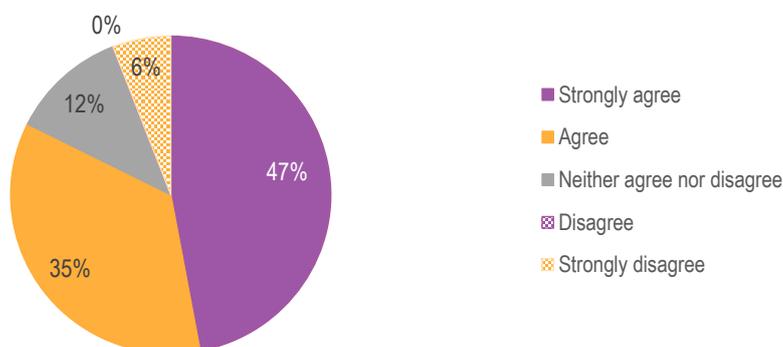
## Economic impacts



## Social and environmental impacts

VRAN activities have led to social benefits for me, and/or my workplace, and/or my community

VRAN activities have led to environmental benefits for my property, and/or my workplace, and/or my community



SOURCE: ACIL ALLEN

## Conclusions

VRAN's outputs and impacts were synthesised to answer the three questions of this analysis.

### 1. What is the value of the initiatives led by VRAN?

VRAN has been responsible for producing tangible social, economic and environmental benefits. Significant examples that illustrate these benefits are described below.

#### Social benefits

- **84 per cent of respondents** indicated they shared knowledge gained through VRAN with people in their workplace, community groups or other networks.
- **Almost all** respondents reported making changes in the way they use an integrated approach (90 per cent) and capacity building activities (84 per cent) over the past three years. This indicates that one of VRAN's main messages of adopting integrated rabbit management has been well received by its stakeholders.
- Furthermore, around **60 per cent** of survey respondents stated their **motivation and confidence** levels regarding rabbit management changed due to involvement in VRAN's activities.

### Economic benefits

- On average, **voluntary participants** travelled **8.5 hours and approximately 281km** (round-trip) to and from VRAN's events. This suggests these participants place considerable value on the network.
- When combined across all of VRAN's activities, the vehicle operating costs, travel time costs and the time costs associated with the activities themselves that have been incurred by voluntary participants total **\$208,233**. This provides a lower bound (conservative) estimate of the value that the voluntary participants place on VRAN. Thus, this value could be higher.
- Community groups which received funding under the Small Community Innovation Grants program made an extra contribution of **\$74,439** in in-kind and cash contributions. This could be viewed as a proxy for the value they perceive in being active VRAN participants.

### Environmental benefits

- More than **75 per cent of core** respondents consider VRAN led to environmental benefits for their property, community or workplace.
- The most commonly cited benefit is the **regeneration of native plant species**.

Without VRAN, it seems unlikely the community would have received the same magnitude of benefits. The result of enhancing social capital via strengthened relationships and networking is unlikely to have occurred to the same extent without VRAN.

It is possible community members' knowledge and practices of rabbit management could stall or regress without VRAN. This may particularly be the case for farmers, who can feel isolated and dejected by the ravages of rabbit destruction. There is also a risk the community may lose confidence in managing rabbits without VRAN.

### *2. What is the value of systems mapping in supporting successful community-led rabbit management, including in the formation of VRAN as a facilitating institution?*

As a facilitating institution, VRAN is about leveraging community, industry and government partnerships to support rabbit management. As per its mandate, collaboration, co-investment and co-learning (the three C's) are vital for successful community-led rabbit management. That is, VRAN should boost and complement stakeholders' abilities to manage rabbit populations. Hence, its effectiveness is not primarily about attributing a reduction in rabbit numbers. Instead, it is about empowering stakeholders to manage rabbits.

The results discussed above provide evidence that VRAN has had a solid start in delivering on the three C's. For example, enhanced stakeholder confidence, increased knowledge and awareness of rabbit management practices and community co-investment are noteworthy VRAN achievements. Significantly, these have been possible due to the systems mapping and systems strengthening processes.

While the results are positive, VRAN's momentum needs to be maintained. This will require further government and community investment. This in turn could feed back into the rabbit system via VRAN to leverage further collaboration, co-investment and co-learning from rabbit stakeholders. Hence, government investment may further strengthen the entire rabbit system via VRAN.

### *3. Does VRAN's approach have the potential to inform other invasive species interventions in Victoria and other jurisdictions?*

VRAN is a working example of how community, industry and government can collectively develop the capability to control rabbits. This highlights the potential for participatory design to be applied in other regions and on other pests. In particular, VRAN's integrated approach may help manage the spread of invasive species that impact diverse communities.

This application, though, will depend on the willingness of diverse stakeholders for a community-led approach. This includes government devolving greater decision making to the private sector and community groups. In addition, persistence and patience are required to allow stakeholders time and space to deliberate. This may lead to disagreements. Conversely, this also paves the way for forging new relationships, but it can take time.

## Recommendations

1. **Department funding:** the Department should continue funding VRAN beyond 2019, subject to a future evaluation. VRAN is still young and evolving and needs support to realise its potential. That is, assisting stakeholders with sustained pressure on managing rabbits and their impacts.
  - At an annual cost of \$140,000, VRAN would need to reduce the economic impact of rabbits in Victoria (currently estimated at \$21.6 million per annum) by less than 0.7 per cent for continued government funding to be economically justified.
2. **Measuring future impact:** the Department should monitor outcomes and impacts of VRAN's activities to gauge its evolution against the three Cs: collaboration, co-investment and co-learning. This can be assisted via:
  - a) **Periodic surveys:** this requires undertaking a new survey about every two to three years. Each survey should build on the previous one. The survey for this analysis provided the baseline. The next survey could go deeper in understanding perceptions of changes in rabbit population, in addition to assessing the progression of the three Cs.
  - b) **Improved government data:** this requires improved tracking of the proportion of work government staff devote to rabbit management tasks (versus time spent on other invasive species). This will assist in assessing the relativities of government and community co-investment.
  - c) **Tracking rabbit populations:** the Department may also collaborate with its counterparts in NSW and South Australia to track rabbit populations in areas near the borders of the three states. These locations may present a *natural experiment* where the factors determining rabbit populations (e.g. climate, terrain) are similar except for differences in government rabbit management policies. This will facilitate an assessment of the relative effectiveness of alternative suites of policies that have been adopted by each jurisdiction. However, it might not be possible to assess the effectiveness of any *single* policy or program, including VRAN.
3. **Community support and co-funding:** VRAN's Steering Committee and other community members should aim to establish closer links to peripheral rabbit stakeholders. These stakeholders have had little or no direct contact with VRAN. Expanding and deepening the network can further its evolution by leveraging additional funding, collaboration and shared learning amongst stakeholders.
4. **Promotion:** the Department should promote the outcomes of this analysis to stakeholders in Victoria and other jurisdictions. Multiple communication products and tools (visual, aural, written) could be used to disseminate the outcomes of this project. These include:
  - summary paper (based on this report's executive summary)
  - infographic (one page in hard and soft copies)
  - link on the Department's website with video
  - social media, online forum
  - information sessions/ roadshows.
5. **Trial VRAN's model with other Victorian invasive species:** the Department should trial a VRAN-style community-led model with another Victorian invasive species. This requires stakeholders' desire to explore a new way, and the government to transfer more decision making to the community.
6. **Comparative evaluation:** the Department could undertake a comparative evaluation of VRAN's community model versus other community based approaches, such as the ones used for blackberry or serrated tussock. This would provide another way of assessing its effectiveness and stakeholder value.

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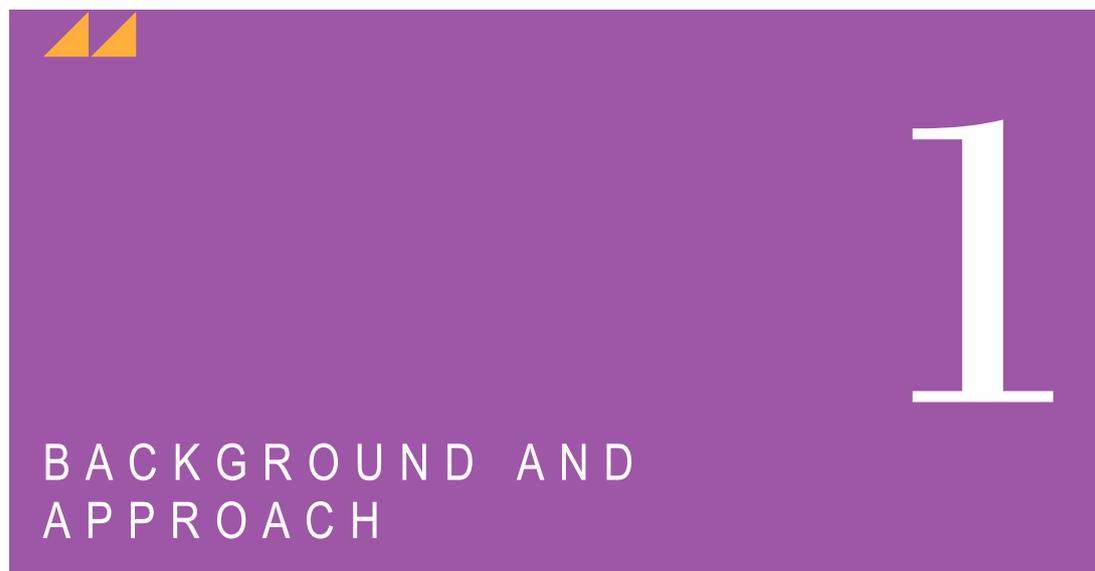
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ACIL Allen Consulting (ACIL Allen) was engaged by the Department of Economic Development, Jobs, Transport and Resources (the Department) to undertake an impact analysis of the Victorian Rabbit Action Network (VRAN).

This chapter sets out the project's background and approach, specifically:

- the prevalence and impact of rabbits in Australia is described in section 1.1
- background to the National Rabbit Facilitator Project (NRFP) and VRAN is described in section 1.2
- aims and scope of the impact analysis in section 1.3
- approach to the impact analysis in section 1.4
- the structure of this report in section 1.5.

## 1.1 Prevalence and impacts of rabbits

Domesticated European rabbits first arrived in Australia on board the First Fleet in 1788. Almost 50 years later, the first wild rabbits were sighted. Today, rabbits exist throughout Australia except the northernmost areas, as illustrated in Figure 1.1 (overleaf).

Wild rabbits have certain features that explain their invasiveness and the magnitude of their impact. For example, their warrens protect them from predators and climatic extremes.<sup>1</sup> Other attributes include their extreme fertility and ability to colonise a wide range of habitats.

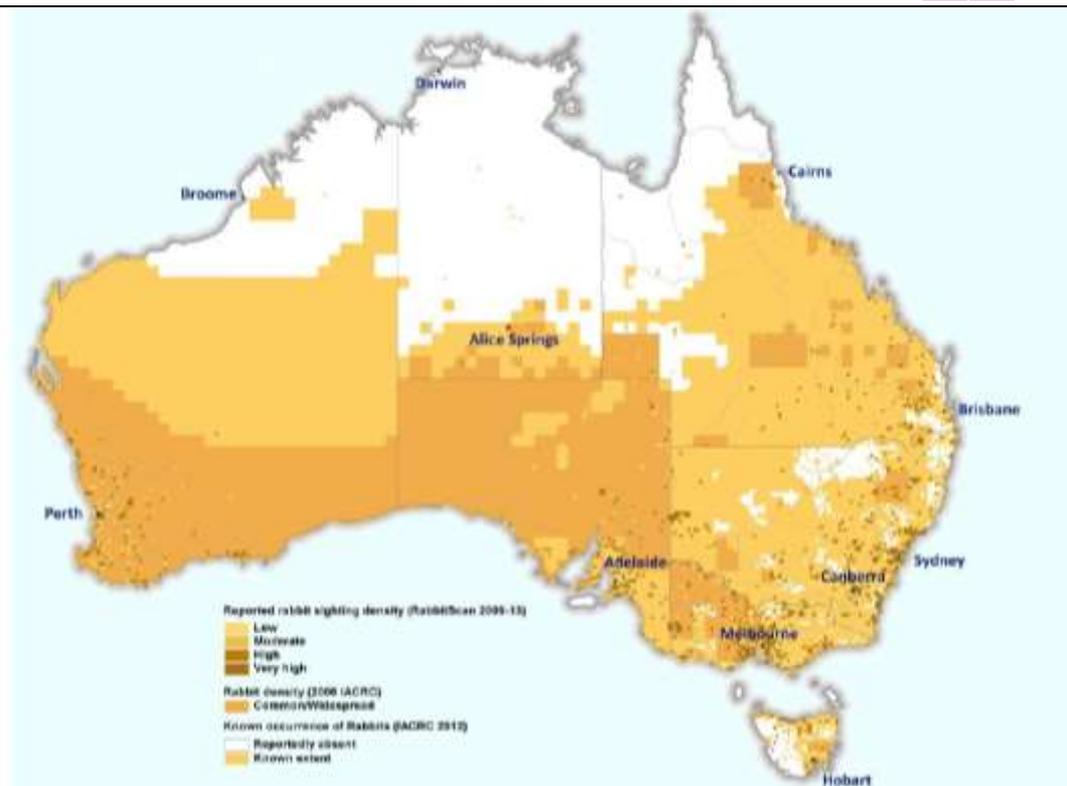
Rabbits cause serious agricultural and environmental harm in Australia (see Box 1.1 overleaf). They are the most costly vertebrate pest, estimated to cause at least \$216 million damage to agricultural production each year.<sup>2</sup> A rabbit density of only 0.5 rabbits per hectare can prevent plant regeneration.<sup>3</sup>

<sup>1</sup> In Western Australia rabbits can also shelter in vegetation.

<sup>2</sup> McLeod, R., 2016, Cost of Pest Animals in NSW and Australia, 2013-14. eSYS Development Pty Ltd, 2016. Report prepared for the NSW Natural Resources Commission, p. 12.

<sup>3</sup> Australian Government, 2016, *Threat Abatement Plan for Competition and Land Degradation by Rabbits*, p. 6.

**FIGURE 1.1** DISTRIBUTION OF RABBITS ACROSS AUSTRALIA



SOURCE: COX ET AL. 2013, REFERENCED IN AUSTRALIAN GOVERNMENT, THREAT ABATEMENT PLAN FOR COMPETITION AND LAND DEGRADATION BY RABBITS, 2016.

**BOX 1.1** IMPACTS OF RABBITS

Direct environmental impacts of rabbits include:

- competition with native wildlife for resources
- prevention of plant regeneration
- overgrazing and general damage to plant species
- reversal of the normal processes of plant succession
- alterations to ecological communities and changes soil structure and nutrient cycling
- removal of critical habitat for mammals and birds.

Indirect environmental impacts of rabbits include:

- provision of support for high population densities of pest predators such as foxes and feral cats
- promotion of growth for introduced and unpalatable species such as weeds.

SOURCE: AUSTRALIAN GOVERNMENT, THREAT ABATEMENT PLAN 2016, PP. 6-7

The prevalence of rabbits across Australia, their impact on diverse communities and parties, their ability to cause large-scale, sustained environmental and economic damage is why rabbit management has been coined a ‘wicked problem.’<sup>4</sup>

This understanding informed NRFP’s and VRAN’s establishment and approach.

<sup>4</sup> Australian Public Service Commission (APSC), 2012, ‘Tackling Wicked Problems: A Policy Perspective.’ <<http://www.apsc.gov.au/publications-and-media/archive/publications-archive/tackling-wicked-problems>>

## 1.2 National Rabbit Facilitator Project and VRAN

Australian governments have traditionally applied a *compliance and enforcement* approach to ensure landowners control rabbits, and other invasive species, on their properties. This means the main obligation for managing rabbits sits with landholders. Landholders could be private, government or community entities.

In Victoria, the Catchment and Land Protection Act 1994 (CaLP Act) covers noxious weed and pest animal management. Rabbits under CaLP are declared a pest species. The Act's objectives are to protect primary production, Crown land, the environment and community health from the threats posed by noxious weeds and pest animals. In line with CaLP, government compliance staff can inspect properties to check if landowners are complying with their responsibilities to control rabbits on their properties.<sup>5</sup>

In addition to this compliance and enforcement approach, a new *participatory community-led approach* has been developed in recent years to manage rabbits. NRFP is an example of this new participatory approach.<sup>6</sup>

NRFP was established by the Department<sup>7</sup> and the Invasive Animals Cooperative Research Centre (IA CRC) in 2013 to enable a collaborative, community-led approach to rabbit management. The objectives of the project were to:

1. build a common understanding of the issues posed by rabbits across the community
2. share knowledge about how to manage them more effectively and sustainably.

