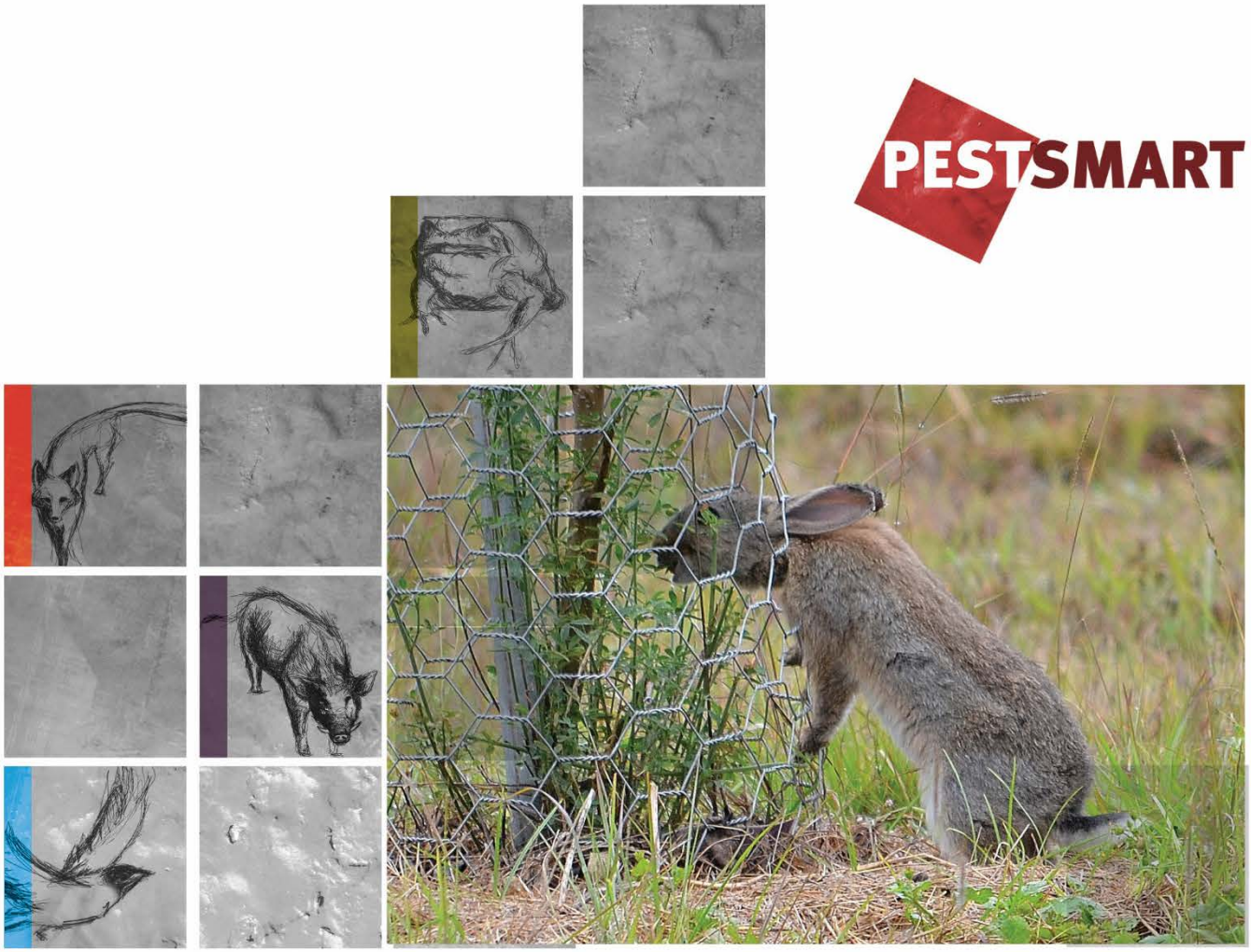

Scenario Planning for Institutional Improvements to Support Citizen Action in Invasive Animal Management

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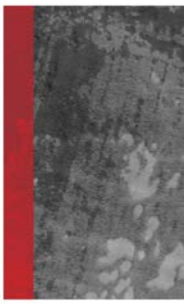

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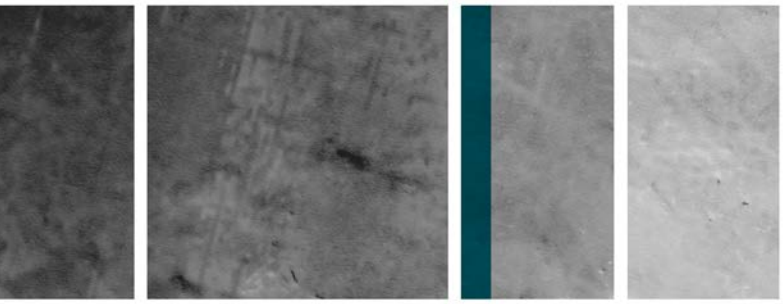

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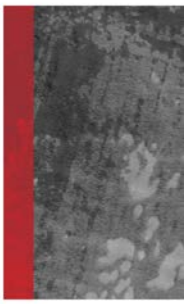

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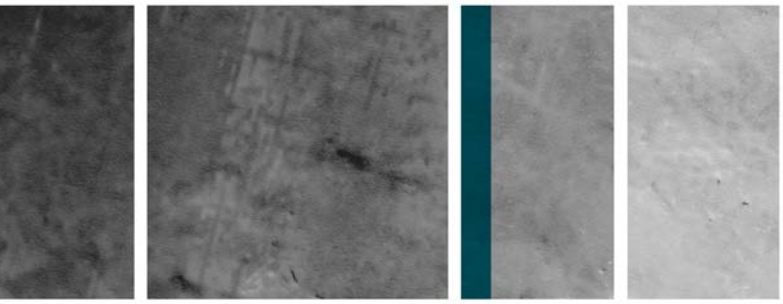

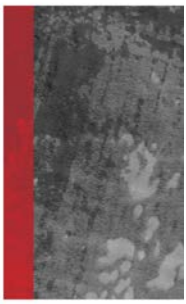

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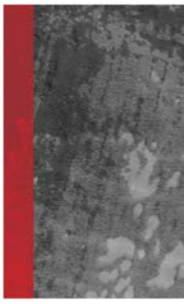


Executive Summary

A scenario planning process has been used to test a number of Future Options for institutional improvement to more effectively support (and reduce impediments to) citizen action in invasive animal management. These Future Options were derived from a two round Delphi survey, supplemented by a previous Scoping Study, and resulted in the identification of a composite set of nine "Future Options" for testing.

Scenario planning provides a systematic approach for testing future options for action (eg plans, strategies and policies) in an uncertain environment under conditions of low controllability. It creates possible futures to inform present decision-making.

Two sets of scenarios were developed by stakeholders in four state-based locations (Brisbane, Sydney, Melbourne and Perth) and included representatives from front-line workers on invasive species issues, non-government organisations, farmers, industry, and three levels of government. Scenario development considered existing and potential drivers of change that could influence the future.

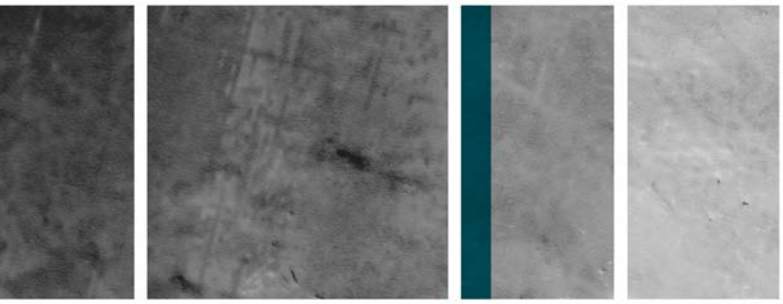
The most significant key drivers of change across the case study areas were: political commitment; coordination and cooperation; community values and priorities; coordinated management; community influence; technological development; global markets; and government support. Common themes that cut across several key drivers relate to: coordination; community involvement; government commitment; and financial aspects.

Future Options tested included: 1. *A stronger focus on private funding*; 2. *A more entrepreneurial strategy for public funding*; 3. *Integrated performance improvement reporting*; 4. *Agreed stewardship roles and accountability*; 5. *More efficient, effective and fair regulation*; 6. *Citizen-friendly systems*; 7. *Greater appreciation of citizen contribution*; 8. *Landscape-scale integrated ('nil-tenure') strategies*; and 9. *More effective public communications*.

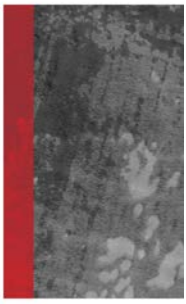
Testing was in response to a draft Vision for future citizen action seeking to reduce harms caused by invasive animals whilst operating in a genuine "government-industry-community" partnership. In response to the draft Vision Statement, there was overall agreement that it would be highly desirable that future initiatives seeking to reduce harm caused by invasive animals should be characterised by: Invasive Animal management undertaken as a shared responsibility; feasible reforms; improved administrative arrangements; research and development focussed on capacity building and training; and facilitated citizen activity. There is a strong degree of correlation between the key elements of the Vision and these common themes and their common elements are all picked up in the nine Future Options.

Considering the challenges to invasive species harm control from the perspective of the scenarios, stakeholders assessed how well the selected Future Options for addressing these challenges stood up within the scenarios and the institutional issues that needed to be managed. They were also given the opportunity to propose institutional reforms and to consider the practical and political feasibility of these.

This scenario planning exercise demonstrated that it is feasible to achieve the Vision and that the Future Options, in combination, could make a major contribution to that achievement. However, there are caveats to many aspects of the nine Future Options and these have been discussed in the report.



This highly participatory exercise has, through the scenario planning process, provided a way ahead in the form of "roadmaps" which can assist and lead towards the Vision. The composite "roadmap" starts by operationalising the Vision's three way partnership of "government-industry-community" into an agreement that can overarch all further initiatives to design, develop and implement the range of modified Future Options. This then could facilitate the development, testing and implementation of a collaborative and comprehensive stakeholder engagement and communication strategy. A parallel undertaking should involve a social impact assessment to address the issues of the "More efficient, effective and fair regulation" Option and also consider cases of landholders who do not have the resources to carry out their assigned responsibilities. Subsequently, a review of the efficiency, effectiveness and fairness of existing regulations can be completed, followed by the scoping out of the system's framework for "Integrated performance improvement reporting", with an expectation of its full adoption nationally. With this foundation, other elements can then be completed, including: a redesign of public funding strategies; development of a Business Case to demonstrate how the outcomes of private investment in invasive animals management can be achieved; and a stocktake and evaluation of community involvement in adaptation of plans and implementation action initiatives.



1. Introduction

This report documents the conduct and findings of a scenario planning study undertaken in support of Project 4E3: Reducing Institutional Barriers to Citizen Action which is part of the Invasive Animals Cooperative Research Centre's (IACRCs) Program 4: Community Engagement: institutional, policy and adoption processes.

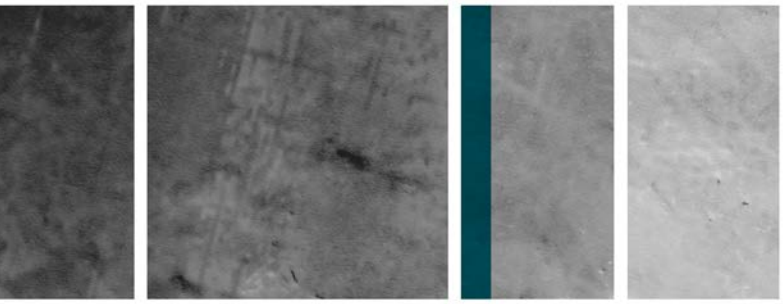
This program aims to reduce institutional barriers (and strengthen supports) for effective community action in the management of invasive species. In particular it is focussed on those aspects that depend on citizen action. The scenario planning study seeks to make a contribution to the overall outcomes for the Project which are to identify and advocate reforms to institutional arrangements that could:

1. increase active community engagement in the prevention or control of pest animal problems;
2. better enable such action with knowledge and resources needed to make this effective; and
3. improve the overall cost-effectiveness and efficiency of invasive animal management laws and institutions.

The Project addresses citizen-focused approaches to invasive species management. It is intended to create reform proposals that are politically and economically feasible and which make it significantly easier for the community to do what is needed to reduce the harms caused by invasive species. Hence there is an imperative to find consensus for reforms by having people with different views and interests interact in a common forum. Fortunately, the Project had access to a Community of Practice and their wider network/s that included a diverse group of stakeholders who represented the views of front-line workers on invasive species issues, non-government organisations, farmers, industry, three levels of government and other important perspectives. Participants were drawn from this network across four states (Queensland, New South Wales, Victoria and Western Australia).

Thus the scenario planning workshops provided an opportunity and a platform for: (1) the development of a shared sense of possible futures; (2) exploring collaboratively developed approaches to address those futures; (3) appreciating what strategies are feasible; and (4) establishing the basis for reform recommendations that can be pursued. The scenario planning approach provided a way to achieve these outcomes that are intended to derive proposals to improve the laws and organisational arrangements that affect the ability of people to control the economic and environmental harm done by invasive species (see Methodology section below).

The focus on 'institutions' in this project concerns the laws, other rules (e.g. industry standards or contractual commitments), and implementation arrangements (e.g. administration, enforcement) that can affect how people seek to reduce the risks and the harms from invasive species. It is institutions that shape how people obtain and use resources; identify their incentives and resources to take action; coordinate harm prevention and control programs; implement regulation and enforcement; and address other aspects of frontline invasive species management.



2. Methodology

2.1 The Scenario Planning Process

Scenario planning is a strategic tool that can be used to develop a science based decision-making framework in situations of high uncertainty and low controllability[i]. It provides a systematic approach for the development and testing of future options for action (eg plans, strategies and policies) in an uncertain environment through the creation of possible futures to test them in[ii]. Scenario planning creates possible futures to inform present decision-making. Developed during World War 2 and then subsequently pioneered by the Royal Dutch Shell Company, the technique is now widely used to consider future operating environments by the public and private sectors worldwide.

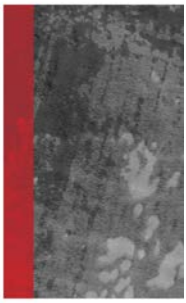
Futures thinking needs a structured systematic approach to explore the range of possible futures rather than relying on the prediction of a single expected or 'most-likely' future[iii]. To this end, scenario planning involves:

1. the identification of a focal issue or question;
2. assessing certain and uncertain drivers of the issue or question over a selected timeframe;
3. the development of possible futures based on those drivers – i.e. creation of scenarios (plausible and coherent pictures of possible futures);
4. the development of narratives from the present to the possible futures (including a 'roadmap' for each scenario with signposts that could indicate if one future is becoming more likely than another); and
5. testing existing and new plans, strategies and policies against each scenarios.

Scenario planning is instructive for a decision context that involves a particular question or problem that demands action now but will play out in an uncertain future[iv]. It involves the systematic exploration and description of the range of ways in which uncertainties could be played out and their impact on the focal question. Scenario planning "simplifies the avalanche of data into a limited number of possible states"[v]. Each scenario involves the consideration of: likely trends; uncertainties; and possible shocks and surprises (welcome and unwelcome).

There is no one way to do scenario planning with most variations being in their qualitative verses quantitative approaches. However, it is important to distinguish that scenario planning is based on the generation of descriptions of possible futures involving a high degree of uncertainty and are not predictions of a particular future. In this sense scenario planning does not involve forecasting or modelling which normally deal with the short term and are based on predetermined elements particularly from the past and the present. Current evidence suggests that two or four scenarios work well with any greater number leading to levels of complexity that potentially dampens engagement. Three scenarios it is suggested, inadvertently promotes the idea that the 'middle' scenario is the most likely most probable future[vi].

Scenario planning is based on the premise that the future is not "knowable" – any statements, stories, narratives or scenarios about the future are hypothetical possible futures that may or may not be realised[vii]. However they should be built from research that can identify the predetermined and the uncertain elements of the future with the objective being the creation of plausible, coherent pictures / descriptions of possible futures and the identification of their drivers.



Cork et al (2005)[viii] have identified the following steps to futures analysis:

1. identify factors that brought about change in the past;
2. identify factors that could bring about change in the future;
3. separate what is relatively certain from what is uncertain about the future;
4. explore the range of ways in which uncertainties could play out (often using carefully constructed 'stories' or 'scenarios' to rest logic and communicate key messages); and
5. identify what needs to be done now to prepare for later.

This should include the development of "Roadmaps" (plausible narratives) from the PRESENT to these possible FUTURES. It also involves the identification of "sign posts" which are indicators of possible futures being realised such as events, occurrences or observations that can be scanned from the real world. It is also important to log the deliberations and discussions during the scenario construction process in the form of a "Decision Track".

Once constructed, the scenarios can then be used in a "wind tunnel" or "test beds" approach to evaluate and refine existing or proposed strategic plans, policies or decisions.

Scenario planning should attempt to involve the key decision-makers – the 'owners' of the problem (focal question), and those that advise the key decision-makers. Meaningful scenario planning will be enhanced if participants can bring imagination, expert knowledge, experience and judgement to complement their analysis of empirical data.

Because the actual scenario panning exercise normally involves a small select group, it is important that the scenarios are communicated to the wider audience of stakeholders so that they too can benefit from the reflection of the scenarios and their consequences.

The scenarios can provide a useful 'hypothetical' to engage stakeholders about the

uncertainties of the future, especially in the context of a wider regional planning and visioning exercise.

2.2 Scenario Planning in Context

The overall methodological context in which the scenario planning process was conducted during this Project is illustrated in Figure 1. All aspects are highly interdependent and provided essential input into the scenario planning process.

The process centred on the conduct of two series of workshops conducted in Brisbane, Sydney, Melbourne and Perth and separated by a number of months. The first series of workshops involved addressing the focal question (see textbox below); assessing certain and uncertain drivers of change over a twenty-five plus time frame[1]; and the development of possible future scenarios based on those drivers. In the second workshop, existing and new future options for action (eg plans, strategies and policies) were tested.

[1] Timeframes consistent with traditional strategic planning initiatives

Focal Question

What plausible current and future drivers of change will influence effective citizen involvement in managing the economic and environmental harms caused by invasive animals in the next 25+ years?

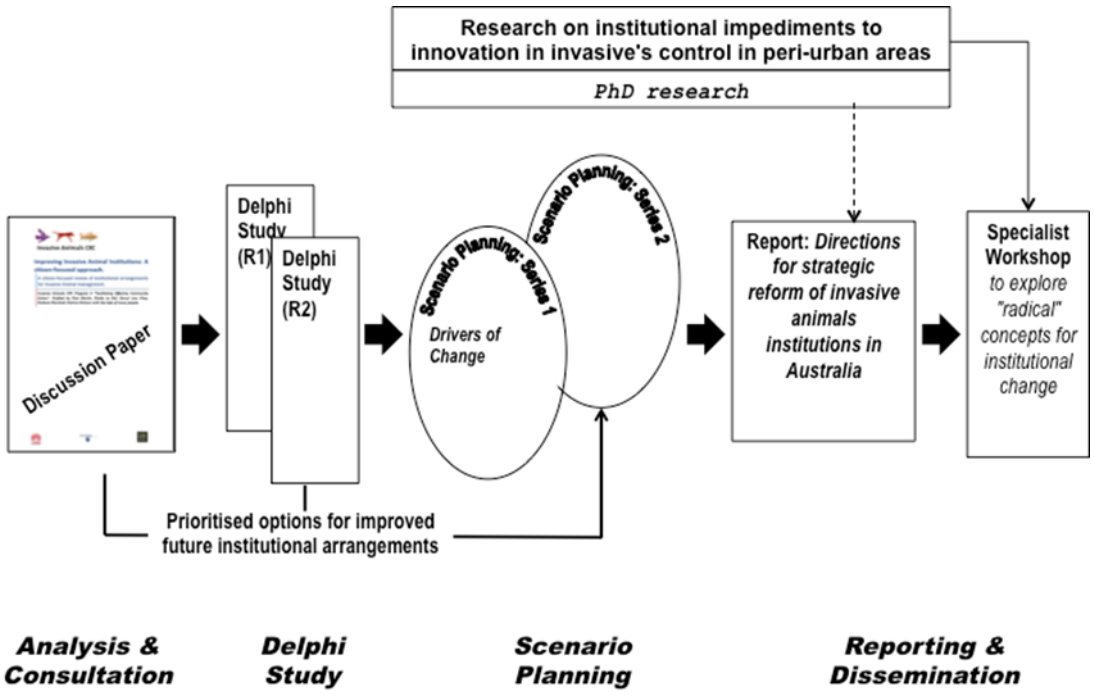
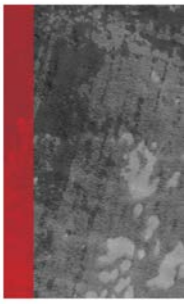


Figure 1 Methodological Pathway for Project 4E3

In order to maximise the opportunity to test a viable set of future options for action in this scenario planning process, it was necessary to assemble a full range of existing and suggested options from a number of sources. Initial input commenced with the previously published Project's Discussion Paper titled: "*Improving Invasive Animal Institutions: A citizen-focused approach*"[ix]. Derived through extensive stakeholder consultation, this document essentially reported a citizen-focused review of institutional arrangements for Invasive Animal management. Hence, it commenced to outline many of the future options that lent themselves to testing in the scenario planning process. This Discussion Paper also contained and provided links to a range of resources for the workshop participants, principally in the form of fact sheets. Through the CRC web site, participants also had access to other reports associated with the project, in particular *Recommendations for the reform of invasive species management institutions*[x] *and Effective Citizen Action on Invasive Species: The*



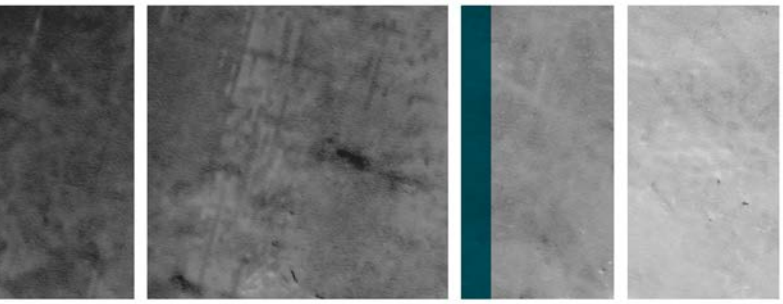
Institutional Challenge[xi]. Appendix A contains a full list of other background resources available to workshop participants.

The range of potential future options were then refined and in some cases developed from new through a two round Delphi survey. The first round required participants to identify key citizen action issues and expected changes that will affect this action and the future 'state of invasiveness'. After these responses were collated into a consolidated list they were circulated to respondents who were then requested to indicate whether they thought that these are likely and what impact they may have. A selection of future options for action from the earlier Discussion Paper and the Delphi study were fed directly into the second workshop for testing (see Figure 1).

The first Scenarios workshop involved participants considering and contributing to an initial draft Vision for reducing institutional barriers (and strengthen supports) for work undertaken by private citizens to prevent the risk or control the costs of harm caused by invasive species. This was followed by participants being asked to identify potential future states of invasive species issues, such as: the drivers of harm, the types of harm, the drivers of citizen action and its potential effectiveness. Each state-based workshop produced two scenarios of possible futures for further consideration in their respective second workshop.

In the second Scenarios workshop, participants considered the challenges to invasive species harm control from the perspective of the scenarios they had created in the previous workshop and which were fleshed out by the Project's research team in-between the workshops. Specifically, they assessed how well the selected future options for addressing these challenges stood up within the scenarios and the institutional issues that needed to be managed. They were also given the opportunity to propose institutional reforms and to consider the practical and political feasibility of these.

The outputs from both workshops and the Delphi survey have subsequently been compiled into this consolidated report. The following sections of the report document in some detail these outputs and conclusions for each state-based workshop series. A summary of the of the workshop participants by the sectors they represented in provided in Appendix B.



3. Background and Current Trends

A consistent context to each of the four state-based scenario planning workshop series was provided by a descriptive overall "Global Context" related to the principal themes of this project, namely: population trends, invasive animals and their management and citizen engagement. This "Global Context" was developed by the Project's research team from the literature and provided to the participants prior to their first workshop. The descriptive context is outlined below.

3.1 A Global Context

Population

The case study areas cover large and varying rural and peri-urban landscapes, from peri-urban areas outlying major cities through to very remote areas. Each case study includes a state capital city which holds a significant proportion of the state population. Each state and capital city is experiencing population growth for the foreseeable future, which is expected to be mostly accommodated in capital city regions.

Beyond metropolitan areas, many peri-urban areas, smaller urban areas, non-metropolitan regional centres, and cluster settlements (for example along growth corridors, transit routes or amenity landscape areas) have been experiencing growth in Australia. Patterns of peri-urbanisation, whereby traditional farming properties are converted to smaller lifestyle blocks and rural residential properties, can be seen in all four case study states. The result of peri-urbanisation processes is land use conversion of previously distinct rural lands into a 'blurred transitional zone' between urban and rural land uses[xii].

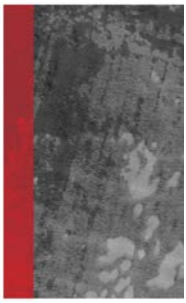
In rural areas, data suggests that properties are becoming larger and are being run by fewer people with smaller family farms selling their land to larger entities[xiii]. There has been a reduction in the number of farmers between 2006 and 2011 of 11% (19,700 farmers)[xiv].

These trends in urbanisation, population and land use are important, as landscape changes may facilitate or impede different actions to manage invasive animals[xv]. For example, peri-urbanisation and urbanisation of rural regions can lead to a heightened risk of invasive animal incursions through increasing interaction of urban communities with agricultural productions areas and increased number of property boundaries may affect the availability of different invasive animal management practices.

Natural Resources Management

Invasive animal species pose a threat to the amenity value of ecosystems, native animal and plant populations, and biodiversity. Whilst there is a gap in the knowledge of the cumulative environmental impacts of invasive animals, they are the principal cause of extinction of native animal species in Australia. Invasive animals directly contribute to the destruction of shelters and the habitat of native animals as well affecting their water and food supplies. Native and invasive animal species also compete for resources and native animals may contract diseases carried by invasive species leading to a decline in population[xvi].

Impact is generally measured based on the impact invasive animal populations have by way of decreasing biodiversity, causing land degradation and reducing water quality. The amenity



value of an ecosystem may also be reduced due to the loss of birds or other species that the community wishes to observe in the environment[xvii].

Extension services availability and quality is important for natural resource management broadly. For example, extension officers play a vital role in communicating to landholders' research findings and best practices related to the management of invasive animal species and environmental rehabilitation. The communication is two ways as landholders provide information to extension officers on pest animal occurrences, which is useful when trying to control outbreaks[xviii].

Technology

There has been an increased role of information technologies over the last decade that dramatically changed our lifestyle, our ability to communicate and our mobility. In particular, the internet and the 'web' have been critical in providing information and the coordination for managing invasive animals. For example, a phone 'app' has become available to assist with identifying invasive animals[xix]. New technologies also provide immediate 'on-the-go'[xx] information that can be easily used by people near or outside major urban centres. There is no doubt that new technologies will play a greater role in controlling the impacts of invasive animal, particularly in the agricultural sector[xxi]. New technologies for invasive animal control aim to become the preferred method for control whilst being effective, safe and humane. For example, mechanical ejectors in conjunction with selective poison, para-aminopropiophenone (PAPP) has the potential to become the method of best practice for fox management[xxii].

