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Social acceptability of pest animal management in meeting TGP targets

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Abstract

Total grazing pressure is a key driver of productivity in livestock systems in the southern Australian rangelands. Sustainable grazing in these environments requires the management of grazing pressure from kangaroos, unmanaged goats and feral pigs (focus species) as well as livestock. Although there are control practices to manage these species, practices must be socially acceptable if the red meat industry is to maintain its social licence. Semi-structured interviews have been conducted to assess the acceptability amongst stakeholders of practices to manage these species.

Commercial shooting was the most acceptable practice for managing kangaroos with a much lower acceptance for non-commercial shooting. A trap yard (at a water point) was the most acceptable practice for managing unmanaged goats with shooting least acceptable. Ground shooting, trapping and 1080 baiting were the most acceptable practices for managing feral pigs with dogging least acceptable. Reviewed literature identified key influential stakeholders: the RSPCA, Animals Australia, the National Farmers Federation and the state-based farmer advocacy groups.

Recommendations for effective engagement with stakeholders include establishing appropriate processes to initiate a positive dialogue with influential animal welfare organisations); establishing a unified and resourced industry 'voice' (e.g. appointing a respected farmer spokesperson); and ensuring the industry self-regulates to avoid the potential for 'bad behaviour' to undermine its credibility and trustworthiness (e.g. complying with Codes of Practice).

Executive summary

Total grazing pressure (TGP) is a key driver of productivity in extensive livestock systems in the southern Australian rangelands. Sustainable grazing in these environments requires managing the grazing pressure from kangaroos, unmanaged goats and feral pigs (focus species), as well as livestock. The control of these species generally involves their destruction or removal, for example by culling, harvesting, mustering, trapping and water point control, or physical exclusion through fencing.

‘Social license to operate’, effectively an unwritten social contract, challenges the red meat industry to meet community expectations about its practices to gain social acceptance and public trust. At present, there is considerable uncertainty for the industry around the social acceptability of existing and emerging control measures needed to manage the focus species contributing to TGP.

Without an improved understanding of social acceptability, it is unlikely the extensive livestock industry can develop and implement effective strategies to engage key stakeholders and the wider public about TGP management. MLA’s *Social Acceptability of Pest Animal Management in Meeting TGP Targets* project assessed the social acceptability by key stakeholders of control measures to manage the focus species in the southern rangelands. The research team addressed the following key research questions:

1. Which stakeholder groups are most influential in shaping public perception, policy and management initiatives relating to control of focus species in the southern rangelands?
2. What are the (current and likely future) options to control these species? What are the relative merits of these control measures as assessed by key informants?
3. What are the attitudes of key stakeholders (those who influence public opinion) to (the current and likely future) control measures?

Research method

The research drew upon a mix of quantitative and qualitative data, and reviewed literature to respond to the research questions. A review of literature was the principal means of addressing research question 1. Twenty-four semi-structured interviews with representatives of stakeholder groups provided the principal data source for responding to research questions 2 and 3. Interviewed participants included three southern rangelands pastoralists, one veterinarian, one sporting shooter, five government agents (policy, NRM and agriculture), four academics, two animal welfare advocates, one animal protection advocate, one wildlife conservationist, three red meat industry stakeholders, two kangaroo meat processors and one indigenous person.

Key findings and their implications for the red meat industry

1. Stakeholder acceptability of control practices

The industry needs to be aware of the concerns raised by the stakeholders, and be able to justify its control practices where possible. Stakeholder views on the control practices were wide-ranging reflecting the different values, beliefs and attitudes towards managing the focus species. Often stakeholders who found a practice acceptable did so with a caveat.

The industry needs to ensure that the Code of Practice (non-commercial shooting) is promoted, accepted, and adhered to. There was clearly a higher level of interest and diversity of views expressed by stakeholders about the management of kangaroos compared to unmanaged goats and feral pigs. The management of kangaroos will remain controversial. Shooting of kangaroos by commercial shooters (skills tested) was much more acceptable than by non-commercial shooters (skills not tested): expect fewer wounding of kangaroos by commercial shooters.

The industry needs to acknowledge that the acceptability of control practices for each focus species depends on how they are valued or perceived by individual stakeholders. In general, stakeholders displayed a stronger preference for the culling of ‘feral’ animals over native wildlife, and the culling of ‘pest’ animals over ‘resource’ animals. Lethal practices were more acceptable in managing feral pigs than for unmanaged goats.

2. Important stakeholder groups seeking to influence policy and the public

The industry needs to initiate a dialogue with key animal advocacy/protection organisations. Key animal advocacy organisations identified include the RSPCAs, Animals Australia, Voiceless, and the Animal Welfare Leagues. The RSPCAs and Animals Australia, in particular, seek representation on government advisory groups and to extend their influence in policy development. Both organisations are viewed by the public as highly credible sources of animal welfare information.