The project was designed using a participatory approach and from an understanding of rabbit management as a '**wicked problem**':

*These wicked problems share a range of characteristics—they go beyond the capacity of any one organisation to understand and respond to, and there is often disagreement about the causes of the problems and the best way to tackle them...*

*Usually, part of the solution to wicked problems involves changing the behaviour of groups of citizens or all citizens. Other key ingredients in solving or at least managing complex policy problems include successfully working across both internal and external organisational boundaries and engaging citizens and stakeholders in policy making and implementation.*

***Wicked problems** require innovative, comprehensive solutions that can be modified in the light of experience and on-the-ground feedback. All of the above can pose challenges to traditional approaches to policy making and programme implementation.<sup>8</sup>*

In addition to NRFP, in June 2015, the Federal Department of Agriculture and Water and Resources and the National Biosecurity Committee (NBC),<sup>9</sup> proposed changes to government roles and responsibilities aimed at modernising pest and disease approaches via a discussion paper. The NBC emphasises the importance of collaboration, noting that governments should:

- provide support where sustained collective action to manage rabbits by an industry or community exists
- promote development of partnerships between government, industry and the community
- work with industry, community and/ or landholder groups where market failure restricts the effective management of rabbits.

Furthermore, in 2017, a participatory decision making approach was highlighted in Victorian Auditor General's Office (VAGO) report, *Public Participation in Government Decision Making*.

<sup>5</sup> At the national level, the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is the Australian Government's primary environmental legislation. It recognises invasive species, such as rabbits, as threats to native animals and plants. Once a threat is listed under the EPBC Act, a threat abatement plan (TAP) can be put into place if it is shown to be 'a feasible, effective and efficient way' to abate the threat. The rabbit TAP provides a national framework to guide and coordinate Australia's response to the impact of wild rabbits on biodiversity.

<sup>6</sup> Public participation is synonymous with community consultation and stakeholder engagement.

<sup>7</sup> At the time, this was the Department of Environment and Primary Industries (DEPI).

<sup>8</sup> Australian Public Service Commission

<sup>9</sup> Department of Agriculture and Water and the Resources National Biosecurity Committee, 2015, *Modernising Australia's Approach to Managing Established Pests and Diseases of National Significance* discussion paper.

VAGO noted:

*Australia and overseas governments have increasingly recognised public participation as an essential part of planning projects and making decisions. This marks a shift in government culture from ‘announce and defend’ to ‘debate and decide’. Transparent and well-managed public participation is now being seen as a critical input for informing government policies, strategies and programs, and as a key feature of good public administration and governance.<sup>10</sup>*

Overall, NRFP is part of a broader shift in government culture to empower local communities and citizens with greater decision making, as well as working more collaboratively with stakeholders.

VRAN was established through NRFP in order to progress activities and strategies identified by stakeholders through a collaborative *systems mapping and strengthening* exercise and workshop in 2014. In 2016, Dr Brian Furze completed a formative evaluation of VRAN and first systems mapping exercise and strengthening exercise, developing findings that could be used to inform the network’s ongoing work. These areas are discussed further in chapter 2.

### 1.3 Impact analysis: aims and scope

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As an extension to Furze’s formative evaluation, this engagement was designed to assess VRAN’s economic merits. In this task, ACIL Allen was engaged to answer three key questions:

1. What is the value of the initiatives led by VRAN?
2. What is the value of the systems mapping approach in supporting successful community-led rabbit management, including in the formation of VRAN as a facilitating institution?
3. Does VRAN’s approach have the potential to inform other invasive species interventions in Victoria and other jurisdictions?

### 1.4 Impact analysis: approach

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This analysis involved four components:

1. *document review and consultation* – to set the scene for the project by reviewing program documentation (provided by the Department) and stakeholder consultations)
2. *survey* – to collect data from VRAN activity participants to provide a baseline understanding of impact
3. *case studies* – to develop three case studies with an external consultant
4. *reach and impact analysis* – data analysis to assess the current operation of VRAN.

#### 1.4.1 Document review and consultations

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A document review provided the background information for this analysis. The main documents that were reviewed include:

- *Formative Evaluation of the Victorian Rabbit Action Network* (Furze 2016)
- *System Mapping of Widely Established Species – Rabbits* draft report (RMCG 2017)
- *Report on an Initiative to Support Community-Led Action for more Sustainable and Effective Rabbit Management in Victoria* (Adams 2014)
- *Effective Citizen Action on Invasive Species* discussion paper (Invasive Animals CRC 2016)
- *Modernising Australia’s Approach to Managing Established Pests and Diseases of National Significance* discussion paper (National Biosecurity Commission 2015)
- *Invasive Plants and Animals Policy Framework* (Victorian Government 2012)
- *Threat Abatement Plan for Competition and Land Degradation by Rabbits and Associated Background Paper* (Australian Government 2016).

Consultations were also held with key stakeholders to inform the development of the approach to the analysis. These are discussed in further depth in the accompanying Appendix Document.

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<sup>10</sup> Victorian Auditor General’s Office, 2017, *Public Participation in Government Decision Making*, p. 1.

## 1.4.2 Survey

There was insufficient data to conduct a robust economic analysis. Most of the available information was largely anecdotal.

An online survey of participants in VRAN's activities and other community members involved in rabbit management was thus developed and implemented to collect data in:

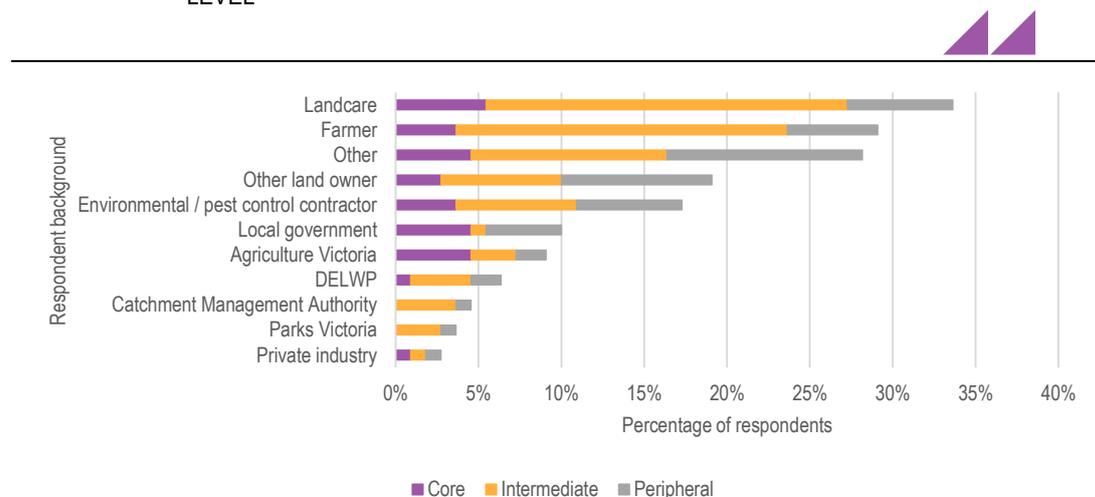
1. characterising the network's participants and reach
2. understanding changes in the mindset, skills and rabbit control practices
3. exploring the prevalence of rabbit monitoring activities and observed changes in the rabbit population
4. exploring VRAN's triple bottom benefits (economic, social and environmental).

On survey area 3, the Department was not seeking to attribute changes in rabbit numbers or impacts on agricultural production to the VRAN activities. This is because there are many variables and actions beyond the VRAN that influence rabbit populations. On that basis, questions on rabbit populations were not intended to directly link population changes with VRAN's activities or influence.

### Survey demographics

Survey respondents are from a range of backgrounds across government, the agricultural sector, and other groups (see Figure 1.2). Almost half of survey respondents are farmers or other land owners (48 per cent in total; 29 per cent farmers and 19 per cent other land owners). More than one third of respondents (34 per cent) are involved in Landcare, and 20 per cent are from the Victorian Government (Agriculture Victoria, DELWP and Parks Victoria).

**FIGURE 1.2** PROPORTION OF RESPONDENTS FROM EACH BACKGROUND BY PARTICIPATION LEVEL



Note: 110 respondents. Many respondents reported they were from more than one of the groups listed, so the percentages do not sum to 100.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

### Network participant levels

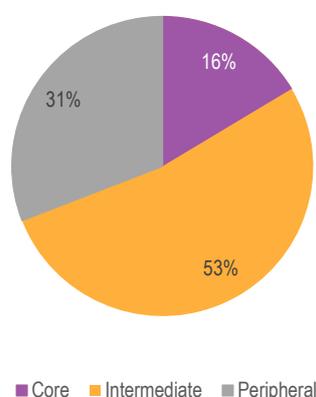
Respondents were categorised into three groups – core, intermediate or peripheral. This was based on the degree of involvement they had in VRAN and the type of activities they were involved in. Each group was then asked different survey questions. In essence:

- **core members** are those who participated in significant VRAN activities, including:
  - VRAN's Steering Group
  - Rabbit Boot Camp
  - 'Leaps and Bounds' Learning Network
- **intermediate members** are those who participated in:
  - National Rabbit Project Steering Group

- Victorian Rabbit Management Conference
  - Small Community Innovation Grants Program
  - K5 Community Action Grants Program
  - Systems mapping of the Victorian rabbit system (including review)
  - any other VRAN activities such as action groups and/ or release sites
- **peripheral members** are those who have not participated in VRAN's activities.

In total, 133 responses to the survey were received. There were 23 respondents who did not indicate which of VRAN's activities they were involved in and were thus unable to be allocated to one of the three groups. These respondents were removed from this impact analysis, therefore the final sample comprised 110 respondents. Of these, 18 are core participants, 58 are intermediate participants, and 34 are peripheral participants. The breakdown of respondents by participant level is shown in Figure 1.3.

**FIGURE 1.3** SURVEY RESPONDENTS BY PARTICIPATION LEVEL



Note: 110 respondents.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

### 1.4.3 Case studies

Separate to this project, the Department contracted First Person Consulting to prepare three case studies that demonstrate ground-level benefits of VRAN's initiatives.

Key findings from these case studies are included in chapter 3.

### 1.4.4 Reach and impact analysis

VRAN's reach and impacts were analysed based on the previous steps in the methodology. A framework for the approach was developed by tracing VRAN's dynamic impact cycle (see Figure 1.4).

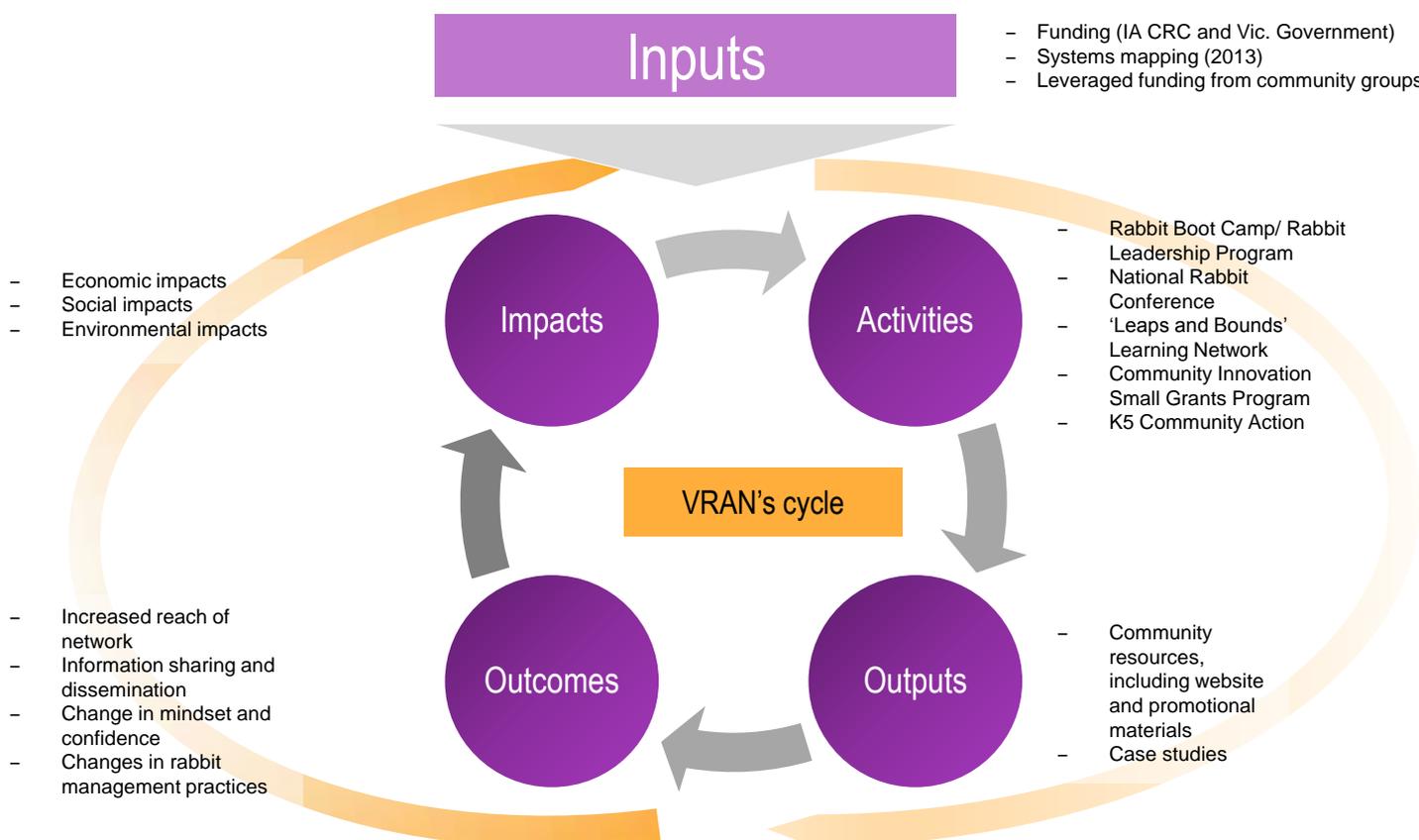
#### VRAN's dynamic impact cycle

VRAN's inputs, activities, outputs, outcomes and impacts interact with one another through a dynamic cycle. The *enablers*, which include VRAN's governance and secretariat support, are across all elements in the cycle. *Inputs* are the financial (cash and in-kind), human and material resources underpinning the network. The *activities* are the means by which the network engages its participants, while *outputs* include informational materials created to engage the broader community. The *outcomes* of participation in VRAN's activities include increased network reach, enhanced information sharing and dissemination, changes in mindset and confidence levels, as well as changes in rabbit management practices. Collectively, these changes drive economic, social and environmental *impacts* via VRAN as a dynamic facilitating institution.

When VRAN's participants witness tangible outcomes and impacts, they are likely to become more motivated about participating in future activities. This thereby perpetuates the dynamic impact cycle. In

short, this is like a feedback loop where observable results create the momentum to allocate on-going resources to manage rabbits collectively.

FIGURE 1.4 VRAN'S CYCLE



SOURCE: ACIL ALLEN

### Additional analysis

ACIL Allen also conducted additional analysis to supplement key findings from the survey.

A *lower bound estimate* of the value that participants derived from VRAN was calculated. This was done by analysing the time, travel and vehicle operating costs incurred by individuals through their participation in VRAN's activities.

A lower bound estimate is a conservative value estimate. Hence, actual values could be higher.

## 1.5 Report structure

The remainder of this report includes:

- Chapter 2: VRAN's Enablers, Inputs, Activities and Outputs
- Chapter 3: VRAN's Outcomes
- Chapter 4: VRAN's impacts
- Chapter 5: Conclusions and Recommendations.



This chapter presents VRAN and the main elements of its dynamic impact cycle. In particular:

- section 2.1 describes the systems mapping exercise used to create VRAN
- section 2.2 describes VRAN's enablers
- section 2.3 describes VRAN's inputs
- section 2.4 describes VRAN's activities
- section 2.5 describes VRAN's outputs.

## 2.1 Systems mapping and strengthening: creating VRAN

In 2013, the National Rabbit Facilitator undertook interviews and held a *systems mapping* workshop with diverse community, private and public stakeholders in Victoria's rabbit management system. The purpose was to gather information about how rabbit management is approached across the system, and to develop strategies for supporting greater collaboration and community involvement.<sup>11</sup>

Stakeholders included:

- private and public landowners and managers
- land manager networks
- private service providers
- not for profit organisations
- government agencies.