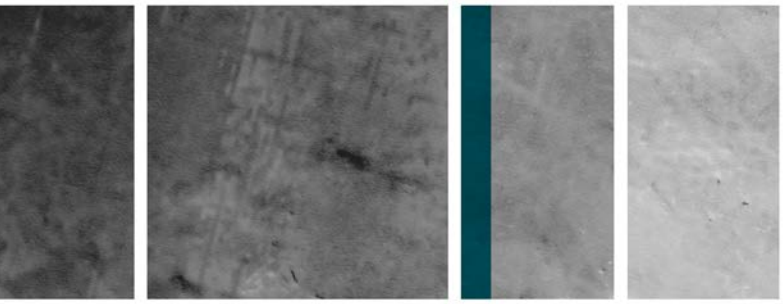
Nevertheless, with the decrease in government and industry revenue due to changing global economic trends, grappling with lower demand for mineral resources and need to diversify and innovate, conflict has accelerated between political and research priorities. Additionally, the private sector represented by large multinational corporations also suffering the credit crunch is investing less in the development of new technologies because of lower market demands. This has led to less consistent focus and investment on policy areas that require longer-term commitments to produce lucrative results such as research and development.

New technologies can be more expensive; hence uptake is slow. However, over a 4-year period it was estimated that the purchase of 200 mechanical ejectors for fox management would save $200,000. The cost of these ejectors was estimated at $45,000-50,000, and once established only one day of additional labour would be required per month[xxiii]. In addition to cost concerns, scientists and land managers may be wary of drastic eradication methods where success is potentially low (except in very small areas) while there may be the ability to devastate non-target species and still not eradicating the subject pest species[xxiv].

Governance and Institutional Arrangements

The political will to support funding, as well as effective coordination and adequate capacity is considered to be very important for the future of invasive species management. However, as outlined earlier, governments are increasingly struggling to deliver high levels of services because of financial constraints. Hence, it is very likely that the control of invasive species will continue to be coordinated based on specific species rather than broader scale management of multiple species and impacts.

Given the likely trend towards reduced funding, some responsibilities may be devolved from state to local governments, with guidance from current state plans. This may correspond with reduced 'on-ground' staffing by state governments and funding being invested in new



incursions rather than already established pest species. Additionally, knowledge transfer between science (communicated through extension officers) and the wider community is likely to continue to be jeopardised[xxv].

While shifts in responsibility may continue to increase due to less government resourcing, effective management of invasive species will require greater acceptance and commitment by landholders and land managers to lead and deliver on-ground management strategies. However, without appropriate regulatory frameworks and associated incentives the extent to which this will occur is uncertain.

Regulatory Frameworks

At a National level, the *Environment Protection and Biodiversity Act 1999* (Cth) identifies numerous feral animals that threaten native species of plants and animals, listing the impact of some as 'key threatening processes' allowing a threat abatement plan to be developed. The Australian Pest Animal Strategy is also a key document that aims to address the negative impacts and prevent the establishment of vertebrate pest animals[xxvi]. Threat Abatement Plans also establish national frameworks to guide and coordinate responses to particular invasive species through identifying the research, management and other actions needed for adequate environmental protection[xxvii].

State specific legislation often declares invasive animal species for a state and give local governments rights to enforce the management of pest animals[xxviii]. State-based strategies and plans can be used to integrate resources and planning, monitoring and management systems and define roles and responsibilities for invasive animal management at a state level. Species-specific state-based strategies and plans are often used to provide stakeholders with a framework to coordinate invasive species control measures and reduce impacts. Legislation, strategies and regulatory arrangements in some states has been under review.

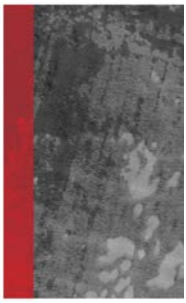
Many state-based plans and strategies rely on complementary and consistent action plans developed at regional and local levels. Local governments play an integral role in invasive animal management through regulatory measures often documented in local government area pest management plans. Local government planning schemes also can influence invasive animal management. Local governments are well placed to facilitate collaboration and partnership between local communities, industry groups, and state government agencies that is responsive to the nature of invasive animal incursions in a particular local area[xxix].

The final value of the regulatory measures described above depends not just on government entities but also on the sustained and coordinated effort of a range of stakeholders, including community members and individual landholders[xxx].

Community Engagement

There is an increasing interest from the rural community in animal welfare. This could coincide with a general increased social acceptance of animal welfare related to invasive animals, possibly including an increase in the perception that welfare negatively impacts control. There may also be a social acceptance of animal welfare related to invasive animals and the need for a higher level of compliance to animal welfare legislation[xxxi].

The potential for constrained community involvement due to competing needs and priorities comprises a key driver for change for invasive animal management. This could include changes such as: less on ground activities by community groups; governments re-taking ownership of roles; no obvious ownership of responsibilities; increases in tree-change/back to



nature movements; growing urban community environmental consciousness; increased populations of previously-managed species; possible establishment and spread of new species; or decreased primary production and increased environmental degradation.

3.2 Queensland

Population

The population of Queensland at June 2014 was 4.72 million people, an increase of 1.5% (70,500 people) from 2013 figures. The population of Greater Brisbane (which excludes the Gold Coast and the Sunshine Coast) at June 2014 was 2.27 million people, which is close to half the total population of Queensland. This is an increase of 1.7% (38,500 people) when compared to data from 2013. At the same time, the population of Queensland, outside Greater Brisbane was 2.4 million, an increase of 1.3% (32,000 people), making it the fastest growing population (outside of capital cities) of all Australian States[xxxii]. In 2014, the average population density of Queensland was 2.7 people per square km. The population density in Greater Brisbane was 140 people per square km[xxxiii].

The Queensland Government Statistician's Office provides estimates of future population growth based on a range of assumptions about lifespan, rates of fertility and immigration, for all Australian states and territories. The State's population is estimated to increase from about 4.5 million people in 2011 to 7.1 million by 2031, and to 10 million by 2061, under the medium range estimates[xxxiv]. Population age structure varies across the region, with a relatively high percentage of 20 to 24 year-olds in Greater Brisbane (39%) compared to the rest of the State (33%). A higher percentage of people above 65 live in more rural and coastal areas (15%) compared to in Greater Brisbane (12%)[xxxv].

Natural Resources Management

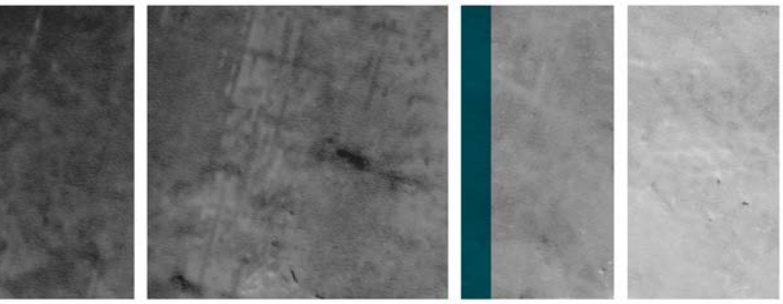
While the true impact of invasive animals on Queensland's environment is unknown, foxes and feral cats predating on native fauna species are said to have led to a decline or extinction of 17 native species in Queensland[xxxvi]. Some other invasive animals in Queensland include feral dogs, feral pigs, feral goats, cane toads, pest fish (including tilapia and carp), and invertebrates such as the feral bee and feral ants (the red fire ant, electric ant and yellow crazy ant)[xxxvii]. Since the 1990s feral deer numbers in Queensland have increased significantly, with small populations of feral deer now in many peri-urban areas[xxxviii].

Governance and Institutional Arrangements

The *Queensland Feral Pest Initiative Guidelines* states there will be $4 million available over 3 years for increasing capability for wild dog control and $10 million in the 2015-16 financial year for Australian Government Pest Animals and Weeds (APGAW)[xxxix].

Regulatory Frameworks

The *Land Protection (Pest and Stock Route Management) Act 2002* (QLD) is the most important piece of legislation governing the action that can be taken to control declared invasive animal species in Queensland, as well as providing local government the right to



enforce the management of pest animals[xl]. There are other relevant Commonwealth and State legislation and regulations that influence the management of invasive animals in Queensland[xli].

The *Queensland Feral Pest Initiative* has been open for expressions of interest (closed 6 October 2015) with the majority of funding allocated 'to cluster fencing arrangements in areas with high wild dog density and evidence of high impacts.' Financial support, albeit limited will also be offered for pest management projects in drought-affected areas[xlii].

The *Wild Dog Management Strategy 2011-16* is a Queensland specific document developed to allow the creation of management plans to 'achieve long-term, effective management of wild dogs' by stakeholders[xliii].

The *Queensland Pest Animal Strategy 2002-06* is currently under review by Biosecurity Queensland. This document will provide clear direction to the government and community on how to best manage animal pests in an efficient manner on a state-wide scale[xliv].

The *Queensland Parks and Wildlife Service Pest Management Plan 2010-2015* has been developed to meet the requirements under the Land Protection (Pest and Stock Route Management) Act (2002).

The *Brisbane Invasive Species Management Plan 2013-17* '*aims to establish and promote the cooperative management of invasive plant and animal species and limit their adverse environmental, social and economic impacts within Brisbane City*.'[xlv]

3.3 New South Wales

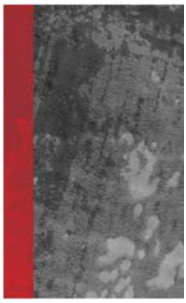
Population

The population of New South Wales at June 2014 was 7.52 million people, an increase of 1.5% (109,100 people) from 2013 figures. Based on these figures New South Wales had the highest population growth between 2013 and 2014 of any Australian State or Territory. The population of Greater Sydney at June 2014 was 4.84 million people, which is just under two-thirds of the total population of New South Wales[xlvi]. At the same time, the population of New South Wales, outside Greater Sydney was 2.68 million, an increase of 24,900 people[xlvii]. In 2014, the average population density of New South Wales was 9.4 people per square km. The population density in Greater Sydney was 390 people per square km[xlviii].

The New South Wales Department of Planning and Environment provides estimates of future population growth based on a range of assumptions about lifespan, rates of fertility and immigration, for all Australian states and territories. The State's population is estimated to increase from about 7.2 million people in 2011 to 9.2 million by 2031, and to 10.2 million by 2041[xlix]. Over the next few decades, most of New South Wale's growth is projected to occur in Sydney, where the population is projected to increase from 4.7 million in 2012 to between 8 and 8.9 million by 2061.[l]

Natural Resources Management

Key animal pests in New South Wales include wild dogs, feral pigs, rabbits, foxes, feral goats, feral cats and carp[li]. Small invertebrate species such as tramp ants and exotic bees can also create significant adverse effects on the economy and environment, and some other pest animals are more localised problems (such as feral horses, wold deer, rats and cane toads).



Pest birds such as common mynahs, exotic turtles and red fire ants are emerging or potential threats. The NSW Invasive Species Plan aims to '*prevent new incursions, contain existing populations and adaptively manage widespread species*'.[lii]

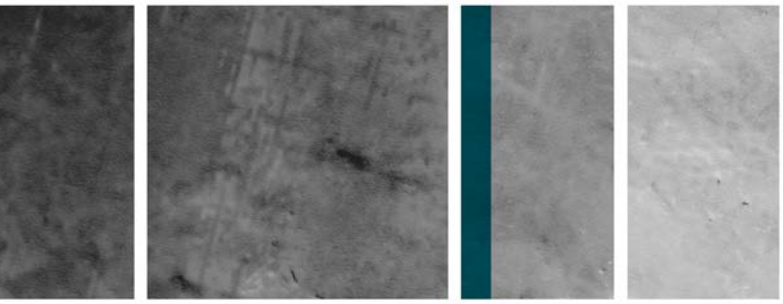
Governance and Institutional Arrangements

There are numerous organisations involved in the management of invasive animal species in New South Wales with an objective of the *Draft NSW Invasive Species Plan 2015-2022* to facilitate improved communication and coordination of activities between key stakeholders, including organisations and individuals.[liii]

The principal agency in charge of coordinating activities to manage invasive animal species in New South Wales is the Department of Primary Industries (DPI). There are however a number of other key organisations – government departments, public and private land managers, industry and community groups – who in collaboration with the DPI and each other, are responsible for activities related to invasive animal management. Government departments include Crown Lands, Local Land Services, Local Control Authorities and the Office of Environment and Heritage.[liv]

Table 1 illustrates the responsibilities or roles of key stakeholders with regards to invasive animal management in New South Wales.

One of the objectives of the *Draft NSW Invasive Species Plan 2015-2022* is to motivate private landholders and community members to actively contribute to the identification of invasive animals as well as assist to exclude and respond to new and existing outbreaks. Increasing awareness and an understanding of the threat and impacts of invasive animals through improved and effective communication campaigns is a proposed action. A key suggestion made in the plan is to 'develop and implement incentives where appropriate for the management of invasive species on non-productive land and to protect biodiversity.'[lv]



Role or Activity	Responsibility			
	Occupier (rural /urban)	Community or local council	State government	Federal government
1. On-farm biosecurity	PR	NR	NR	NR
2. On-farm pest control	PR	NR	NR	NR
3 Backyard management	PR	SR	NR	NR
4. Public land management	PR	SR	SR	NR
5. Commercial production (eg agriculture, horticulture etc)	PR	NR	NR	
6. Legislation	NR	NR	PR	SR
7. Stakeholder awareness	SR	SR	SR	NR
8. Hands on/field activities (eg treatment, spraying, trapping)	PR	SR	SR	NR
9. Diagnostics/identification	PR	SR	PR	NR
10. Domestic market access	SR		PR	NR
11. Export market access	SR	NR	SR	PR
12. Training and engagement	PR	SR	SR	NR

Key to colours

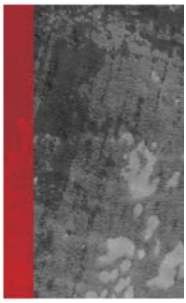
PR	Means this group has primary responsibility
SR	Means a shared responsibility
NR	Means no responsibility

Table 1 Representation of roles and responsibilities for invasive animal management[lvi]

Regulatory Frameworks

The *New South Wales Invasive Species Plan 2008-2015*[lvii] has been under review with public consultation for the *Draft NSW Invasive Species Plan 2015-2022* closing on 2nd October 2015.[lviii]

The current legislative framework for the management of invasive animal species in New South Wales consists of the *Threatened Species Conservation Act 1995*, the *Nature Conservation Trust Act 2001* and parts of the *National Parks and Wildlife Act 1974*. However, the New South Wales government is currently in the process of developing a new legislative



framework for invasive species management. The government has been considering a report by an independent panel reviewing biodiversity legislation in New South Wales.[lix]

It is anticipated that when the New South Wales *Biosecurity Act* is enacted it will remove current inconsistencies and duplication with regards to invasive animal management, and '*further empower industry and stakeholders to self-manage invasive species and clarify their rights, responsibilities and obligations*.'[lx]

The proposed *Biosecurity Act* will be read in conjunction with the following Acts to achieve its goals.[lxi]

- Local Government Act 1993
- Local Land Services Act 2013
- National Parks and Wildlife Act 1974
- Threatened Species Conservation Act 1995
- Forestry and National Park Estate Act 1998
- Crown Lands Act 1989
- Crown Lands (Continued Tenures) Act 1989
- Native Vegetation Act 2003
- Prevention of Cruelty to Animals Act 1979
- Game and Feral Animal Control Act 2002

The *NSW Wild Dog Management Strategy 2012-15* developed by the Wild Dog Working Group and Biosecurity NSW '*aims to minimise the negative impacts of wild dogs on primary production, the environment and the wider community by clearly defining the roles and responsibilities of land managers and other community members in managing wild dogs*.'[lxii]

Codes of Practices for key pest animal species are also available on the Biosecurity NSW website providing information on '*general information on species biology and impact, best practice management that incorporates acceptable control techniques, and the relative humaneness of control techniques*.'[lxiii]

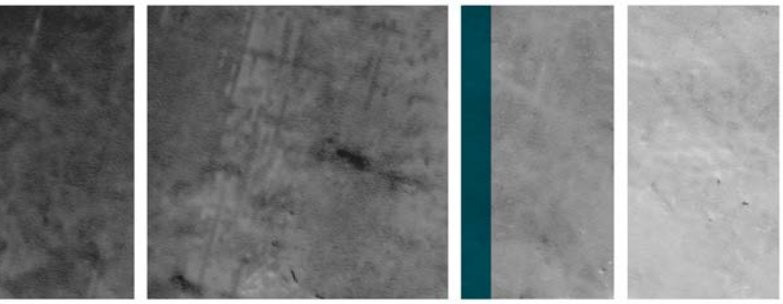
The *State of the Catchments – Invasive species* reports are available for all 13 catchments in New South Wales. The 2010 reports are the first of their kind to '*assess the state of natural resources in the region, the pressures impacting on them and the management actions being undertaken to address the pressures*.'[lxiv]

3.4 Victoria

Population

The population of Victoria at June 2014 was 5.84 million people, an increase of 1.9% (106,700 people) from 2013 figures. Based on these figures Victoria had the second highest population growth between 2013 and 2014 behind New South Wales. The population of Greater Melbourne at June 2014 was 4.44 million people, which is 76% of the total population of Victoria[lxv].

At the same time, the population of Victoria outside Greater Melbourne was 1.4 million, an increase of 11,000 people[lxvi]. In 2014, the average population density of Victoria was 26 people per square km. The population density in Greater Melbourne was 440 people per square km[lxvii].



The Victorian Department of Transport, Planning and Local Infrastructure provides estimates of future population growth based on a range of assumptions about lifespan, rates of fertility and immigration for all Australian states and territories. The State's population is estimated to increase from about 5.54 million people in 2011 to 7.7 million by 2031, and to 10 million by 2051[lxviii]. Over the next few decades, most of Victoria's growth is projected to occur in Melbourne, where the population is projected to increase from 4.4 million in 2014 to between 7.8 million by 2051. The population of regional Victoria over the same timeframe is expected to increase from 1.4 million to 2.2 million, dependant on people moving out of Greater Melbourne.[lxix]

Natural Resources Management

Invasive animal species in Victoria have a negative impact on farms, parks, forests and waterways. In particular, '*they also pose the second biggest risk to rivers, streams and nationally significant wetlands*'[lxx]. Invasive animals also place pressure on productive systems in Victoria through increased grazing pressure, preying on livestock and spreading weeds. These issues place increased stress on rural communities that derive their livelihood from the land through increased financial strain. Additionally, invasive animals can spread disease to humans and other animals.[lxxi]

Established pest animal species in Victoria include the European hare, goats, pigs, red fox, wild dog, dingo-dog hybrid and European rabbit. High-risk invasive animals are those which are not currently considered to be established in the wild in Victoria, however if one of these species was allowed to establish it would be a considerable threat to the environment, social values and the economy. High-risk animal species in Victoria include Asian black-spined toad, cane toad, house crow, red-eared slider turtle and smooth newt[lxxii]. Other invasive animal species present in Victoria include cats (feral or wild), Indian myna, mice and cockatoos.[lxxiii]

The most cost effective method of management of invasive species is to prevent their entry into Victoria and the establishment of a population. Figure 2 below from the Victorian Invasive Plants and Animals Policy Framework illustrates the invasion curve and return on investment if an invasive animal pest enters a new area and the action that can be taken at each stage of the invasion.

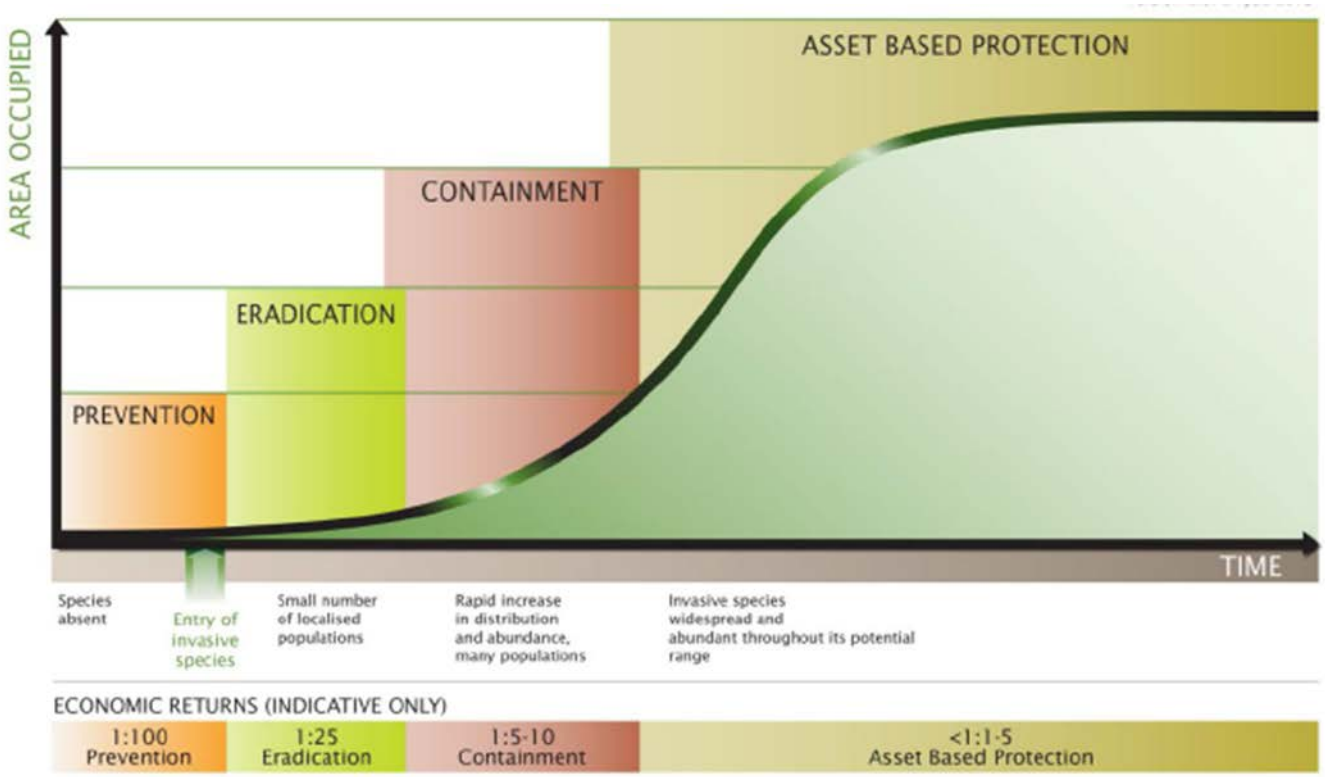
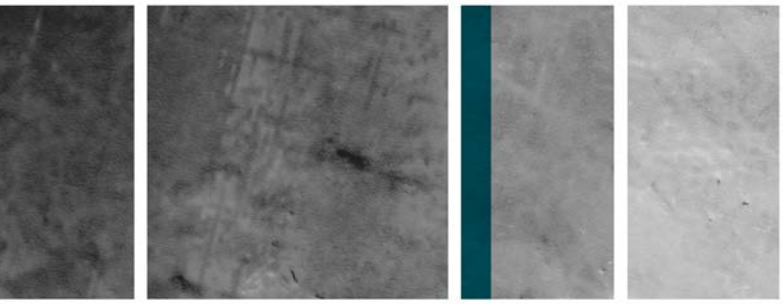


Figure 2 Generalised invasion curve showing actions appropriate to each stage[lxxiv]

Through the *Invasive Plants and Animals Policy Framework*, the Victorian Government acknowledges that research and development is a critical component of evidence-based management of invasive animal species to discover new technologies and further knowledge to combat the issue. The framework also states '*the Victorian Government's investment in research needs to be sufficient to ensure future management is not seriously constrained by insufficient R&D support*.'[lxxv]

The Victorian Government has acknowledged that community involvement is essential for effective biodiversity conservation and invasive animal control. The aim is to develop state-wide cooperation to achieve invasive animal control[lxxvi]. Government staff and stakeholders conduct regular awareness-raising programs and educate the public with the intention to increase the knowledge of community members on invasive animal management[lxxvii]. These partnerships between key stakeholders helped to develop an overarching approach and sense of ownership by the community of the invasive animal issue.[lxxviii]

The *Victorian Rabbit Management Collaboration Initiative* is an example of how community-led action in invasive animal species may continue to occur in the future. The initiative will deliver six strategies that target skills, learning and network development and community-based innovation. Pro-active groups will be supported to work together to plan, resource, and coordinate their effort towards more sustainable and effective rabbit management in Victoria. The strategies are:



- '*A 12-month training, mentoring and learning network program to develop the next generation of rabbit management experts, with trainees from all regions of Victoria.*
- *A small grants and workshop program to improve coordination across groups involved in rabbit management, including mapping and networking capability.*
- *Support for Blackberry Action Groups in Victoria to extend their focus to rabbits.*
- *Facilitation of opportunities to improve warren ripping quality assurance.*
- *Facilitation of opportunities to better understand and target funding flows for more effective community-led action on rabbits.*
- *Promotion of stories that communicate what can be achieved through community-led action on rabbits.*'[lxxix]

Governance and Institutional Arrangements

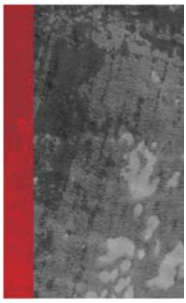
The *Victorian Pest Management Framework* completed in 2002 utilised an asset and risk based approach to invasive animal management. This allowed a greater focus to be placed on new and emerging invasive animal species. However, the new framework developed by the Victorian Government states that due to developments, which are not described, the direction of invasive animal policy is needed, and this will continue to evolve over the coming year as priorities change.[lxxx]

The *Victorian Invasive Plants and Animal Policy Framework* describes biological control agents for invasive animal management as a public, non-excludable public good. The report indicates that as everyone benefits from their use and spread across a landscape (and it is impossible to exclude someone from obtaining the benefits), a private landholder or user cannot profit from this, and therefore governments will be the only possible provider of these types of goods or services[lxxxi]. The goals of the *Victorian Invasive Plants and Animals Policy Framework* are to prevent and be prepared, eradicate, contain and protect assets in relation to the management of invasive animal species. This will be achieved through partnerships, the development of legislation and policy, stakeholder engagement, increased monitoring, evaluation and reporting, and continued research and development[lxxxii]. As of early 2016, only *Module 1 – Weed and Pest Animals* is published on the Department of Economic Development, Jobs, Transport and Resources website.

The Department of Environment and Primary Industries is reported as the principal agency in charge of managing invasive species. However since the State Government election in 2014 this portfolio has been absorbed into the Department of Economic Development, Jobs, Transport and Resources. Catchment management authorities and local government departments also have a significant role in managing invasive animal species.

Given the likely trend towards reduced funding, some responsibilities may be devolved from state to local governments, with guidance from current state plans. This may correspond with reduced 'on-ground' staffing by state government and funding being invested in new incursions rather than already established pest species. Additionally, knowledge transfer between science (communicated through extension officers) and the wider community is likely to continue to be jeopardised.[lxxxiii]

Effective coordination of invasive species management has been identified as a key driver of change in Victoria. This coordination might include sponsorship via community good from corporates. It also requires political, biological and funding cycles to be aligned using evidence based tools, therefore avoiding government funding for 'popular' outcomes.



Regulatory Frameworks

The Victorian Department of Economic Development, Jobs, Transport and Resources website states that a new, stand-alone legislative framework for managing invasive species is currently under development.[lxxxiv]

Currently, the main piece of legislation responsible for governing the management of invasive animal species is the Catchment and Land Protection Act 1994 (VIC), the former Department of Primary Industries now the Department of Economic Development, Jobs, Transport and Resources is responsible for administering the Act. Other relevant legislative instruments include the *Prevention of Cruelty to Animals Act 1986* (VIC) and *Flora and Fauna Guarantee Act 1988* (VIC).