The high credibility of farmers represents a huge positive on which the industry can capitalise. The public rates farmers and agriculturalists more highly than key animal advocacy/protection organisations as sources of animal welfare information. Key farmer advocacy groups identified include the National Farmers Federation (NFF), the state-based farmer advocacy groups, and specific industry organisations including the Cattle Council. The NFF and their state counterparts are politically influential.

3. Public attitudes to animal welfare

The industry needs to demonstrate they can be trusted ‘to do the right thing’ by accepting and adhering to strong Codes of Practice. Animal cruelty will not be tolerated. The public recognise the intrinsic value of all animals and that they should not be mistreated.

The industry needs to accept that people are not consistent in their views about the treatment of animals. The public draws a distinction between types of animals: companion animals and wildlife are valued most highly followed by ‘useful animals’ and pests.

The industry needs to use the opportunity to influence public opinion in favour of the commercial kangaroo industry. The public is split equally between support for, opposition to, or uncommitted (i.e. neutral) about the commercial kangaroo industry. Both the industry and the animal welfare/protection organisations have the opportunity to influence the ‘uncommitted public’.

4. Animal welfare/protection organisations

The industry needs to acknowledge it is faced with managing the expectations of some well-resourced animal welfare/protection organisations. The vast majority of the 500+ registered charity animal welfare/protection organisations (most formed post 2000) have annual revenues below \$500,000. The larger charities, most notably the RSPCAs and Animal Australia, receive most of the donor income with multi-million dollar budgets.

The industry needs to be vigilant in scanning for emerging animal welfare issues, nationally and internationally. The animal welfare/protection organisations will form alliances to increase their power and influence to achieve change in policy, supply chain purchasing and management of the focus species.

It is important for the industry to acknowledge the potential of kangaroo protection organisations to influence consumers, particularly internationally. A number of advocacy organisations specifically dedicated to the protection of kangaroos have, at times, been very effective in their campaigns to influence international markets and their consumers.

5. Representative industry organisations

The industry needs a single ‘voice’ to represent its interests and engage with media. There are multiple farmer and commodity organisations representing the interests of the industry. Given the diversity of organisations with an interest in the management of the focus species, there is the need for an agreed representative who can create linkages with politicians and journalists.

The industry needs a coherent and consistent narrative in managing the focus species in the context of TGP management. The state and national farmer associations are among the industry’s most powerful advocates, and collectively, the industry requires a narrative that specifically addresses the need to manage the focus species in the context of sustainable grazing.

6. Policies of political parties

The industry will need to be prepared to respond to increased political scrutiny. The interests of animal welfare are now directly represented in parliament; increased representation is likely in the future. The Animal Justice Party in NSW has an explicit policy for protecting kangaroos and for phasing out the commercial industry.

7. Role of the media

The industry must be prepared and well-resourced to have the capacity to provide a coordinated response to specific incidents. Public outrage around animal protection issues is infrequent but also highly unpredictable. Its impact is fast moving and difficult to manage for an unprepared organisation/industry. The animal welfare/protection organisations are skillful at using multiple social media platforms and the traditional media. These organisations have the capacity to outstrip the capacity of an unprepared industry to effectively respond to an exploding welfare issue.

8. Key recommendations to the red meat industry

The recommendations aim to ensure that the extensive red meat industry develop an engagement strategy that will improve the acceptability of control practices to manage kangaroos, unmanaged goats and feral pigs in the southern Australian rangelands. The strategy is based around the following:

1. Establishing platforms and processes for effective stakeholder engagement

- a. Know your stakeholders and recognise that some stakeholders are more powerful than others in influencing public and shaping policy.
- b. Do not ignore the ‘unengaged’ in the community as they can be mobilised by either industry or animal advocacy groups.
- c. Initiate a positive dialogue with key animal welfare/protection organisations, particularly RSPCA Australia and Animals Australia. Enable a genuine exchange of information, be open and transparent, acknowledge differences and the reasons, build trusting relationships, and establish open lines of communication for continued dialogue.
- d. Implement a process for the industry to proactively review the domestic and international environment to identify potential issues and/or opportunities with managing the focus species.

2. Establishing a unified and resourced industry “voice” to effectively engage with government, the media and other stakeholders

- a. Appoint a respected industry spokesperson to represent the industry, create linkages with government and the media by engaging with politicians and journalists, and build relationships and trust with other stakeholders.
- b. Present a positive narrative around animal welfare and environmental stewardship to promote the industry’s credentials and create public interest.

- c. Communicate with the public whenever the media reports a public interest story relating to the focus species.
- d. Address any misinformation through a respected and trusted third party source that could include an academic or scientist.

3. Ensure that the industry self-regulates to avoid the potential for ‘rogue elements’ to undermine its credibility and trustworthiness

- a. Clearly articulate the industry’s values. Examples could include practising TGP, producing high quality meat and wool, caring for the environment and animals.
- b. Make it clear that ‘bad behaviour’ will not be tolerated. Prevent reputational damage by establishing social norms and expectations in managing the focus species.
- c. Be open and transparent about the purpose for which a particular control practice is being employed.
- d. Promote, accept and adhere to strong Codes of Practice, and demonstrate compliance and good stewardship.