The approach was intended to be 'systems-strengthening, democratic [and] participatory,' recognising that no one party had all the answers and that effective and sustainable rabbit action requires cooperation and collaboration, built on mutual respect and learning.<sup>12</sup>

Twenty three interviews were held with key stakeholders, which led to the development of a set of 10 broad strategy options for collaborative rabbit management. Following this, stakeholders participated in a workshop to prioritise and refine the policy options. Six strategies were identified for the project to pursue (see Figure 2.1). VRAN was established in late 2014 to progress work on the strategies in order to strengthen the rabbit system.

Delivering long term, effective rabbit management requires:<sup>13</sup>

<sup>11</sup> Lisa Adams, 2014, *Victorian Rabbit Management Collaboration Initiative*, PetSmart Toolkit publication, Invasive Animals Cooperative Research Centre, Canberra, p. 2.

<sup>12</sup> *Ibid.*

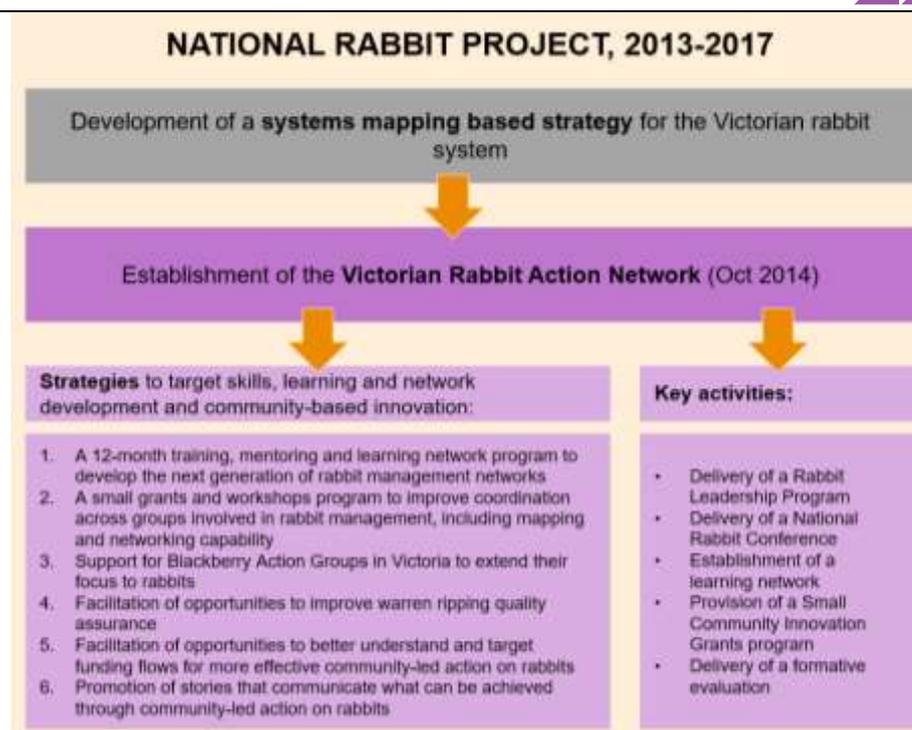
1. *collaboration between diverse rabbit stakeholders*
2. *co-learning amongst diverse stakeholders*
3. *co-investment from government, community and the private sector.*

In essence, these three Cs are seen as vital to better manage the wickedness of rabbit problems. They are VRAN's guiding principles for successful community-led rabbit action. They will be used as *criteria* to assess VRAN's effectiveness as a facilitating institution to answer question two of this analysis:

*What is the value of the systems mapping approach in supporting successful community-led rabbit management, including in the formation of VRAN as a facilitating institution?*

VRAN's development process, including its strategies and activities, are illustrated below in Figure 2.1

**FIGURE 2.1** OVERVIEW OF NRFP AND VRAN



SOURCE: ACIL ALLEN, BASED ON DEPARTMENT PROGRAM DOCUMENTATION

## 2.2 VRAN's enablers

### 2.2.1 Governance

VRAN's activities and strategies are overseen by a Steering Group comprised of community and government representatives. The Steering Group is required to:

- oversee the implementation of the initiative and its strategies
- approve the initiative's budget
- endorse agreements or contractual arrangements that may be established through the Department or the Invasive Animals Cooperative Research Centre (IA CRC) or other organisations for the purpose of implementing the initiative
- facilitate opportunities to leverage cash and in-kind resources from government, industry and civil society to support long-term planning, incentives and resources for community-led rabbit management

<sup>13</sup> Ibid.

- champion the initiative and build effective communication with community, industry and government sponsors and stakeholders to advocate community-led approaches to rabbit management.

The Steering Group is supported in its work by Department staff. Between 2014 and 2016, VRAN was managed and supported by the National Rabbit Facilitator and the IA CRC. This role is no longer funded by the IA CRC, though VRAN has been resourced until 2019 through the Australian Government's Agriculture Competitiveness Initiative to manage established pests and weeds. Secretariat and other support for VRAN is provided through the Department (Agriculture Victoria). VRAN is currently managed by an executive officer, with support from the Established Invasive Species project officer and program manager.

### 2.2.2 Formative evaluation

In 2016, Furze conducted a formative evaluation into current operations of the VRAN.<sup>14</sup> He explained how the VRAN provides the time and space that allows for a cooperative and collaborative approach to rabbit management. Here:

- time refers to the opportunities given to reflect, learn and share information and experiences on rabbit management
- space refers to the building of activities to support the above time components.

Furze believes the systems mapping exercise was crucial in developing the VRAN's strategy. The process involved participants identifying the challenges and opportunities of two contrasting rabbit management strategies (called ideal types).<sup>15</sup> Discussions from this process then led to the development of a collaborative and cooperative strategy for VRAN, effectively a hybrid between the two ideal types.

The learning network developed from VRAN's activities allowed for more effective knowledge sharing and information flow. Members have been able to share their personal experiences of rabbit management. Through these information flows, best practice principles to rabbit management have been developed. Individuals have also been able to identify 'go-to' mentors for any questions and issues relating to their own rabbit situation.

In participating in activities like the National Rabbit Conference, stakeholders have also been able to play a more active role in rabbit management. By bringing government and land managers together, closer relationships have formed on a personal level. As a result, there has been better flow into and within government departments of current rabbit management issues and concerns. There have also been direct benefits to compliance. Community members can directly contact government staff to identify areas of assistance in a timely manner.

Furze found that VRAN's approach to rabbit management has provided an example of the benefits that can be expected if used to manage other invasive pests. Systems mapping exercises develop a collaborative and cooperative strategy for pest management. The time and space then needs to be provided to build the network of actors and stakeholders to facilitate learning and knowledge sharing.

## 2.3 VRAN's inputs

### 2.3.1 Funding

VRAN was co-funded by the IA CRC and the Department of Environment and Primary Industries from 2013-2016, with \$100,000 in cash and \$200,000 in kind support.<sup>16</sup> As mentioned in section 2.2.1, VRAN has been resourced until 2019 through the Australian Government's Agriculture Competitiveness Initiative. VRAN's funding from the IA CRC via the National Rabbit Facilitator included secretariat support, program management and facilitation and in-kind contributions from the Department included committee representation and mentors.

<sup>14</sup> B. Furze, 2016. *Formative Evaluation of the Victorian Rabbit Action Network*.

<sup>15</sup> The two ideal types were: local and participatory ideal type; and technical and blueprint ideal type. The former emphasises effectively a bottom-up strategy while the latter advocates a top-down strategy instead.

<sup>16</sup> L. Adams, 2014. *Report on an Initiative to Support Community-led Action for more Sustainable and Effective Rabbit Management in Victoria*.

### 2.3.2 Budget

VRAN's budget and the rabbit management operational budget both fall under the Department's biosecurity. The first pane of Figure 2.2 shows the total biosecurity budget since 2007-08, which has fluctuated over time. The budget for invasive species makes up between 22 and 47 per cent of the total biosecurity budget.

The second pane of Figure 2.2 shows a breakdown of the total invasive species budget by:

- rabbit management operational budget share
- operational budget share for other invasive species.

#### Rabbit management operational budget

The rabbit management operational budget share is relatively small. It fluctuates between 2 and 4 per cent of the total biosecurity budget share, and around 8 to 12 per cent to the invasive species operational budget.

The total biosecurity budget has fallen from 2011-12 to 2015-16, which has decreased the rabbit management operational budget. This trend does not reflect a reduced need to manage rabbits, but rather a shifting focus new biosecurity issues, including:

- market access issues
- responding to emergencies
- minimising the risk of new exotic species.

The Department indicated that these developments have reduced the capacity to deliver projects on established pests, such as rabbits, in some years.

#### VRAN's budget

VRAN's budget is separate to the rabbit management operational budget and the total invasive species budget. Between 2013 and 2016, this has been approximately \$140,000 per annum (see third panel of Figure 2.2), comprising:

- staffing and operations costs, which are consistently more than 70 per cent of total project costs
- travel costs, which consistently contribute less than 10 per cent to project cost
- in-kind staff costs, which make up the remaining project costs (between 16-17 per cent of total).

This is a very small proportion of the biosecurity budget (less than 1 per cent). VRAN would need to reduce the economic impact of rabbits in Victoria (currently estimated at \$21.6 million per annum) by less than 0.7 per cent for continued government funding support to be economically justified.

**FIGURE 2.2 VICTORIAN BIOSECURITY BUDGET BREAKDOWN FROM 2007-08 TO 2017-18**



Note: VRAN's budget is separate to the invasive species budget. It falls within the biosecurity budget. The third panel shows in detail VRAN's annual budgets.  
 SOURCE: DEPARTMENT OF ECONOMIC DEVELOPMENT, JOBS, TRANSPORT AND RESOURCES 2017

## 2.4 VRAN's activities

VRAN's activities are focused on collaboration, knowledge-sharing, and capacity building for people involved in rabbit management across Victoria (see Table 2.1).

**TABLE 2.1** DESCRIPTION OF VRAN'S ACTIVITIES

Title of activity	Description
<b>Rabbit Boot Camp / Victorian Rabbit Leadership Program</b>	The Rabbit Boot Camp was an intensive 2.5 day course held in Rawsley in May 2015 as a systems-strengthening activity for participants from industry, government agencies and community. Participants gained firsthand practical experience in managing rabbits, using techniques such as warren ripping, fumigation, baiting and implosion.
<b>Victorian Rabbit Management Conference</b>	The 'Victorian Rabbit Conference: Connecting Knowledge and know-how towards more effective community action' on rabbits was held in August 2015 in Melbourne. The objective of the conference was to provide a forum for discussion of best practices in rabbit management and to showcase and raise awareness about VRAN. There were over 150 participants who came from across Australia and New Zealand.
<b>'Leaps and Bounds' learning network</b>	The 'Leaps and Bounds' learning network is an ongoing group comprised of 24 participants from the Rabbit Boot Camp. Participants work together to exchange ideas and experiences to gain further knowledge in the many aspects of rabbit control. The objective is for participants to share this knowledge with their employers and other relevant networks, as well as to build leadership and support institutional change.
<b>Small Community Innovation Grants Program</b>	The Small Community Innovation Grants Program was held over 2015-16. The program involved the provision of 11 small grants (between \$1,000 and \$10,000) to support community groups in rabbit management to work together to build capacity and facilitate knowledge-sharing networks. Funded projects included community forums, workshops and field days.
<b>K5 Community Action Grants Program</b> (Part of phase two of VRAN's funding in 2017)	A second grants program was introduced in 2017. The aim of these grants is to support coordinated, community-led action across Victoria in response to the March 2017 release of a new strain of calicivirus (RHDV K5) for rabbit control. The RHDV K5 is a virus that causes a fatal haemorrhagic disease in the European rabbit, leading to rapid death.

SOURCE: THE DEPARTMENT PROGRAM DOCUMENTATION

### 2.4.1 Second systems mapping and strengthening: enhancing VRAN

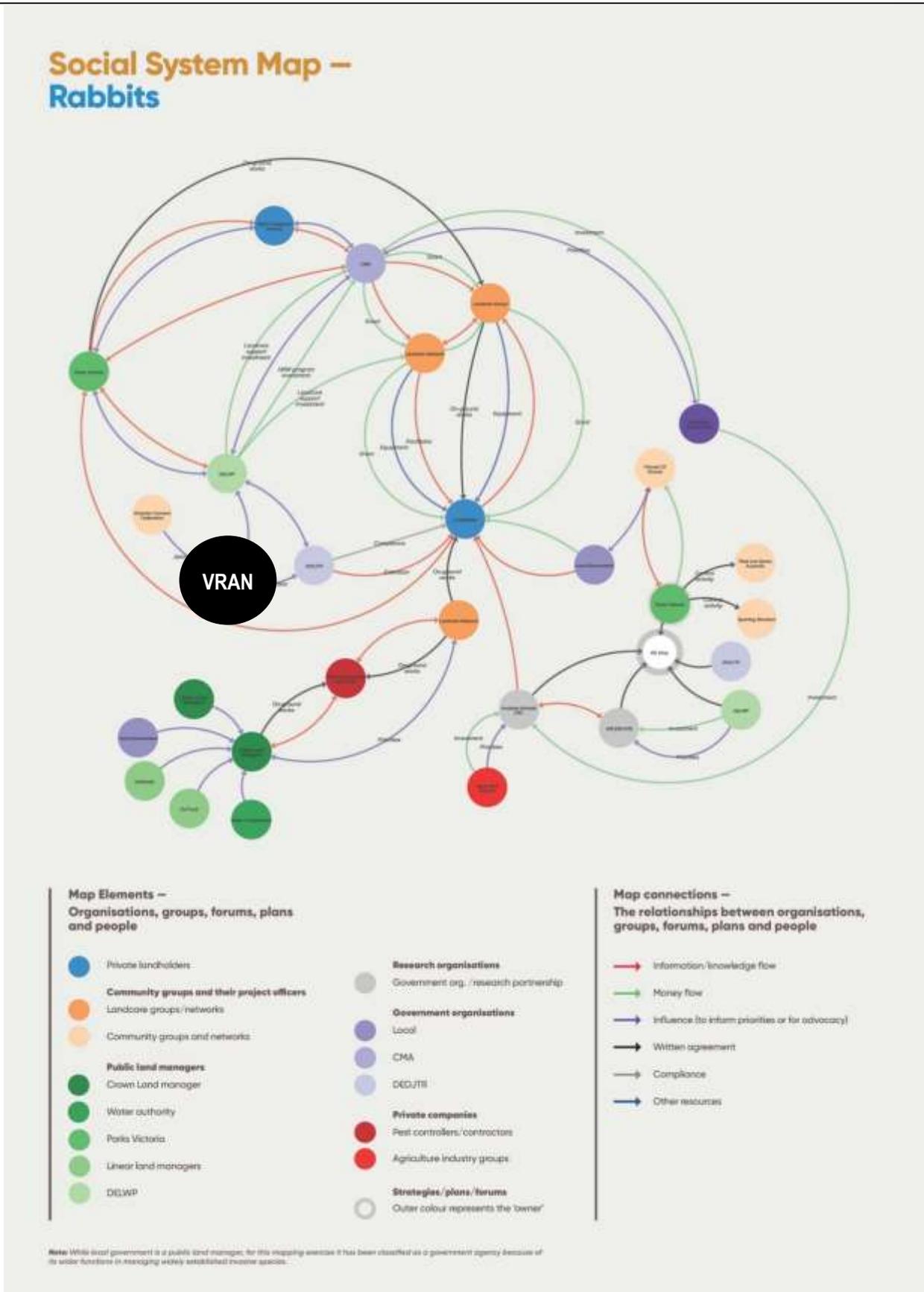
A second rabbit systems mapping and strengthening exercise was undertaken by RMCG in 2017 to inform future work of VRAN (shown in Figure 2.3).<sup>17</sup> It expanded the 2013 exercise that helped shape VRAN's development.

The key system strengthening opportunities identified through the process included:

- development of a goal or vision for community-led action on rabbits
- improvement of the community's 'landscape literacy' (better understanding the impacts of rabbits on local environments)
- improving community knowledge of best practice control methods and approaches
- support for community leaders and leadership at the system level
- continued support for VRAN to build on early successes and as a means to achieve outcomes for the rabbit management system.