The *Invasive Plants and Animals Policy Framework* is the overarching document detailing the approach the Victorian Government is taking with regards to managing existing and potential invasive animal species. This document must be read in conjunction with the *Biosecurity Strategy for Victoria* and the *White Paper on Land and Diversity*.[lxxxv]

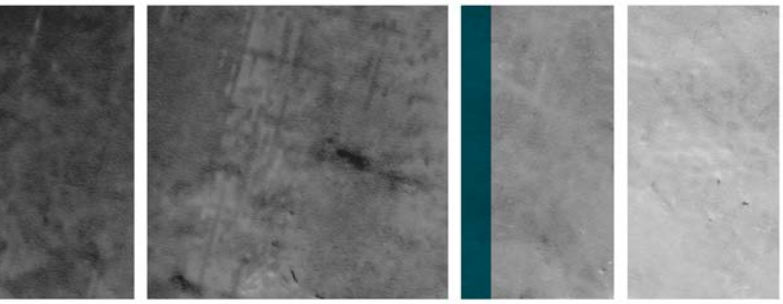
The new Invasive Plants and Animal Policy Framework has made the case for government investment in invasive animal species management based on:

- Market failure
- Productivity, market-access and human health spill-overs
- Risk of public harm
- Access to policy instruments
- High co-ordination costs
- Public goods and invasive species
- Beneficiary and risk creator pays
- Return on investment
- Efficient delivery of services
- Cost sharing approaches[lxxxvi]

A key report is the *Victorian Rabbit Management – Collaboration Initiative*, which aims to '*develop strategies to support more sustainable, effective community-led action on rabbits in Victoria and to extend the approach to other jurisdictions*[lxxxvii].' Another piece of relevant policy is the *Non-indigenous Bird Management Policy*.[lxxxviii]

There are also regional (e.g. *North Central Invasive Plants and Animal Strategy*[lxxxix]) and individual local government (e.g. *Nillumbik Shire Council Invasive Species Action Plan 2015*[xc]) plans for invasive animal management.

The lack of consistency in the philosophical approach to enforcement and compliance was considered to be a key driver of change in invasive species management in Victoria. This is associated with trends that are considered to be likely, such as: increased scepticism to government efforts; ineffective management; increasing reactive management; outbreaks of species under control; shifting levels of community uptake of management; a loss of perception of importance of issues relating to invasive species.[xci]



3.5 Western Australia

Population

The population of Western Australia at June 2014 was 2.57 million people, an increase of 2.2% (54,400 people) from 2013 figures. The population of Greater Perth at June 2014 was 2.02 million people, which is 79% of the total population of Western Australia. This is an increase of 2.5% (48,400 people) when compared to data from 2013, making it the fastest growing capital city in Australia. At the same time, the population of Western Australia, outside Greater Perth was 552,200, an increase of 1.1% (6,000 people)[xcii]. In 2014, the average population density of Western Australia was 1 person per square km. The population density in Greater Perth was 315 people per square km and 0.2 people per square km for the rest of Western Australia.[xciii]

The Australian Bureau of Statistics provides estimates of future population growth based on a range of assumptions about lifespan, rates of fertility and immigration for all Australian states and territories. Western Australia's population is estimated to increase from about 2.4 million people in 2012 to 6.4 million by 2061, under the medium range estimates[xciv]. Most of the population growth is expected to be in Greater Perth with an increase from about 1.9 million people in 2012 to 4.4-6.6 million by 2061. In the rest of Western Australia it is projected that the population will increase to 950,800 people by 2061, under medium range estimates.[xcv]

Natural Resources Management

Key invasive animal species in Western Australia include feral cattle, goats, camels, rabbits and wild dogs. Of particular importance are cane toads, feral cats and foxes[xcvi]. Pest animals in Western Australia cause damage by predating on native, domestic and production animals, destroying crops, threatening native ecosystems, and have the potential to create human health hazards.[xcvii]

A reduction in knowledge transfer and practical support is an issue in invasive species management. However, rather than a lack of information, sometimes the biggest barrier is a lack of 'driving on ground' actions. The level of importance individuals place on volunteering and collective good activities was associated with a continued declining input into community activities and declining appreciation for long-term collective actions. Reduced agency focus on investment in landowner engagement, extension, and communication comprises the most important key driver of change in invasive animal management in the region.

Governance and Institutional Arrangements

There are numerous departments involved with invasive species management in Western Australia. The Department of Agriculture and Food, Parks and Wildlife, and Fisheries is the lead agency for invasive animal management in Western Australia. The Department of Parks and Wildlife, and the Department of Fisheries also have essential roles in invasive animal management[xcviii]. Other relevant stakeholders include local governments, utilities and government authorities, landholders and community groups[xcix]. Figure 3 below outlines the Biosecurity Governance Framework in Western Australia.

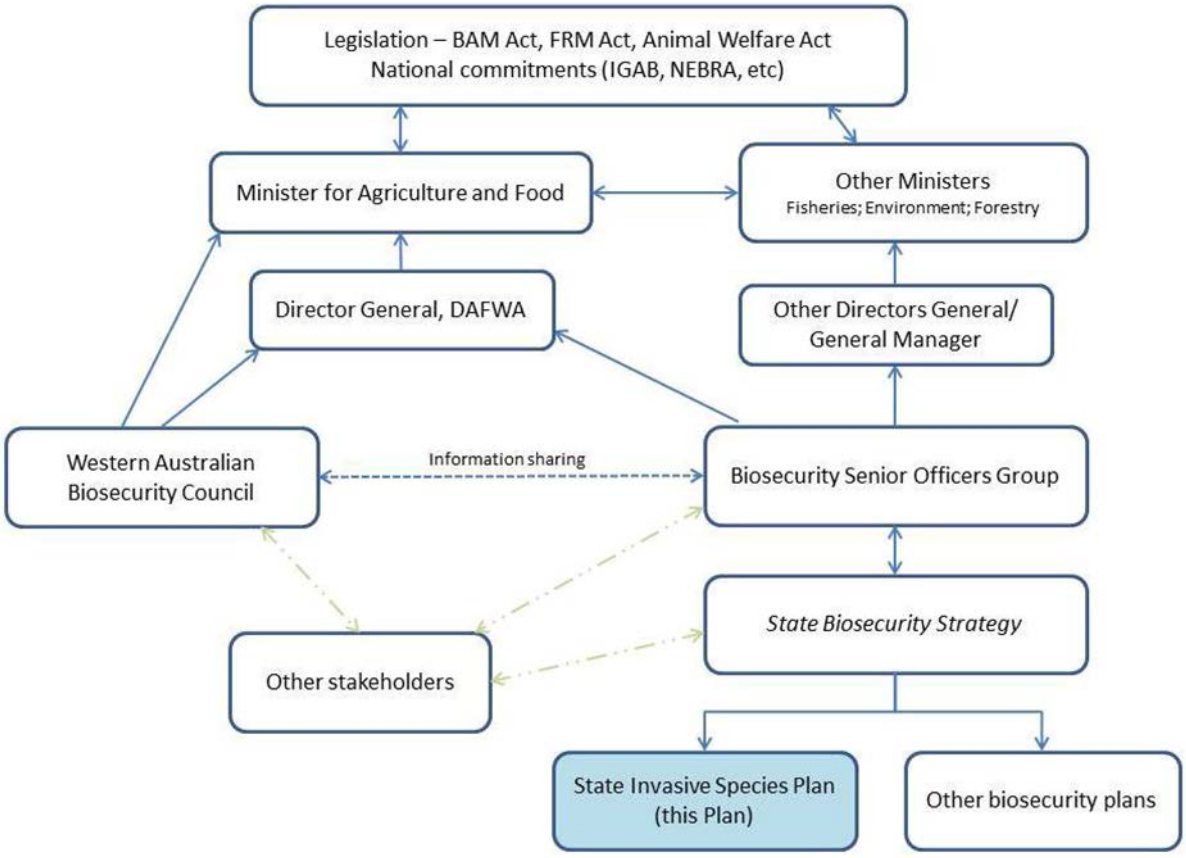
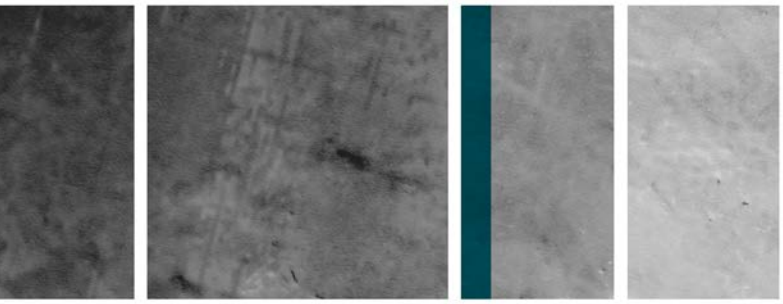


Figure 3 The state biosecurity governance framework in Western Australia[c]

Regulatory Frameworks

There are several pieces of legislation that govern invasive animal management in Western Australia. The most important is the *Biosecurity and Agriculture Management Act 2007* and other relevant instruments include the:

- *Agricultural Produce Commission Act 1988*
- *Agricultural and Veterinary Chemicals (Western Australia) Act 1995*
- *Animal Welfare Act 2002*
- *Conservation and Land Management Act 1984*
- *Emergency Management Act 2005*
- *Fish Resource Management Act 1994*
- *Forest Products Act 2000*
- *Health Act 1911*
- *Local Government Act 1995*
- *Swan and Canning Rivers Management Act 2006*
- *Wildlife Conservation Act 1950*



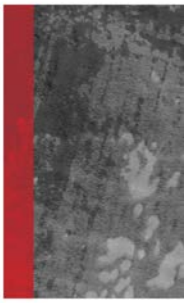
The *Invasive Species Plan for Western Australia 2015-2019* outlines the State's approach to managing current and emerging invasive species populations that have the potential to cause harm to the environment, economy and people of Western Australia.[ci]

The Western Australian Department of Environment and Conservation also has produced a guide to managing introduced and nuisance animals in Western Australian wetlands.[cii]

3.6 Overall Summary

The states of Queensland, New South Wales, Victoria and Western Australia contain a wide range of landscapes, land uses, and climates, where the key invasive animal species vary from place to place. However common elements in invasive animal management exist across the four states, including land use changes associated with urbanisation and peri-urbanisation, demographic changes in rural areas and new technologies influencing invasive animal management options (despite sometimes slow uptake).

Invasive animals represent very real and serious threats to biodiversity, amenity and industry in all four states. Decreased consistent research and development investment from the private sector and trends for decreased government funding resulting from fiscal government constraints represent a significant challenge. This has caused some state governments to instigate a shift in funding focus towards preventing new incursions due to greater return on investment in invasive animal management. These funding pressures have also caused an increased focus on the role of landholders and community members. Effective invasive animal management requires coordinated action and commitment from a wide range of stakeholders including landholders, communities, extension services, and local, state and federal government.



4. Future Options

The two round Delphi survey, supplemented by the Scoping Study (V1.2) (see Appendix A), produced a composite set of nine "Future Options" for institutional improvement to more effectively support (and reduce impediments to) citizen action for consideration in the scenario planning process. The nine sets of Options outlined below, include:

- Future Option 1: *A stronger focus on private funding*
- Future Option 2: *A more entrepreneurial strategy for public funding*
- Future Option 3: *Integrated performance improvement reporting*
- Future Option 4: *Agreed stewardship roles and accountability*
- Future Option 5: *More efficient, effective and fair regulation*
- Future Option 6: *Citizen-friendly systems*
- Future Option 7: *Greater appreciation of citizen contribution*
- Future Option 8: *Landscape-scale integrated ('nil-tenure') strategies*
- Future Option 9: *More effective public communications*

Future Option 1: *A stronger focus on private funding*

This Option proposed a strategy targeting significant increases in private funding with possibilities including:

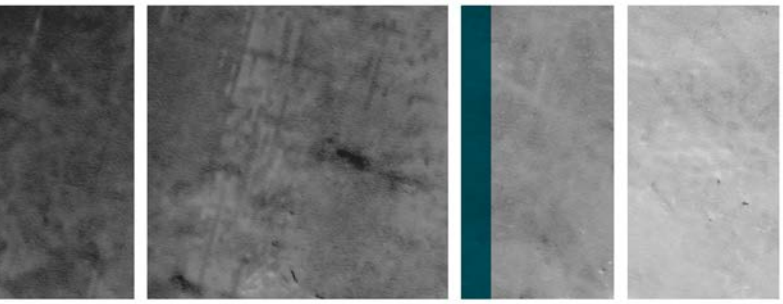
1. A focus on private philanthropy investment into invasive species control (e.g. by promotion of the benefits, taxation deductions, strategic joint ventures);
2. Use crowd-funding from Australia or overseas;
3. Invasive species market instruments, for example:
   a. In bio-banking or carbon or offsets;
   b. Mandatory pest status certificates of properties prior to transfer;
   c. Invasive species management in all industry stewardship schemes;
   d. A market instrument(s) focused on invasive species control; or
   e. Financial instruments (eg bonds, insurances) for risk-creating activities;
4. Invasive species management in eco-label and self-regulation programs;
5. Technology innovation/investment support for private investments in innovation; and
6. Demonstrate and promote the economic benefits of invasive species control investment.

Possible implementation mechanisms: A national strategy for private funding options.

Possible implementation responsibility: A group with high-level private markets expertise, involving major farming/business groups and conservation NGOs to lead implementation.

Timing and duration: Ongoing once strategies are established.

Anticipated benefits: More funds and stronger engagement with industry; stronger public/private partnerships in invasive species management.



Possible adverse effects: Further decline in public funding; 'cherry picking' of opportunities; complexity; the risk of program manipulation; privatization of innovations.

Future Option 2: *A more entrepreneurial strategy for public funding*

This Option calls for the redesigning of public funding strategies to meet changed conditions (e.g. reduced government budgets, climate change, more international trade, changing land use). Possibilities include:

1. Redesign funding strategies around (for e.g.) negotiated regional outcomes, multiple benefits and ongoing support rather than stop/start investments on specific sites;
2. Effectiveness to be evaluated in partnership with the community to continually improve performance (e.g. transparent benefit/cost evaluation, use of best practices, local adaptation);
3. Make invasive species control a requirement for all public NRM programs (where relevant);
4. Private funding leverage to be used as a selection criteria for public projects; and
5. Use taxes and rates or rate relief to attract private funds. Possibilities include:
    a. Stronger tax deductibility or as a condition of agricultural tax deductions;
    b. Taxation revenue targeted ('hypothecated') to invasive species, e.g. mining royalties or ammunition tax; and
    c. Local rates hypothecated to local invasive species management (eg. rates by RBGs in WA or LLSs in NSW, or by local government).

Possible implementation mechanisms: A COAG initiative, coordinated across Australia. Inclusion of stewardship investment in the taxation reform debate.

Possible implementation responsibility: National and State Environment and Agriculture Departments. Business and NGO sector partnerships.

Timing and duration: Ongoing, but continually adapted based on outcomes.

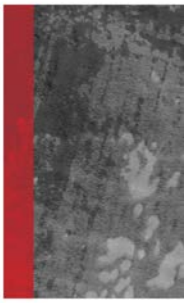
Anticipated benefits: Significant leverage on the declining public funds; more involvement of the private sector, greater program creativity.

Possible adverse effects: Project management complexities; failures due to lack of experience; partial dependence on public funds; tax system distortion.

Future Option 3: *Integrated performance improvement reporting*

A comprehensive and transparent system of performance review and reporting, focused on continuing improvement (not merely evaluation). Possibilities include:

1. Integrated monitoring and reporting invasive species management status and issues on a national, state and region basis: 'State of Invasives' reporting;
2. Landscape-scale regional invasive species management objectives and plans set through stakeholder consultation;
3. Negotiated performance commitments e.g. by industry, region, or program
4. Open reporting of performance;



5. Open reporting by public agencies of investments, outcomes, causes of outcomes and continuing improvement plans and
6. Overall reporting of funds invested, by whom, and in what, overall outcomes, and plans to jointly improve investment performance.

Possible implementation mechanisms: Productivity Commission or ANAO led project, with national and state Agriculture or Environment departments.

Possible implementation responsibility: National and state Agriculture or Environment departments.

Timing and duration: commencement within 12 months with annual reporting cycles.

Anticipated benefits: greater transparency; a strong stimulus for systematic performance improvement.

Possible adverse effects: transaction costs; too narrow criteria; unreliable assessment performance; excessive oversight and reduced flexibility.

Future Option 4: *Agreed stewardship roles and accountability*

This Option would involve a clear specification of responsibility and accountability of those who should be involved in invasive species management. Possible elements include:

1. A negotiated agreement on the obligations, rights and reasonable expectations, of landholders and land managers, government and industry;
2. Agreed legal accountabilities and enforcement principles (perhaps at a regional basis), linked to enforcement action;
3. Equivalent stewardship responsibilities and performance supervision for public and private land managers; and
4. Implementation supports, based on landscape values, economics and capacity, to ensure effectiveness is fair.

Possible implementation mechanisms: A 'summit' to negotiate invasive species management roles and responsibilities, outcomes ratified through COAG.

Possible implementation responsibility: A national champion or group of champions, possibly including ALGA, farmer and NGO organisations.

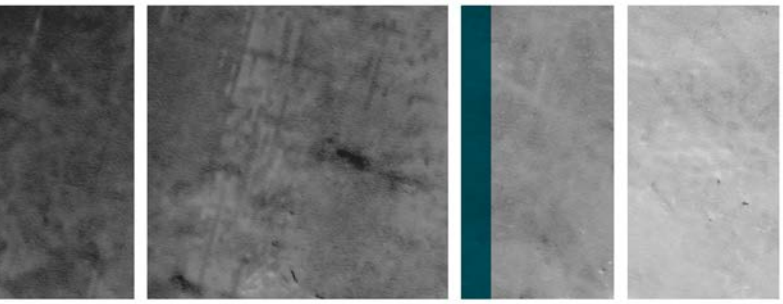
Timing and duration: Ongoing.

Anticipated benefits: Greater clarity and endorsement of accountability actions; a consensus base for management.

Possible adverse effects: Gaps in accountability; crystallization of disagreements and public awareness of limited capacity.

Future Option 5: *More efficient, effective and fair regulation*

Implementing this Option would entail the harmonization of Regulation across Australia to address inconsistencies and gaps, under-implementation and inefficient administration. Possibilities include:



1. Unified invasive species law (or system of laws), either a national law, or closely coordinated national, state and local government laws;
2. More consistent, clear and universal definitions and principles e.g. pest species declarations;
3. Clarification of rules and explanations, streamlined administration, harmonised declarations and control measures, and delegate approvals;
4. Reforms to reflect the increasing threat and changing nature of invasive species problems (e.g. climate change, increased trade, more diverse land use etc);
5. Active continuous improvement approach to regulation. Assess performance, share performance improvement knowledge and adjust regulation;
6. A more proactive approach to changing animal welfare expectations in the community, and the resulting rules and processes;
7. Community engagement in the development and refinement of regulation, and in enforcement tailored to regional conditions; and
8. Reflect local conditions, capacity and fairness in regulatory and program implementation.

Possible implementation mechanisms: COAG and state agriculture and environmental agencies.

Possible implementation responsibility: COAG, regulatory agencies such as Attorney Generals and state agriculture and environmental agencies with farmer and environmental NGO consultation.

Timing and duration: agreement within 2 years, implementation over 3 years and scheduled regulatory review.

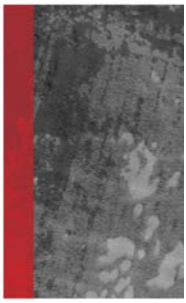
Anticipated benefits: more effective and efficient, and hopefully more fair, regulation; a clearer and more principle based approach to implementation and enforcement.

Possible adverse effects: conflict,; regulatory regression or scope-creep during the reform process.

Future Option 6: *Citizen-friendly systems*

This Option seeks an Administration that is user-friendly and transparent, with 'customer-focused' design and feedback, to minimise frustrations and administrative costs and improve experiences. It would involve:

1. An administration professionally redesigned for improved user experience and engagement and characterised by:
    a. Streamlining compliance and certification administration (e.g. permits, access to pesticides or herbicides etc)
    b. Improved arrangements to access support and reporting (e.g. funding applications, training and certification, reporting and acquittals).
    c. Responsive "citizen science" reporting, including feedback and follow-up when citizens provide information or reports;
2. Users in the 'co-creation', design and review of programs and project management systems;
3. Agency performance objectives to include citizen experience as well as program performance;



4. Widespread training and use of 'scientific best practice' engagement methods; and
5. Reviews and accountability for the use-ability, usefulness and 'friendliness' of administration systems.

Possible implementation mechanisms: Productivity Commission led project, with national and state Agriculture or Environment departments; farming and environmental NGO steering group.

Possible implementation responsibility: Productivity Commission led project, with national and state Agriculture or Environment departments; farming and environmental NGO steering group.

Timing and duration: 2 year initial process review and design; progressive implementation, scheduled performance reviews.

Anticipated benefits: reduced frustrations and transaction costs for citizens; reduced coordination expenditure overall; better agency/citizen relations.

Possible adverse effects: costs of design and implementation; disenchantment if improvement does not occur.

Future Option 7: *Greater appreciation of citizen contribution*

This Option seeks to build and maintain citizen engagement, arrangements that clearly recognize and demonstrate appreciation for the contributions of citizens through:

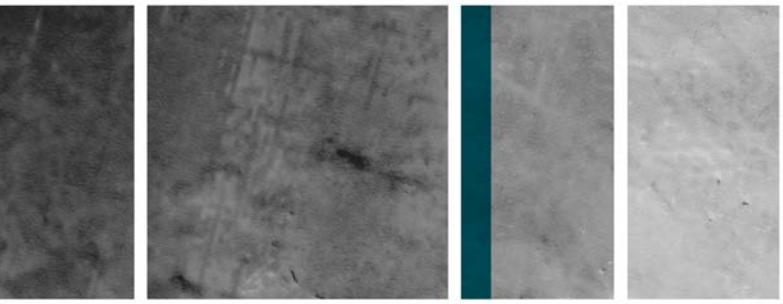
1. A collaborative approach to the design and implementation of programs and projects, with citizens as valued partners;
2. Events and awards to thank, recognize and reward citizens;
3. Citizen involvement in participatory budgeting and evaluation of citizen experience;
4. Greater 'citizen-scientist' involvement in data gathering, reporting, interpretation, publications and research communication;
5. Acknowledge and act on citizen communications – for example when citizens report issues or data;
6. Greater use of 'customer' feedback on satisfaction with the engagement experience and relationships; and
7. Agreed principles for financial support for citizens who help manage the system (e.g. expenses and travel etc).

Possible implementation mechanisms: Review and redesign by National and State agency task forces with independent consultancies, and farming and NGO community steering groups.

Possible implementation responsibility: National and State agency task forces.

Timing and duration: estimated two-year design and implementation project, ongoing subject to regular reviews.

Anticipated benefits: Great satisfaction leading to deeper engagement by citizens, further leverage of public investment.



Possible adverse effects: Additional investment and complexity for public agencies and their staff; a shift in focus away from outcomes to relationships.

Future Option 8: *Landscape-scale integrated ('nil-tenure') strategies*

This Option would involve tightly integrated strategies across a whole landscape to reduce the effects of fragmentation land-use, tenures, program and public/private roles. It could involve:

1. Biodiversity and production rather than species-focused approaches, using a negotiated regional or local strategy;
2. Potential changes to land-access and private tenure arrangements, ideally on a negotiated cooperative basis;
3. Regional NRM and other bodies, but with an invasive species focus that is not 'drowned' by other issues;
4. Invasive species performance targets that are negotiated as part of the regional strategy, as a basis for funding or other support;
5. Community involvement in adaptation of plans and implementation action; and
6. A peri-urban invasive species management strategy and taskforce.

Possible implementation mechanisms: regional agreements and potentially specialist taskforces.

Possible implementation responsibility: regional invasive species groups and government agencies; involving landholder groups; farmer and non-government organisations.

Timing and duration: ongoing, depending upon negotiation.

Anticipated benefits: significant reduction on the effects of fragmentation.

Possible adverse effects: political tensions over property right and access issues; complexity and coordination costs.

Future Option 8: *More effective public communications*

This Option calls for a strong communications approach to community awareness of (and support for) invasive species management, and proactive management of possible 'negative' messages. This could involve a mix of the following:

1. Sophisticated communications strategies and implementation drawing on professional communication skills and good research;
2. Creating (a) widespread awareness and support for invasive species action, (b) management of potential counterproductive ideas or 'public relations disasters';
3. A comprehensive communications strategy including face-to-face (e.g. landholders), traditional media (e.g. with local communities) and social media;
4. Communication of education as part of the strategy, targeting general knowledge (e.g. communities or schools) and 'how to do it' capabilities and
5. Widespread training and use of 'scientific best practice' social marketing and communications methods.

Possible implementation mechanisms: An expert communications team, operating nationally on a collaborative basis with state agencies.

Possible implementation responsibility: National and state arrangement ratified through COAG.

Timing and duration: commencement within 18 months, ongoing.

Anticipated benefits: stronger community support and engagement, more effective response to media, stronger political support, more effective response to negative messages and media disasters.

Possible adverse effects: Costs.

5. Scenarios

5.1 A Draft Vision

The scenario planning exercise needed to be overarched by a Vision Statement for future institutional improvement to more effectively support (and reduce impediments to) citizen action in invasive animal management. As no such Vision Statement existed across all jurisdictions it was necessary for the study team to derive a draft Vision for the purpose of the scenario planning workshops. The original draft Vision stated:

A future World influenced by politically and economically feasible reforms that reduce institutional barriers (including legal and administrative arrangements, funding, governance and government activities) and increase support thereby motivating and facilitating effective citizen activity and making it significantly easier through a genuine government-community partnership to reduce harms caused by invasive animals.

Expectedly, the participants at each state-based workshop modified the original Vision to accommodate their perceived local circumstances, challenges and objectives. The modified Vision Statement/s utilised in the second scenario planning workshop to overarch the evaluation of the Future Options is reported below in Section 6.1: Outcomes.