9. Recommendations for future research

- a. *Exclusion fencing.* There is a gap in understanding the consequences of exclusion or cluster fencing in the south Australian rangelands. A longitudinal biodiversity survey, interviews with participating landholders and an economic analysis will provide the knowledge and an understanding of the triple bottom line impacts arising from constructing exclusion fencing.
- b. *Improved control practices.* There is the need for continued research in regards to the control practices for managing the focus species to improve their humaneness and effectiveness, and to be wildlife friendly.
- c. *Addressing contemporary social expectations.* The red meat industry has a strong connection with the public in relation to marketing its products but not its production practices. There is a gap in understanding the nature of contemporary public values related to the protection of animals and the environment, and the organisations that actively advocate for these. A comprehensive national survey that benchmarks ‘public’ values, beliefs attitudes, knowledge and interest about these topics will enable the industry to better engage with and build trust with the public by appropriately addressing their expectations about the industry’s practices.

Table of contents

1	Background.....	11
1.1	The project team	11
1.2	Background	11
2	Project objectives.....	14
2.1	Research questions.....	14
3	Methodology	14
3.1	Research approach	14
3.1.1	Review of literature	14
3.1.2	Round 1 interviews with key informants.....	14
3.1.3	Round 2 interviews with key stakeholder and industry representatives.....	15
3.1.4	Advisory committee.....	15
3.1.5	Red meat industry workshop.....	15
3.1.6	Report structure	15
4	Review of literature	16
4.1	The scope of the review of literature.....	16
4.2	Animals and Society.....	16
4.3	Key concepts: ‘social licence to operate’, ‘social acceptability’, ‘public’, ‘communities of interest’ and ‘stakeholder’	20
4.3.1	‘Social licence to operate’	20
4.3.2	‘Social acceptability’	21
4.3.3	‘Public’	23
4.3.4	‘Communities of interest’	23
4.3.5	‘Stakeholder’	24
4.4	Managing Total Grazing Pressure in the southern Australian rangelands.....	24
4.4.1	Kangaroos	25
4.4.2	Unmanaged goats.....	27
4.4.3	Feral pigs	28
4.5	Commonwealth and State legislation.....	29
4.5.1	Animal welfare legislation	29
4.5.2	RSPCA and pest animal management	30
4.5.3	Kangaroo harvesting	31
4.5.4	Assessment process for humane wildlife harvesting	33

4.5.5	Codes of Practice and Standard Operating Procedures	33
4.6	Effectiveness of control methods for the focus species.....	34
4.6.1	Kangaroos	34
4.6.2	Unmanaged goats.....	36
4.6.3	Feral pigs	39
4.7	Relative humaneness of control methods for the focus species	42
4.8	Pest animal management principles	46
4.9	Public and interest groups’ attitudes towards pest animals and their control methods	47
4.9.1	Public attitudes towards pest animals and their control methods	47
4.9.2	Interest groups attitudes towards pest animals and their control methods	50
4.9.3	Indigenous perspectives	51
4.10	Conclusion.....	52
5	Stakeholder assessment of control practices for kangaroos, unmanaged goats and feral pigs.....	54
5.1	Introduction	55
5.2	Research method.....	55
5.3	Key findings.....	63
5.3.1	Nature and extent of issues affecting the pastoral enterprise	63
5.3.2	Impact assessment of kangaroos and other feral animals on pastoral businesses	65
5.3.3	Interviewees’ assessment of control practices for kangaroos.	68
5.3.3.1	Commercial shooting.....	80
5.3.3.2	TGP fencing	81
5.3.3.3	Exclusion fencing	82
5.3.3.4	Water point exclusion.....	83
5.3.3.5	Non-commercial shooting	84
5.3.3.6	Reproduction and translocation	85
5.3.4	Interviewees’ assessment of control practices for unmanaged goats.....	85
5.3.4.1	Trap yards (at water point).....	94
5.3.4.2	Ground and aerial mustering.....	94
5.3.4.3	Strategic fencing	94
5.3.4.4	TGP and exclusion fencing	95
5.3.4.5	Judas goats.....	95
5.3.4.6	Water point exclusion.....	95
5.3.4.7	Ground and aerial shooting	95