<sup>17</sup> RMCG, 2017, System Mapping of Widely Established Species: Rabbits, Draft Report.

FIGURE 2.3 RABBIT MANAGEMENT SYSTEM MAP



SOURCE: RMCg, 2017, SYSTEM MAPPING OF WIDELY ESTABLISHED SPECIES: RABBITS, DRAFT REPORT, P 8.

## 2.5 VRAN's outputs

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As a result of its activities, VRAN developed a range of community resources, including a website, promotional videos and a series of in-depth case studies.

### 2.5.1 Website

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VRAN developed a website that provides regular news updates on rabbit management practices. It includes information on the grant application process, a calendar of listed rabbit activities, as well as information on VRAN's governance. Users can also interact with each other by commenting on website posts. There were a total of 3,593 visitors to VRAN's website from 2015 to 2017.

### 2.5.2 Promotional videos

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VRAN also created four short videos for YouTube. These videos provide engaging and informative content on the outcomes from VRAN's activities and the impact they have had on local actors and stakeholders involved.

Three of these videos relate to the case studies described below and were uploaded in September 2017. The final video, *Reclaiming the Rabbit Problem with Communities*, was developed in 2015 following the Rabbit Management Conference.

At the time of writing this report, VRAN's YouTube videos have had a total of 704 views.<sup>18</sup>

### 2.5.3 Case studies

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Several case studies were also developed by First Person Consulting, as mentioned in chapter 3. The case studies provide qualitative descriptions of on-ground net benefits at different levels of the rabbit management system to capture the outcomes of the approach using written and video narratives.

Three case studies were developed, namely:

1. *Connecting Government with Communities to Build Capacity* with John Matthews from Agriculture Victoria and Ben Fahey from Parks Victoria. This case study is discussed in Box 3.1.
2. *Changing the Approach to Peri-Urban Rabbits* with Cassie Borg from Hume City Council (Box 3.2)
3. *Building on a Lifetime of Rabbit Knowledge* with Peter Barnes from Trust for Nature's Neds Corner Station (Box 3.3).

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<sup>18</sup> This was measured on 14 November 2017.



This chapter examines VRAN's outcomes:

1. its reach, explored in section 3.1
2. knowledge sharing and dissemination, explored in section 3.2
3. changes generated by VRAN, explored in section 3.3.

The survey provides insights into these three themes from the perspective of stakeholders and the broader community. This is supplemented with a series of case studies prepared by First Person Consulting.

## 3.1 Reach

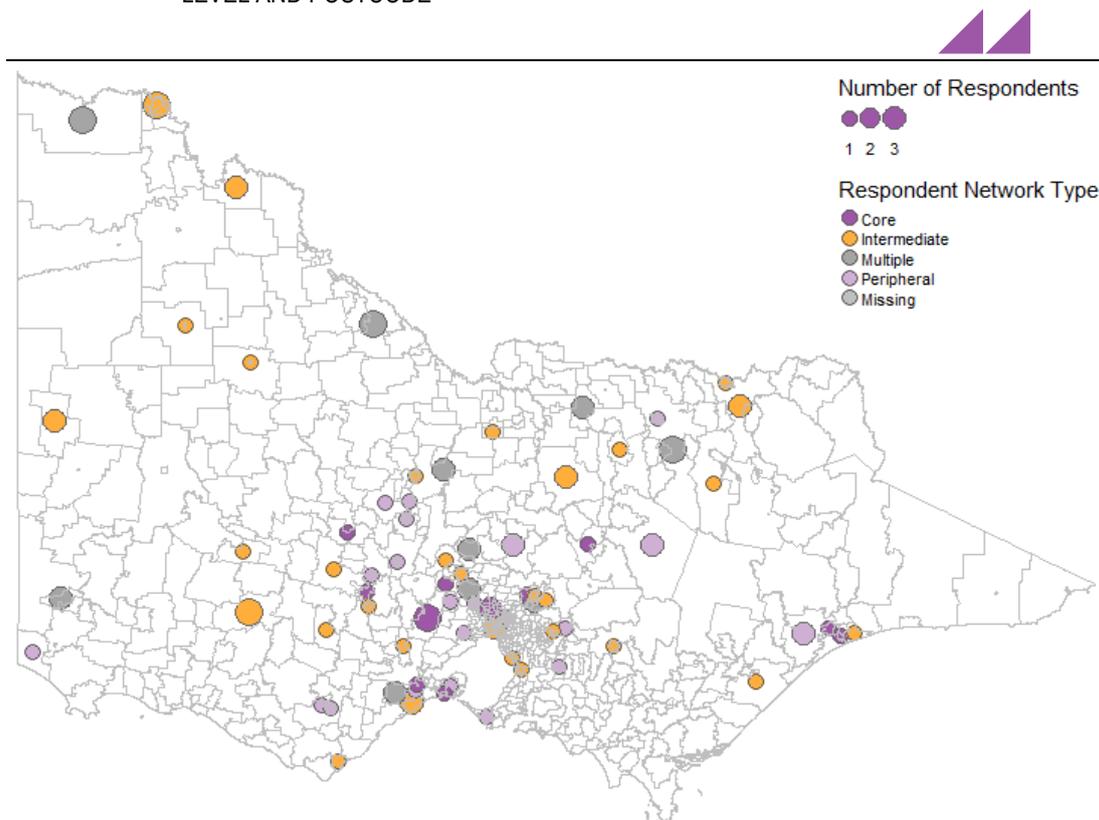
The survey provided, for the first time, an indicative description of VRAN's reach. As described in section 1.4.2, respondents came from a range of backgrounds. The reach can largely be attributed to VRAN's two systems mapping exercises, where many rabbit stakeholders met and developed relationships.

### 3.1.1 Geographic reach

Respondents to the survey were asked to identify the location of their property, workplace or main place of business (by postcode). The majority of respondents (94 per cent) were from Victoria. The highest concentration of respondents was in central and north-eastern Victoria, although there was also a wide distribution across western Victoria (north and south) and several from Gippsland. Respondents' distribution is shown in Figure 3.1.

Of those from interstate, most respondents were from New South Wales or South Australia, and all had attended the Victorian Rabbit Management Conference.

**FIGURE 3.1** DISTRIBUTION OF VRAN'S PARTICIPANTS ACROSS VICTORIA BY PARTICIPATION LEVEL AND POSTCODE



Note: 100 respondents. Ten postcodes were represented by more than one network type – these are labelled as 'multiple'. The 'missing' category means there were no respondents in that suburb.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

### 3.1.2 Land area managed by VRAN's participants

VRAN has the potential to influence large areas of land within Victoria and interstate. Survey respondents indicated that they are collectively involved in managing over 2.5 million hectares of land.<sup>19</sup> The range of land size managed by VRAN's participants varies significantly from zero to 1.9 million hectares,<sup>20</sup> as shown in Figure 3.2. On average, private participants manage over 6,500 hectares of land, whereas the public participants manage over 55,000 hectares of land. Almost half of respondents reported managing less than 250 hectares of land (47 per cent), and 9 per cent reported managing over 50,000 hectares.

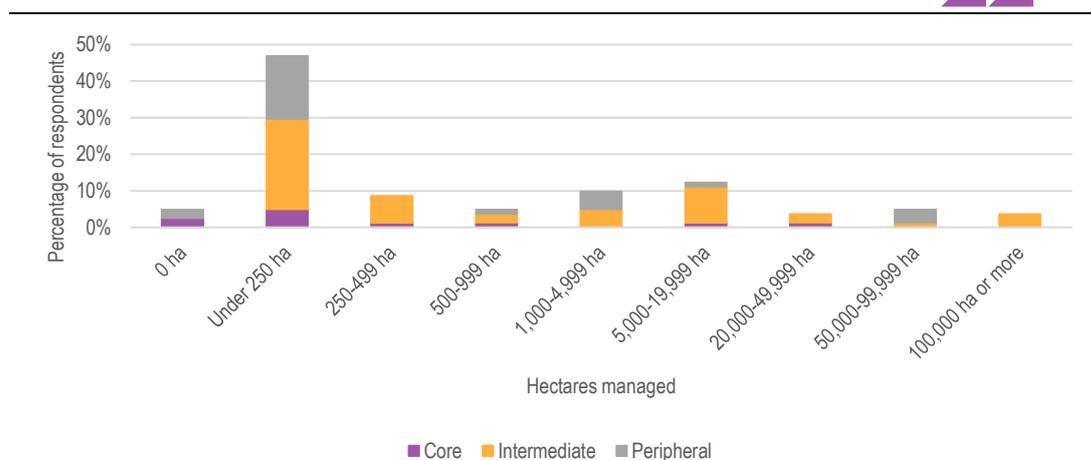
These figures do not necessarily represent the area of land on which practices have changed as a result of VRAN. They suggest a conservative, lower bound appraisal for VRAN's potential reach to influence rabbit and land management practices.<sup>21</sup>

<sup>19</sup> Survey respondents were asked to identify the number of hectares of land under their management. This totalled 2,882,040 hectares, however there may be some double counting where multiple respondents have identified the same land (for example, where multiple people from the same government department have responded). Thus the total area of land which VRAN currently reaches has been conservatively estimated at 2,500,000 hectares. It is likely that is lower than the actual reach of the network, given that not all survey respondents answered the relevant question (81 of 110) and that not all of VRAN's participants responded to the survey.

<sup>20</sup> This respondent was from a Catchment Management Authority and may have recorded the total amount of land managed by the CMA.

<sup>21</sup> See footnote 19. Additionally, these figures do not include the potential for flow-on changes where VRAN's participants share knowledge through their other networks.

**FIGURE 3.2** NUMBER OF HECTARES MANAGED BY VRAN PARTICIPANTS BY PARTICIPATION LEVEL



Note: 81 respondents (76 of these were from Victoria).

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

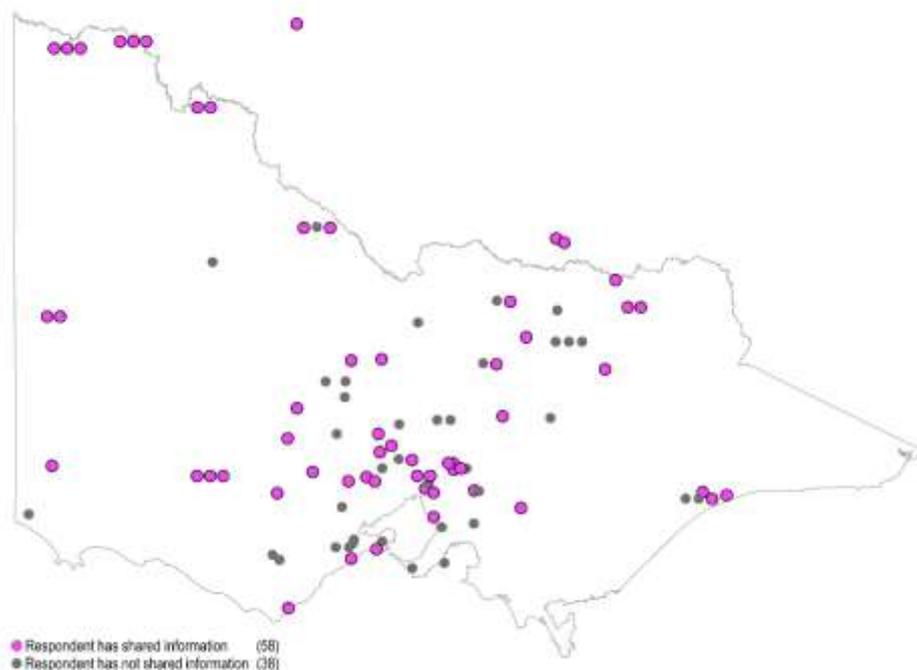
## 3.2 Knowledge sharing and dissemination

Knowledge sharing and collaboration are essential to support VRAN's objective of enabling community-led rabbit action. These are key areas in which VRAN has been found to have created changes in Victoria's rabbit system.

Most survey respondents (84 per cent) indicated that they have shared knowledge gained through VRAN with people in their workplace, community groups or other networks (63 of 75 respondents to the question). Almost all core respondents (94 per cent) and over three quarters of intermediate participants (77 per cent) reported having shared information with their networks. Additionally, one quarter of peripheral respondents also reported sharing information, although they had not been significantly involved in VRAN's activities. The location of survey respondents who indicated they have shared knowledge is shown in Figure 3.3.

The ways in which this information have been shared are varied and occur through both formal and informal channels. Many respondents report that they have shared information through established groups or organisations such as Landcare, local government and CMAs.

Others report having held or participated in events such as field days or local markets, or given talks to their community or other groups. Several also reported they have given talks through Federation University. Additionally, many respondents report sharing knowledge informally through one-on-one conversations with friends, colleagues and other associates, including contractors and Men's Sheds.

**FIGURE 3.3** LOCATIONS OF SURVEY RESPONDENTS WHO SHARED INFORMATION FROM VRAN

SOURCE: ACIL ALLEN

### 3.2.1 Knowledge sharing by activity

Respondents were asked which VRAN activities they participated in. On average, respondents participated in 1.5 activities, with the most common being:<sup>22</sup>

- Rabbit Management Conference (40 per cent of participants)
- grants programs (31 per cent in total; 16 per cent participated in the K5 Community Action Grants program and 15 per cent in the Small Community Innovation Grants program)
- learning network (18 per cent).

Twenty per cent of respondents also indicated they have been involved in other activities ranging from K5 release sites to other local groups.

Table 3.1 shows the number and share of respondents who report having participated in each activity.

<sup>22</sup> This includes only people in the core and intermediate participation levels.

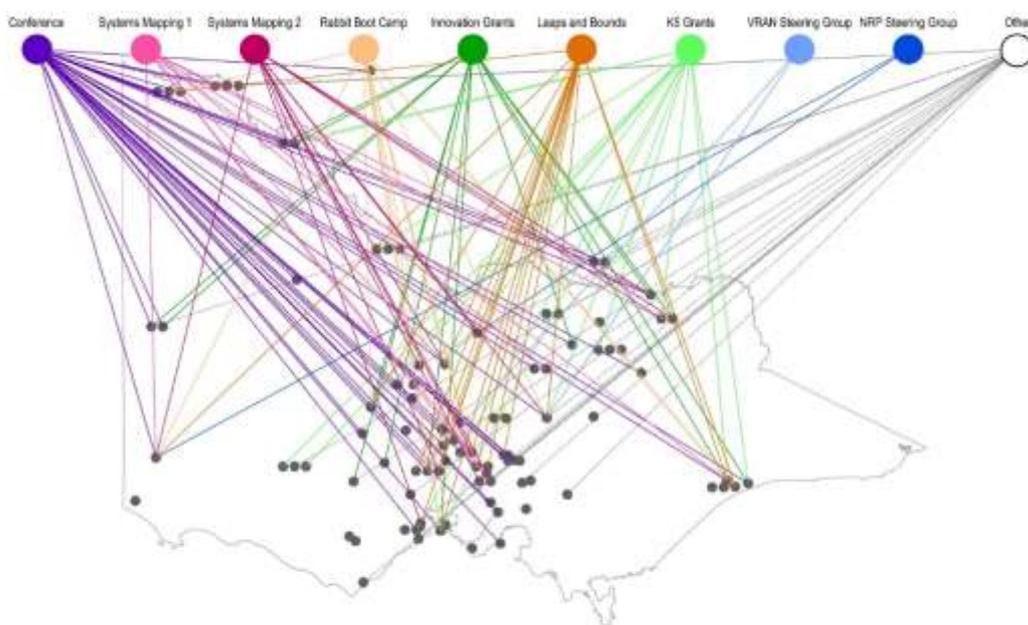
**TABLE 3.1** RESPONDENTS' PARTICIPATION IN ACTIVITIES

Activity	Total participants <sup>a</sup>	Share of respondents <sup>a</sup>
Victorian Rabbit Management Conference	38	40%
Systems mapping of the Victorian rabbit system (review) – 2017	13	14%
Rabbit Boot Camp	13	14%
Systems mapping of the Victorian rabbit system – 2013	10	10%
Small Community Innovation Grants program	14	15%
'Leaps and Bounds' learning network	17	18%
K5 Community Action Grants program	15	16%
VRAN Steering Group	2	2%
National Rabbit Project Steering Group	3	3%
Other	19	20%
<b>Total</b>	<b>144</b>	

<sup>a</sup> These figures are greater than the number of respondents because many respondents have participated in more than one activity.  
 Note: 96 respondents. The survey covers both phase 1 and 2 of VRAN's activities. That is, the K5 Community Action Grants program is a phase 2 activity through the Commonwealth White Paper project.  
 SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

Figure 3.4 shows survey respondents' participation in various activities, by their location, reflecting their wide distribution across Victoria. The figure also shows that respondents across Victoria and into New South Wales have shared knowledge gained through VRAN activities with others in their networks.