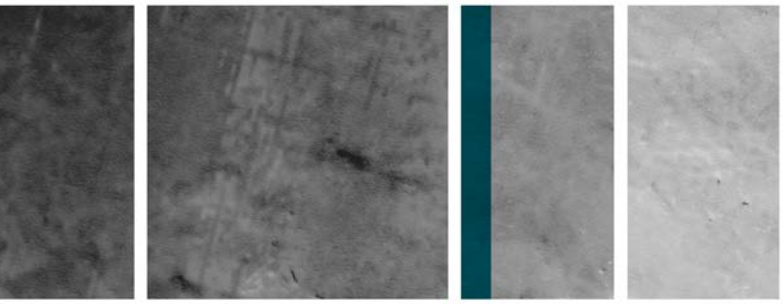
5.2 Brisbane Scenarios

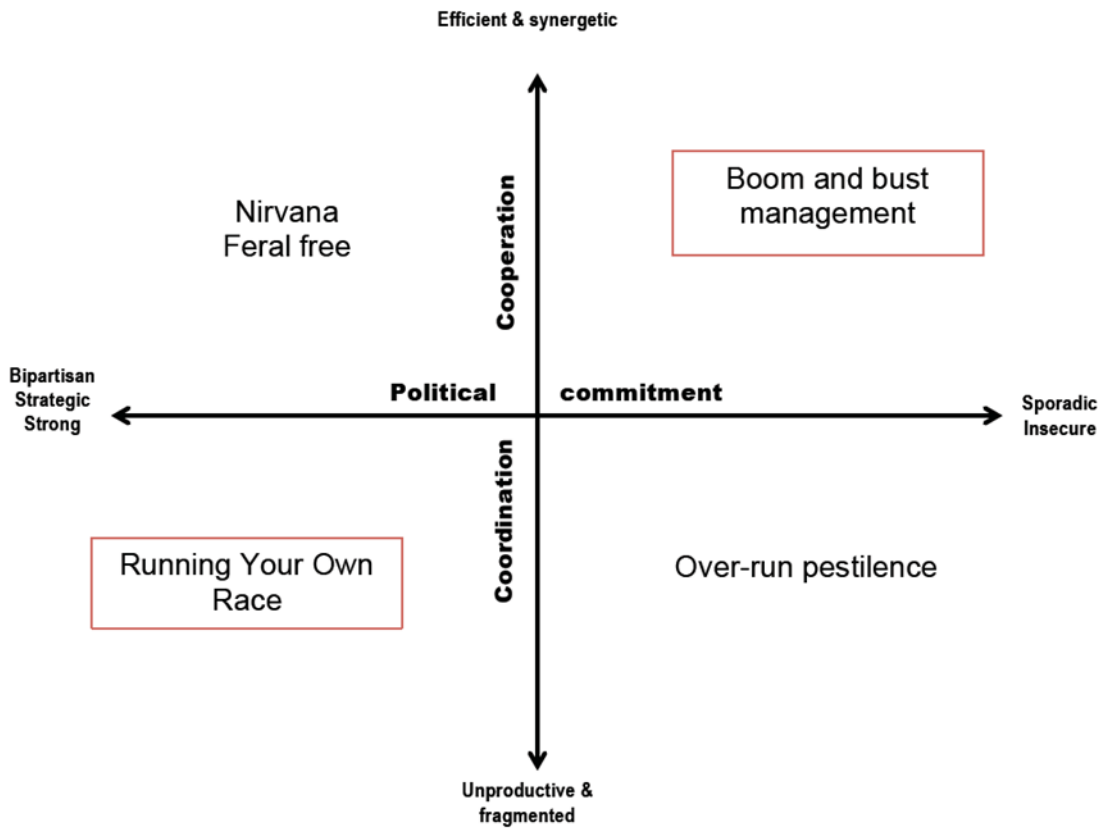
The two most significant drivers of change for the future of invasive animal management in Queensland, as voted in the Brisbane workshop, were:

Political Commitment

Coordination and Cooperation

These drivers were shown on two axes to display a range of possible outcomes (Figure 4). The x axis describes political commitment to issues of invasive animal management, and ranges from a bipartisan strategic strong approach to an insecure sporadic approach. The y axis describes the degree of coordination and cooperation in invasive animal management, and ranges from an unproductive and fragmented approach to one that is efficient and synergetic. Four quadrants can be seen in Figure 4, equating to specific levels and characteristics of each





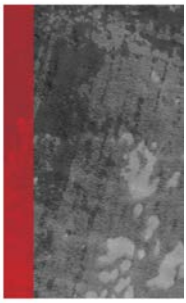
of the drivers of concern. Via a voting system, the workshop participants chose to use the following two scenarios to test the Future Option in their second workshop:

1. '*Running Your Own Race*'; and
2. '*Boom and Bust Management*'

Figure 4 Axes showing variations in the most significant drivers of change and the four possible scenarios

5.2.1 '*Running Your Own Race*' Scenario

This scenario is characterised by unproductive and fragmented coordination of invasive animal management even though there is strong political support for issues relating to invasive animals. Local and state governments employ large numbers of people in the management of invasive animals to deal with increased domestic and international demand for agricultural products, creating a public service workforce that could not easily be disbanded. Policy formation is fragmented, change is slow and decisions are largely uncoordinated. This has promoted limited learning about the broader system and reduced the



ability of government to manage adaptively despite strong bipartisan political support for invasive animal management.

In the *Running Your Own Race* scenario, coordination and communication among the community is generally poor. Even more dramatic than the changing demographics is the changing spatial distribution of the population. The population is now concentrated in the large cities. Unfortunately, these are prone to sudden failure due to increased frequency and intensity of natural hazards and have had negative impacts on nearby areas that are susceptible to disruption from natural hazards, particularly in the peri-urban space.

Positive Trends

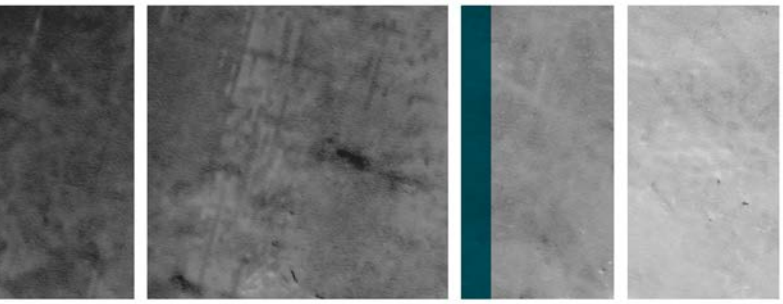
- More people involved, with greater public awareness about invasive animals;
- More financial support for projects at the national and regional levels;
- Continuity in policies addressing invasive animals management beyond electoral cycles;
- Successful management of specific invasive animal species;
- Decreased loss of some threatened native species;
- More extension services provided by government personnel are available to landowners;
- New invasive species management techniques are developed, including increased use of information technologies;
- Greater acceptance of landholder's responsibility for invasive animals management; and
- Within agencies, stronger regulatory frameworks are in place for invasive animals management.

Negative Trends

- Inefficient use of financial and human resources due to overlapping activities implemented by different actors (individuals and community groups);
- Multiple regional approaches to innovation may lead to lack of consistency that inhibits identification of most efficient solutions;
- Lack of knowledge transfer between organisations and government agencies
- Competitiveness between groups for government funding;
- Increased loss of some threatened native species;
- Conflicting regulatory frameworks emerge as a result of poor coordination across government agencies;
- Increased population of specific invasive animal species;
- Less investment from the private sector in developing new technologies for invasive animals management;
- Invasive animals management initiatives become predominantly dependent on government funding; and
- Limited opportunities for collaborative resourcing between private and public sectors for invasive animals management.

'Running Your Own Race' – Natural Resource Management

There is much concern for, and investment in, natural resource management focused on invasive animal management. Natural resource management functions exist in most departments of government and there are also independent natural resource management



bodies to deliver natural resource management outcomes[ciii]. Reliable support for natural resource management bodies, along with volunteerism and community groups, has left regional natural resource management bodies with resources and both political and community support. However what support there is, is not necessarily tied to coordinated actions, leaving regional bodies with difficulties relating to duplication of activities, fractured and inconsistent plans, and with different relevant natural resource management groups working in competition with each other rather than synergistically.

For example, a large number of government-driven invasive animal control fronts were put in place across Australia. However, given the lack of coordination and cooperation, loss of non-target plant and animal species have occurred due to the direct or indirect effect of the chemicals or other means used to control invasive animals[civ]. Additionally, some exotic invasive plant species have increased in number due to releases of mesopredator leading to hyperpredation, whereby the removal of one predator was overcompensated by an increase in another (perhaps more efficient) predator.[cv]

'Running Your Own Race' – Technology

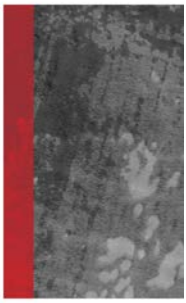
Australia has a reputation of being a world leader in sustainable technologies, including renewable energy and storage, sustainable agriculture, carbon farming and habitat rehabilitation (eco-innovation in general)[cvi] . However, this reputation is based on individual industries working separately with little cooperation. This is also observed in the invasive animal management domain where there is a lack of knowledge transfer at the national and regional level,[cvii] sometimes contributing to the occurrence of less desirable on-ground outcomes.

Nevertheless, as technologies may be developed and trialed for one pest species they have the potential to be applied to a range of invasive animal species, hence the investment made in the initial research is worthwhile[cviii]. On the other hand, the extensive use and adoption of new technologies is constrained when high costs are incurred. Hence, the uptake of technological advances have been slow as they are considered excessively expensive, the data required to utilise them has not been collected, and the models the technology uses has not been refined for use over widespread areas or different pest species.[cix]

'Running Your Own Race' – Governance and Institutional Arrangements

There is strong by-partisan political will to support funding and implement regulations for invasive species management. However, the new economic order has impeded sufficient allocation of government funds for broad scale management of invasive species and funding programs are greatly focused on specific species, reflecting a reactive rather than an anticipatory approach to managing impacts caused by those species. In particular, funding tends to prioritise management strategies focused on new incursions rather than already established pest species.

On the other hand, government regulations have delegated a greater share of responsibility to landholders and land managers to lead and deliver on-ground management strategies. Whilst regulations have ensured more individuals attempt to manage invasive species related impacts within their properties, there is substantial lack of knowledge transfer between science (communicated through extension officers) and the wider community[cx]. As a result, responses are not coordinated and sometimes not as effective as they could be, not to mention potential spill-over of impacts (e.g., environmental impacts) to areas outside property boundaries.



Government regulations also extend to industry bodies responsible for international imports and exports to ensure the spread of invasive animals is controlled and minimised. These regulations have increased costs associated with agricultural production whereby smaller industries are becoming less financially viable and being incorporated by larger groups with substantial consequences to livelihoods in remote and regional areas.

'Running Your Own Race' – Community Engagement

Continuous political support to invasive animal management has helped to increase awareness and concern about the impact of invasive species among all community members. In particular, local governments have invested greater efforts towards consolidating public consultation processes in their invasive animal management strategies which contributed to increase communities' interest in being involved in those strategies through active participation[cxi]. However, given the lack of coordination underlying those strategies community members are unaware of other activities and there is competitiveness rather than cooperation between community groups at the regional scale.[cxii]

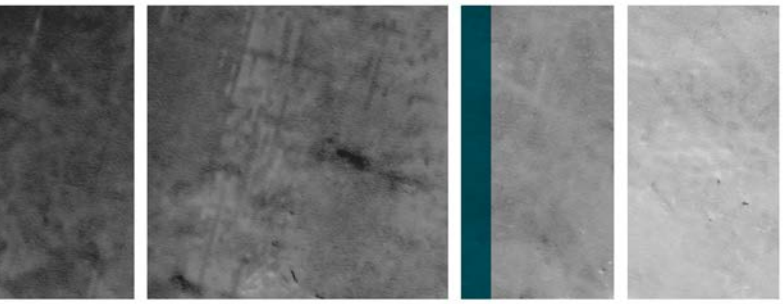
5.2.2 'Boom and Bust Management' Scenario

This scenario is characterised by synergetic actions taken by a range of government and community groups, grappling with sporadic inconsistent political support for invasive animal management. Local and state governments allocate limited resources to the management of invasive animals, whereby the public service workforce fluctuates from time to time and is disassembled and reassembled based on demand. Policy formation is fragmented and change is slow. However, actors outside government agencies largely coordinate on-ground invasive animal management actions. This has increased learning about the broader system among non-government actors and invasive animal management is carried out regardless of political support.

In the Boom and Bust Management scenario, coordination and cooperation between the community is generally good[cxiii]. Despite dramatic demographic changes in terms of the spatial distribution of the population which is now concentrated in the large cities, increased use of information technologies have enabled continuous exchange of information between communities dealing with invasive animals. While there have been spill over impacts from invasive animals on areas that are not protected due to weak legislation, community response has been relatively quick in minimising greater environmental degradation.

Positive Trends

- More people involved with greater public awareness about invasive animals;
- Private management of invasive animals increases, including landholders, land managers and industries;
- Invasive animals management is well-coordinated at specific locations;
- Citizen science is more widely used by local groups to manage invasive animals;
- Successful management of specific invasive animal species;
- New invasive species management technologies are developed by the private sector, including increased use of information technologies;
- Decreased loss of some threatened native species;
- Efficient use of financial and human resources with fewer overlapping activities implemented by different actors (individuals and community groups);



- Less conflicting regulatory frameworks emerge as a result of improved coordination and collaboration;
- More opportunities emerge for collaborative resourcing between private and public sectors for invasive animals management, including community and industry partnerships and crowd-funding; and
- Invasive animals management initiatives become less dependent on government funding.

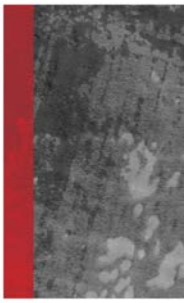
Negative Trends

- Private management of invasive animals returns poorer public benefits such as less emphasis on environmental impacts;
- Management of new invasive animal incursions is neglected (prevention, rapid response and surveillance);
- Reduced continuity of community-led invasive animals management initiatives;
- Less funds allocated to research and development with science failing to inform policy;
- Smaller industries are at a disadvantage, as larger companies dominate the invasive animals management market;
- Greater reliance on industry self-regulation to maintain pest-free exports;
- Lack of knowledge transfer between community groups and government agencies
- Increased loss of some threatened native species;
- Increased population of specific invasive animal species;
- Less financial support for larger spatial scale projects (e.g., national and regional levels);
- Discontinuity in policies addressing invasive animals management based on electoral cycles;
- Less extension services provided by government personnel are available to landowners;
- Weaker regulatory frameworks are in place for invasive animals management; and
- Resource allocation by governments to invasive animals management is reactive rather than proactive and strategic.

'Boom and Bust Management' – Natural Resource Management

There is less government investment in natural resource management, including invasive animal management. Natural resource management functions have been phased out in most government departments, leaving it for independent natural resource management bodies to deliver outcomes. Inconsistent political support for natural resource management has increased reliability on volunteerism and community groups, as well as the private sector to deliver on-ground actions. However, despite lack of political support, actions tend to be well coordinated with less duplication of activities and fractured and inconsistent plans. While competition for funding continues to be high, natural resource management groups are managing to work more synergistically.

Cooperation between regions has also improved and regions work together to analyse different approaches under an experimental framework, dramatically increasing the effectiveness of adaptive management[cxiv]. There are also serious attempts to move towards proactive, anticipatory management of ecosystems as a means to improve the ability to cope with continually changing conditions[cxv], although this is still in early stages.



As governments have reduced their capability concerning invasive animal management, especially with respect to carrying out urgent research, new incursions tend to be neglected (prevention, rapid response and surveillance)[cxvi]. This situation raises critical challenges to manage invasive species because scientists and land managers are wary of drastic eradication methods where success is low (except in very small areas) and also have the ability to devastate non-target species whilst still not eradicating the subject pest species[cxvii]. Additionally, continued biodiversity loss is an ongoing threat posed by invasive animal species[cxviii], and there has been an increased abundance and greater spread of the 10 nationally significant pests across Australia.[cxix]

Additionally, private management of agricultural pests has resulted in fewer public benefits. Hence, environmental impacts are neglected[cxx]. There is general acceptance of the roles that biodiversity plays in contributing to wellbeing[cxxi], but these are not seen as a high priority compared to economic benefits.

'Boom and Bust Management' – Technology

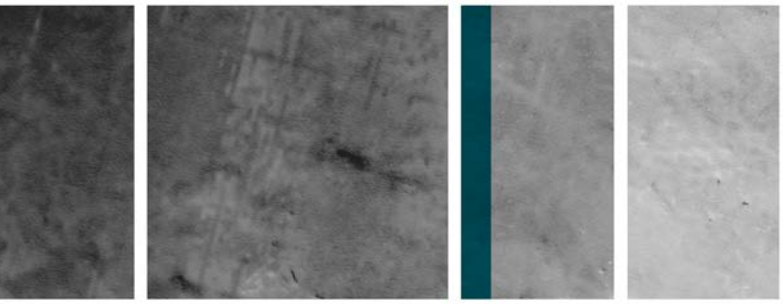
Australia has lost its reputation of being technologically advanced in sustainability issues as governments allocated limited funding to research and development. As a consequence, critical areas that have significant economic impact if neglected such as invasive animal management are increasingly relying on research produced overseas. While there is greater level of knowledge sharing between scientists and communities, no new technology is being generated in the country. Hence, there are fewer policies that are based on scientific evidence and/ or technical solutions. On the other hand, there has been an increase in the use of citizen science by local groups for various scientific issues including invasive animal detection[cxxii] and a greater focus on sharing good practice.

Sophisticated technology and monitoring systems are used to provide immediate feedback and maximise outcomes of on-ground actions regarding invasive animal management. Nevertheless, these technologies are expensive thereby limiting their widespread access and use. Additionally, as there is limited government regulation overseeing the use of these technologies, their price is driven by international markets and is in the hands of larger multinationals that have relatively little interest in the maintaining Australia's sovereignty in the Asian Pacific region.

'Boom and Bust Management' - Governance and Institutional Arrangements

Governments are monitoring and reporting on community projects tasked with managing invasive animals, however they are not participating in implementing those projects[cxxiii]. Considering the confusing, polarised, sporadic, insecure, reduced, volatile, reactive, inactive, unproductive and absent political commitment to managing invasive animals, policymakers prefer to plan for eradication of specific pest animal species[cxxiv][cxxv]. They believe that 'even an expensive eradication campaign is cheaper than management costs and losses associated with the invader in perpetuity.'[cxxvi]

Additionally, government responses are essentially reactive, not strategic and increase invasive animal issues[cxxvii]. Despite the increase in coordination and cooperation between community groups and the private sector, the absence of political support limits the continuity of projects with outcomes being localised rather than widespread[cxxviii]. To some extent, limited outcomes are also the result of the hands-off approach by governments, which



has led to less support from agencies in the form of extension officer available to the community and much needed translation of updated scientific knowledge.[cxxix]

Government frameworks for invasive animal management are falling short on pursuing the principles of integration, public awareness, commitment, consultation and partnership, planning, prevention, best practice and improvement[cxxx]. Additionally, there is a global trend towards reliance on industry self-regulation to maintain pest-free exports, which benefits larger corporations at the expense of small companies. Hence, whilst communities and the private sector are attempting to fill the void left by governments, their impact is conditioned to their capacity and interest.[cxxxi]

'Boom and Bust Management' - Community Engagement

Government staff and stakeholders conduct regular awareness-raising programs and educate the public with the intention to increase the knowledge of community members of invasive animal management.[cxxxii] The government hands-off approach to invasive animal management resulted in creation of more community industry partnerships to leverage funding for investment into projects.[cxxxiii] These partnerships between key stakeholders helped to develop an overarching approach and sense of ownership by the community of the invasive animal issue.[cxxxiv]

5.3 Sydney Scenarios

Participants of the first scenario planning workshop held in Sydney identified the following two key drivers of change as being the most significant for the future of invasive animal management:

Technological Development

Community Influence

The drivers can be shown on two axes displaying a range of possible outcomes (Figure 5). The x axis describes the extent of technological development in invasive animal management, and ranges from advanced to unrealised technological development. The y axis describes the degree of community influence in political interventions. Four quadrants can be seen in Figure 5, equating to low and high levels of each of the drivers of concern. Via a voting system, the workshop participants chose to use the following two scenarios to test the Future Option in their second workshop:

1. '*Short Term Lost Opportunity*'; and
2. '*High Risk High Reward*'

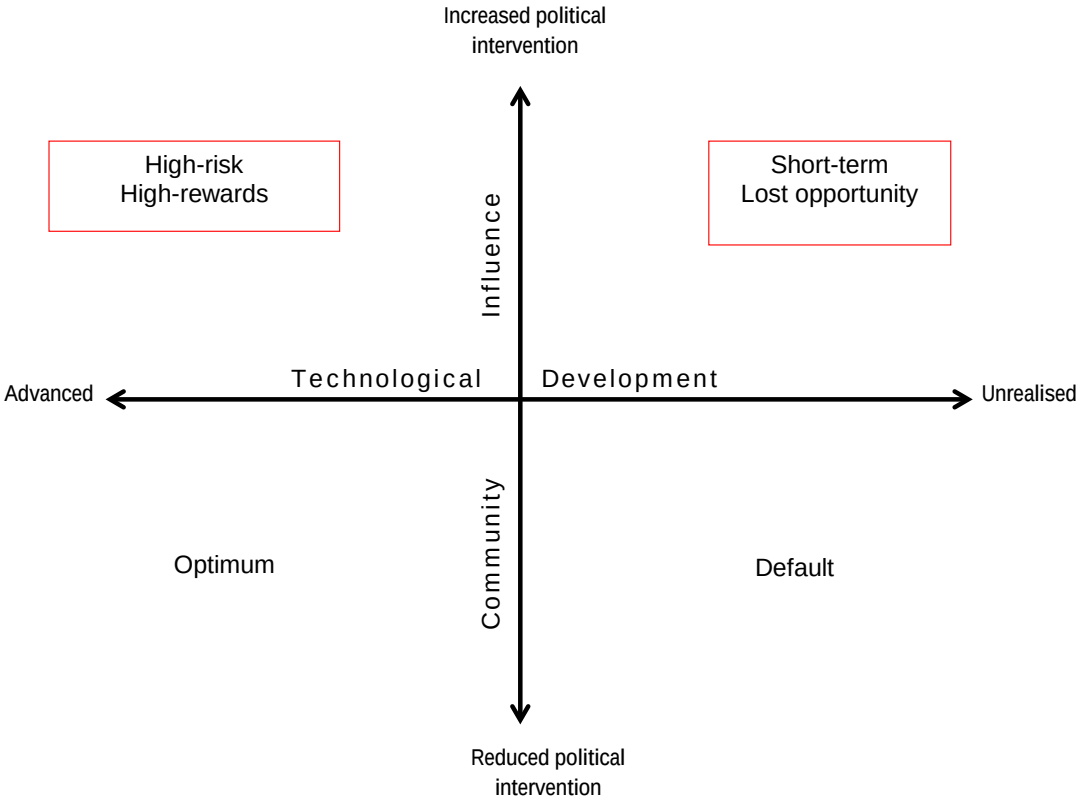


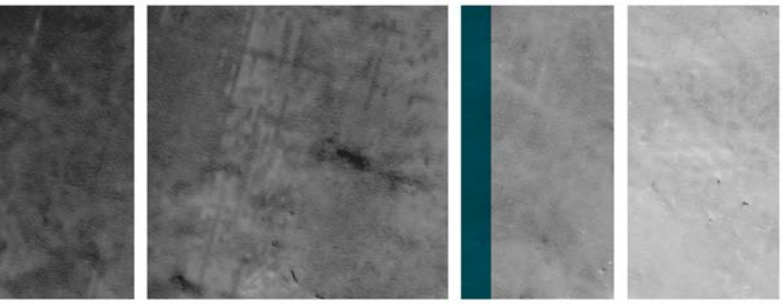
Figure 5 Axes showing variations in the most significant drivers of change and the four possible scenarios

5.3.1 '*Short Term Lost Opportunity*' Scenario

In the *Short-term Lost Opportunity* scenario, community influence in political decision-making regarding invasive animal management is high. Meanwhile, advances in technologies used in invasive species management stagnate, making it difficult to keep up with new on-ground challenges and environmental change.

Greater participation by influential communities in political decisions leads to increased legitimacy[cxxxv] and continuity in policy decisions, as communities ensure that invasive species management stays on the political agenda despite electoral cycles and changes of government. Greater community involvement also allows government responses to invasive animal challenges that are tailored to regions and specific communities.[cxxxvi] The effectiveness of invasive species management may increase due to greater community involvement bringing more information and knowledge to policy development and greater awareness through more widespread involvement.

This has a positive effect on invasive animal management, however, it is not sufficient to deal with impacts from new incursions, continued loss of threatened species and reduced government funding and resourcing. Invasive animal threats to biodiversity continue to mount



and population levels of some invasive species continue to rise. Possible technological developments that could help manage invasive animals (such as information technology to assist information sharing and coordination of invasive animal management) are not realised. Landholders find it hard to juggle invasive species management with other concerns such as climate extreme events that are demanding of attention and resources.

Increased community influence can come with complexities. For example, issues may arise where particular influential community groups or individuals may fail to represent the public 'at large', or where community members are ill-informed of a particular issue. In some cases, increased community involvement can demand increased allocation of financial resources, human resources and time in policy development.[cxxxvii]

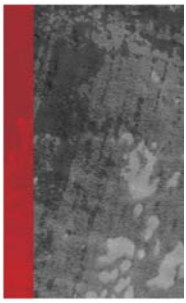
The Sydney region continues to be the major metropolitan region for NSW and Australia. The same patterns of urbanisation continue in the Sydney region as well as other urbanised areas along the NSW East Coast. Some practices used in invasive animal management are no longer available in some areas due to the expansion of urban and of peri-urban areas. As these are lost they are not replaced with new techniques or practices.

Positive Trends

- Greater participation lends increased legitimacy for invasive species management plans and landscape management in general;
- Solutions to invasive animal problems are more tailored to unique local situations;
- Greater community involvement may enhance the quality of decision making by providing an opportunity for the public to contribute pertinent information[cxxxviii];
- Stakeholder participation in invasive species management is often necessary for their control.[cxxxix] Allowing greater political influence may entice communities to play a greater role in the invasive species management, thus increasing its effectiveness;
- More people involved, with greater public awareness about invasive animals; and
- Continuity in community-led policies addressing invasive animals management beyond electoral cycles.

Negative Trends

- Increased community involvement demands increased allocation of financial resources, human resources and time in environmental planning issues;
- Increased community influence may be problematic where community members are ill-informed or lack particular relevant knowledge or understanding of an issue;
- Increased political intervention and community influence may be based on reactionary responses to plans that leads to confrontation and ineffective results;
- Particular community groups or individuals may be influential at a political level but still fail to represent the public 'at large';
- Community members' attitudes relating to invasive species can be varied and complex[cxl];
- Increased loss of some threatened native species; and
- Increased population of specific invasive animal species.



'Short Term Lost Opportunity' - Natural Resources Management

There is less ability for utilisation of technology to reduce pest problem leading to a decreased viability of individual landholders in the region. As a result, there are increases in population of specific invasive animal species, leading to increased loss of some threatened native species and increased agricultural damage. Unrealised technological development leads to neglected management of new incursions (prevention, rapid response and surveillance). Compounding this, climate change brings greater frequency of extreme climate events that demand landholders' attention and suck up resources.

At the same time, greater community participation lends increased legitimacy for invasive species management plans and landscape management in general. The influence of communities also brings solutions to invasive animal problems are more tailored to unique local situations.

'Short Term Lost Opportunity' - Technology

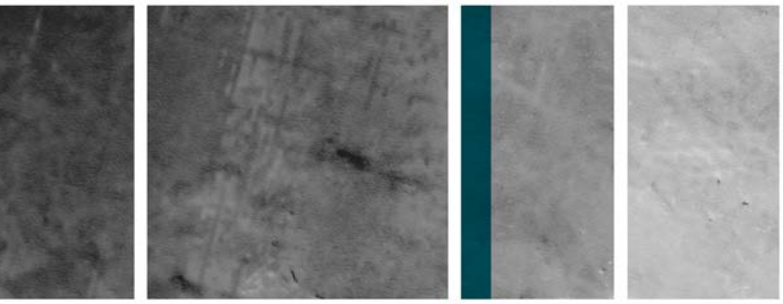
There is a net decline in the number of control options in the region. This compounds environmental pressures caused by invasive animals. This is characterised by:

- Unrealised technological opportunities to assist invasive animal management;
- At the national and regional level there is a lack of knowledge transfer[cxli]; and
- Less R&D. Current knowledge is shared, but no new knowledge is generated.
- Several steps are usually involved in best practice pest management including:
- Managing the actual impacts of pest animals, as compared to the perceived impacts and only eliminating the threat;
- Implementing strategic ongoing management of pest animals through coordinated group action as opposed to individuals undertaking activities; and
- The use of a range of control techniques that are safe, effective, target specific and humane.[cxlii]

Over the past decade the attitude and methodology towards invasive animal pest management has changed with the recognition that invasive animal control should form a part of a comprehensive natural resource and primary production plan at a regional and local level. Careful planning, a coordinated approach, a range of control techniques and active participation by a range of stakeholders over an extensive region is required to have an effective and enduring effect on pest populations.[cxliii]

The integration of technological advances into pest management plans will occur with research currently being undertaken. For example, a pilot program in by the Northern Inland Weeds Advisory Committee, which encompasses over 100,000 square kilometres, and 10 Local Control Authorities using integrated aerial surveillance and thermal imaging and mapping to control to detect and monitor high risk invasive weed species is underway. The outcomes achieved from this project have the ability to change the way detection, monitoring and mapping of invasive plant species, and potentially invasive animal species in the future.[cxliv]

There are numerous other technologies currently being researched, which also have the potential to be utilised in integrated invasive animal management, including DNA detection in animal scats[cxlv] and GPS mapping to assist with the spatial distribution of baits.[cxlvi]



'Short Term Lost Opportunity' - Governance and Institutional Arrangements

There is strong by-partisan political will to support funding and implement regulations for invasive species management. However, the new economic order has impeded sufficient allocation of government funds for broad scale management of invasive species and funding programs are greatly focused on specific species, reflecting a reactive rather than an anticipatory approach to managing impacts caused by those species. In particular, funding tends to prioritise management strategies focused on new incursions rather than already established pest species.