5.3.5	Interviewees’ assessment of control practices for feral pigs	96
5.3.5.1	Ground and aerial shooting	104
5.3.5.2	Trapping	104
5.3.5.3	Ground and aerial baiting 1080	104
5.3.5.4	Exclusion fencing and water point exclusion.....	105
5.3.5.5	Use of Judas pigs.....	105
5.3.5.6	Dogging	105
5.4	Summary of key findings	106
5.5	Further discussion points.....	109
5.5.1	The pastoralists.....	109
5.5.2	Management of native wildlife post erection of exclusion fencing	109
5.5.3	Program justification and evaluation	110
5.6	Implications of stakeholder acceptability of control practices for the red meat industry .	111
6	Influence of key stakeholders influence public perception and policy in managing kangaroos, unmanaged goats and feral pigs	112
6.1	Introduction	112
6.2	The historical context of animal welfare and protection in Australia.....	113
6.3	The Australian public’s attitude towards animals and their treatment.....	114
6.3.1	Implications for the red meat industry.....	115
6.4	Representation of animal welfare issues in the media	116
6.4.1	Print Media	116
6.4.2	Other media platforms	118
6.4.3	Media circuits	119
6.4.4	Implications for the red meat industry.....	119
6.5	The policy intersection between animal welfare and protection groups, livestock industry groups and political parties	120
6.5.1	Implications for the red meat industry.....	122
6.6	Animal welfare and animal protection groups.....	122
6.6.1	Animal advocacy organisations	123
6.6.2	Kangaroo advocacy organisations	126
6.6.3	The policy intersection between the red meat industry and animal welfare/protection groups	128
6.6.4	Implications for the red meat industry.....	128
6.7	Agricultural industry groups and other key animal interest groups	129
6.7.1	Organisations with an interest in management of the focus species	129

6.7.2	Implications for the red meat industry.....	132
6.8	Political parties and policy	132
6.8.1	Implications for the red meat industry.....	135
6.9	Summary of key findings	135
7	Practical considerations for red meat industry producers.....	138
8	Recommendations to the red meat industry.....	143
8.1	Objectives of an effective stakeholder engagement strategy.....	143
8.2	Key recommendations for engagement around the management of native and feral herbivore control for TGP	143
8.2.1	Establishing platforms and processes for effective stakeholder engagement	143
8.2.2	Establishing a unified and resourced industry “voice” to effectively engage with government and other stakeholders	146
8.2.3	Ensuring that industry self-regulates to avoid the potential for rogue elements to undermine its credibility and trustworthiness	146
8.3	Recommendations for future research	147
9	Acknowledgements.....	148
10	Bibliography	149
11	Appendix	157
11.1	Project information sheet.....	157
11.2	Timeline of animal welfare events in Australia	159
11.3	Animal welfare policy network.....	161
11.4	List of abbreviations.....	162
11.5	Glossary of terms	163

1 Background

1.1 The project team

Members of the project team are listed in Table 1.1 together with their position title, affiliation and roles/responsibilities in the project.

Table 1.1. Project team: name, position title, affiliation and roles/responsibilities.

Name/position title	Affiliation	Roles/responsibilities
Dr Katrina Sinclair, Social Researcher	NSW Department of Primary Industries	Project manager and principal investigator
Professor Allan Curtis, Social Scientist	Graham Centre for Agricultural Innovation, Charles Sturt University	Contributed to the research design, assisted with data analysis and interpretation, workshop co-facilitator, contributed to reporting.
Dr Ron Hacker, Consultant (Rangelands)	Ron Hacker Rangeland Consulting Service	Provided expert advice to the project, workshop co-facilitator, contributed to reporting.
Ms Trudie Atkinson, Technical Specialist (Grazing Systems)	NSW Department of Primary Industries	Provided linkages to industry and producers, provided strategic advice to the project, contributed to reporting.

1.2 Background

Total grazing pressure (TGP) is a key driver of productivity in extensive livestock production systems in the southern rangelands of Australia. TGP in the rangelands has two components: grazing pressure by domestic stock associated with the extensive livestock industry (i.e. managed) and pest animals which include feral species and native herbivores (i.e. unmanaged) (Bastin 2012). Grazing land management needs to consider the impact of domestic and pest animals to ensure the sustainable capacity of the land is not exceeded threatening the economic viability of the pastoral industries (through forage and stock losses and damage to infrastructure) and the proper functioning of ecosystems provided by native flora and fauna (degrading native habitats, eliminating rare plants and competing with rare native fauna) (Dall 2010).

However, managing the grazing pressure from feral animals and native herbivores is complex and challenging: the size and extent of populations needs to be known, the high mobility of some species, the effectiveness of the control measures and the need for on-going control, and the time and expense of control activities. While the abundance of pest animals is mostly determined by seasonal conditions, their movement and the location where their grazing is concentrated is largely reliant on the availability of water and forage preferences. In effect, the grazing from kangaroos and feral species can be considered to be largely uncontrolled in the southern Australian rangelands (Fisher *et al.* 2004).