**FIGURE 3.4** RESPONDENTS' PARTICIPATION IN ACTIVITIES BY POSTCODE



Note: 96 respondents.  
 SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

Where respondents indicated they had participated in other activities, these were identified as:

- local action groups, for example, the Chiltern Action Group
- release and distribution of K5
- hole destruction and baiting
- Landcare baiting program
- forums and community information sessions, including the Weeds and Rabbits Forum and the Stawell Rabbit Forum
- study and site visits.

### 3.2.2 Participation and knowledge-sharing with other networks

Respondents were also asked about the workplace, producer or community groups in which they are currently involved (see Table 3.2). Approximately two thirds of respondents are involved in Landcare, and one quarter are part of the Country Fire Authority. The next most popular groups are Catchment Management Authorities (19 per cent). Few respondents (7 per cent) are involved in the Victorian Farmers Federation, which is lower than expected given more than one quarter of participants are farmers and there is representation of the VFF on VRAN's Steering Group. This may be a potential channel for increased knowledge sharing in the future.

Most respondents participate in more than one group, bringing the average to 1.7 groups per participant. As 24 respondents said that they do not participate in any group, those that are active tend to participate in more than two groups.

**TABLE 3.2** RESPONDENTS' PARTICIPATION IN GROUPS

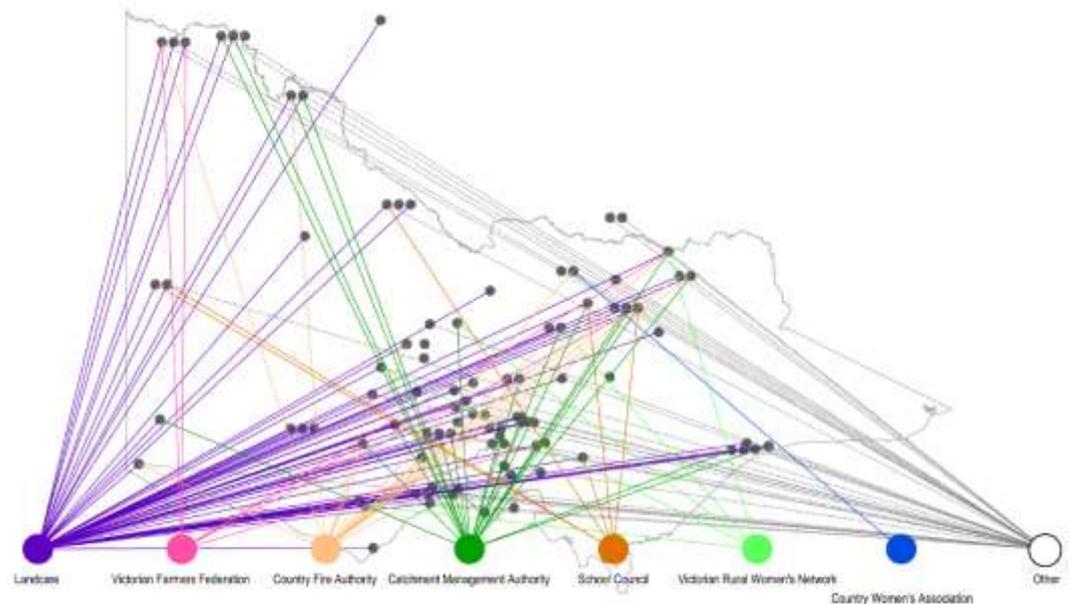
Group	Total participants	Share of respondents
Landcare	64	67%
Victorian Farmers Federation	7	7%
Country Fire Authority	18	19%
Catchment Management Authority	24	25%
School council	6	6%
Victorian Rural Women's Network	6	6%
Country Women's Association	1	1%
Other	36	38%
<b>Total</b>	<b>162</b>	<b>100%</b>

<sup>a</sup> These figures are greater than the number of respondents because many respondents have participated in more than one activity.

Note: 96 respondents.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

Figure 3.5 shows that the survey covered respondents from all parts of Victoria. There appear to be some local concentrations which could indicate word of mouth spread. The lines on the map show the respondents' association with each group. The map thus demonstrates that the place of residence seems to play a small role in the choice of a group with which a respondent is associated. The map also shows that respondents who answered that they have shared information tend to be active in more groups.

**FIGURE 3.5** RESPONDENTS' PARTICIPATION IN GROUPS BY POSTCODE

Note: 96 respondents.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

Participants also identified a wide range of other networks and groups to which they belong. These included local environmental and agricultural groups, local community and economic development groups, local and state government and local sporting clubs.

The importance and value of the knowledge-sharing opportunities supported through VRAN were explored through First Person Consulting's *Connecting Government with Communities to Build Capacity* case study (in Box 3.1 overleaf).

### BOX 3.1 CASE STUDY – CONNECTING GOVERNMENT WITH COMMUNITIES TO BUILD CAPACITY

The *Connecting government with communities to build capacity case study* profiled two of VRAN's key stakeholders: John Matthews from Agriculture Victoria, and Ben Fahey from Parks Victoria. John is one of VRAN's mentors, and Ben is a member of the Steering Group.

Both John and Ben said that the learning that is shared through VRAN is one of its key benefits. This is shared through the Leaps and Bounds learning network as well as other of VRAN's activities.

Stakeholders involved in the network are from different backgrounds across government, the agricultural and other sectors, so the learning is two-way and helps participants develop their knowledge, skills, and understanding of rabbit management, the stakeholders involved, and the system more broadly.

*...what we want is for them to have the confidence and competence to be able to advocate best management practice—engage with their own communities, share learnings and encourage participation in local communities where they have rapport and respect.*

The knowledge-sharing and relationships developed through VRAN assist with capacity building in communities and in relevant government agencies. They also contribute to collaboration between the different stakeholder groups involved in rabbit management.

An example of this was preparation for the K5 release earlier this year. The release strategy involved providing information to the community and asking them to engage with others on the ground about the issues. There was also collaboration between government agencies to coordinate releases between community and public land managers.

SOURCE: FIRST PERSON CONSULTING 2017

## 3.3 Changes brought by VRAN

The survey also provides preliminary indications that changes are occurring as a result of VRAN's activities.

### 3.3.1 Change in mindset and attitudes

Respondents reported that VRAN has led to changes in:

- levels of motivation
- levels of confidence
- attitudes towards collaboration
- attitudes and practices of others

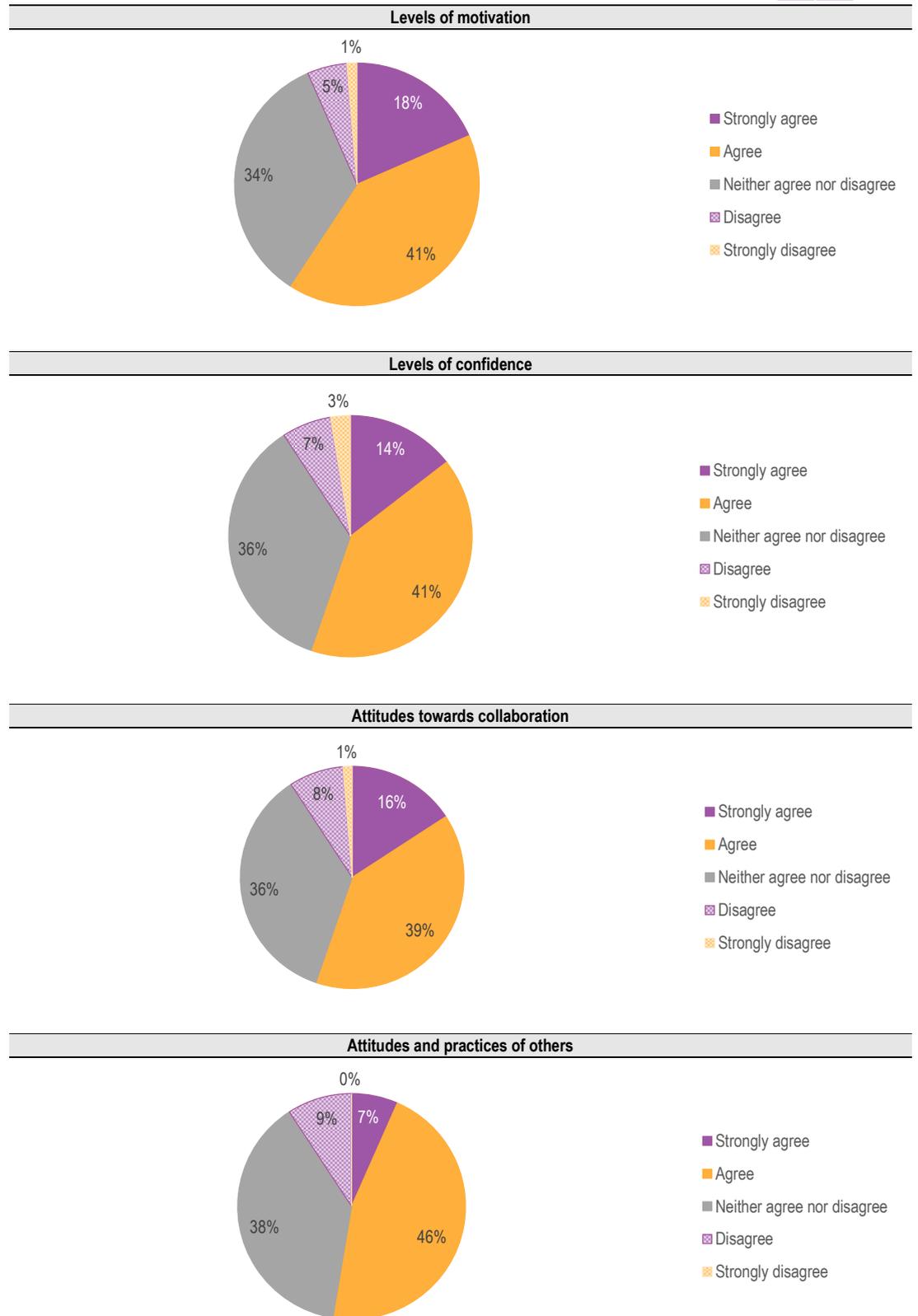
Key results are summarised in Figure 3.6 overleaf and are discussed below.

#### Level of motivation

Most respondents (59 per cent) report that VRAN has increased their motivation to control rabbits (see first pane of Figure 3.6). Forty one per cent of respondents strongly agree and a further 18 per cent of respondents agree that this is the case.

Responses vary somewhat by participant level. While 65 per cent of core respondents and 57 per cent of intermediate respondents agree or strongly agree that VRAN led to increased motivation, 35 per cent of core respondents strongly agree with this, compared with 14 per cent of intermediate respondents.

**FIGURE 3.6** CHANGES IN MINDSET AND ATTITUDES – KEY FINDINGS



Note: 76 respondents.

SOURCE: SURVEY RESPONSES TO VRAN SURVEY 2017, ACIL ALLEN

### Level of confidence

Stakeholders report that participation in VRAN has led to increased confidence in rabbit management. This is a key finding from the *Changing the approach to peri-urban rabbits* case study (see Box 3.2), and is supported by the survey responses. More than half of respondents (55 per cent) agreed that their involvement in VRAN has helped them to increase their confidence regarding rabbit management (see second pane of Figure 3.6).

Again, responses vary by participant level. Sixty-five per cent of core respondents agree that their confidence has increased, compared with 52 per cent of intermediate respondents. Of those who agreed, 35 per cent of core respondents strongly agreed, compared with 9 per cent of intermediate respondents. The more intensive nature of the core activities, such as the learning network, are likely to have a greater impact on confidence levels rather than the less intensive, shorter term activities like the Rabbit Management Conference or grants provisions.

#### BOX 3.2 CASE STUDY – CHANGING THE APPROACH TO PERI-URBAN RABBITS

Findings from the *Changing the approach to peri-urban rabbits* case study provide an example of the shifts in attitudes and confidence levels that can occur through involvement in VRAN. Cassie Borg is the Rural Environment Officer with the Hume City Council. She has participated in the Rabbit Boot Camp and the 'Leaps and Bounds' learning network.

*For me, being part of this learning network has helped me tremendously with my confidence. It's taught me a lot. It would probably take me a three-year degree to learn what I've learned through the learning network...*

Cassie's experiences through VRAN also helped her to support local, community-led action on rabbits. When she was contacted by a local landholder with concerns about rabbits, she conducted a site visit and explored ways that she could assist him to better manage rabbits.

*Knowing that working as a group is the most effective way, I suggested that he get some of his neighbours involved.*

This led to the formation of the Sunbury Rabbit Action Group, through which 15 local landholders worked together to apply for a grant and undertake collaborative rabbit management activities on their land.

*The [Sunbury] Rabbit Action Group are now doing their own work with rabbit control on their own land and helping the neighbours out with doing their own works too...On some sites we have gotten rabbit numbers down to say under five or under ten per 500-metre transact...*

The case study found that there has been a clear reduction in rabbit numbers in the area as a result of the group. This is an example of the 'networks of networks' effect identified by Furze in his formative evaluation of VRAN.

SOURCE: FIRST PERSON CONSULTING 2017

### Attitudes towards collaboration

More than half of survey respondents (55 per cent) are changing their views on the role of collaboration in rabbit management after being involved in VRAN's activities (see third pane of Figure 3.6). This shows that one of the key messages and objectives of the VRAN – to increase community collaboration in rabbit management – is reaching participants. Survey respondents commented that VRAN has supported the development and strengthening of relationships and networks.

The proportion of core and intermediate respondents who agree and strongly agree that their views on collaboration have changed is approximately the same (53 per cent and 55 per cent respectively). However, as with the measures discussed above, a higher share of core respondents strongly agree with the statement (24 per cent compared with 14 per cent of intermediate respondents).

### Impact on others' attitudes and practices

Over half of survey respondents (53 per cent) report that they have seen changes in other people's attitudes or practices since they have been involved in VRAN (see last pane of Figure 3.6). This speaks to the community focus of VRAN and the approach that it takes towards capacity-building and knowledge-sharing at the community level.

A considerably higher share of core respondents report that they have seen others' attitudes and practices change as a result of VRAN (88 per cent), compared with intermediate respondents (43 per cent). As discussed above, this may be because of the relatively more intensive nature of core activities, which are likely to acquaint participants more closely and/ or with more people who are also involved in VRAN.

### 3.3.2 Changing rabbit management practices

VRAN's activities appear to have inspired a significant number of participants to subsequently undertake different rabbit management practices. In particular, 59 per cent of respondents report using an integrated approach more often. Similarly, 56 per cent of respondents report undertaking capacity building activities more often since their involvement in VRAN, and a further 22 per cent have started undertaking capacity building activities.

These results indicate that VRAN's core messages – to move towards integrated and collaborative rabbit management practices and away from isolated low-impact activities – are being received by respondents. These changes are discussed in further depth below.<sup>23</sup>

These differences may reflect the additional changes that are implemented when people are more heavily involved in VRAN. However, it is likely that people who are more motivated and active in implementing best practice are also more engaged in VRAN, so while the charts show correlation, conclusions about causation cannot be definitively drawn. Differences may also reflect the relative location of participants, as different practices are more appropriate in different environments.