On the other hand, government regulations have delegated a greater share of responsibility to landholders and land managers to lead and deliver on-ground management strategies. Whilst regulations have ensured more individuals attempt to manage invasive species related impacts within their properties, there is substantial lack of knowledge transfer between science (communicated through extension officers) and the wider community.[cxlvii] As a result, responses are not coordinated and sometimes not as effective as they could be, not to mention potential spill-over of impacts (e.g., environmental impacts) to areas outside property boundaries.

Government regulations also extend to industry bodies responsible for international imports and exports to ensure the spread of invasive animals is controlled and minimised. These regulations have increased costs associated with agricultural production whereby smaller industries are becoming less financially viable and being incorporated by larger groups with substantial consequences to livelihoods in remote and regional areas.

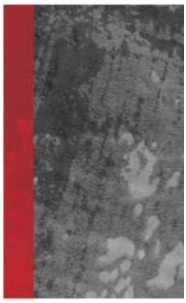
Secure community commitment and intervention in politics has implications for governance and institutional arrangements. Greater community influence in policy development leads to continuity in policies addressing invasive animals management beyond electoral cycles and more stability in policy implementation in the face of changes of government. However, increased community influence may be problematic where community members are ill-informed or lack particular relevant knowledge or understanding of an issue, or if community interventions are based on confrontational reactionary responses to plans.

'Short Term Lost Opportunity' - Community Engagement

Stakeholder participation in invasive species management is generally considered necessary for their control.[cxlviii] Greater community involvement may enhance the quality of decision making by providing an opportunity for the public to contribute pertinent information[cxlix], and contributing to greater public awareness about invasive animals. Creating partnerships and working closely with key stakeholders is important to the NSW DPI to manage invasive animal management. The delivery of training, the development of information resources and coordination of their website are all methods used by the NSW DPI to engage the community.[cl]

Everyone has an important role to play in invasive animal management, for example abandoning unwanted pets can lead to increased populations of feral cats, wild dogs and invasive fish in the environment. Community programs, e.g. Landcare provide the opportunity for community members and landholders to participate and build their knowledge surrounding control and management of invasive animal pest species.[cli]

However, increased community influence in political interventions may occur in a form that represents particular community groups or individuals whilst failing to equally represent



others. Equal political representation and timely policy development can be difficult when community members' attitudes relating to invasive species are varied and complex.

5.3.2 '*High Risk-High Reward*' Scenario

In this scenario, greater participation and intervention in politics by community members and community groups means that the community sphere as a whole is more influential in the development and implementation of invasive species management plans. The community is highly engaged politically and effective consultation is regarded as an essential part of any policy making process.

Greater participation by influential communities in political decisions leads to increased continuity in policy decisions, as communities ensure that invasive species management stays on the political agenda despite electoral cycles and changes of government. Greater community involvement also allows government responses to invasive animal challenges that are tailored to regions and specific communities. The effectiveness of invasive species management may increase due to greater community involvement bringing more information and knowledge to policy development and greater awareness through more widespread involvement.

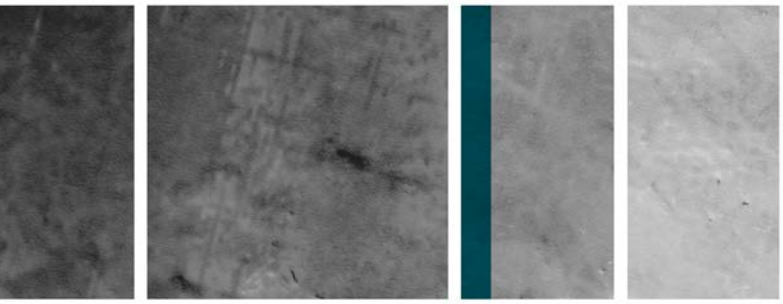
Increased community influence can come with complexities. For example, issues may arise where particular influential community groups or individuals may fail to represent the public 'at large', or where community members are ill-informed of a particular issue. In some cases, increased community involvement can demand increased allocation of financial resources, human resources and time in policy development.[cli]

Meanwhile, there are many advances in technologies used in invasive species management. Although these new technologies hold much promise, there are no guarantees as to their exact environmental, social and economic impacts.

This takes place alongside continued trends in environmental change such as climate change and urban growth. The Sydney region continues to be a major metropolitan region for NSW and Australia. The same patterns of urbanisation continue in the region as well as other urbanised areas along the NSW East Coast. Some practices used in invasive animal management are no longer available in some areas due to the expansion of urban and of peri-urban areas. As these are lost, new techniques or practices emerge. These include, but are not limited to, techniques rooted in information technologies that assist in information sharing and coordination of invasive animal management. Mobile phone apps allow 'on-the-go' information collection and dissemination that helps to identify and track animals. Other technological advances include the use of carnivore-selective toxicant paraaminopropiophenone deployed in mechanical ejector devices.[cliii]

Positive Trends

- Greater participation lends increased legitimacy for invasive species management plans and landscape management in general;
- Solutions to invasive animal problems are more tailored to unique local situations;
- Greater community involvement may enhance the quality of decision making by providing an opportunity for the public to contribute pertinent information;
- Stakeholder participation in invasive species management is often necessary for their control. Allowing greater political influence may entice communities to play



a greater role in the invasive species management, thus increasing its effectiveness;
- Land management efforts may benefit from advanced rapid, inexpensive, and accurate on-site methods to detect harmful invasive species to prevent their introduction and spread;
- Technological advances (such as satellite remote sensing, and landscape scale modelling[cliv] and interactive visualisation technologies[clv]) enable easier assessment of spatio-temporal changes in the distribution of invasive species, their impact on ecosystems, and their movement patterns.[clvi] This assists decision-making;
- Advanced technologies may enable more effective invasive animal management in general;
- More people involved, with greater public awareness about invasive animals;
- Continuity in community-led policies addressing invasive animals management beyond electoral cycles;
- New invasive species management techniques are developed, including increased use of information technologies; and
- Decreased loss of some threatened native species.

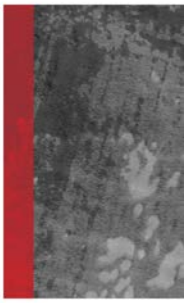
Negative Trends

- Increased community involvement demands increased allocation of financial resources, human resources and time in environmental planning issues;
- Increased community influence may be problematic where community members are ill-informed or lack particular relevant knowledge or understanding of an issue;
- Increased political intervention and community influence may be based on reactionary responses to plans that leads to confrontation and ineffective results;
- Particular community groups or individuals may be influential at a political level but still fail to represent the public 'at large';
- Community members' attitudes relating to invasive species can be varied and complex;
- Technological developments used need to be compatible to have optimal impact[clvii];
- New technologies may have non-target impacts[clviii]; and
- New technologies may not be equally accessible to all land managers (due to expensive or logistically burdensome requirements). Some land managers may find it difficult to benefit from new technological developments.

'High Risk High Reward' - Natural Resources Management

Greater community participation lends increased legitimacy for invasive species management plans and landscape management in general. The influences of communities also bring solutions to invasive animal problems and are more tailored to unique local situations. Greater community involvement may also enhance the quality of decision making by providing an opportunity for the public to contribute pertinent information. In some areas, communities are engaged in citizen science for various issues such as invasive animal detection.[clix]

As governments have reduced their capability concerning invasive animal management, especially with respect to carrying out urgent research, new incursions tend to be neglected (prevention, rapid response and surveillance).[clx] This situation raises critical challenges to manage invasive species because scientists and land managers are wary of drastic eradication



methods where success is low (except in very small areas) and also have the ability to devastate non-target species whilst still not eradicating the subject pest species.[clxi] Additionally, continued biodiversity loss is an ongoing threat posed by invasive animal species[clxii], and there has been an increased abundance and greater spread of the 10 nationally significant pests across Australia.[clxiii]

There is decreased loss of some threatened native species due to technological advances matched with important contributions from communities. However, new technologies also bring new risks of impacts on non-target species. Loss of non-target plant and animal species may occur due to the direct or indirect effect of the chemicals or other means used to control invasive animals.[clxiv] Additionally, an increase of exotic invasive plant species may occur due to 'mesopredator release and hyperpredation, whereby the removal of one predator is overcompensated by an increase in another (perhaps more efficient) predator.'[clxv]

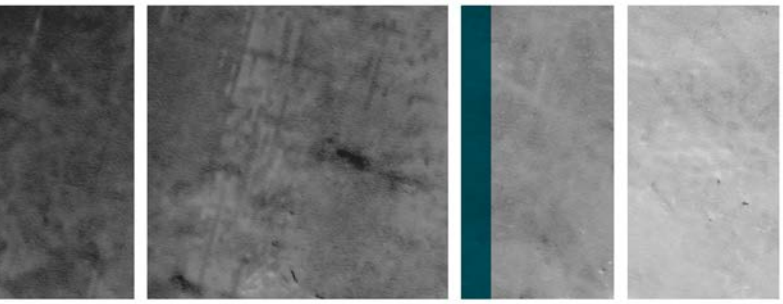
'High Risk High Reward' - Technology

Australia has lost its reputation of being technologically advanced in sustainability issues as governments allocated limited funding to research and development. As a consequence, critical areas that have significant economic impact if neglected such as invasive animal management are increasingly relying on research produced overseas. While there is greater level of knowledge sharing between scientists and communities, no new technology is being generated in the country. Hence, there are fewer policies that are based on scientific evidence and/ or technical solutions. On the other hand, there has been an increase in the use of citizen science by local groups for various scientific issues including invasive animal detection[clxvi] and a greater focus on sharing good practice.

Sophisticated technology and monitoring systems are used to provide immediate feedback and maximise outcomes of on-ground actions regarding invasive animal management. Nevertheless, these technologies are expensive thereby limiting their widespread access and use. Additionally, as there is limited government regulation overseeing the use of these technologies, their price is driven by international markets and is in the hands of larger multinationals that have relatively little interest in the maintaining Australia's sovereignty in the Asian Pacific region.

There is increased investment in high-tech solutions nationally and broadly, with a technologically advanced Australian workforce. Technological infrastructure is available to a greater proportion of the population, enabling new opportunities to develop new invasive animal management techniques, including increased use of information technologies that assist in advanced, real time monitoring, control techniques, improved efficacy, and cost-effective control.

Additionally, land management efforts may benefit from other advanced rapid, inexpensive, and accurate on-site methods to detect harmful invasive species to prevent their introduction and spread (such as satellite remote sensing, and landscape scale modelling[clxvii] and interactive visualisation technologies[clxviii]). These technologies also assist decision-making in policy development spheres. However, uptake of technological advances will be slower for some landholders due to limited funds or other resources.[clxix] Also, technological developments used need to be compatible to have optimal impact[clxx], and will need to be monitored for potential non-target impacts.[clxxi]



'High Risk High Reward' - Governance and Institutional Arrangements

Community-led policies are expected to bring more continuity in invasive animals management policies beyond electoral cycles. Increased community involvement might also demand increased allocation of financial resources, human resources and time for policy development, in order to properly address varied and complex community interests. Secure community commitment and intervention in politics has implications for governance and institutional arrangements and regulatory frameworks.

Government frameworks for invasive animal management are falling short on pursuing the principles of integration, public awareness, commitment, consultation and partnership, planning, prevention, best practice and improvement.[clxxii] Additionally, there is a global trend towards reliance on industry self-regulation to maintain pest-free exports, which benefits larger corporations at the expense of small companies. Hence, whilst communities and the private sector are attempting to fill the void left by governments, their impact is conditioned to their capacity and interest.[clxxiii] There is an inclination for the government to promote a shared responsibility for invasive species management between private and public landholders to meet legislative requirements and to improve education and community based initiatives.[clxxiv]

'High Risk High Reward' - Community Engagement

The ongoing challenge faced by New South Wales (and other States in Australia) is the need for key stakeholders including the community to possess the necessary skills, knowledge, resources and systems to adequately manage the impact of invasive animal species. The Draft NSW Invasive Species Plan 2015-2022 aims to build capacity to 'ensure NSW has the ability and commitment to manage invasive species.'

Invasive animal management programs in New South Wales utilise the concept of community based social marketing, which 'incorporates scientific knowledge on the psychology of human behaviour into the design and delivery of community programs to achieve long term behavioural change.'[clxxv] To encourage participation by the community in invasive animal species management various programs focus on communicating relevant information. However, merely providing information is ineffective as demonstrated by research, hence the application of the community social based marketing model.[clxxvi]

There is a movement towards formal arrangements through national agreements and Memoranda of Understandings (MOUs) to establish strong partnerships, which are essential to effective and efficient invasive animal management. National agreements generally between government departments and industry bodies may outline cost sharing arrangements and the shared responsibilities of each party for invasive animal species. It is anticipated that a broader range of participants will be party to these agreements in the future.[clxxvii] Developed in the spirit of establishing a partnership which will work towards a mutually agreed to goal, MOUs are a less formal contract between two or more parties.[clxxviii] Generally they are not legally binding and no exchange of money occurs, however they are an important type of agreement going into the future to allow coordination of activities between parties.

5.4 Melbourne Scenarios

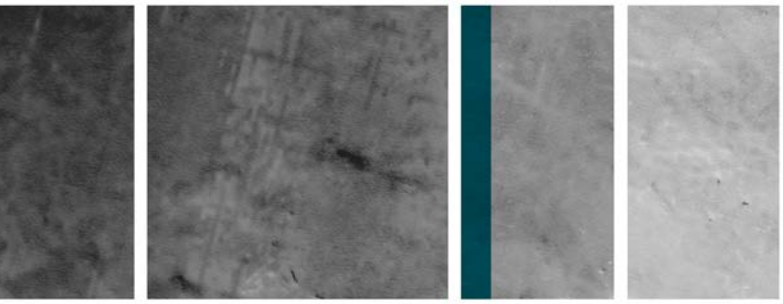
The two most significant drivers of change for the future of invasive animal management as identified by workshop by participants in Melbourne were:

Coordinated Management

Community Values and Priorities

The drivers can be shown on two axes displaying a range of possible outcomes (Figure 6). The x axis describes the extent of coordinated management in invasive animal management, and ranges from effective to ineffective. The y axis describes the degree of community values and priorities ranging from high to low levels of shared understanding. Four quadrants can be seen in Figure 6, equating to low and high levels of each of the drivers of concern. Via a voting system, the workshop participants chose to use the following two scenarios to test the Future Option in their second workshop:

1. '*Reduced Effectiveness'*; and
2. '*Dysfunctional'*.



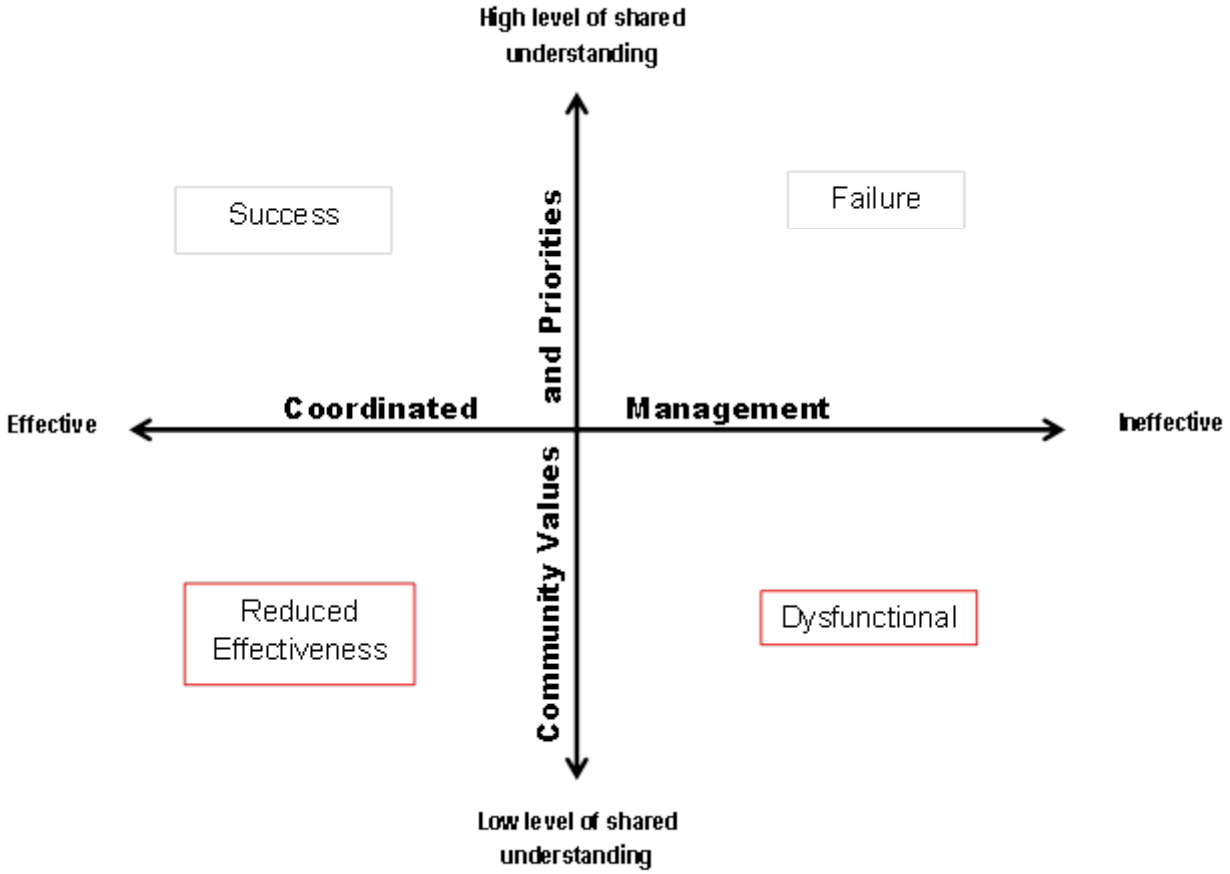
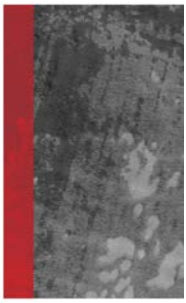


Figure 6 Axes showing variations in the most significant drivers of change and the four possible scenarios

5.4.1 '*Reduced Effectiveness*' Scenario

In the *Reduced Effectiveness* scenario, there is effective coordinated management of invasive animals. Everyone involved in invasive animal management is clearly aware of their roles and responsibilities; there are cost effective partnerships between government, community and industry; and stakeholders' actions are carried out consistent with a range of other policies. While there have been spill-over impacts from invasive animals on areas that are not protected due to weak legislation, community response has been relatively quick in minimising greater environmental degradation.

However, gains made by effective coordination are partly hindered because of a low level of shared understanding of diverse values and priorities held by community members and other stakeholders. Differing perspectives across different stakeholder groups are not communicated or addressed in the development of invasive animal management strategies and policies. Because managers do not understand the basis of public perceptions, they are



unable to anticipate potential conflicts and proactively generate management plans that are responsive to community values.[clxxix] Community members are not duly informed, and are frequently misunderstood. This adversely affects the capacity to manage invasive species.

Positive Trends

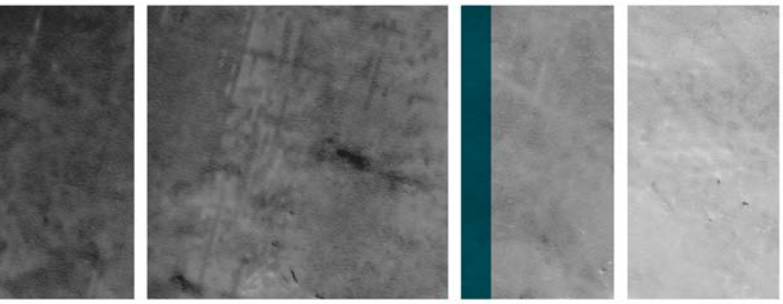
- Less conflicting regulatory frameworks emerge as a result of improved coordination and collaboration[clxxx];
- More effective adaptive management is enabled through on ground knowledge facilitated by improved coordination and collaboration;
- Knowledge transfer between different industries assists technological development;
- There is an increase in the use of citizen science by local groups for various scientific issues including invasive animal detection;
- More opportunities for cost effective partnerships and collaborative resourcing between private and public sectors, including community and industry partnerships and crowd-funding;
- Effective coordination makes it easier for landholders to gauge the impacts of their management approaches on neighbouring lands[clxxxi]; and
- Actions by different stakeholders are consistent with a range of policies.

Negative Trends

- Increased loss of some threatened native species due to conflicting stakeholders' values guiding on ground actions;
- Increased population of specific invasive animal species also occur as a result of conflicting management actions based on distinct stakeholders' values;
- Disconnect between government decision-making and community needs;
- Lack of knowledge transfer between community based organisations and government agencies;
- Limited engagement of diverse stakeholder groups that may contribute alternative perspectives, and limited translation of information in digestible ways between scientists, landholders, and policy makers[clxxxii];
- Conflicting community goals and value judgements by resource managers and local communities has led to community opposition and other complications in invasive animal projects[clxxxiii]; and
- Decision-makers and policy makers lose the trust of the public.[clxxxiv]

'Reduced Effectiveness' - Natural Resources Management

Cooperation between regions has improved and regions work together in a coordinated fashion to analyse different approaches under an experimental framework, dramatically increasing the effectiveness of adaptive management.[clxxxv] Interagency coordination allows managers to address problems more effectively.[clxxxvi] This includes mechanisms that allow various stakeholders to report invasive species and verify reports and refine monitoring data. Interagency cooperation also helps to respond effectively to trans-boundary issues, such as regional land use practices that disrupt native communities and open niches for invaders.



'Reduced Effectiveness' - Technology

Technological development and research is carried out by different industries in a cooperative and coordinated fashion that assists knowledge transfer. This coordinated and cooperative approach has also extended to civil society, with an increase in the use of citizen science by local groups for various scientific issues including invasive animal detection.[clxxxvii]

However, communication of research findings has generally been more successful than communication of underlying values that frame research itself. This is partly because of differing motivations, social pressures, ways of sharing information, and methods of evaluating information. Even when all stakeholders involved understand the scientific evidence, they still tend to disagree about the best way forward. Consequently, technical solutions for invasive animal control are not based on a shared understanding of problems and goals of different stakeholder groups.[clxxxviii]

Problems in communicating science to the public have also resulted in a decline in public trust and respect in science. There is increased questioning of the ethics of institutions carrying out R&D for invasive animal management, and some communities are reluctant to adopt certain new technologies.[clxxxix]

'Reduced Effectiveness' - Governance and Institutional Arrangements

Greater coordination and effective management of information assists regulatory aspects of invasive species management, especially in regard to trans-boundary issues such as mitigating incursions across regional or marine borders and from the international trade of goods.[cxc]

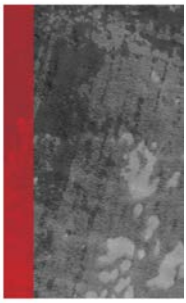
Despite the increase in coordination and cooperation between community groups and the private sector, the absence of a shared understanding limits the outcomes and functioning of projects. Policy development for invasive species management fails to facilitate a shared understanding of community values and priorities as there is limited engagement of diverse stakeholder groups that may contribute alternative perspectives, and limited translation of information in digestible ways between scientists, landholders, and policy makers.[cxci]

'Reduced Effectiveness' - Community Engagement

Everyone involved in invasive animal management is clearly aware of their roles and responsibilities to ensure a co-ordinated approach for invasive animal prevention, eradication, containment and asset-based protection. To ensure that government finances invested in invasive animal management are maximised, partnerships between government, community and industry are generated. Actions undertaken by stakeholders are consistent with a range of policies including Aboriginal heritage and culture, animal welfare and protection of native species and rural communities.[cxcii] However, a lack of shared understanding and disparate community values and priorities amongst community groups, stakeholder groups, industries and government bodies reduce the perceived effectiveness of these groups' collective endeavours.

5.4.2 'Dysfunctional' Scenario

In the *Dysfunctional* scenario, the level of shared understanding of issues relating to invasive species management is low and there is ineffective coordinated management of activities. Communities are poorly understood and generally uninformed about issues relating to invasive species. Meanwhile, invasive animal management activities at the regional scale are inconsistent and priorities are unclear, leading to little support from the community.



Differing perspectives relating to the management of invasive species across different stakeholders are not communicated or addressed in the development of invasive animal management strategies or policies. Because managers do not understand the basis of public perceptions, they are unable to anticipate potential conflicts and proactively generate management plans that are responsive to community values.[cxciii]

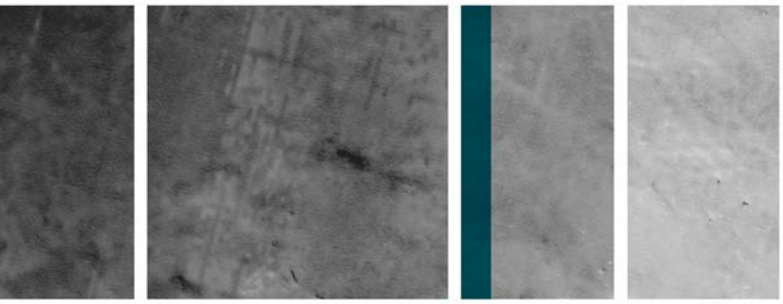
Instead, invasive animal management is essentially carried out through a top down approach, guided by best available science whereby priorities are determined by scientists and government agencies. In most cases, this top down approach focuses on the management of specific invasive species both established and new incursions. Occasionally, on-ground activities are carried out beyond individual property boundaries with successful management of prioritised species.

Positive Trends

- Management of specific invasive species is carried out based on best technical/ scientific information that is available to government;
- Top down approach to management has enforced management of specific species on private properties;
- Specific species, both new incursions and established species, have been controlled at several isolated locations;
- Agricultural sector has greatly benefited from greater government focus on species of economic significance;
- More technical solutions have been implemented more quickly as stakeholders' values that may slow down their application are not considered by government agencies;
- Government agencies are able to respond more quickly to issues caused by specific species at the local scale; and
- More technologically innovative solutions are developed to target specific species of economic significance.