Kangaroos are common and widespread and, currently, are at very high densities in the Western Division of NSW <http://www.environment.nsw.gov.au/Topics/Animals-and-plants/Wildlife-management/Kangaroo-management/Kangaroo-population-monitoring-and-reporting> viewed 3 July 2018). Bastin and the ACRIS Management Committee (2008) found that the contribution by kangaroos to TGP has been estimated at 20-40% and that at times they contributed more to TGP than livestock. In the southern Australian rangelands high feral goat populations contribute

significantly to the unmanaged component of TGP. Thompson *et al.* (2002) found that unmanaged goats contributed 3-30% of TGP in their study area located in south-western Queensland. However, this population also underpins a \$240M goat meat export industry highlighting how the unmanaged TGP can be regarded as a resource. While feral pigs are probably not directly competitive with livestock for forage, they can damage native habitat and transmit disease (Fisher *et al.* 2004). All three species thus contribute substantially to the management issues confronting rangeland pastoralists and retention of a capacity to manage them is fundamental to the sustainability of the rangeland pastoral industries. Kangaroos, unmanaged goats and feral pigs-collectively referred to as focus species-have been identified as having the most significant impact on TGP in the southern Australian rangelands.

The Australian Pest Animal Strategy (APAS) (Natural Resource Management Ministerial Council 2007) provides guidance for the effective and humane control of vertebrate pest animals. Although on-ground management of pest animals is primarily the responsibility of the landholder (both public and private), state-based animal welfare legislation places an obligation on the landholder to ensure the humane treatment and destruction of pest animals (NSW Natural Resources Commission 2016). The options for the management of native species are more restrictive than for feral species and relevant regulations involve both Commonwealth and State legislation. However, legislation is not intended to prevent Indigenous people from exercising their traditional uses of native wildlife (NSW Office of Environment and Heritage 2017).

The control methods used for managing pest animals mostly involve killing in order to reduce their impact to an acceptable level. Irrespective of an animal's status as a pest, there is an ethical obligation to minimise any suffering a control method may cause i.e. the method of killing must be humane (Mellor and Litten 2004). In general, the control of pest animals involves the removal or destruction of animals, for example, culling and harvesting, mustering and trapping, and water point control and management or exclusion by fencing (boundary, internal and cluster) (Norris and Low 2005, Russell *et al.* 2011). Recently, in Queensland and NSW considerable incentive funding has been made available for exclusion/predator fencing, though the long-term production and biodiversity benefits in constructing specialised fencing on a broad scale have not been quantified (Cathleen Waters pers. comm.).

In practice, while animal welfare legislation has been enacted based on science it does not account for community values in pest animal control measures (Seymour *et al.* 2010). The concerns of communities in regards to animal health and welfare and the environment have been expressed widely in Australia and in many other developed countries. In Australia, community concern has already been expressed in relation to the acceptability of practices in the management of livestock. This means that in controlling pest animals for TGP management extensive livestock producers need to use practices that are acceptable by the public even if those practices are effective, efficient and supported by sound science (Shindler *et al.* 2004). It requires an understanding of the values (guiding principles/what is important to people), beliefs (what we think is true) and norms (how we/others think we ought to behave) that people hold toward the treatment of animals.

The 'social license to operate' (SLO) is an important contemporary issue that is challenging the production and supply of animal-based products in many developed countries, including Australia. SLO is associated with the notions of acceptance, approval, consent, demands, expectations, and reputations (Business Council of British Columbia 2015). The acceptability by society of livestock production practices will be fundamental in maintaining business continuity for producers and in securing a sustainable future for Australian livestock industries. If the extensive livestock industry fails to meet community expectations about how they 'ought' to operate, and, in this case, the

control of pest animals in managing for TGP, and, as history has shown, the consequences could threaten this industry's economic viability in the short and longer term.

Social acceptability is made up of judgments (which can change) that are held by identifiable parts of society (e.g., communities of interest) (Shindler *et al.* 2004). The degree of social acceptability is informed by a multiplicity of factors. These include people's prior experience, personal values, beliefs about the practice, personal and social norms, level of trust in decision-makers, and perception of risk (Shindler *et al.* 2004). These social/psychological factors influence people's attitudes about an issue and what people think should be done or happen. People make judgments about how an industry's practices in question are appropriate, preferred, desirable, supported or tolerated. It is also unlikely that people's judgments will change by simply providing technical information (Brunson and Steel 1996; Toman and Shindler 2003).

Central to building trust, credibility and legitimacy with opinionated and influential interest groups (and the wider community) will be the extensive livestock industry's ability to respond to raised concerns, including through more effective engagement and an appropriately tailored communication strategy to ensure the support of key stakeholders and the general public. In the development of such a strategy technical information is necessary but as indicated is insufficient to change public responses given the multiple factors that influence people's judgments (Mazur *et al.* 2014a; Mendham and Curtis 2015). It requires a "focus on types and content of information, but also on how and why it is communicated" (Toman and Shindler 2003).

At present there is considerable uncertainty as to the social acceptability of existing and emerging feral animal and native herbivore control measures that are/will be available to those producers attempting to manage for TGP. However, it is known that without paying attention to the social acceptability of these control practices in the rangelands the extensive livestock industry will be challenged and at risk to losing its SLO.