Figure 3.7 summarises key practice changes for:

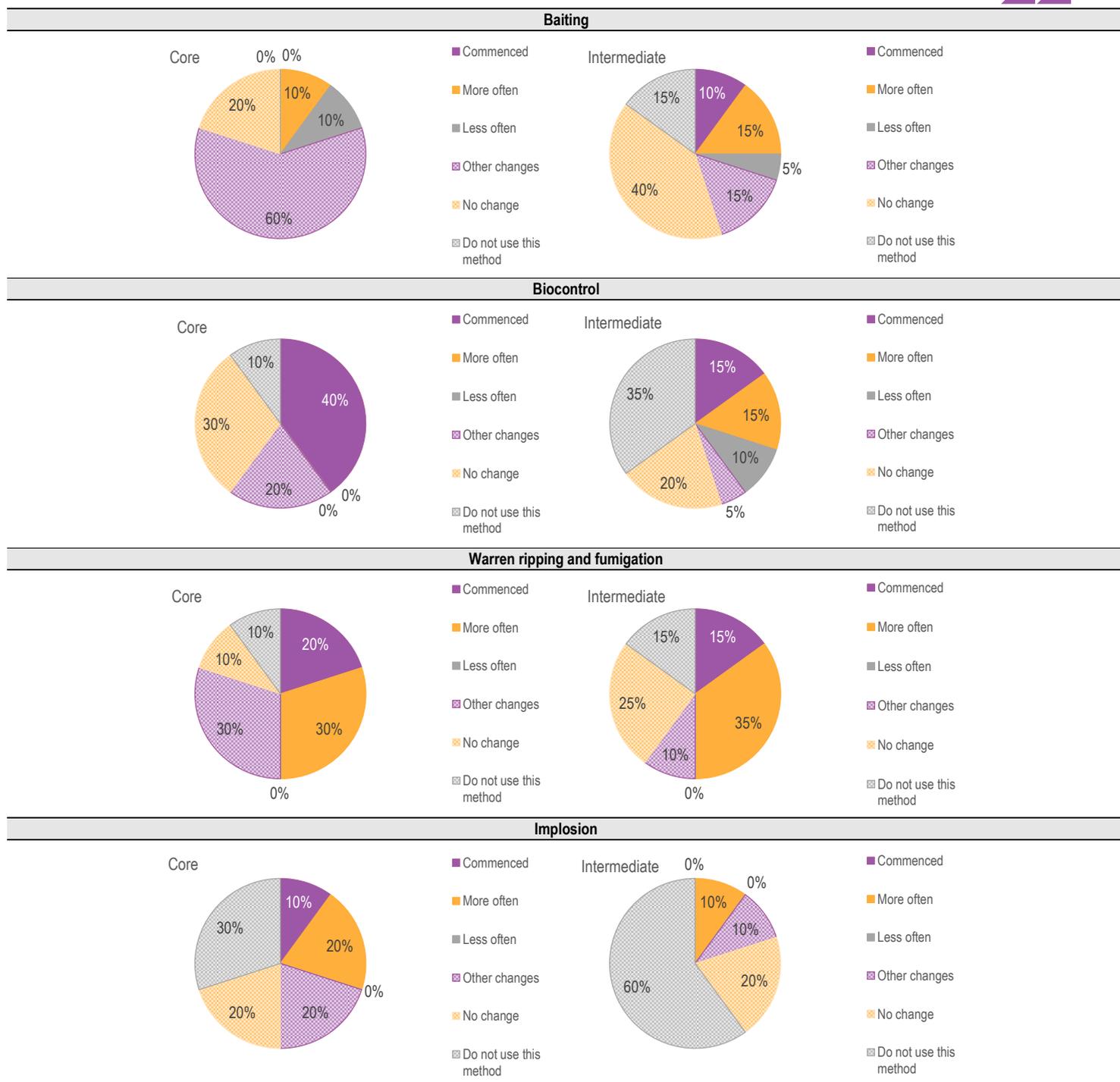
- baiting
- biocontrol
- warren ripping and fumigation
- implosion.

The recent ABARE survey of national landholders found that shooting remains one of the key methods of pest management around Australia. In fact, 80 per cent of surveyed landholders reported shooting as a means of managing pest animals on their property. Figure 3.8 contrasts practice changes in the most common pest management activities (shooting and fencing/ trapping) with the collaborative initiatives (integrated approach and capacity building) after participants participate in VRAN's activities.<sup>24</sup>

<sup>23</sup> A series of charts showing responses to the survey from core and intermediate level participants are discussed in this section. These charts show the changes that respondents report making in their rabbit management practices as a result of their involvement in VRAN's activities. In total, 32 responses were received to this question in the survey: ten core respondents, 20 intermediate respondents, and two peripheral respondents. The peripheral respondents have not been shown in the charts below due to the low response rate; instead, the charts show the differences between core and intermediate participants' responses (charts showing total responses, including peripheral participants, are provided in the accompanying Appendix Document).

<sup>24</sup> ABARE, 2017, *Pest Animal and Weed Management Survey: National Landholder Survey Results*, <http://www.agriculture.gov.au/abares/research-topics/social-sciences/pest-animals-weed-management-survey>

**FIGURE 3.7 CORE AND INTERMEDIATE RESPONDENTS' REPORTED PRACTICE CHANGE AS A RESULT OF VRAN**



Note: 10 core respondents and 20 intermediate respondents.  
 SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

### Baiting

Overall, 56 per cent of survey respondents report that they have changed their approach to baiting as a result of VRAN (see accompanying Appendix Document).<sup>25</sup> Key changes are commencing baiting or increasing the frequency of baiting (almost 20 per cent of total respondents). Additionally, 31 per cent of respondents report that they have made other changes to their baiting practice.

<sup>25</sup> This increases to 64 per cent when respondents who do not use baiting to manage rabbits are excluded from the calculation.

Different changes are seen for core respondents and intermediate respondents (first pane of Figure 3.7). Fifteen per cent of intermediate respondents report that they do not bait rabbits, while all core respondents reported baiting. Of the respondents who use baiting, 80 per cent of core respondents and 53 per cent of intermediate respondents have changed their approach since being involved in VRAN.

While only 10 per cent of all core respondents now bait more often, one quarter of all intermediate respondents report they have started or increased their baiting practice since their involvement in VRAN (10 per cent commenced; 15 per cent increased frequency). Almost two thirds of core respondents have made other changes to the way they bait (60 per cent), while only 15 per cent of intermediate respondents have made other changes.

### **Biocontrol**

More than half of survey respondents (53 per cent) report that they have changed their approach to biocontrol as a result of their involvement in VRAN,<sup>26</sup> with one quarter of respondents starting to use these methods (see accompanying Appendix Document). These rates vary significantly between core and intermediate participants, with 60 per cent of core respondents and 45 per cent of intermediate respondents making changes since their involvement in VRAN (see second pane of Figure 3.7). Forty per cent of core respondents and only 15 per cent of intermediate respondents have started to use biocontrol methods as a result of their participation in VRAN.

Core respondents have not changed their frequency of biocontrol use as a result of VRAN, while 15 per cent of intermediate members have increased their frequency and 10 per cent have decreased their frequency. Twenty per cent of core respondents have changed the way they use biocontrol in other ways, while only 5 per cent of intermediate respondents report this. This may reflect different baseline approaches to biocontrol between the groups, which lead to different areas in which improvements can be made.

### **Warren ripping and fumigation**

Overall, more than two thirds of respondents (69 per cent) report that they have changed their approach to warren ripping and fumigation as a result of their participation in VRAN (see accompanying Appendix Document).<sup>27</sup>

There is relatively less variation between core and intermediate groups than for other activities (see third pane of Figure 3.7). Twenty per cent of core respondents and 15 per cent of intermediate respondents report they have started ripping as a result of VRAN, with 30 per cent and 35 per cent increasing the frequency of ripping, respectively. The largest difference between the groups is seen for 'other changes made', with almost a third of core respondents making other changes to the way they rip, compared with 10 per cent of intermediate respondents.

### **Implosion**

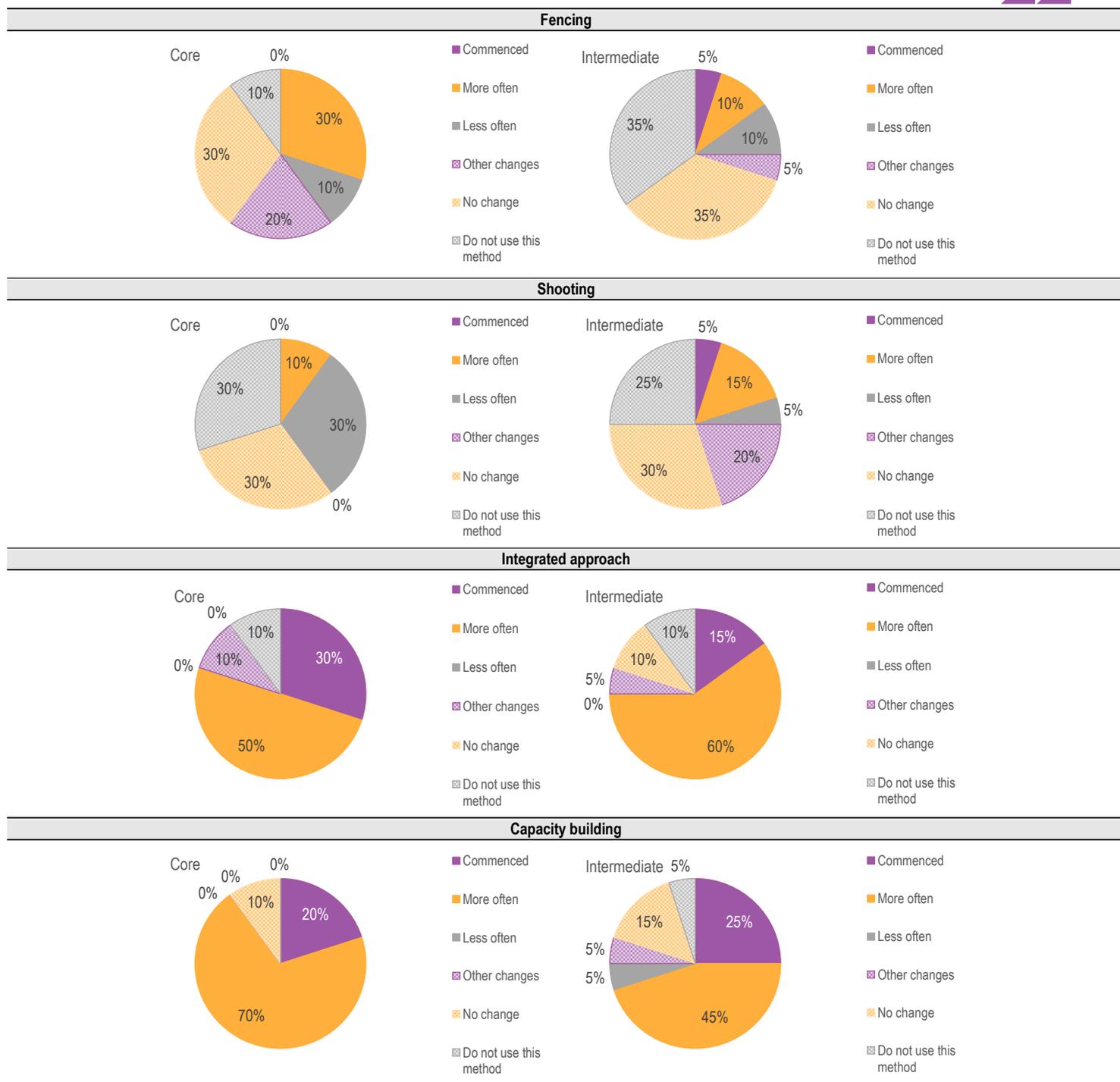
Implosion is one of the less common methods of rabbit management, with more than half of respondents (53 per cent) reporting that they do not use the technique (see accompanying Appendix Document). Almost a third of respondents (28 per cent) report that they have changed the way that they use implosion as a result of their involvement in VRAN.<sup>28</sup> This varies by respondent group, with 50 per cent of core respondents and 20 per cent of intermediate respondents reporting changes (see last pane of Figure 3.7). The most common changes were increased frequency of implosions and other changes (each with 20 per cent of core respondents and 10 per cent of intermediate respondents).

<sup>26</sup> This increases to 71 per cent when respondents who do not use biocontrol methods to manage rabbits are excluded.

<sup>27</sup> This increases to 79 per cent when respondents who do not use these methods to manage rabbits are excluded.

<sup>28</sup> This increases to 60 per cent when respondents who do not use implosion to manage rabbits are excluded.

**FIGURE 3.8** CORE AND INTERMEDIATE RESPONDENTS' REPORTED PRACTICE CHANGE AS A RESULT OF VRAN



Note: 10 core respondents and 20 intermediate respondents.  
 SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

### Fencing

Almost 40 per cent of survey respondents report that they have made changes to their fencing as a result of the VRAN’s activities (see accompanying Appendix Document).<sup>29</sup> This varies by participant level, with 60 per cent of core respondents and only 30 per cent of intermediate respondent reporting they have made changes (first pane of Figure 3.8). Interestingly, while 30 per cent of core

<sup>29</sup> This increases to 52 per cent when respondents who do not report using fencing to manage rabbits are excluded.

respondents and 10 per cent of intermediate respondents report that they now use fencing more often as a way of managing rabbits, 10 per cent of each group also report using fencing less frequently. This may be due to increased knowledge about the effectiveness of fencing as a method of rabbit management in different environments and in conjunction with other methods.

The proportion of core respondents who use fencing as a way of managing rabbits is considerably higher than intermediate respondents (90 per cent and 65 per cent respectively). Again, this may be due to local environments and it may also reflect the respondents' deeper involvement in VRAN and commitment to an integrated approach to rabbit management; however, as discussed earlier there may also be a higher level of intrinsic motivation and action in core respondents.

### Shooting

Over 40 per cent of respondents have changed their approach to shooting as a rabbit management practice since their involvement in the VRAN (see accompanying Appendix Document).<sup>30</sup> Overall, more than one quarter of respondents have changed the frequency with which they shoot rabbits (13 per cent increased, 13 per cent decreased), however this varies between respondent groups (second pane of Figure 3.8). Thirty per cent of core respondents and only 5 per cent of intermediate respondents report shooting less often. Relatively similar proportions of each group report increasing their frequency of shooting (10 per cent of core respondents and 15 per cent of intermediate respondents), while 20 per cent of intermediate respondents (and no core respondents) report making other changes to their approach to shooting.

These differences may reflect different local environments, baseline rabbit populations and understanding of the benefits of an integrated approach.

### Integrated approach

Eighty four per cent of respondents report making changes in the way they use an integrated approach to rabbit management as a result of their involvement in the VRAN (see accompanying Appendix Document).<sup>31</sup>

Changes are more similar between core and respondent groups for this approach than in other methods discussed above (third pane of Figure 3.8). Almost one third of core respondents, and 15 per cent of intermediate respondents, report that they have started to use an integrated approach since their participation in VRAN. More than half of respondents in each group report that they use an integrated approach more frequently (50 per cent of core respondents; 60 per cent of intermediate respondents).

Ten per cent in each group, and 28 per cent of total respondents, report that they do not use an integrated approach. The reasons behind this are unclear but it may be due to understanding of the term or direct involvement in land management.

### Capacity-building

In total, 84 per cent of respondents have changed the way they approach capacity building activities for rabbit management as a result of VRAN (see accompanying Appendix Document).<sup>32</sup>

Most respondents (56 per cent) report increasing the frequency in which they participate in capacity building activities, and 22 per cent report that they have started engaging in capacity building activities. These figures vary between respondent groups, with 70 per cent of core respondents and 45 per cent of intermediate respondents reporting increased participation (last pane of Figure 3.8).

### Other practices

Thirty per cent of respondents report that they have made changes to other practices as a result of their involvement in VRAN's activities (see accompanying Appendix Document).<sup>33</sup> Twenty per cent of core respondents, and 5 per cent of intermediate respondents, have started undertaking other

<sup>30</sup> This increases to 57 per cent when respondents who do not use shooting to manage rabbits are excluded.

<sup>31</sup> This increases to 93 per cent when respondents who report they do not use an integrated approach are excluded.

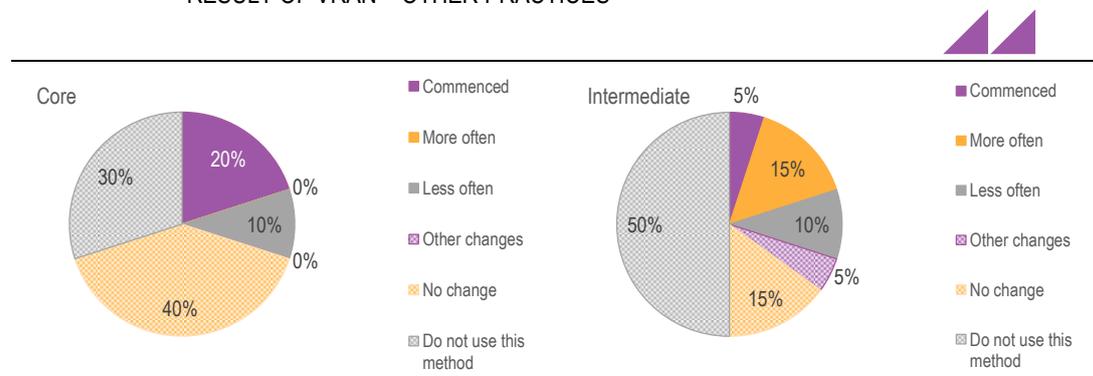
<sup>32</sup> This increases to 87 per cent when respondents who do not report engaging in capacity building are excluded.