Negative Trends

- Inefficient use of human resources due to overlapping activities implemented by different actors;
- Multiple local approaches to innovation may lead to lack of consistency that inhibits identification of most efficient regional solutions;
- Lack of knowledge transfer between community groups and government agencies;
- Without shared understanding between different stakeholder groups the development of large scale effective invasive species monitoring programs and research projects is hindered, and research projects fail to generate important information for control measures[cxciv];
- Increased loss of some threatened native species;
- Increased population of specific invasive animal species
- Conflicting regulatory frameworks emerge as a result of poor coordination across government agencies;
- Conflicting community goals and value judgements by resource managers and local communities has led to community opposition and other complications in invasive animal projects[cxcv];



- Without effective coordination of invasive animal management, landholders may disregard the impacts of their management approaches on neighbouring lands[cxcvi]; and
- Decision-makers and policy makers lose the trust of the public.[cxcvii]

'Dysfunctional' - Natural Resources Management

A lack of coordination in the management of agricultural pests alongside a low level of shared understanding across community values and priorities results in marginal public benefits from natural resource management activities. Environmental impacts are largely neglected[cxcviii], and continued biodiversity loss is an ongoing threat posed by invasive animal species. Conversely, there is a trend to focus on the management of invasive species with greater economic significance, especially targeting the agricultural sector.

What support there is for natural resource management bodies and community groups is not necessarily tied to coordinated actions, leaving regional bodies with difficulties relating to duplication of activities, fractured and inconsistent plans, and with different relevant natural resource management groups working in competition with each other rather than synergistically. In the absence of coordinated activities, landholders are unaware of the impacts of their management approaches on neighbouring lands. The development of effective invasive species monitoring programs and research projects is also hindered, and research projects fail to generate important information for control measures.[cxcix]

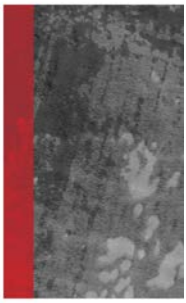
A large number of government-driven invasive animal control fronts were put in place across Australia. While these fronts were successful in controlling the impacts of specific species, a lack of coordination across these fronts has contributed to loss of non-target plant and animal species due to the direct or indirect effect of the chemicals or other means used to control invasive animals.[cc] Other unintended impacts included some exotic invasive plant species increasing in number due to releases of mesopredators leading to hyperpredation, whereby the removal of one predator was overcompensated by an increase in another (perhaps more efficient) predator.[cci]

'Dysfunctional' - Technology

Australia has a reputation for being a world leader in sustainable technologies, including renewable energy and storage, sustainable agriculture, carbon farming and habitat rehabilitation (eco-innovation in general).[ccii] However, this reputation is based on individual industries and regions working separately with little cooperation. This is also observed in the invasive animal management domain where there is a lack of knowledge transfer at the national and regional level[cciii], sometimes contributing to the occurrence of less desirable on-ground outcomes. Multiple overlapping yet disparate approaches to innovation result in limited consistency, which inhibits identification of the most efficient solutions. There is also little knowledge sharing between scientists and communities, having a stagnating effect on technology development.

The uptake of technological advances has been slow in some places as the data required to utilise them has not been shared, and the models the technology uses has not been refined for use over widespread areas or different pest species.[cciv] Hence, there are fewer policies that are based on scientific evidence and/or technical solutions.

Scientists have also generally been unsuccessful in communicating research findings to community groups, albeit successful in convening their message to government personnel. This is partly because of differing motivations, social pressures, ways of sharing information



and methods of evaluating information. Even when all stakeholders involved understand the scientific evidence, they still tend to disagree about the best way forward. Consequently, technical solutions for invasive animal control are not based on a shared understanding of problems and goals of different stakeholder groups, but rather based on scientific information and technical knowledge of government personnel.[ccv]

Problems in communicating science to the public have also resulted in a decline in public trust and respect in science, as people's participation is hindered. There is increased questioning of the ethics of institutions carrying out R&D for invasive animal management, and some communities are reluctant to adopt certain new technologies.[ccvi]

'Dysfunctional' - Governance and Institutional Arrangements

On a landscape scale, government responses are essentially inefficient, chaotic and dysfunctional, and exacerbate invasive animal challenges, with overlapping activities implemented by different actors.[ccvii] Policy development for invasive species management fails to facilitate a shared understanding of community values and priorities as there is limited engagement of diverse stakeholder groups that may contribute alternative perspectives, and limited translation of information in digestible ways between scientists, landholders, and policy makers.[ccviii] Public distrust in decision-makers and policy makers grows due to dominant top down approach to invasive animal management.[ccix]

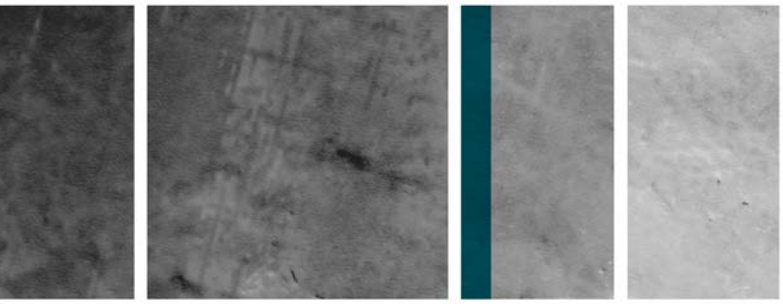
Governments or agencies directly allocate resources to bring about outcomes, impose order, rule and collective capacity.[ccx] This includes imposing rules or standards of behaviour on other actors, backed by sanctions and rewards, in order to achieve invasive animal management goals.[ccxi] However, there is a lack of consistency in the philosophical approach to enforcement and compliance which has been associated with: increased scepticism to government efforts; ineffective management; increasing reactive management; outbreaks of species under control; shifting levels of community uptake of management; and a loss of perception of importance of issues relating to invasive species.[ccxii]

Although there is largely centralised government executive power and authority, government regulations have delegated a share of responsibility to landholders and land managers to lead and deliver on-ground management strategies. Regulations reflect a substantial lack of knowledge transfer between science (communicated through extension officers) and the wider community.[ccxiii] As a result of poor communication and poor coordination, regulatory frameworks are at times contradictory and in conflict with another.

Responses to invasive animal threats are not coordinated and sometimes not as effective as they could be, not to mention potential spill over of impacts (e.g., environmental and economic impacts) to areas outside property boundaries. For example, landholder and community groups work in isolation, potentially impacting on the costs of others trying to control invasive animals.[ccxiv]

'Dysfunctional' - Community Engagement

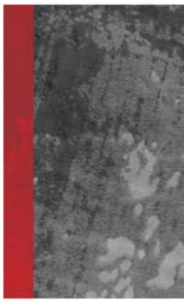
Collaborative processes for policy development are failing to take into account a full range of community values. This may be because collaborative processes are only involving the dominant stakeholder groups, or maybe they are not consulting people extensively enough, or perhaps their methods of community engagement are flawed. Instead, government personnel are confident that management decisions are based on best available information and do not require input from citizen science. On ground management is carried out more quickly at



some locations as there is no need for community involvement and consultation prior to their implementation.

While there is meaningful dialogue between scientists and government practitioners, the public is distrusting of government given its inability to take into account a fuller range of community values.[ccxv] A range of conflicts and community opposition to invasive animal projects ensues but those have little impact on government led and planned management actions.

A lack of coordination underlying local invasive animal management strategies has also led community members to be unaware of the activities of other groups. There is no obvious ownership of responsibilities and there is competitiveness rather than cooperation between community groups at the regional scale.



6. Key Outcomes

6.1 Vision

As previously noted (see section 5.1), the participants at each state-based workshop modified the original Vision Statement to accommodate their perceived local circumstances, challenges and objectives. Whilst the principal elements remained constant, some wording and emphasis modified the Vision to read:

A future world influenced by feasible reforms that reduce institutional barriers (including legal and administrative arrangements, funding arrangements, governance and government activities) and increase support thereby motivating and facilitating citizen activity and making it significantly easier to achieve a genuine government-industry-community partnership to reduce harms caused by invasive animals.

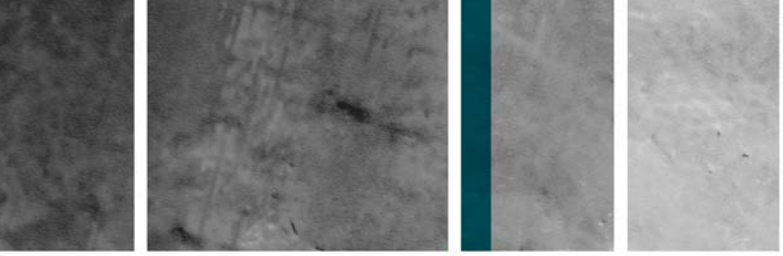
Whilst there were minor variations in each State to this generic Vision, the key elements for a Vision seeking "*A future with reduced harm caused by invasive animals*", included its achievement through:

- Invasive Animal management as a shared responsibility;
- Feasible reforms;
- Improved administrative arrangements;
- Research and development – capacity building and training; and
- Facilitating citizen activity.

Whilst a whole separate workshop could have been held on the Vision alone, there was very limited time to devote to this matter during the second scenario single day workshop. Never-the-less, in each location, consensus was reached on a composite Vision for use in the workshop. Each workshop generated a number of individual points in relation to the Vision that were not necessarily adopted. But for the purposes of faithfully reporting that discussion and highlighting the issues important to participants from each state, these points raised have been summarised in Appendix C.

The outcomes from each of the four state-based workshop series are reported below in terms of the nine Future Option categories that workshop participants evaluated against their chosen scenarios. In evaluating the scenarios, participants addressed the following questions:

- What is its likelihood of success (ie achieve the aims of the Option)?
- What is the likelihood that this Option will have negative impacts on society?
- To what extent will this Option assist to fulfil the vision for invasive animal management?
- To what extent does this Option represent "value for money" - the best use of public money (ie cost effectiveness)?
- To what extent will this option enable communities to deal with future shocks and surprises?



6.2 Brisbane Outcomes

6.2.1 A stronger focus on private funding

Participants of the Brisbane workshop expressed that a greater focus on private funding as opposed to government is probable, as government investment is likely to decline. It was expected that philanthropic endeavours would work to motivate a stronger focus on private funding. Private funding was considered to be cost effective in general and was expected to bring a diversified portfolio and more on-ground initiatives which would increase resilience. However, a shift in investment focus from public to private sources was expected to bring some negative impacts such as:

- Limited attention paid to environmental pests in preference for a focus on economic pests instead;
- Neglect of new incursions and prevention strategies;
- More attention paid to private lands at the expense of biodiversity protection on public lands;
- Less control over where funds are directed; and
- Limited investment going to R&D or long term management, as private investment tends to prefer tackling short term on-ground solutions.

6.2.2 A more entrepreneurial strategy for public funding

Workshop participants expressed concerns regarding redesigning public funding strategies to meet changed conditions (such as reduced government budgets, climate change, more international trade, changing land use). These related to the potential for complex processes that are not user friendly, tax rorting, and the potential for people who know the system well to benefit from it at the expense of others that are disadvantaged by a lack of administration skills. This Option was associated with administrative burdens and challenges.

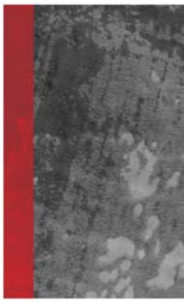
6.2.3 Integrated performance improvement reporting

A comprehensive and transparent system of performance review and reporting focused on continuing improvement (not merely evaluation) was considered by workshop participants to have merit insofar as it included involvement of all stakeholders with negotiated commitments. The provision of suitable tools and set rules was also considered important for this Option.

Participants considered this Option to potentially hinder the vision for invasive animal management through increasing institutional barriers and generating conflict within communities. Some identified potential negative impacts from this Option relate to difficulties in achieving consensus from stakeholders, labour intensive reporting and time consuming, costly activities. It was asserted that focus should be on on-ground activities rather than reporting.

6.2.4 Agreed stewardship roles and accountability

Workshop participants asserted that before a clear specification of responsibility and accountability of those who should be involved in invasive species management can be achieved, more efficient, effective and fair regulation is required (Option 5). However, a clear specification of responsibility and accountability in invasive species management was



considered to assist the vision for invasive animal management through reforming and reducing barriers and assist communities to deal with shocks and surprises.

Some questions were raised relating to this Option regarding who would mediate and enforce rules, whether it is really necessary, and whether funds would be best placed on this Option. It was mentioned that this Option generates pressure for stakeholders to act rather than encouraging motivation.

6.2.5 More efficient, effective and fair regulation

Workshop participants considered that more efficient, effective and fair regulation would impact on circumstances dealing with animals in captivity and would be especially beneficial in new incursions. Harmonizing regulation across Australia to also address inconsistencies and gaps, under-implementation and inefficient administration was expected to impact special interest groups in different ways and be a difficult task due to conflicting interests.

The successful implementation of Option 5 was considered to be reliant on clear specification of responsibilities and accountabilities in invasive species management, and a willingness to act on legislation. Government changes were also seen as presenting challenges for the implementation of this Option.

6.2.6 Citizen-friendly systems

Participants drew attention to various successes of citizen-friendly systems such as fox management activities in the Sunshine Coast, in which good council and community relations have been integral. Participants asserted that good relationships with communities are essential for the likelihood of success and boosting of adaptive capacity through initiatives such as those in Option 6. Where good relationships occur, the likelihood of success was considered to be high. In particular, insofar as these options assist the necessary involvement of landholders in invasive animal management, they may be considered critical. This Option was considered to assist communities to deal with future shocks and surprises through getting communities 'up and running', and so fostering community skills.

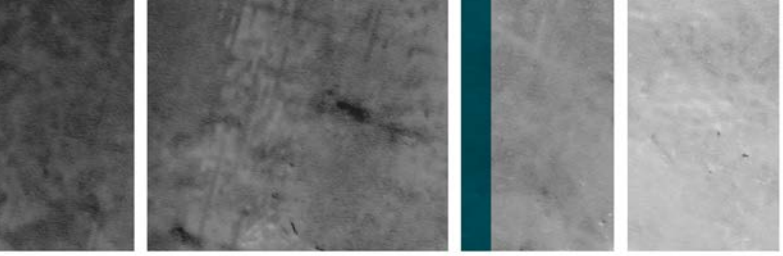
However, it was noted that managing expectations and effective coordination is very important in these sorts of initiatives so as to avoid loss of public trust. It was also noted that sometimes the means of public engagement may be more important than the ends, and outcomes may occur slowly.

6.2.7 Greater appreciation of citizen contribution

As government funding of invasive animal management is curtailed, more community responsibility and capability was recommended by workshop participants. It was asserted that if the community is skilled and more informed they are better prepared to deal with future shocks and surprises. Community groups up and running were considered to be able to deal with any pests, although communities might need additional support for managing new incursions. It was noted that other communities with prior experience dealing with a particular pest could assist with new incursions.

6.2.8 Landscape-scale integrated ('nil-tenure') strategies

Workshop participants felt that tightly integrated strategies, across a whole landscape, to reduce the effects of fragmentation of land-use, tenures, program and public/private roles



would work for some local/regional groups, but not others that need regular government support (especially financial support). Benefits of this Option were expected to be only localised in nature and were expected to require regular support to be the best use of funds. This Option was also expected by many workshop participants to be a good local and regional response and foster good succession plans for properties.

Some potential negative impacts identified by workshop participants were that: programs under Option 8 may not be long term as government funds tend to be given to short term projects; property rights and access challenges may act as barriers to implementation; and vulnerabilities of some communities may be accentuated.

Good coordination and cooperation was considered essential to achieve success at local and regional scales for a range of initiatives across the landscape, including for example:

- Biodiversity and production rather than species-focused approaches, using a negotiated regional or local strategy;
- Potential changes to land-access and private tenure arrangements, ideally on a negotiated cooperative basis;
- Involve regional NRM and other bodies, but with an invasive species focus that is not 'drowned' by other issues;
- Invasive species performance targets that are negotiated as part of the regional strategy, as a basis for funding or other support; and
- A peri-urban invasive species management strategy and taskforce.

It was pointed out that community involvement in adaptation of plans and implementation actions is already happening.

6.2.9 More effective public communications

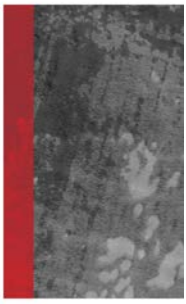
More effective public communications was considered essential to respond to environmental changes such as drought and new incursions. Workshop participants also considered a strong communications approach to community awareness of (and support for) invasive species management, and proactive management of possible 'negative' messages to be beneficial in overcoming deficiencies of sporadic and insecure political commitment to a degree. However, it was pointed out that if funding was intermittent, public messages may be inconsistent, resulting in poor communication and a waste of funds.

Workshop participants asserted that the actions in this Option are largely inconsistently supported by government, particularly because they are considered costly.

6.3 Sydney Outcomes

6.3.1 A stronger focus on private funding

Private investment was not considered by Sydney workshop participants to enable communities to deal with future shocks and surprises. Private investment was considered to be too focused on short term outcomes, and too susceptible to changes in the state of the economy.



6.3.2 A more entrepreneurial strategy for public funding

This Option was not reported on by workshop participants.

6.3.3 Integrated performance improvement reporting

Workshop participants suggested that communities need to demonstrate that they are managing their issues and that input from community actions is incorporated into reporting. It was noted that although these actions are possible they will not happen without funding.

6.3.4 Agreed stewardship roles and accountability

This Option was considered to be important because it addresses issues of government accountability.

Lack of enforcement or will to enforce, in addition to funding, was considered to be the main barrier to this Option contributing to the vision for invasive animal management, (although New South Wales' new Biosecurity Act was considered to assist to a degree with issues of compliance).

In addition, participants felt that it would be difficult for stakeholders to reach agreement regarding their responsibilities and that this Option could bring contentious animal issues to the surface. Workshop participants asserted that trying to define responsibilities for pest animals is very difficult, and that even when roles and responsibilities are clearly defined, additional regulation and enforcement is needed to make sure stakeholders actually enact their roles on the ground. In addition, workshop participants pointed out landholders do not always have the financial and other resources to be able to carry out on-ground actions and that this can hinder their ability to carry out their responsibilities.

6.3.5 More efficient, effective and fair regulation

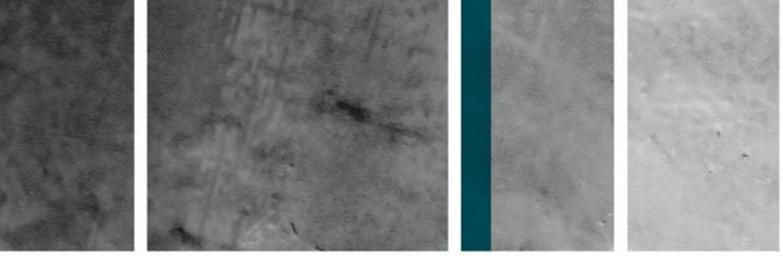
Workshop participants felt that success of Option 5 was difficult to achieve and only considered it at a national level. They also expressed however, that appropriate technology, a large injection of funds, and political will can facilitate coordinated action and likelihood of success.

Although different state laws and electorates can produce challenges, different state laws were not always an impediment to harmonised regulation and to addressing inconsistencies and gaps, under-implementation and inefficient administration. While some participants noted that there are cases where having regional differences in regulation and standardising laws can result in negative impacts, some participants felt that harmonising regulations could entail the weakening of laws to the 'lowest common denominator'.

6.3.6 Citizen-friendly systems

Administration that is user-friendly and transparent, with 'customer-focused' design and feedback, to minimise frustrations and administrative costs and improve experiences was seen by workshop participants as having scope for potential improvements, such as improvements in training. Although it was noted that it is impossible to be entirely 'customer focused'.

Citizen-friendly systems were considered by workshop participants to carry some risks, such as a ban of 1080 (which would cause challenges in the management of some species), risks of



higher impacts resulting from lower regulation, (although this option was considered unlikely to result in a change in regulations regarding chemicals).

It was asserted that regulators are currently opposed to the sorts of actions listed under Option 6. Some other concerns raised by workshop participants included those relating to risks to human health, poor animal welfare outcomes, unrealistic expectations of data from citizen science, and inappropriate use of chemicals. A large amount of uncertainty was also perceived regarding the cost and value of Option 6. Workshop participants expressed that this Option could be costly if it required restructuring government administration, future public investment, or increased coordination.

6.3.7 Greater appreciation of citizen contribution

Workshop participants expected that a greater appreciation of citizen contribution would yield a marginal help to all other Options, but on its own cannot achieve the vision for invasive animal management. This Option was expected to assist in dealing with shocks and surprises through producing more 'leads', and assisting the setting of more realistic expectations for control programs.

Participants mentioned that maintaining citizen engagement over time can generate some fatigue but that this is easier in a local context, where communities tend to be more engaged. Improved technologies were expected to have potential to improve the effectiveness of citizen engagement.

6.3.8 Landscape-scale integrated ('nil-tenure') strategies

The likelihood of success of landscape-scale integrated ('nil-tenure') strategies was considered to be independent of technology uptake in the 'Short Term Lost Opportunity' scenario, and improved due to technology in the 'High Risk High Reward' scenario, which is characterised by advanced technological development.

It was highlighted that 'most efforts fail due to poor uptake', and that employing the best use of available techniques is a determining factor in the cost effectiveness of landscape-scale integrated strategies. If communities work together in tightly integrated strategies across a whole landscape it was considered that this could help to increase resilience.

6.3.9 More effective public communications

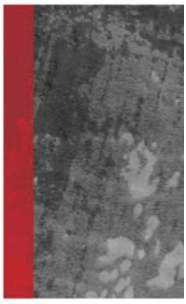
This Option was not reported on by workshop participants.

6.4 Melbourne Options

6.4.1 A stronger focus on private funding

A stronger focus on private funding was considered to assist the vision for invasive animal management through its potential to bring greater community involvement. This was considered to depend on the 'business case' for invasive animal management, ability to monitor performance, and the metrics and outcomes defined from the conception of invasive animal initiatives.

Workshop participants identified the risk that if government funding lapses, there would be no replacement for private investment. Also, they perceived that environmental impacts may



receive a lower priority than agricultural concerns in private funding of invasive animal management.

6.4.2 A more entrepreneurial strategy for public funding

This option was considered by workshop participants to potentially assist to reduce the need for further tax payer funding of invasive animal management, and to assist in dealing with a spike in resource requirements in short term. It was also seen as having potential to help drive reform, reduce funding barriers, and increase support and partnerships.

Workshop participants noted that the success of this option would depend largely on the clarity of invasive animal management objectives, and how well they align with those of communities and NRM groups. Also, it was noted that tax exemptions and other financial incentives to support this option would need to avoid eroding other revenue sources.

6.4.3 Integrated performance improvement reporting

Workshop participants in Melbourne considered the likelihood of success of integrated performance improvement reporting would be hindered by difficulties in motivating people to report. This future option was not expected to change compliance rates or get 'buy-in'. Workshop participants even raised concerns that this Future Option could 'put people off', as they may not understand why the reporting is important.

A comprehensive and transparent system of performance review and reporting focused on continuing improvement (not merely evaluation) posed some risks, such as the risk of demotivating and alienating people, in particular illiterate people which can make up a high proportion of the community in some areas.

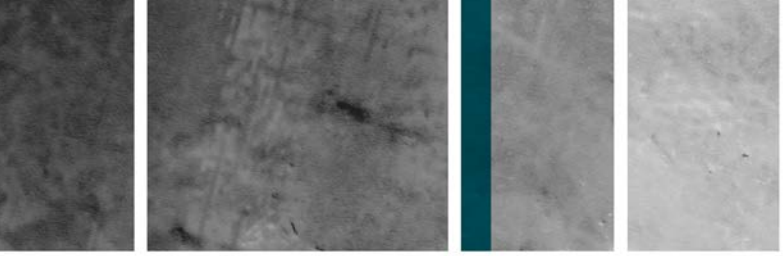
Workshop participants also had concerns integrated monitoring and reporting of invasive species management status and issues on a national, state and region basis: 'State of Invasives' reporting, could shift resources from on-ground actions. However it was noted that this could also improve the knowledge base for invasive animal management.

Workshop participants considered 'value for money' of this Future Option to be high due to integration, and the contributions of data for evidence-based policy and transparency for future decision-making.

6.4.4 Agreed stewardship roles and accountability

Option 4 was considered by some workshop participants to have limited likelihood of success given a reported 'lack of awareness of problems and responsibilities'. It was even asserted that this option could have a negative impact on society if responsibilities and obligations were enforced without good communication.

A negotiated agreement on the obligations, rights and reasonable expectations, of landholders and land managers, government and industry was considered to have limited likelihood of success if public and private land managers were to be given similar obligations and expectations. Workshop participants were doubtful of the likelihood of all stakeholders reaching agreement on such matters. It was also noted that enforcement of this option would be essential for its success, and that in the absence of enforcement this option could even have the ability to have negative impacts on invasive animal management.



It was asserted that equivalent stewardship responsibilities and performance supervision for public and private land managers could also have negative impacts on society if it encouraged public land managers to devote resources to relatively insignificant species. Workshop participants also pointed out that ensuring effective and fair implementation of this option, based on landscape values, economics and capacity, could be too administratively complex, costly, and potentially divisive. Workshop participants also proposed that value for money for this particular option would depend on the scale at which it would be applied.

6.4.5 More efficient, effective and fair regulation

Workshop participants warned that a unified invasive species law (or system of laws), either a national law, or closely coordinated national, state and local government laws, could have perverse outcomes if they were to impact negatively on vegetation condition.

The likelihood of success of more consistent, clear and universal definitions and principles e.g. pest species declarations was considered by workshop participants to be context-dependent, as some species are not pests everywhere. It was cautioned that this option could be perverse for some context-dependent pests. Also related to local contexts was the perceived likelihood of success of Option 5.3, 'clarification of rules and explanations, streamlined administration, harmonised declarations and control measures, and delegate approvals'. Workshop participants considered this to be limited, as some invasive animals management needs to be tailored to particular characteristics of localities.

It was recommended that all regulations need to be reviewed and reformed as necessary in order for reforms to reflect the increasing threat and changing nature of invasive species problems (e.g. climate change, increased trade, more diverse land use etc); and for active continuous improvement approach to regulation to be achieved.

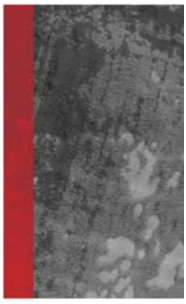
Workshop participants considered a more proactive approach to changing animal welfare expectations in the community, and the resulting rules and processes to be essential for effective invasive animal management, but also felt that this was a major communication challenge. Community engagement in the development and refinement of regulation and in enforcement tailored to regional conditions was considered to be very important for community acceptance, and thus the likelihood of success of Option 5.

6.4.6 Citizen-friendly systems

The likelihood of success of efforts to achieve administration that is user-friendly and transparent, with 'customer-focused' design and feedback, was not considered to be high by workshop participants. Problems were noted relating to community 'buy-in', reluctance to participate and attend training. However it was noted that this Future Option could help with a lack of engagement if systems were tailored for every segment of society. If well-designed, this Option could motivate and facilitate invasive animal management.

Workshop participants mentioned again the need to consider illiteracy in communities. The use of visuals and minimal words was encouraged to reduce barriers and an alert option was suggested for shocks and surprises. Images and reporting was considered to help engage young people. Participants also raised concerns that this Future Option could create further alienation for those not engaged and even maintain a low level of understanding.

Professionally redesigned administration for improved user experience and engagement was commended as a good move for increasing capacity, but participants noted difficulties due to the high level of coordination and public education required.



Participants suggested that involving users in the 'co-creation', design and review of programs and project management systems was good but needs an informed public. In the context of public confusion, frustrated poor outcomes were expected. Agency performance objectives to include citizen experience as well as program performance were considered to be a 'step in right direction', relying on 'experience rather than opinions'. Widespread training and use of 'scientific best practice' engagement methods, and reviews and accountability for the use-ability, usefulness and 'friendliness' of administration systems were considered to be the 'best way out of a bad situation', but require improved management and coordination, and reviewed funding.