It is important to identify and understand the attitudes of the wider public about the social acceptability of actions to control feral animals and native herbivores as part of managing TGP. Indeed, there has been social research examining this topic for the control of kangaroos (McLeod and Sharp 2014). This new project complements that previous study by examining the attitudes (and actions) of stakeholders that have important influences on decisions about the control of feral animals and native herbivores as part of TGP management. These key stakeholders may mobilise public opinion but that is just one of many ways they may seek to influence policy and the extensive livestock industry's ability to implement to specific practices to control the focus species (Mazur *et al.* 2014b).

In this research the concept of "community type" will be used to structure the identification of key stakeholders to be engaged in the research process. A community typically embraces groups of people where there are personal interactions or 'ties that bind'. In the NRM context, agencies have typically focused on place-based communities and often ignored other stakeholders, an approach that has typically led to poor outcomes from the engagement processes (Curtis *et al.* 2014). Addressing this issue Harrington *et al.* (2008) provide a sound and useful typology that identifies four key community types: 1) communities of place (i.e., towns, cities, countryside), 2) communities of identity (e.g., ethnic groups, indigenous), 3) communities of practice (e.g., occupation) and 4) communities of interest (e.g., recreational, animal welfare, environmental and wildlife conservation groups). In this project the research team will employ this four category framework to ensure all key stakeholders are included. Those key stakeholders will also include government agencies, academics and those involved in the red meat industry supply chains.

At present, there is considerable uncertainty around the social acceptability of control measures for the unmanaged component of TGP. Without this information it is unlikely the extensive livestock industry in the southern rangelands of Australia can develop and implement effective strategies to engage key influential stakeholders and the wider public about TGP management. It will ensure that extensive livestock producers are able to manage TGP in ways that are acceptable to the Australian public. In so doing, the red meat industry in the southern Australian rangelands will be better placed to manage risk to the SLO.

2 Project objectives

This project assesses the social acceptability amongst key stakeholders of control measures to manage kangaroos, unmanaged goats and feral pigs as components of TGP in the southern Australian rangelands. This knowledge will provide a base that will guide the red meat industry's engagement and communication with key stakeholders and the Australian public around the control of the focus species in the context of TGP management.

2.1 Research questions

The key research questions to be addressed in this project are listed below:

- 1.) Which stakeholder groups are most influential in shaping public perception, policy and management initiatives relating to the control of the focus species (kangaroos, unmanaged goats and feral pigs) as components of TGP in the southern Australian rangelands?
- 2.) What are the (current and likely future) options to control these focus species? What are the relative merits of these control measures as assessed by key informants?
- 3.) What are the attitudes of key stakeholders (those who influence public opinion) to (the current and likely future) control measures for the focus species?

3 Methodology

3.1 Research approach

The overall research approach will be to work with key community and industry stakeholders, rather than the general public, to understand the values, beliefs and attitudes that will influence public perceptions and shape policy in relation to the control practices to manage the focus species as components of TGP in the southern Australian rangelands.

3.1.1 Review of literature

The project team will review the literature relevant to control practices for the focus species and the social acceptability of these practices in agricultural and natural resource management (NRM) contexts. The review of literature will also include other relevant topics that contribute to understanding the social, legal and environmental context within which the focus species are managed.

3.1.2 Round 1 interviews with key informants

In the Round 1 face-to-face/telephone interviews 10-15 key informants with candidates including government agency staff, scientists and others will be consulted. The key informants will provide information to enable the research team to understand the impact of the focus species, identify and

assess the strengths and weaknesses of current practices and, any likely future practices. Other informants will provide information about their approach to managing SLO.

3.1.3 Round 2 interviews with key stakeholder and industry representatives

Round 2 semi-structured interviews will be conducted with 25-30 opinion leaders and key stakeholder representatives (across four community types: 1) communities of place, 2) communities of identity, 3) communities of practice and 4) communities of interest) to explore their assessment of the social acceptability of current and likely future control measures for the focus species and the basis for those judgements (e.g., values, beliefs, knowledge, experience, trust). Broadly, these stakeholders could include animal welfare, conservation groups, recreation/tourism groups, recreational shooter groups, government land administrators wildlife managers, indigenous groups, pastoralists, kangaroo harvesters and processors, and scientists (veterinarians/ecologists). Selection of opinion leaders and key stakeholders will be based on criteria relating to their influence on public opinion, policy and management, degree of activism, potential to undermine SLO and capacity to contribute good ideas.

3.1.4 Advisory committee

An industry advisory committee will be established to provide expert advice about the focus species and the control measures, to identify key informants, to identify key stakeholder and industry representatives and to the extent practical, review project outputs. The committee may include representatives from NSW Farmers, Pastoralists Association of West Darling, Kangaroo Industry Association of Australia, NSW DPI Animal Welfare Policy unit, Australian Conservation Foundation, National Parks and Wildlife Service, Rangeland Alliance, Southern Australian Meat Research Council (SAMRC) and Northern Australia Beef Research Council (NABRC).