<sup>33</sup> This increases to 56 per cent when respondents who do not use other practices are excluded.

practices, and 15 per cent of intermediate respondents now undertake other practices more frequently (Figure 3.9). Ten per cent in each group now undertake other practices less often.

Overall, 44 per cent of respondents report that they do not use other practices (30 per cent of core respondents and 50 per cent of intermediate respondents).

**FIGURE 3.9** CORE AND INTERMEDIATE RESPONDENTS' REPORTED PRACTICE CHANGE AS A RESULT OF VRAN – OTHER PRACTICES



Note: 10 core respondents and 20 intermediate respondents.  
 SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

An example of practice change that has occurred as a result of learnings through VRAN is on Neds Corner, one of the case studies undertaken by First Person Consulting (see Box 3.3 overleaf).

**BOX 3.3** CASE STUDY – BUILDING ON A LIFETIME OF RABBIT KNOWLEDGE

The *Building on a lifetime of rabbit knowledge* case study profiles Peter Barnes, the Manager of Trust for Nature’s Neds Corner Station in north-west Victoria. Although he has been involved in managing rabbits for decades, Peter still learnt new information through VRAN’s activities and stakeholders.

*We came from different areas and perspectives and sat down and talked about different issues... and we all learnt, I think, from every meeting, just so much...legislation, humane control, different control methods.*

This led to changes in the way that Peter approached rabbit control methods for Neds Corner, particularly through more targeted timing of application and integrated use of different methods.

*The way that the group’s changed things for me here is probably more using each method at the right time. Before, we tried to kill rabbits, but we didn’t put [the methods] in the right order to control rabbits...*

Peter also highlighted the importance of the relationships developed through the network, and the support that is provided by other participants as they tackle similar issues. Peter has in turn shared the knowledge he has gained through VRAN with other networks, including Landcare, neighbours and local government advisory committees.

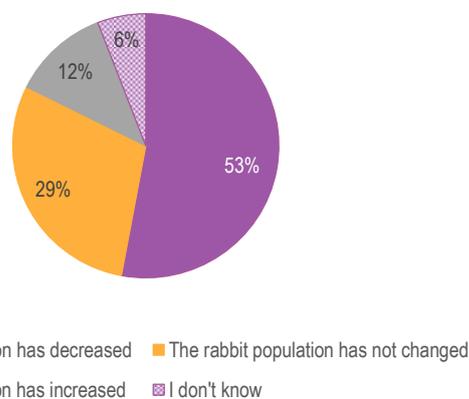
SOURCE: FIRST PERSON CONSULTING 2017

**3.3.3 Perceived impact on rabbit numbers**

There is some evidence to suggest that the rabbit population in Victoria has changed after the establishment of VRAN.

Core respondents were asked whether the rabbit population on their property or in their community has noticeably changed in the last three years (that is, since the time VRAN was established). More than half of these respondents (53 per cent) reported they had observed a decrease in the rabbit population (Figure 3.10).

**FIGURE 3.10** CORE RESPONDENTS' PERCEPTIONS OF CHANGES IN RABBIT POPULATION IN PAST THREE YEARS



Note: 17 respondents. Only core participants were asked this question in the survey.

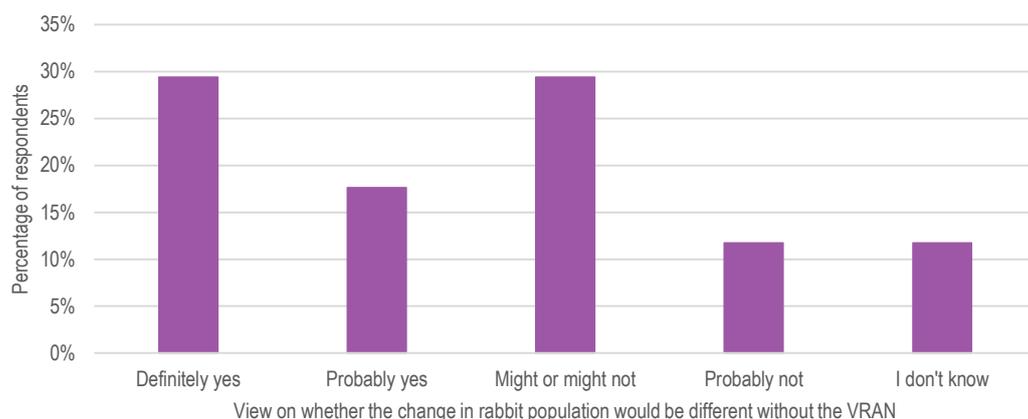
SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

Respondents who had observed a change were also asked to estimate the size of this change, as a percentage. Half of the respondents who had observed a decrease in the rabbit population estimated that the population had dropped by 30-40 per cent, and half estimated that it had dropped by more than 50 per cent (4 of 8 respondents for each). Two respondents reported observing an increase in the rabbit population, one by 11-20 per cent and one by 31-40 per cent.

Respondents identified a range of reasons for the changes they had observed. The most common reason was collaboration among the community – effective collaboration was seen as a key factor in reducing rabbit numbers, with lack of collaboration (for example, presence of absentee landowners) identified as a factor where populations were seen to have increased. Other factors identified by respondents included increased community awareness, presence or lack of funding to support rabbit management, the introduction of the K5 virus, and seasonal weather conditions.

Survey respondents in the core group were then asked whether the rabbit population would be different in the absence of VRAN's activities (Figure 3.11). Almost half of respondents (47 per cent) considered that VRAN's activities have had an impact on the rabbit population on their property or in their community (29 per cent 'definitely yes', 18 per cent 'probably yes'). These respondents stated that information sharing offered by activities such as the Rabbit Boot Camp led to greater education of new and varied rabbit control methods.

Around 40 per cent of respondents were unsure whether rabbit populations would have been different (29 per cent responded with 'might or might not' and 12 per cent responded with 'I don't know'), and around 10 per cent of respondents believe that VRAN's activities were probably not related to changes in the rabbit population. Respondents noted that many rabbit management activities predate VRAN and emphasised that the reasons behind changes in rabbit populations are complex and varied, and that there remains much work to be done in the area.

**FIGURE 3.11** CORE RESPONDENTS' VIEWS ON WHETHER THE CHANGE IN RABBIT POPULATION WOULD BE DIFFERENT WITHOUT VRAN

Note: 17 respondents.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

### 3.3.4 Most significant change

Respondents were asked to identify the most significant change that VRAN has made for them.<sup>34</sup> The most common theme was that VRAN has provided participants with increased knowledge and awareness (over half of respondents). This was followed by the development of supportive networks through VRAN (roughly one quarter of respondents). Other reasons included the funding and other resources provided through VRAN and employment in the field.

Respondents were also asked to identify the most significant change that VRAN has made more broadly, for example, for their community, workplace or the Victorian rabbit management system.<sup>35</sup> The key themes that emerged were that VRAN has led to increased awareness and knowledge of rabbit management issues in the community (roughly half of respondents commented on these themes), and has supported community collaboration and focus (roughly one quarter).

Some respondents (around 20 per cent) did not consider that VRAN has made a significant change to themselves or broader systems or communities. Where provided, the reasons respondents gave behind this were varied. The most common theme was that rabbit action in many communities, including Landcare groups, predates VRAN by a long time and thus the network has not had a large impact. Several respondents also noted the slow pace of change in this area, where it can take a long time for changes to be seen on the ground.

## 3.4 Key findings

### Stakeholders involved in VRAN

- Almost half of survey respondents are farmers or other land owners, while more than one third of respondents are involved in Landcare. Twenty per cent are from state government agencies.

### Geographic reach of VRAN

- Survey respondents span throughout Victoria and interstate (mostly from New South Wales or South Australia).

### Land area managed by VRAN's participants

- Survey respondents indicated they are involved in managing over 2.5 million hectares of land.

<sup>34</sup> In total, 58 respondents answered this question (14 core respondents and 44 intermediate respondents).

<sup>35</sup> In total, 59 respondents answered this question (14 core respondents and 45 intermediate respondents).

**Knowledge sharing with other networks**

- Two thirds of respondents are involved in Landcare and one quarter are part of the Country Fire Authority.
- 84 per cent of respondents indicated they have shared knowledge gained through the VRAN with people in their workplace, community groups or other networks.

**Changes in participant mindset and attitudes**

- Respondents report that their motivation and confidence levels regarding rabbit management have changed as a result of their involvement in VRAN's activities.
- Involvement in VRAN has led to more than 50 per cent of survey respondents changing their views on the role of collaboration in rabbit management.

**Changes in rabbit management practices**

- Almost all respondents reported making changes in the way they use an integrated approach (90 per cent) and capacity building (84 per cent) activities over the past three years.

**Perceived impact on rabbit numbers**

- Over 50 per cent of core respondents reported that the rabbit population has decreased in the last three years.
- The magnitude of the fall lies somewhere between 10 and 40 per cent, according to survey respondents.

**Most significant change**

- Most respondents believe the most significant change brought by VRAN is providing participants with increased knowledge and awareness of rabbit management practices.
- Increased awareness of rabbit management issues was identified by respondents as the most significant change VRAN made to their community, workplace and the rabbit system.



This chapter examines VRAN's impacts:

1. economic impacts, explored in section 4.1
2. social impacts, explored in section 4.2
3. environmental impacts, explored in section 4.3.

## 4.1 Economic impacts

### 4.1.1 Perceived economic benefits

The majority of participants in VRAN's activities believe that the network has generated economic benefits. More than half of core respondents agree that VRAN's activities have led to economic benefits for their property, community or workplace (59 per cent in total; 47 per cent 'agree' and 12 per cent 'strongly agree'), as shown in Figure 4.1.

**FIGURE 4.1** CORE RESPONDENTS' PERCEPTIONS OF VRAN'S ECONOMIC BENEFITS

VRAN activities have led to economic benefits for my property, and/or workplace, and/or community:



Note: 17 respondents. Only core participants were asked this question in the survey.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

Respondents' comments on the reasons behind their responses to this question were varied (15 respondents commented on this question). Most respondents focused more on the environmental and social benefits of the program than on the economic benefits, with some noting that they hope or expect to see economic benefits arising in the future. Respondents also commented on the

community aspects of rabbit management, with some noting that they lived in peri-urban areas where the land was not used for agricultural or income generating purposes, and some also noting that there were many new or 'unknown' landholders in their area who do not fully understand the issues of rabbit damage and management.

Two of the three respondents who disagreed that there have been economic benefits commented that there has been little additional investment through VRAN and that more investment is required to support communities to undertake effective rabbit management, such as through assisting in the hire of machinery. The third respondent who disagreed noted that VRAN 'has had no involvement in what [they] do or...have achieved.'

#### **4.1.2 Value of VRAN for participants**

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In addition to perceiving that VRAN has delivered economic benefits, network participants also appear to derive significant value from its activities.

##### **Lower bound estimate**

ACIL Allen used the value of the time and other contributions (including travel costs) of community members participating in VRAN's activities. This provided a lower bound estimate of the value of the network and its activities to the community.

This is a conservative estimate. Participants are likely to derive utility from their involvement in VRAN's initiatives in excess of the value of time they contributed and other costs they incurred. In addition, their participation will likely generate additional social benefits enjoyed by other community members, who are not involved with VRAN and its initiatives.

This approach is often used to value community assets such as national parks, where many of the economic benefits are intangible. In that case, the travel and time costs of visitors to national parks provide a lower bound estimate of their valuation of the parks.

##### **Participant travel costs**

The number of participants, their total travel distances and travel times at each key activity of the VRAN are shown in Table 4.1. The travel distance and time for each participant at each activity was calculated using a mapping program, based on the home locations of (anonymised) participants provided to us by the Department. On average, voluntary participants at VRAN's events travelled 8.5 hours and 281.4 km (round-trip) to and from an event.

**TABLE 4.1** VRAN ACTIVITY AND VOLUNTARY PARTICIPANTS' TRAVEL TIME AND DISTANCE

Activity stream	Activity and location	Number of voluntary participants	Duration of activity (days)	Travel distance - round trip (km)	Travel time - round trip (hrs)
<b>Learning network</b>	Euroa meeting	16	1.5	9,570	106.5
	Neds Corner meeting	14	1.5	16,298	1,736.9
	Phillip Island meeting	14	1	7,266	97.6
	Melbourne meeting	14	1	5,090	65.5
<b>National Rabbit Conference</b>	Conference in Melbourne	126	1	40,522	471.1
<b>Rabbit Leadership Program</b>	Training in Melbourne	8	2.5	2,738	35.2
<b>Systems mapping</b>	Workshop in Melbourne	15	1	6,326	76.4
<b>Small grants program</b>	Bellarine Landcare Group Inc. local meeting	77	0.625	0	0
	East Gippsland Landcare Network local meeting	10	1	0	0
	Yarrowee Leigh Catchment Group local meeting	18	1	0	0
<b>Total</b>		<b>312</b>		<b>87,810</b>	<b>2,585.2</b>

SOURCE: THE DEPARTMENT

In order to turn travel times into costs, we used assumptions surrounding:

- vehicle operating costs
- recommended travel time values
- value of participants' time.

These are detailed in Box 4.1 overleaf.

**BOX 4.1** OUR ASSUMPTIONS

To calculate vehicle operating costs (VOCs), we have drawn on standard VOC values from Transport for NSW's 2016 *Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives*. The full financial vehicle operating cost per km was 48.63 cents for a medium-sized car travelling at an average speed of 80 km per hour. Adjusted for inflation between March 2016 and June 2017, the parameter value we have used is 49.75 cents per kilometre. This includes fuel costs, maintenance costs and insurance costs.

Similarly, we have drawn recommended travel time values from the same source, which were \$52.76 per hour for business travel and \$16.26 per hour for private travel. The average of the two values (again adjusted for inflation) was used in our calculation, on the grounds that some of the voluntary participants in the VRAN activities would be full-time workers, while others would be part-time workers, and still others retirees or otherwise not formally employed.

To calculate the value of participants' time at the actual activities, we have used the Australian Bureau of Statistics (ABS)' latest published data on the average total weekly earnings of all workers (including both full-time and part-time workers) in Victoria.<sup>36</sup> This figure of \$1,128.10 per week translates to a daily average of \$225.62. This is multiplied by the duration of each activity (excluding travel time) and the number of voluntary participants in that activity.

SOURCE: ACIL ALLEN

Table 4.2 shows the vehicle operating costs, travel time costs and the time costs associated with the activities themselves that have been incurred by voluntary participants at VRAN activities. When combined across all activities, vehicle operating costs, travel time costs and time costs associated with the activities themselves by voluntary participants total **\$208,233**. This is a lower bound estimate of the value that voluntary participants place on VRAN.

**TABLE 4.2** VEHICLE OPERATING COSTS, TRAVEL AND TIME COSTS INCURRED BY VOLUNTARY PARTICIPANTS AT THE VRAN ACTIVITIES

Activity stream	Activity and location	Vehicle operating costs (\$)	Value of travel time (\$)	Value of workshop / meeting time (\$)
<b>Learning network</b>	Euroa meeting	4,761	3,758	5,659
	Neds Corner meeting	8,109	61,327	4,952
	Phillip Island meeting	3,615	3,447	3,301
	Melbourne meeting	2,532	2,313	3,301
<b>National Rabbit Conference</b>	Conference in Melbourne	20,161	16,633	29,711
<b>Rabbit Leadership Program</b>	Training in Melbourne	1,362	1,241	4,716
<b>Systems Mapping</b>	Workshop in Melbourne	3,147	2,698	3,537
<b>Small grants program</b>	Bellarine Landcare Group Inc. local meeting	0	0	11,348
	East Gippsland Landcare Network local meeting	0	0	2,368
	Yarrowee Leigh Catchment Group local meeting	0	0	4,244
<b>Total</b>		<b>\$43,689</b>	<b>\$91,417</b>	<b>\$73,127</b>

SOURCE: ACIL ALLEN

<sup>36</sup> Australian Bureau of Statistics, ABS publication 6302.0 Average Weekly Earnings, Australia, May 2017

On average, voluntary participants at VRAN's events are willing to travel 8.5 hours and 281.4 km to and from an event. This suggests that they place considerable value on the network.