6.4.7 Greater appreciation of citizen contribution

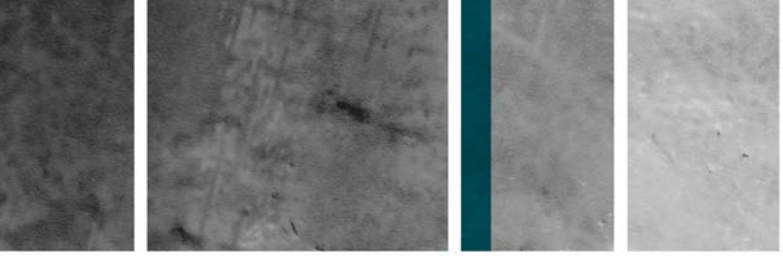
The likelihood of success of greater appreciation of citizen contributions was considered by workshop participants to be affected by ad-hoc citizen efforts, difficulties to collaborate in a 'dysfunctional environment' and citizen contributions that are based at an individual level rather than on community values. To increase the likelihood of success workshop participants suggested educating people of the benefits, cost efficiencies and reasons that they should be involved, and demonstrating successes that do occur as a motivator for others becoming involved. It was suggested that building and maintaining citizen engagement arrangements should be done in conjunction with Future Option 9.

Workshop participants believed that this Future Option would not effectively result in positive change, not affect feasible reform activities and will not create incentives for partnerships. Some potential negative impacts were identified relating to the potential for people to feel pushed away if they do not feel acknowledged. They felt it would be wrong for recognition to only go to those with resources and for people who only act when an action is recognised and acknowledged. It was mentioned that there is a need for innovative ways to create recognition without creating disincentives.

Workshop participants suggested that a collaborative approach to the design and implementation of programs and projects must be inclusive, as it has the potential to alienate some people if not well managed. Events and awards to thank, recognize and reward citizens was also considered to have potential to alienate some groups, but also be a cost effective way to maintain public support. Acknowledging citizen communication through 'thankyou's was considered necessary by workshop participants, as was greater use of 'customer' feedback to maintain engagement.

Citizen Involvement in participatory budgeting and evaluation of citizen experience was considered to be helpful in prioritising and understanding, to further the vision of invasive animal management, but this needed to be sensitively managed. However, workshop participants cautioned of the 'squeaky wheel effect' leading to incorrect priorities. The cost effectiveness of this action rested on its level of involvement and how it is 'sold' to stakeholders.

Greater 'citizen-scientist' involvement in data gathering, reporting, interpretation, publications and research communication was considered to have value through its capacity to increase awareness. However its success was considered to rest on the need for a statistically robust design that is linked to government and public databases (birddata/bom), and citizen repository tools.



6.4.8 Landscape-scale integrated ('nil-tenure') strategies

Scenarios used by Melbourne involved a low level of shared understanding of community values and priorities. Under these conditions workshop participants considered that landscape-scale integrated ('nil-tenure') strategies would be potentially positive. However, public/private roles were considered to be hampered by any lack of coordination which could make defining priorities difficult. It was noted that the success of this Option rests on a need for coordination, agreed performance metrics, community engagement, a shared approach, and defined priorities from the beginning. Where these needs are met workshop participants believed that this Option had potential to create an impact on the credibility of policy/regulation etc. However, where there is a lack of shared knowledge and shared approach, this Future Option could lead to new incursions being missed.

In order for actions to negotiate invasive species performance targets as part of a successful regional strategy, workshop participants suggested that actions must be well structured and well resourced. Workshop participants also cautioned that this action may encourage perverse 'neighbour versus neighbour' behaviour.

6.4.9 More effective public communications

Workshop participants considered this Option for more effective public communications to be 'most important of all'. A strong communications approach to community awareness of (and support for) invasive species management and proactive management of possible 'negative' messages was considered to assist the vision for invasive animal management through assisting to create partnerships, engagement and motivations, assisting the emergence and engagement of community champions, setting collaborative standards from the outset, and increasing social cohesion. Workshop participants also noted the potential for training to reduce costs and increase value for money, and increase community ownership.

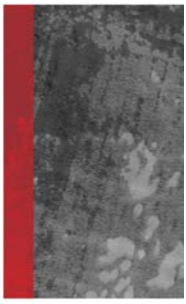
However, the likelihood of success of this Future Option was considered to be dependent on relevant strategic communications, and a strategy tailored for particular circumstances and clearly articulating issues and risks. Workshop participants warned that "sophisticated" communications may alienate community and that messages that promote "science best practice" may be seen as patronising. It was also recommended that risks be communicated early in engagement processes.

Workshop participants suggested that the success of Actions 9.1 and 9.2 require extensive community involvement and broad engagement, including from urban areas. It was also suggested that Action 9.3, 'a comprehensive communications strategy including face-to-face (e.g. landholders), traditional media (e.g. with local communities) and social media' is driven on-ground by a person that is not 'threatening, and preferably not government. It was also recommended that a communications strategy focus on creating awareness and support for action.

6.5 Perth Outcomes

6.5.1 A stronger focus on private funding

In a context of expanding global markets, workshop participants saw that a stronger focus on private funding could lead to higher profits/funding that are available for public works related to invasive species, and increased funding of research into invasive species and the



interface between researchers and the community. This was considered to build community skills and knowledge.

When global markets are expanding investment can be high and markets a rich source of funds. In such conditions, workshop participants envisioned industry and community working closely together on research and invasive species management and social wellbeing of community, with corporate social responsibility being high. A stronger focus on private investment under these desirable market conditions was also associated with local aspects of invasive species incursions receiving greater focus and financing, and greater cost effectiveness. A collaborative and cooperative relationship between industry and the community was considered to help direct funding towards new invasive species incursions, or other shocks and surprises.

However, a greater role for private funding was also associated with some potential negative impacts, including a lack of focus on invasive species research, inefficiencies in collecting funds, competition for funding, lack of coordinated direction across the landscape, individuals pushing their own self-interested ideas, lack of accountability, and a disproportionate focus on economic benefits to the detriment of environment and community.

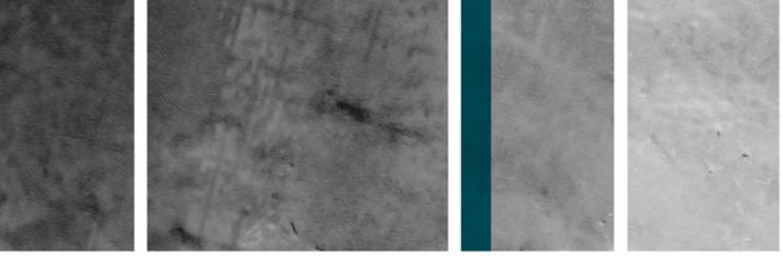
A focus on private philanthropy investment into invasive species control (e.g. by promotion of the benefits, taxation deductions, strategic joint ventures) (Action 1.1) was seen as assisting employment opportunities in some regions. The use of crowd-funding from Australia or overseas (Action 1.2) was not considered by workshop participants to be good for long term sustainability and too small in scale to effectively assist the vision for invasive animal management. Market instruments in Action 1.3 were not rated highly in the context of contracting global markets. Technology innovation/investment support for private investments in innovation (Action 1.5) was largely seen as being positive in impact with technology being driven by market opportunities, but also potentially restricted in availability to wealthier people. Action 1.6, 'Demonstrate and promote the economic benefits of invasive species control investment', was welcomed by workshop participants.

6.5.2 A more entrepreneurial strategy for public funding

This option was likened to shifting the cost in the public realm whilst retaining regulatory control at state level, and shifting responsibility from government compliance to a community compliance approach. It was mentioned that WA is far from being ready to be a statutory free NRM jurisdiction and that the RBG model needs more work in relation to engagement. Workshop participants raised questions as to whether a more entrepreneurial strategy for public funding would show benefits to people who invest.

6.5.3 Integrated performance improvement reporting

In a context of expanding global markets, a comprehensive and transparent system of performance review and reporting focused on continuing improvement was seen by workshop participants as assisting the vision for invasive animal management and increasing resilience in cases of future shocks and surprises. In this context, workshop participants associated performance improvement modelling with perfectly developed and privately funded cross-industry and cross-community adaptive invasive species management models that ensure the increased support, motivation and facilitation of government industry-community partnership. The success and cost effectiveness of this Future Option was considered to hinge upon availability of private funding and the extent of social capital. Some potential negative



consequences identified by workshop participants were a possible lack of transparency, false reporting and 'massaging of results', and the generation of a multiplicity of reviews, processes, and systems.

In an environment characterised by limited government funds, Action 3.1 ('integrated monitoring and reporting invasive species management status and issues on a national, state and region basis') was considered by workshop participants to not enable communities to deal with shocks and surprises, but instead only put more pressure on communities. This Action was considered to not be cost effective, and have potential for disenchantment and loss of outcomes on-ground.

Action 3.2, however, was commended by workshop participants. Landscape-scale regional invasive species management objectives and plans set through stakeholder consultation was considered good value for money and helpful, as 'everyone knows where they are going'. Actions 3.4 and 3.5 were considered to not be good use of public money, but could help communities prepare for future shocks and surprises.

6.5.4 Agreed stewardship roles and accountability

With regards to the specification of agreed stewardship roles and accountability, workshop participants pointed out that some landholders would like to have the stewardship but may not have particular required skills. It was also asserted that WA is the only state that has dollar for dollar matching in matters of stewardship, with priorities established and approved by the director general, followed by requirements for landholders to develop action plans to match it.

6.5.5 More efficient, effective and fair regulation

Workshop participants suggested that the scope of invasive animal management should be expanded beyond concepts of regulation to clearly include measures in the 'early days' of invasion. It was noted that when the community is involved in compliance planning, there is scope for greater community awareness and assistance in compliance. But it was noted that the definition of 'community' and who is involved can be key. Participants suggested that 'stakeholder' involvement in the development and refinement of regulation may be more apt than 'community' involvement.

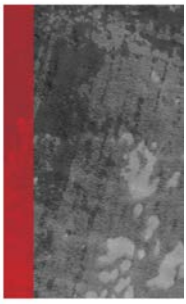
6.5.6 Citizen-friendly systems

Some workshop participants commented that reduced regulation implies a degree of flexibility that could assist the redesign of administration for improved user experience and engagement. It was noted that administration time can be a problem to report and ensure data is updated, and that permits are becoming more difficult to get as there are less people working in the sector.

6.5.7 Greater appreciation of citizen contribution

Building and maintaining citizen engagement was seen by workshop participants to develop capacity and flexibility to deal with invasive species incursions and help to motivate citizens. Participants noted that this Future Option is reliant on local champions and citizen actions, in an environment characterised by retreating government support.

Some identified potential negative impacts included questionable value of data, favouritism of particular citizens or citizen groups, agendas high-jacked by citizens, increased cost



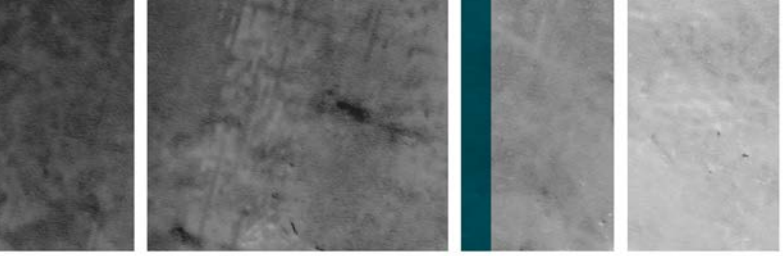
burden on communities and individuals, lack of expertise, and community burnout. Workshop participants also commented that this Future Option was not achievable, but that it would be very important if it were.

6.5.8 Landscape-scale integrated ('nil-tenure') strategies

Workshop participants highlighted that a key problem with integrated ('nil tenure') strategies at a landscape level was that some landholders may not like the 'nil-tenure', so they do not allow entrance to their properties. Issues in accessing public land were also highlighted – particularly conservation areas. Small holdings were also considered problematic for the integrated management of some invasive species.

6.5.9 More effective public communications

A strong communications approach to community awareness of (and support for) invasive species management, and proactive management of possible 'negative' messages was considered essential for the likelihood of success of invasive animal management.



7. Discussion

7.1 General

In response to the draft Vision Statement used in the scenario planning, there was overall agreement that it would be highly desirable that future initiatives seeking to reduce harm caused by invasive animals should be characterised by:

- Invasive Animal management undertaken as a shared responsibility;
- Feasible reforms;
- Improved administrative arrangements;
- Research and development focused on capacity building and training; and
- Facilitated citizen activity.

As reported in Section 5.6, the similarities across the four case study regions in terms of the key drivers of change likely to have implications for future invasive animals management across Australia were abstracted to four common themes, namely:

- Coordination;
- Community Involvement;
- Government Commitment; and
- Financial Aspects

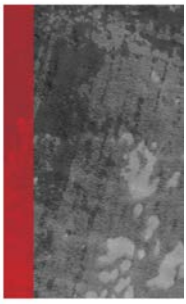
There is a strong degree of correlation between the key elements of the Vision and these common themes. Their common elements are all picked up in the nine Future Options.

This section summarises the findings from the scenario planning exercise and synthesises the findings relevant to each of the nine Future Options for institutional improvement to more effective support for (and reduction of impediments to) citizen action in invasive animal management.

7.2 A stronger focus on private funding

Clearly this Option will work best in a robust economy, especially one dominated by expanding global markets, and at its very extreme could be characterised as a changing world where business is taking over power and those responsibilities that were formerly the domain of government, ("shareholders start to hold more power than voters"). It may in fact (have to) become a reality as government investment in invasive animal management declines.

Stepping back from that extreme future, a stronger focus on private funding, on the one hand, could lead to a higher degree of on-ground works and investment in R&D and thereby assist in achieving the Vision. This injection of funds could lead to greater community involvement in invasive animal management, assisting to improve the interface between researchers and the community, building community skills and knowledge. It could also lead to higher degrees of cooperation and collaboration between industry and the community especially on research and invasive animal management. This industry-community relationship, forged through a stronger focus on private funding, is seen as assisting the community to deal directly with new invasive species incursions and other shocks and



surprises. The direct and speedy attention to new incursions would be a cost-effective response. This in itself will assist communities to build resilience although there is also a minority view that private investment will not enable communities to deal with future shocks and surprises.

The potential downside which will need to be managed notes that private investment will tend to focus naturally on short term on-ground solutions and outcomes in preference to R&D or long term management and is too susceptible to changes in the state of the economy. There will be limited control over where private funds are directed and a danger that more attention will be directed to dealing with economic pests in preference to environmental pests and thus more attention may be given to the management of private lands at the expense of biodiversity protection on public lands. In fact, this view holds that there may even be neglect for new incursions with self-interests dominating decisions and a lack of accountability on the employment of funds. Interestingly, these negative outcomes play themselves out in an environment characterised by sporadic, inconsistent and inadequate political support for invasive animal management with low level understanding of community values and priorities.

Moving forward, a "roadmap" to ensure a successful uptake of this Option requires some preparatory work largely in the form of developing a Business Case which demonstrates how, through the performance monitoring of key metrics, the outcomes of private investment in invasive animals management can be achieved.

These preparatory efforts should be undertaken in the context of an environment where there was strong bipartisan political support for, and high community participation and intervention in the politics of, invasive animal management. Within this context, the social wellbeing of community needs to be highlighted, with a strongly articulated argument for why corporate social responsibility should be high on this agenda.

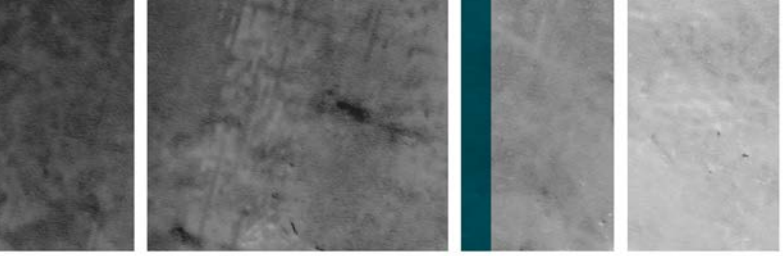
Government involvement will be required to provide the overarching effective coordinated management and facilitation of productive cooperation especially as there is always the risk that as government's interests and priorities wane and their funding lapses, so too will private investment - it needs the Vision's three way partnership of "***government-industry-community***".

7.3 A more entrepreneurial strategy for public funding

The success of this Option is dependent on the clarity of invasive animal management objectives and how well they align with those of NRM groups and the community-at-large. This outcome will be improved if it can occur in a context of effective coordinated management and cooperation.

Benefits associated with this Option go to an eventual reduction in overall taxpayer funds required for invasive animal management and its potential ability to flatten the spikes in resource requirements in the short term. It is also believed that this option has the potential to help drive reform, reduce funding barriers and increase support and partnerships.

However, in an environment characterised by sporadic, inconsistent and inadequate political support for invasive animal management with low level understanding of community values and priorities, any redesign of public funding strategies has the potential to result in the



introduction of complex processes that are not user friendly and favour those who know the system and benefit from it at the expense of others.

A view was also expressed that this option could be likened to shifting the cost of invasive animal management in the public realm whilst retaining its regulatory control at the state level (ie. shifting from government to a community compliance approach). Care will be required in the manner in which the suggested tax incentives and rate reliefs are used to attract private funds to ensure that other revenue sources are not subsequently eroded.

A "roadmap" for this Option would entail an initial alignment of invasive animal management and natural resource management objectives through a coordinated management framework. This alignment could then overarch efforts to redesign public funding strategies to meet previously mentioned changed conditions such as reduced government budgets, climate change, more international trade, and changing land use.

7.4 Integrated performance improvement reporting

Assuming this Option occurs in an operating environment characterised by effective coordinated management and cooperation, it should represent 'value for money' and good use of public resources due to its potential to integrate data, improve the knowledge base for invasive animal management, and contribute to evidence-based policy, paving the way for transparency in future decision-making.

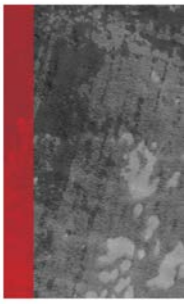
An essential key to the success of this Option lies in how well it is communicated to reporting agencies and the community and what degree of social capital is built up around its implementation. People, especially the general community, will need to be convinced of the importance of this task and why the reporting of their role and achievements are critical to the process and need reporting. The introduction of this Option should not demotivate and alienate people - it should do the exact opposite. This will require funding and good communications. In this manner, this Option would assist in the achievement of the Vision and improve community resilience to future shocks and surprises.

Pre-requisites for its success include: its needs to be comprehensive and transparent; it requires a process of continuing improvement not merely evaluation; it should involve all stakeholders with negotiated commitments; it needs to be supported with suitable tools and set rules; and its focus should be on on-ground activities rather than simply reporting.

The system needs to safeguard against unintended negative consequences, including: becoming a labour intensive, time consuming and costly process; generating false reporting and 'massaging of results'; the potential to generate conflict within communities; and the generation of a multiplicity of reviews, processes and systems and therefore increase institutional barriers. All of these consequences could hinder the achievement of the Vision.

A "roadmap" to ensure the success of this Option should commence with a fully consultative scoping out of the system's framework involving all stakeholders whilst acknowledging the above pre-requisites and potential negative consequences. Following beta testing it should undergo more extensive trails in different regions before being adopted nationally.

In an ideal world, this Option, along with Options 1 and 2, should go a long way to extend the Vision's "government-industry-community" partnership.



7.5 Agreed stewardship roles and accountability

This is an important Option as it addresses issues of government accountability. Overall this initiative would assist in the achievement of the Vision through reforming and reducing barriers, and it would assist communities to deal with shocks and surprises. Due to its importance for future invasive animal management and the achievement of the Vision, enforcement of this Option is considered essential.

To be successful it will need to improve a lack of awareness of the problems and responsibilities for invasive animal management especially where there has been sporadic, inconsistent and inadequate political support for invasive animal management with low levels of understanding of community values and priorities. Provision will need to be made for the improvement of selected landholder stewardship skills. Additionally, a distinction will need to be made between obligations and expectations of public and private land managers. It will need to ensure that there is a fair and equitable implementation of this Option accounting for different landscape values, economics and capacities of stakeholders. In this respect, acknowledgement will need to be made that landholders do not always have the financial and other resources to be able to carry out on-ground actions and that this can hinder their ability to carry out their responsibilities.

Mediation will be an essential ingredient in this process as there will be difficulties getting stakeholders to reach agreement regarding their responsibilities plus the difficulties in trying to find responsibilities for pest animals, especially as this process is likely to bring a number of contentious animal issues to the surface.

The "roadmap" towards the achievement of this Option starts with a review of the efficiency, effectiveness and fairness of existing regulations. Early delineation of enforcement aspects (eg enforcement / mediation mechanisms, enforcement rules and authority) and funding support will also be essential. As noted, not all landholders have the financial and other resources to be able to carry out their responsibilities, hence special consideration will need to be made to address this potentially serious deficiency.

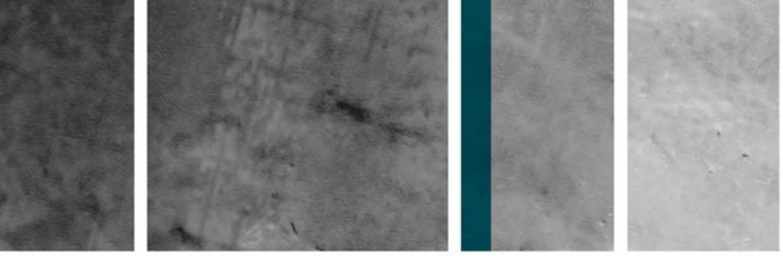
Extensive mediated consultation and negotiations will form the principal component of the development of this Option.

In order to ensure that the enforcement of responsibilities and obligations did not have a negative impact on the intent of the Option, it will be essential that a comprehensive stakeholder engagement and communication strategy is developed and implemented as early as possible.

This Option will only achieve success if the Vision's "***government-industry-community***" partnership can be fully embraced in a realistic and equitable manner.

7.6 More efficient, effective and fair regulation

The success of this Option is linked to Option 4. It is seen as particularly responsive and beneficial in the case of new incursions. However, the main challenge will be finding a period of stability across national and state/territory levels of government to complete this task, obtain agreement and then implement. In the current context, this is seen as highly problematic.



There is also a strong argument that the scope of invasive animal management should be broader than just a focus on regulations. It is argued that it should start with measures in the 'early days' of invasion with the community involved in compliance planning, thereby improving community awareness and assistance in compliance.

Again, as previously recommended in Option 4, and consistent with an environment characterised by effective coordinated management and cooperation, a review of the efficiency, effectiveness and fairness of existing regulations should be undertaken as an initial start on the "roadmap" for this Option. Additionally, consistent with notions of continuous improvements, it has been recommended that regulations be reformed to account for the increasing threats and changing nature of invasive species problems (including for example: e.g. climate change, increased trade, more diverse land use). Stakeholder engagement in the development and refinement of regulation and in the previously discussed enforcement regimes are considered very important for community acceptance and thus the likelihood of success of Option 5.

A cautionary note with respect to this Option if it were to involve "uniformity" of regulation, includes the fact that: pest species declarations are context dependent as some species are not pests everywhere; it could impact negatively on vegetation condition; and some invasive animal management needs to be tailored to the particular characteristics of a location.

Potential unintended negative impacts from this initiative could include its impact on special interest groups including those with conflicting interests.

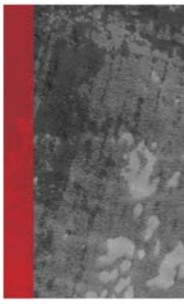
As noted, the "roadmap" for this Option is consistent with that of Option 4. Additionally, a social impact assessment needs to be completed with respect to this proposed Option at the outset and it should pick up unresolved issues from Option 4 such as the case of some landholders not having the financial and other resources to be able to carry out their assigned responsibilities.

7.7 Citizen-friendly systems

The success of this Option is very much dependent on the relationships developed between the administrators and the community - good relationships are essential and more than likely will lead to success whilst assisting the community to deal with future shocks and surprises. In this respect, the means of public engagement may be more important than the ends. Additionally, expectations need to be addressed in an environment of coordinated management and cooperation so as to retain the trust of the public. Such initiatives could assist in improving motivation levels and facilitating enhanced involvement in invasive animal management.

There is also the possibility that this Option can lead to improved user experience and engagement if it and the immediately preceding Options 4 and 5 result in a reduction in regulation.

Design essentials for this Option could be extended to include improvements in training. A professionally redesigned administration for improved user experience and engagement is seen as a good move for increasing response capacity. User involvement is the design and review of initiatives under this Option would be a good way to maintain an informed public. Utilising citizen experience rather than opinions provides added support for this Option.



This Option is overshadowed by a relatively strong view that a 'customer focused' administration is not entirely possible, with limitations including for example: the low levels of literacy in some communities; and it could further alienate those already not engaged and even maintain a low level of understanding in those quarters.

The "roadmap" for this Option should be linked to those of Options 3, 4, 5 and 6. This Option also reinforces the early initiation of the previously recommended comprehensive stakeholder engagement and communication strategy (see Option 4). It also highlights the requirement for a very high level of coordination to be achieved in order to bring all of these initiatives together.

7.8 Greater appreciation of citizen contribution

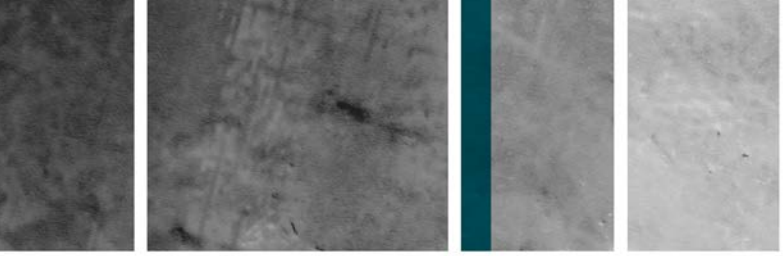
Ironically this Option is considered essentially in the wake of expected future cuts in government support and investment in invasive animal management. In this context, the Option should seek to improve community responsibilities and capabilities and as a consequence, better prepare them to deal with future shocks and surprises. It also highlights the need and importance of seeking out local champions to promote citizen action in invasive animal management. Building and maintaining citizen engagement in this manner will assist to develop the community's capacity and flexibility to deal with invasive animal incursions and help to motivate citizens to become involved and act.

On its own it will not achieve the Vision but it can provide some support to other options and importantly it is expected that it could assist the community to deal with future shocks and surprises.

The success of this Option may be enhanced through educating people of the benefits, cost efficiencies and reasons why they should be involved in invasive animal management. Any promotion of successful achievements by the community can only serve to increase the motivation of others to become involved. Success of this Option will also require an operating environment characterised by effective coordinated management and cooperation that promotes collective as opposed to individual ad-hoc contributions.

Negative issues may include for example: rewards may only go to those with resources to act; favouritism of particular citizens or citizen groups; it may not encourage partnerships; and people may be alienated if not recognised. This suggests there is a need to devise an innovative reward system in a collaborative manner that creates recognition without creating disincentives. In this way, an award system may be turned into a cost effective way to maintain public support critical to ongoing invasive animal management. Other suggested negative issues include: questionable value of citizen-derived data; hijacking of agendas; increased cost burden; and potential for community burnout. Greater access and use of technology may assist communities in this latter regard.

The "roadmap" for this Option will also require the early development and maintenance of a high productive level of community engagement, starting with the previously mentioned collaboratively derived comprehensive stakeholder engagement and communication strategy. It should be developed and implemented as early as possible (see Options 4 and 6 - see also Option 9).