3.1.5 Red meat industry workshop

A red meat industry workshop will be held to present the research findings, discuss their implications and to test and refine the recommendations that have been developed as part of the activities developed above. The recommendations will provide advice as to how the extensive livestock industry in the southern Australian rangelands can effectively engage and communicate with the key stakeholders and the wider Australian public.

3.1.6 Report structure

In the following sections of this report we respond to the key research questions. We do this by presenting a review of the relevant literature in section 4. The literature reviewed includes peer-reviewed research articles and book chapters, and grey literature which include government and research reports. In section 5, we report on the stakeholders' assessment and justification of control practices in managing kangaroos, unmanaged goats and feral pigs. This section includes the analysis and interpretation of the Round 2 semi-structured interviews conducted with key stakeholder representatives. In section 6, we identify the key influential stakeholder groups and how they shape public perception and influence animal welfare policy in the management of kangaroos, unmanaged goats and feral pigs. In section 7 we draw our conclusions and in section 8 we provide our recommendations to the red meat industry to support their engagement and communication strategy with influential stakeholder groups and the wider Australian public.

4 Review of literature

4.1 The scope of the review of literature

The literature reviewed includes literature that is relevant to control practices to manage native Macropods (kangaroos), unmanaged goats (*Carpus hircus*) and feral pigs (*Sus scrofa*) – collectively referred to as focus species - as components of TGP in the southern Australian rangelands. It includes literature relevant to the social acceptability of these practices in agricultural and natural resource management (NRM) contexts. The review of literature will also include other relevant topics that contribute to understanding the social, legal and environmental context within which the focus species are managed.

This review of literature examines:

1. the nature of the relationship between animals and society;
2. the meaning of key concepts: 'social licence to operate', 'social acceptability', 'community', 'communities of interest' and 'stakeholder';
3. the management of Total Grazing Pressure in the southern Australian rangelands;
4. relevant Commonwealth and State legislation, Codes of Practice and Standard Operating Procedures;
5. the effectiveness of control methods for the focus species;
6. the relative humaneness of the different control methods for the focus species;
7. the public and interest groups attitudes towards pest animals and their control methods.

The review focuses particularly on the rangelands of NSW, Queensland and South Australia. The southern rangelands of Western Australia are not specifically addressed given the small and declining nature of the red meat industries in this region.

4.2 Animals and Society

"The question is not, can they reason? Nor, can they talk? But, can they suffer?" (Jeremy Bentham, utilitarian philosopher).

The concern for animal welfare dates back in history to 4BC with the Chinese Taoist philosopher Zhuangzi. He said that compassion should permeate relations not only between humans but between all sentient beings. Concern for animal suffering is found in Hinduism and caring for all sentient beings is a central ethical precept in Buddhism (Park and Singer 2012). The conventional view now held is that humans and nonhuman animals are sentient beings and as such have the capacity to experience pleasure or pain (Garner 2017).

The modern animal welfare movement started in the West in the early nineteenth century largely over the concern for the treatment of domestic animals, particularly pets and draught animals. This led to the funding of local humane societies including the Royal Society for the Prevention of Cruelty to Animals (RSPCA): 'kindness' and 'compassion' were held values. The RSPCA campaigned for animal welfare laws to protect working animals from abuse. Governments responded by legislating to protect animals from some forms of cruelty such as whippings and beatings, and from being deprived of food and water that caused suffering when there was no reason for so doing (<https://www.rspca.org.uk/whatwedo/howweare/history> viewed 30 January 2017).

In the mid-1950s Western countries extended legislation to protect animals used in experiments and ensure their humane use based on the "3Rs" principles: replacement, reduction and refinement. On-

going controversy remains to this day between those who favour replacement and those who favour refinement. A decade later the focus of concern expanded to farm animals in response to concerns about modern intensive farm animal production methods (Sandoe and Gamborg 2017). The anti-cruelty movement was built on the assumption that animals deserved protection although human interests still prevailed, provided it can be justified and is humane (Park and Singer 2012): controversy continues about how to balance animal welfare with economic priorities. The RSPCA within Australia continues to campaign to improve existing animal welfare laws and to fund (albeit with some government assistance) over 100 RSPCA inspectors to investigate reports of animal mistreatment and to enforce existing legislation (<https://www.rspca.org.au/what-we-do/preventing-animal-cruelty> viewed 30 January 2018).