### Additional grantee

In addition, community groups that received Victorian Government funding under the Small Community Innovation Grants program made important contributions to the program (see Table 4.3). These are \$55,795 in in-kind contributions and \$18,644 in cash contributions. Their total contribution of **\$74,439** can be viewed as a proxy for the value groups perceive in being VRAN participants.

**TABLE 4.3** SUCCESSFUL SMALL COMMUNITY INNOVATION GRANTS PROGRAM RECIPIENTS

Successful grantee	Grant recipients – in kind contributions (\$)	Grant recipient – cash contributions (\$)	Funding from the VRAN (\$)	Total (\$)
Hughes Creek Catchment Collaborative	7,200	4,800	4,000	<b>16,000</b>
Moyston Landcare Group Inc.	2,500	100	1,020	<b>3,620</b>
McCallums Creek Landcare Group	2,100	300	900	<b>3,300</b>
Telopea Downs Agricultural & Landcare Group	1,200	1,500	1,000	<b>3,700</b>
Yarrowee Leigh Catchment Group Inc.	200		2,150	<b>2,350</b>
East Gippsland Landcare Network Inc.	1,050	1,000	9,700	<b>11,750</b>
Millewa-Carwarp Landcare Group	13,440		9,840	<b>23,280</b>
Bellarine Landcare Group Inc.	3,675	2,744	5,750	<b>12,169</b>
Moorabool Landcare Network Inc	13,790	2,300	9,955	<b>26,045</b>
Up2Us Landcare Alliance and Upper Goulburn Landcare Network	3,600	5,00	5,756	<b>9,856</b>
Bass Coast Landcare Network	3,600	4,400	8,090	<b>16,090</b>
Upper Loddon & Avoca Landcare Network	1,800	1,000	2,200	<b>5,000</b>
Mt Bolton/Beckworth Landcare Group	1,640		1,256	<b>2,896</b>
<b>Total</b>	<b>\$55,795</b>	<b>\$18,644</b>	<b>\$61,617</b>	<b>\$136,056</b>

SOURCE: THE DEPARTMENT

## 4.2 Social impacts

The survey also provides suggestive evidence on VRAN's positive social impacts. The majority of core VRAN participants who responded to the survey (82 per cent) consider the network led to social benefits, for the respondent, their workplace and/or community (Figure 4.2). Almost half of respondents (47 per cent) strongly agree with this, with an additional 35 per cent agreeing.

**FIGURE 4.2** CORE RESPONDENTS' PERCEPTIONS OF SOCIAL BENEFITS FROM THE VRAN

VRAN activities have led to social benefits for me, and/or my workplace, and/or my community:



Note: 17 respondents. Only core participants were asked this question in the survey.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

Several key themes emerged from respondents' comments on this question. Almost half of respondents who commented emphasised the benefits of the development or strengthening of relationships and networking that occurred through VRAN. This is consistent with the VRAN formative evaluation. It found the network's theory of change is 'underpinned by facilitating cooperation between actors' (Furze 2016).

Over one third of respondents commented on the opportunities VRAN provides to share knowledge in and across communities. Almost one third noted the increased capacity that had been developed in themselves or their community through VRAN.

Only one person (strongly) disagreed that VRAN led to social benefits. They stated strong networks already existed in their local community. These worked to build capacity without government assistance, and in spite of what they saw as often 'hostile' government attitudes.

Greater awareness of rabbit management in the community, including awareness of the latest news and tools, was also seen to be a benefit of the VRAN.<sup>37</sup> Respondents also commented on increased community focus and engagement in the issue. One respondent expressed concern that the VRAN was not proactive in addressing the barriers that can prevent people from implementing best practice, such as regulations around native vegetation or baiting on public land.

### 4.3 Environmental impacts

In addition to economic and social impacts, participants in VRAN's activities also believe the network has generated considerable environmental impacts.

More than three quarters of core respondents (76 per cent) indicated VRAN led to environmental benefits for their property, community or workplace (Figure 4.3). Twenty nine per cent of respondents strongly agree that there have been environmental benefits, and a further 47 per cent agree.

<sup>37</sup> These responses were provided to the survey question: *Have there been any other impacts from the VRAN activities?*

**FIGURE 4.3** CORE RESPONDENTS' PERCEPTIONS OF ENVIRONMENTAL BENEFITS FROM VRAN

VRAN activities have led to environmental benefits for my property, and/or workplace, and/or community:



Note: 17 respondents. Only core participants were asked this question in the survey.

SOURCE: RESPONSES TO VRAN SURVEY 2017; ACIL ALLEN

The most cited environmental benefit was the regeneration of native plant species, with almost half of respondents noting that this has been seen in their local areas. However, some respondents drew attention to the difficulty of attribution and the long-term nature of rabbit management. For example, several noted that their communities had been undertaking similar activities before VRAN and that these were likely to have contributed to positive signs. Some respondents also commented on the need for sustained support because environmental change can be slow.

## 4.4 Key findings

### VRAN's economic impacts

- More than 50 per cent of core respondents consider VRAN's activities have led to economic benefits for their property, community or workplace.
- On average, voluntary participants travelled 8.5 hours and approximately 281km (round-trip) to and from VRAN's events.
- When combined across all VRAN activities, the vehicle operating costs, travel time costs and the time costs associated with the activities themselves that have been incurred by voluntary participants total \$208,233. This is a lower bound estimate of the value voluntary participants place on VRAN.
- Community groups which received funding under the Small Community Innovation Grants program made a total of \$74,439 in in-kind and cash contributions. This can be viewed as a proxy for the value they perceive in being active VRAN participants.

### VRAN's social benefits

- 82 per cent of core respondents consider that the network has led to social benefits, including development and strengthening of relationships and opportunities for knowledge-sharing.

### VRAN's environmental benefits

- More than 75 per cent of core respondents consider VRAN has led to environmental benefits for their property, community or workplace.
- The most commonly cited benefit is the regeneration of native plant species.



# 5

## CONCLUSION AND RECOMMENDATIONS

This chapter draws together the analysis to answer the three questions:

1. What is the value of the initiatives led by VRAN?
2. What is the value of the systems mapping approach in supporting successful community-led rabbit management, including in the formation of VRAN as a facilitating institution?
3. Does VRAN's approach have the potential to inform other invasive species interventions in Victoria and other jurisdictions?

This chapter has four parts:

- section 5.1 responds to Question 1, assessed mainly via the survey and lower bound estimate results
- section 5.2 covers Question 2, assessed primarily against VRAN's success criteria (the three Cs)
- section 5.3 answers Question 3 by drawing together the results of the first two questions
- section 5.4 provides recommendations for the Department on VRAN.

### 5.1 Question 1: VRAN's value

To date, VRAN has been responsible for producing tangible social, economic and environmental benefits. This is especially around spreading and increasing knowledge to improve rabbit management practices and boosting stakeholder confidence.

#### 5.1.1 Social benefits

Key social benefits of VRAN include:

- **84 per cent of respondents** indicated they shared knowledge gained through VRAN with people in their workplace, community groups or other networks
- **almost all** respondents reported making changes in the way they use an integrated approach (90 per cent) and capacity building activities (84 per cent) over the past three years

This indicates that one of VRAN's key messages of adopting integrated rabbit management has been well received. Furthermore, around 60 per cent of survey respondents stated their **motivation and confidence** levels regarding rabbit management changed due to involvement in VRAN's activities.

Overall, most survey respondents believe the **most significant change** brought by VRAN is providing participants with increased knowledge and awareness of rabbit management practices.

#### 5.1.2 Economic benefits

The above social benefits are reinforced by the strong value participants derive from VRAN's activities and participation in the network. These members have contributed significant time and their own resources to be involved in VRAN. For example:

- On average, voluntary participants travelled **8.5 hours and approximately 281km** (round-trip) to and from VRAN's events. This suggests these participants place considerable value on the network.
- When combined across all of VRAN's activities, the vehicle operating costs, travel time costs and the time costs associated with the activities themselves that have been incurred by voluntary participants total **\$208,233**. This provides a lower bound (conservative) estimate of the value voluntary participants place on VRAN. Thus, this value could be higher.
- Community groups which received funding under the Small Community Innovation Grants program made a total of **\$74,439** in in-kind and cash contributions. This can be viewed as a proxy for the value they perceive in being active participants in VRAN.

### 5.1.3 Environmental benefits

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In addition to the noticeable social and economic benefits, some environmental benefits resulted due to VRAN. For instance:

- More than **75 per cent of core** respondents consider VRAN led to environmental benefits for their property, community or workplace.
- The most commonly cited benefit is the **regeneration of native plant species**.

### 5.1.4 Likely consequences of discontinuing VRAN

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VRAN's value could also be judged by asking:

- Without VRAN, could the resultant benefits have been derived anyway?
- If VRAN did not continue, what impact would this have on the resultant benefits?

On question a, it seems unlikely the community would have received the same magnitude of benefits without VRAN. A key VRAN effect is the ability to enhance social capital via 'strengthened relationships and networking.' This positive result is unlikely to have occurred to the same extent without VRAN.

On question b, without VRAN continuing, it is possible that community members' knowledge, mindset changes and practices could stall or regress. This could particularly be seen with farmers, who can feel isolated and at times dejected by the ravages of rabbit destruction. The establishment of new relationships and networks has supported farmers and other stakeholders with their rabbit struggles.

Furthermore, there is a danger that community stakeholders may lose confidence in the government's commitment to addressing rabbit issues, or even broader invasive species collaboration. VRAN has induced community, industry and government goodwill. If VRAN ceased, this goodwill could thaw.

If VRAN did not continue, this could also place pressure on the Department's rabbit and invasive species programs and budget. The rabbit management operational budget share is small. It fluctuates between 2 and 4 per cent of the total biosecurity budget, and around 8 to 12 per cent of the invasive species operational budget.

The total biosecurity budget has fallen from 2011-12 to 2015-16, which has decreased the rabbit management operational budget. This trend does not reflect a reduced need to manage rabbits, but rather a shifting focus on new biosecurity issues, including:

- market access
- responding to emergencies
- minimising the risk of new exotic species.

The Department indicated that these developments have reduced the capacity to deliver projects on established pests, such as rabbits, in some years.

Consequently, by choice and/ or happenstance, VRAN has been able to fill this rabbit resourcing gap and support the Department's operational work. As discussed above, the early signs of co-investment by government, community and industry are promising.

In short, for a relatively small investment, VRAN's continuance could yield further benefits and co-investment. This could support the Victorian Government's broader invasive species and biosecurity agenda.

## 5.2 Question 2: VRAN as a facilitating institution

As a facilitating institution, VRAN is about leveraging community, government and industry partnerships to support rabbit action. As per its mandate, collaboration, co-investment and co-learning (the three C's) are vital for successful community-led rabbit management. That is, it should boost and complement stakeholders' abilities to manage rabbits. Hence, VRAN's effectiveness is not primarily about attributing a reduction in rabbit numbers. Instead, it's about empowering stakeholders at community and institutional levels to manage rabbits.

The results discussed above provide evidence that VRAN has had a solid start in delivering on its three C's. For example, enhanced stakeholder confidence, increased knowledge and awareness of rabbit management practices and community co-investment are noteworthy VRAN achievements. Significantly, these have been possible due to the systems mapping and systems strengthening processes.

While the results are positive, VRAN's momentum needs to be maintained, which will require further government support and investment. This in turn could feed back into the rabbit system via VRAN to leverage further collaboration, co-investment and co-learning from diverse stakeholders. Therefore, government investment may further strengthen the entire rabbit system via VRAN.

In addition to sustained government investment, VRAN could:

- expand and deepen its links to non-core members, especially to peripheral rabbit stakeholders
- further connect experienced rabbit stakeholders with less experienced ones within groups and between groups to promote best practice
- support existing VRAN leaders and train new leaders to ensure leadership expansion and succession
- use the systems mapping results to design interventions that will strengthen existing relationships, re-build past relationships, and develop new relationships.

## 5.3 Question 3: VRAN as a model for other invasive species management

VRAN's model, as a community centred, collaborative vehicle, could be applied to managing other invasive species. This may be its logical extension, as other invasive species face the 'wickedness problem' that rabbit management comes up against. Where there are similar issues, an integrated approach may bolster institutional capacity via strengthening industry, community and government efforts to protect natural resources and the profitability of food and fibre industries.

In addition, as Victorian operates within a national biosecurity system, dealing with invasive species requires collaboration between different jurisdictions. This is prudent as the spread of invasive species does not stop at state borders.

Hence, a VRAN-type structure could assist jurisdictional collaboration on other invasive species. Specifically, this could include more effective containment of invasive species that are beyond eradication by limiting their distribution and/ or density. This can be critical, as the level of cost effectiveness tends to decline ever more as the invasive species moves toward becoming more established.

### 5.3.1 Key ingredients for application elsewhere

If VRAN's model is extended to other jurisdictions for rabbit management or other invasive species, the following should be considered:

1. Willingness and appetite from diverse stakeholders for a community-led approach is required. This includes government devolving greater decision making to the private sector and community groups.
2. Stakeholders' appetite could be tested or established via a systems mapping exercise. Systems mapping provides a holistic view of the entire system. It delivers a better understanding of system weaknesses and potential improvements. It also allows stakeholders to test their own assumptions. This may open the prospects for attitudinal change, which paved the way for VRAN's establishment.
3. Persistence and patience are required to allow stakeholders time and space to deliberate. This may lead to disagreements. Conversely, this is conducive to building and strengthening relationships.

4. Champions/ leaders are necessary to motivate others, spread the message and connect stakeholders across the whole system.

## 5.4 Recommendations

1. **Department funding:** the Department should continue funding VRAN beyond 2019, subject to a future evaluation. VRAN is still young and evolving and needs support to realise its potential. That is, assisting stakeholders with sustained pressure on managing rabbits and their impacts.
  - At an annual cost of \$140,000, VRAN would need to reduce the economic impact of rabbits in Victoria (currently estimated at \$21.6 million per annum) by less than 0.7 per cent for continued government funding support to be economically justified.
2. **Measuring future impact:** the Department should monitor outcomes and impacts of VRAN's activities to gauge its evolution against the three Cs: collaboration, co-investment and co-learning. This can be assisted via:
  - a) **Periodic surveys:** this requires undertaking a new survey about every two to three years. Each survey should build on the previous one. The survey for this analysis was the baseline. The next survey could go deeper in understanding perceptions of changes in rabbit populations, in addition to assessing the progression of the three Cs.
  - b) **Improved government data:** this requires improved tracking of the proportion of work government staff devote to rabbit management tasks (versus time spent on other invasive species). This will assist in assessing the relativities of government and community co-investment.
  - c) **Tracking rabbit populations:** the Department may also collaborate with its counterparts in NSW and South Australia to track rabbit populations in areas near the borders of the three states. These locations may present a *natural experiment* where the factors determining rabbit populations (e.g. climate, terrain) are similar except for differences in government rabbit management policies. This will facilitate an assessment of the relative effectiveness of alternative suites of policies for managing rabbit populations that have been adopted by each jurisdiction. However, it might not be possible to assess the effectiveness of any *single* policy or program, including VRAN.
3. **Community support and co-funding:** VRAN's Steering Committee and other community members should aim to forge closer links to peripheral rabbit stakeholders. These are stakeholders that have had little or no direct contact with VRAN. Expanding and deepening the network can further its evolution by leveraging additional funding, collaboration and shared learning amongst stakeholders.
4. **Promotion:** the Department should promote the outcomes of this analysis to other rabbit stakeholders in Victoria and other jurisdictions. Multiple communication products and tools (visual, aural, written) could be used to disseminate the findings and outcomes of this project. They include:
  - summary paper (based on this report's executive summary)
  - infographic (one page in hard and soft copies)
  - link on the Department's website with video
  - social media, online forum
  - information sessions/ roadshows.

In line with VRAN's spirit, these avenues are designed to illicit feedback, continue knowledge sharing and deepen stakeholder relationships.

5. **Trial VRAN model with other Victorian invasive species:** the Department should trial a VRAN-style community-led model with another Victorian invasive species. This requires stakeholders' desire to explore a new way, and the government to transfer more decision making to the community.
6. **Comparative evaluation:** the Department could undertake a comparative evaluation of VRAN's community model versus other community based approaches, such as the ones used for blackberry and serrated tussock.

This comparative analysis could be in addition to the periodic VRAN evaluation suggested in recommendation 1 above. This would provide another way of assessing its effectiveness and stakeholder value. It could also inform the Department of the merits and challenges of different community invasive species approaches.

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