7.9 Landscape-scale integrated ('nil-tenure') strategies

Effective coordination and cooperation is considered essential to achieve success with this Option at local and regional scales. It is expected that the rate and scale of technological uptake in invasive animal management and the advanced state of that technology will play a large part in this Option's success. Communities working together in tightly integrated strategies across a whole landscape could also help to increase their resilience to future invasive animal incursions.

However, it is also noted that this Option would not work for all local and regional groups, as some may be too small and others still need government financial and other support. Nevertheless, this Option could have a potentially positive effect where there was a low level of shared understanding of community values and priorities.

Essential attributes for success include: an ongoing commitment from government to fund this Option as a long term project/s; universal agreement is reached in terms of property rights and access to private lands as well as public land especially the protected estate; and the vulnerabilities of some communities may need to be safeguarded.

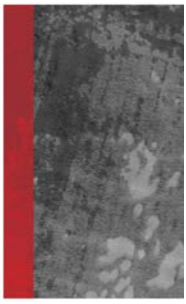
This Option's "roadmap" should start with a universal agreement of all relevant stakeholders on the need for a coordinated approach; a full community engagement and shared approach; agreed performance metrics; and defined priorities for action. As some elements of this Option are already underway, a stocktake and evaluation of these initiatives may prove informative at the early stages of the Option's development.

7.10 More effective public communications

There is a strongly held view that this is the most important of all nine Options. It was argued that a strong communications approach focussed on community awareness and support for invasive animal management, supported by the proactive management of 'negative' messages, would assist to achieve the Vision. This could be through assisting to: create partnerships, promote engagement and motivations; seek the emergence and engagement of community champions; establish collaborative standards from outset; and increase social cohesion.

In some respects, this Option is seen as a possible counter to an environment characterised by poor political commitments and a low level of understanding of community values and priorities. This Option is considered as essential, especially as an aid to respond to environmental changes such as drought and new incursions.

This Option's success was linked directly to the development of a relevant strategic communications strategy tailored to the particular circumstance at the time and one that clearly articulates the key issues and risks. In this regard, it was cautioned communications that are too sophisticated may alienate the community, and messages that promote "science best practice" may be seen as patronising. It was also recommended that the risks be



communicated early in engagement processes and that extensive engagement be extended to include urban areas as well.

It was cautioned however, that this Option would only achieve its intended outcomes if there were ongoing political support (including funding) for invasive animal management. The opposite would only result in a waste of public funds.

The Option's "roadmap" is entirely consistent with those of other Options, particularly, Options 4, 6 and 7. This should entail the very early development of a collaboratively derived comprehensive stakeholder engagement and communication strategy. This strategy should initiate the community engagement process and seek to develop and maintain a high productive level of engagement throughout.

7.11 A possible "Roadmap" to the Vision

This scenario planning exercise has demonstrated that it is feasible to achieve the Vision involving:

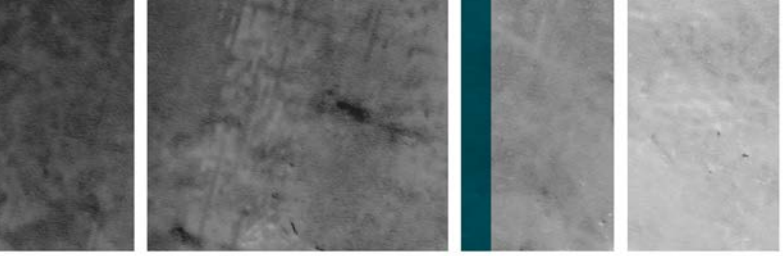
A future world influenced by feasible reforms that reduce institutional barriers (including legal and administrative arrangements, funding arrangements, governance and government activities) and increase support thereby motivating and facilitating citizen activity and making it significantly easier to achieve a genuine government-industry-community partnership to reduce harms caused by invasive animals.

However, there are caveats to many aspects of the nine Future Options for institutional improvement to more effectively support (and reduce impediments to) citizen action. These have been reported above.

This highly participatory exercise has involved and drawn input from a wide range of stakeholders that included representatives from front-line workers on invasive species issues, non-government organisations, farmers, industry, and three levels of government from across four states. This scenario planning process has provided a way ahead in the form of "roadmaps" which can assist and lead towards the Vision. A composite of those "roadmaps" concludes this report.

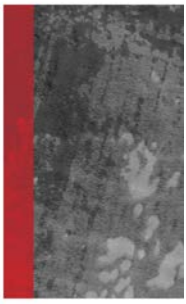
The composite roadmap requires:

1. The operationalisation of the Vision's three way partnership of "*government-industry-community*" into some form or mechanism (eg MoU) that can overarch all further initiatives to design, develop and implement the range of modified Future Options. This should entail a universal agreement on the need for an ongoing coordinated approach; a full community engagement and shared approach; agreed performance metrics; and defined priorities for action.
2. 2a. Under the umbrella of this partnership, one of the very early undertakings should be the development of a collaboratively derived comprehensive stakeholder engagement and communication strategy. Once it has been accepted by all stakeholder groups, it should initiate the community engagement for the entire process. It will need to be adaptively managed.
   2b. In parallel, complete a social impact assessment (SIA) to address the issues of *More efficient, effective and fair regulation* which entails the harmonization of



regulation across Australia to address inconsistencies and gaps, under-implementation and inefficient administration (Option 5). Include in this SIA, consideration of cases where some landholders do not have the financial and other resources to be able to carry out their assigned responsibilities.

3. 3a. Review of the efficiency, effectiveness and fairness of existing regulations, including the early delineation of enforcement aspects (eg enforcement / mediation mechanisms, enforcement rules and authority) and required funding support.
   3b. Seek opportunities to undertake 3a, desirably during periods of stability across national and state/territory levels of government in order to maximise agreements.
4. Undertake a fully consultative scoping out of the system's framework for *Integrated performance improvement reporting* involving all stakeholders. Following beta testing, undergo extensive trails in different regions before being adopted nationally.
5. Complete an initial alignment of invasive animal management and natural resource management objectives through a coordinated management framework. Under this umbrella, redesign public funding strategies.
6. Develop a Business Case to demonstrate how through the performance monitoring of key metrics, the outcomes of private investment in invasive animals management can be achieved.
7. Complete a stocktake and evaluation of community involvement in adaptation of plans and implementation action initiatives prior to commencing Option 8.



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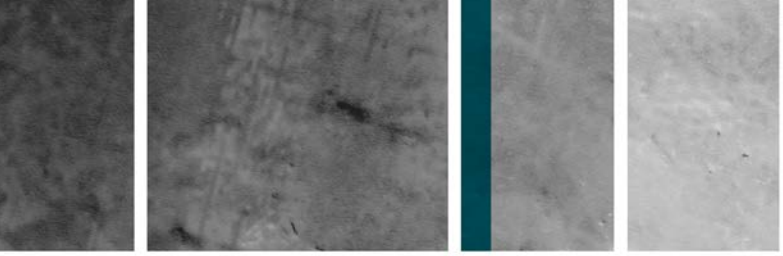

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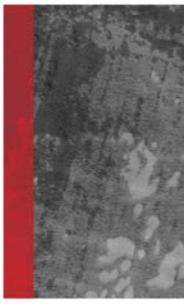

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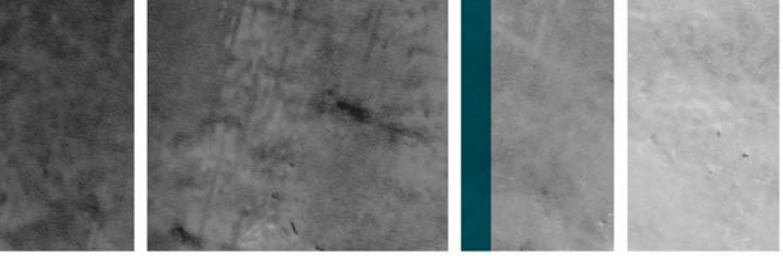

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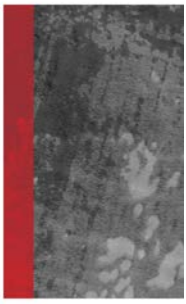

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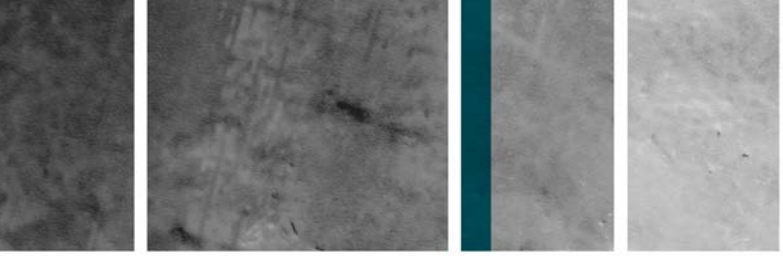

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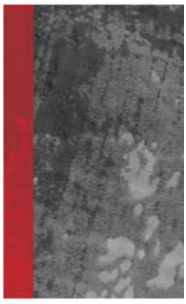

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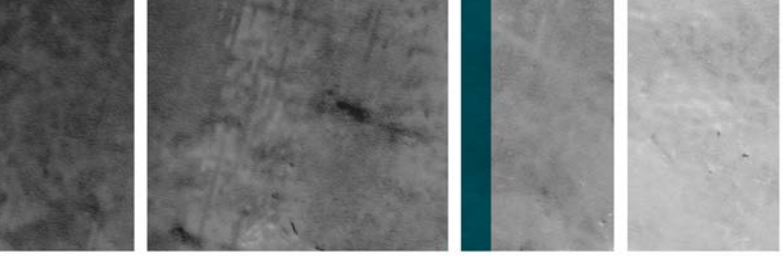

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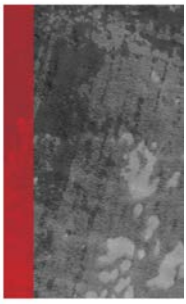

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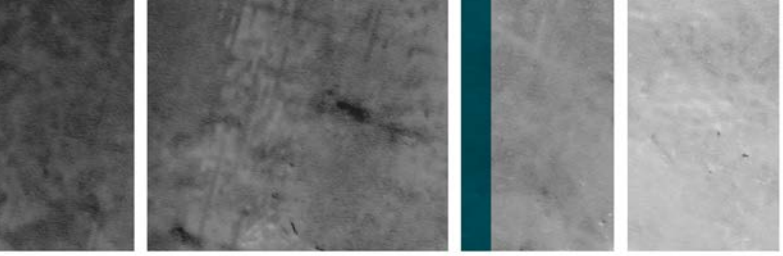

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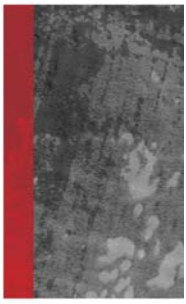

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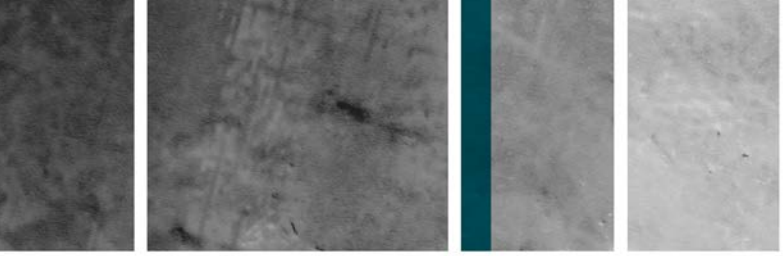

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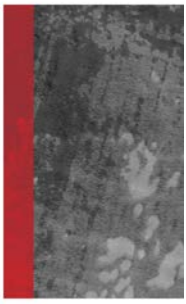

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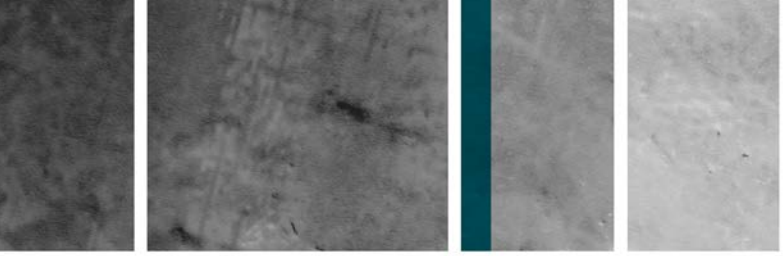

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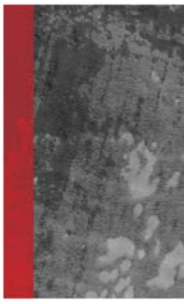

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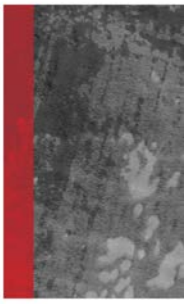
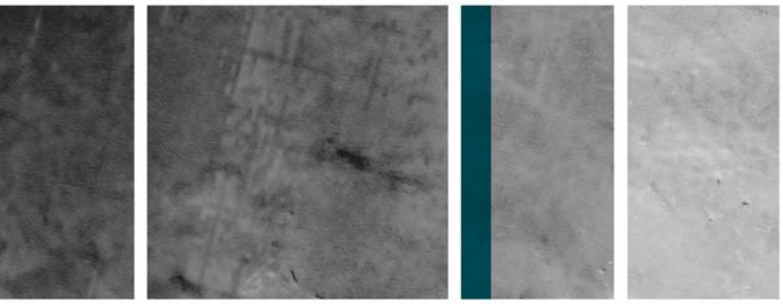


Appendices

Appendix A

Background Resources for Workshop Participants

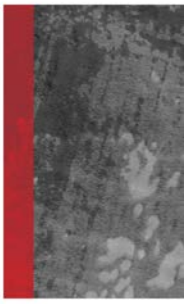
1. Scoping Study- Improving Invasive Animal Institutions- A citizen-focused approach V1.2 including feedback
2. Australian laws, regulations, policies etc. updated (July 2015)
3. Key studies and reports (May 2014)
4. Media issue reporting (May 2014)
5. Resourcing community action (May 2014)
6. Selected international comparisons (May 2014)
7. Stakeholder policy positions (May 2014)
8. Country assessments of Invasive Species institutions
9. Innovations in institutions to improve weed funding, strategy and outcomes
10. Invasive Species Council Community Engagement report
11. Invasive Species Council Submission on Environmental Biosecurity
12. National Farmers Federation Submission on Environmental Biosecurity



Appendix B

Scenario Planning Workshop Participation by Sector

Sector	Brisbane	Sydney	Melbourne	Perth
Local Government (IS or NRM focus)	✔✔			✔
NRM Body / Land Care	✔		✔✔	✔✔
State Government (IS or NRM focus)	✔✔	✔✔✔✔	✔✔✔✔ (SA) ✔✔✔ ✔	✔✔✔✔ ✔✔✔
Environmental Group	✔	✔✔	✔✔✔✔✔	✔✔
Industry / Farmers			✔✔✔	✔✔
Technical/Scientific Expert	✔	✔	✔	✔✔
Other		✔	✔	✔



Appendix C

State by State Workshop comments on the Vision

Brisbane

A future world influenced by politically and economically feasible reforms that reduce institutional barriers (including legal and administrative arrangements, funding, governance and government activities) and increase support thereby motivating and facilitating effective citizen activity and making it significantly easier through a genuine government-community partnership to reduce harms caused by invasive animals.

Comments raised by Brisbane participants:

- communities need to be motivated
- vision needs to show a two-way project
- replacing governance
- economic and environmental harms (typical dimensions – these a currently driving funding) but social may also need to be included – suggestion to keep only harms so it doesn't exclude the individual/ social dimension such as human health
- social dimensions beyond political and economic– consumer awareness of how food is produced; change in demographics to assist government as they become corporations
- community expectations that governments will intervene when there is a major issue such as wild dogs
- governments may change in the future – not captured in the current words – government responds to hotspots for funding and delegates the rest to the community to deal with the problem
- how to lobby government to do something
- define what reforms to reduce institutional barriers mean and also citizen activity
- keep message short and add explanation at the bottom.

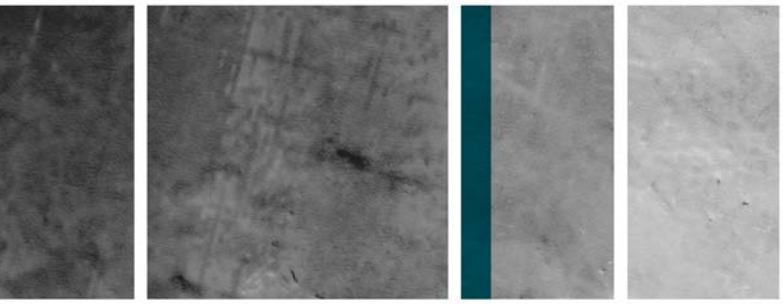
Sydney

A future world influenced by politically and economically feasible reforms that reduce institutional barriers (including legal and administrative arrangements, funding, governance and government activities) and increase support to achieve a genuine government-community partnership to reduce harms caused by invasive animals.

A future world influenced by feasible reforms that reduce institutional barriers (including legal and administrative arrangements, funding, governance and government activities) and increase support to achieve a genuine government-community partnership to reduce harms caused by invasive animals.

Comments raised by Sydney participants:

- Current wording omits the responsibility of landowners and places it onto governments



- Issues with the work partnership as in some cases it has not work – so it is a bit of a buzz word
- Also partnership has been pushed by community to re-enforce the need for government action
- Shared responsibility is a missing concept

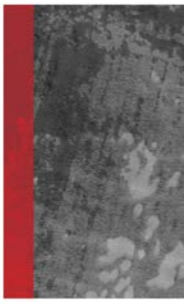
Melbourne

A future world influenced by feasible reforms that make it significantly easier to achieve a genuine government-community partnership to reduce harms caused by invasive animals.

Reforms that support citizen activities that foster government-industry-community partnerships to reduce the impacts of invasive animals.

Discussions regarding the draft vision in Melbourne workshops highlighted a number of issues and comments, including:

- The terms 'effective' and 'significant' are ambiguous and hard to quantify – post hoc denominations. It was suggested that 'wiz words' should be avoided. The term, 'effective' is misleading on how you evaluate community activity (e.g., numbers, outcomes) – how to compare indicators, find right role of community in parks management – this could be used to facilitate citizen activity
- Instead of 'effectiveness' it was suggested that 'motivating' is a powerful word that increases the achievement of outcomes
- 'effective' can be measurable and should be maintained, it is a matter of setting the parameters on how to measure effectiveness
- The Vision should use more ambitious words – eg 'eradicate'. Although 'eradicate' is not possible - it is better to manage impacts as there are too many species interacting
- Social push for not eradicating may be very strong in the future that there will a lot of pressure to do it
- Change 'reduce harm' to 'manage impact'. This raised questions of to what degree should impacts be managed, reducing harms may not mean impacts are managed
- 'Prevent establishment and dealing with existing sp' – what is the focus of the vision? We are doing both. One may be more achievable than the others
- Ambitions should be good because we can manage some of the impacts
- More aspirational vision
- 'Champion' and 'innovation' should be captured in the vision
- Vision is not inviting others and it needs to be
- There are other barriers and institutional barriers may not be the case in the future. We should identify barriers that prevent people to contribute rather than pre-identify that they are institutional only.
- Funding is also an issue – e.g. need to have funding to facilitate the action
- Starting off with politics turns people off. We have got to start from the grass-roots people on the ground
- Flip community-government partnership
- Forget about government and focus on people on the ground to get their aspirations – empowerment of community is key and should be vision focus
- Explain the problem the other way around
- Recognition of both top-down and bottom-up approaches – recognise community empowerment



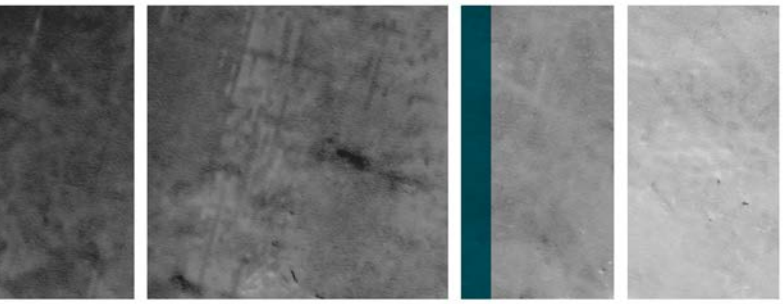
- More emphasis on community but without removing the role of government
- Community makes decision and government need to do the work
- Governments don't need to be involved all the time
- Role of government doesn't need to be that broad
- Political – it is not just government, there are also lobby groups, politics at local level (different priorities, competing funds, too many interests)
- Vested political interest also at a higher level can clash against community values
- Private land and institutional barriers are clear, but not so much in government owned land
- Knowledge and understanding is missing – from a community education so partnerships need to also include this qualifier
- Vision is getting mixed with how to do it – it should be a vision
- Keep 'future world'
- Vision is too negative so shift focus to give a positive spin
- Go straight to 'reform' rather than 'influence' – make it more active
- Invert end statement to the beginning – focus on citizens being motivated
- A future where harms have been reduced due to …
- Government-industry-community partnership should be maintained
- Institutional arrangements should also enable rather than being a barrier
- Have the first line and combine with last 3 lines
- Remove weasel words like 'significant'
- Important - citizen understanding activities and institutional arrangements which are complimentary rather than opposing
- Regulation need not be bad – some are needed
- Remove stuff in brackets
- Feasible reforms that support and motivate … change negative focus
- To reduce the impact is the ultimate goal
- Funding should be there because it is important
- The vision should be your outcome – the outcome is at the bottom
- 'Genuine government-industry-community partnership', then 'citizen' can be removed
- Summarise the first 5 lines and focus on what we want – citizen, partnerships and harms
- Make sure a word that includes people is stated upfront to move way from a government thing
- Perhaps a focus on partnership

Perth

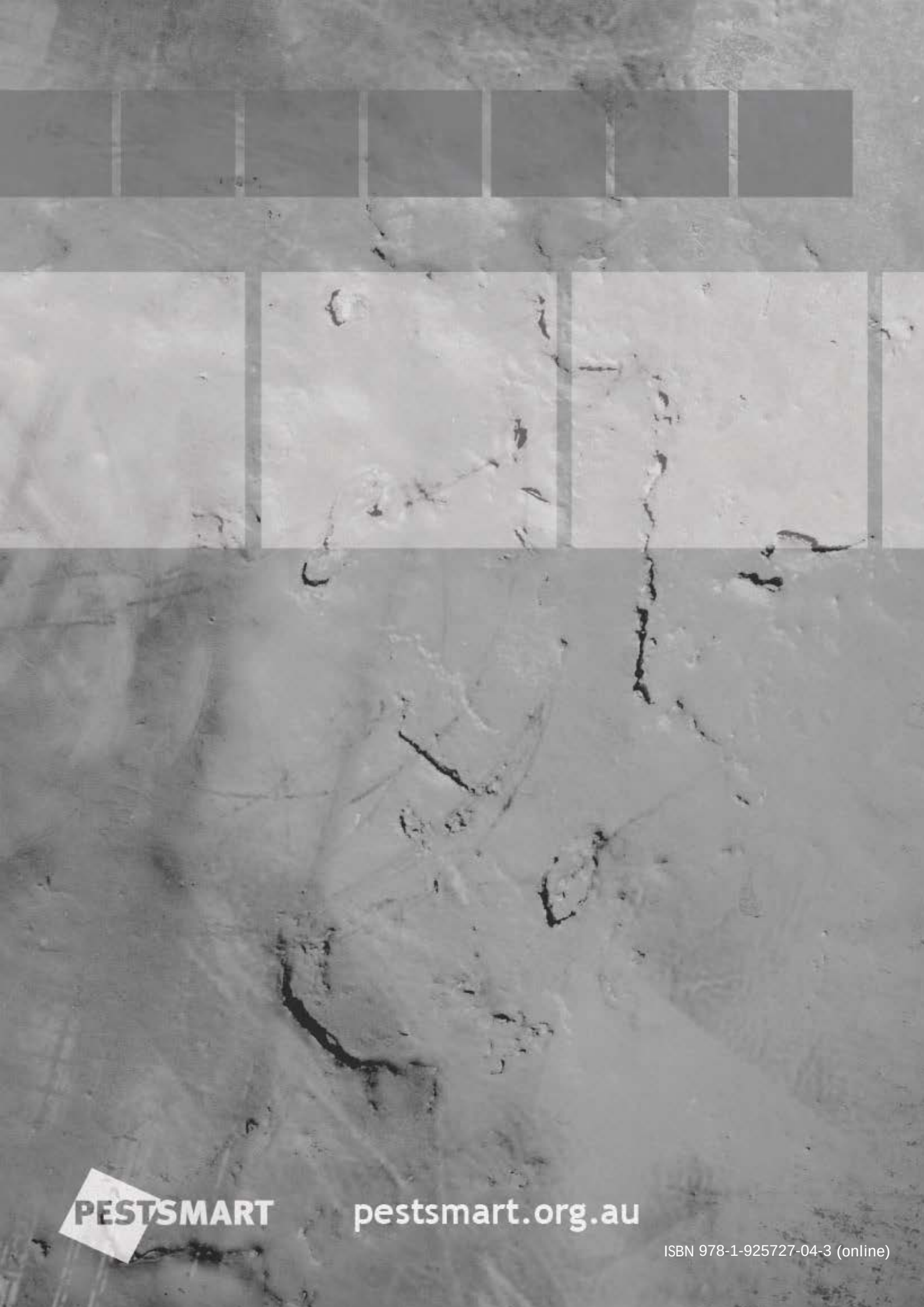
A future world influenced by reforms that achieve genuine community-industry-government partnerships to address impacts caused by invasive species.

Comments relating to the draft Vision made by participants during scenario planning workshops in Perth included:

- Need to add industry as well as community to the vision
- Responsibility of landholders (needs to be considered)
- Community action – needs to be succinct and direct – wording needs to be simplified
- Facilitate effective citizen activity – needs to be explained



- Several communities with different interests (e.g. farming versus conservation have different objectives and how to reconcile these interests.
- Political reform/ feasibility test – if put upfront other opportunities are removed
- Replace political to socially acceptable
- Revert to highlight the role of community – bottom-up approach, only citizens can influence politics
- Focus on reducing institutional barriers – more creative institutions that increase support rather than emphasising barriers
- Why not only institutional reforms
- Change citizen to on-the ground activity so it affects everyone
- Overall objectives need to be established to guide on-ground activity to ensure it is not ad hoc (e.g. no framework exists at the moment)
- Focus should be on targeted/ expected outcomes
- Word 'perpetual' – drop barriers and increase opportunities, to ensure changes keep occurring
- Based on IUCN – legislation, policy and strategy – not stopping only at legislation, it includes indigenous in the community – overarching statement is on the IUCN website section on ecosystems and invasive animals www.iucn.org – better strategic approach to liaise with governments – language relevant to international conventions.
- From IUCN: An effective Ecosystem Approach to adaptive invasive species legislation, governance, policy, strategy, planning, management and restoration, which develops functioning and resilient ecosystems, that enhances biodiversity, its services, human well-being, health, livelihoods and food security, incorporating indigenous and local communities.
- Vision statement should be the last couple of lines and not how to do it
- Make sure there is no hierarchy e.g. government-industry-community change order around to bring community first as long as governments are not excluded from their responsibility
- Vision statement should not include 'significantly easier' but use 'facilitate' or 'enhance'
- Take the word 'feasible' out
- Word 'community' infers citizen
- Remove stuff in between bracket
- Change 'animals' to 'species'
- 'A future world influenced by reforms that achieve genuine community-industry-government partnerships to address impacts caused by invasive species'.
- Word 'industry' – who is it?



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