Animal welfare is a complex concept since it incorporates beliefs about what is *better* or *worse*, *right* or *wrong* in the treatment of animals (i.e. animal welfare is a social construct) (Fraser *et al.* 1997; Mellor and Littin 2004). The welfare of an animal is a state that relates to how the animal feels i.e. the sensations it is experiencing including negative and positive affective experiences. *“An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress”*

(http://www.oie.int/index.php?id=169&L=0&htmfile=chapitre_aw_introduction.htm viewed 12 April 2018). Animal welfare is a state that varies along a continuum from the very worst to the very best (Mellor and Beausoleil 2015). *“It is not just about the animal but also our understanding of the animal, what it is experiencing and what matters to it, as well as the justification for any pain and distressed caused”* (Fisher 2009 pp.72-73). *“No amount of scientific evidence will ever be sufficient to bring about improvements in animal welfare unless this evidence also speaks to, and resonates with, public attitudes and values”* (Serpell 2004 p.145). *“In the end, people decide what is an acceptable way of treating animals”* (Velde *et al.* 2002 p. 205). It requires an understanding of the values and norms that people hold towards the treatment of animals (Velde *et al.* 2002).

The animal rights (as distinct from animal welfare) movement is a more contemporary phenomenon with its beginnings in the 1970s, and gathering momentum following the publication of the book, *Animal Liberation* (Singer 1975). The aim of the animal rights movement is to end the speciesist bias in favour of the interests of humans that allow them to act against the interests of non-human species i.e. the use of animals by humans cannot be justified. The philosopher Peter Singer (1975) like Jeremy Bentham argued that all life is capable of suffering (and/or enjoyment or happiness) and should thus be worthy of equal consideration: *“the ethical principle on which human equality rests requires us to extend equal consideration to animals too”*; *“what equalises all sentient beings is our ability to suffer”* (Singer 1975). Tom Regan also a philosopher argued that non-human animals had a natural right to live free from exploitation. Many of the animal right organisations are based on either or both these ideas (Springirth 2016). Although animal rights groups oppose the exploitation of all non-human animals, the focus has been on animal experimentation and the use of animals for food (Singer 1985).

The animal rights movement can be included in the collection of “New Social Movements” that emerged in advanced Western democracies over the past 50 years: the focus of New Social Movements (NSMs) is on social issues such as women’s and gay liberation, peace, and society’s relationship with the natural environment and the creatures within it (Pichardo 1997). These NSMs “can fail woefully or succeed spectacularly” (Villanueva 2017 p. 2) in their quest for widespread social and cultural change. They demonstrate a willingness to engage in long-term campaigns to achieve their goals. Although these NSMs depend upon highly committed and engaged activists, support by others is also important as they are viewed as ‘potential recruits’ and as a resource that can also be mobilised in their struggle (Stern *et al.* 1999).

Adherents of the animal rights movement distinguish themselves from those concerned with animal welfare, believing that the latter are conformist/mainstream groups representing a “soft option” (Signal and Taylor 2006b). Animal rights groups are typically engaged in direct action, ranging from demonstrations to gathering and exhibiting dramatic film footage often involving scandalising images of animal exploitation or cruelty intended for mass media exposure that will challenge the broader public and influence policy (Stern *et al.* 1999; Munro 2012). Also important to these groups’ success is the low commitment and less public forms of activism. One such low key support activity is ‘active citizenry’ which involves writing letters to politicians, signing petitions, and donating funds. Another is changing consumer behaviour that becomes widespread e.g., a preference for free-range eggs, providing a signal to government and industry regarding citizen concerns and consumer preferences (Stern *et al.* 1999). Celebrity involvement is another tactic used to advocate their cause (Springirth 2016).

The goals and strategies of animal rights groups in Australia and New Zealand are influenced by the goals and actions of international organisations such as People for the Ethical Treatment of Animals (PETA). PETA was founded in the 1980s in the USA as a non-profit organisation with the motto, “Animals are not ours to eat, wear, experiment on, use for entertainment, or abuse in any other way” which is the banner still used today (Springirth 2016). In Australia over the past 40 years or more, animals have been at the centre of an increasing number of political and ethical controversies that have often been stimulated by these groups (see below for examples of campaigns).

The RSPCA movement has continued to take the middle ground, maintaining a focus on the prevention of cruelty by actively promoting the care and protection of animals. For example, RSPCA takes animals into shelters to help them recover from neglect. It retains its historical roots as a community based charity engaging with governments, institutions and public bodies and providing advice on key animal welfare issues or concerns (<https://www.rspca.org.au> viewed 30 January 2018).

There has been little research examining the membership of animal welfare and animal rights groups. Franklin (2007), a rare exception, surveyed 2000 Australians (in capital cities, regional centres, and by State) and found that few people (i.e. <2% of respondents) were members of any organisation identified in Table 4.1. However, most respondents identified as a “supporter” (i.e. those who are sympathetic) of the RSPCA, Wilderness Society, World Wildlife Fund and Greenpeace, though not of PETA or Earth First. Notwithstanding this finding, almost a third of respondents identified as a supporter of PETA. Very few respondents were opposed to the objectives of any of these groups but a sizeable minority had no particular view.

Table 4.1. Overall respondents’ association with organisations related to animal welfare, animal rights or conservation (Franklin 2007).

Organisation	Greenpeace (%)	Earth First (%)	PETA (%)	RSPCA (%)	Wilderness Society (%)	World Wildlife Fund (%)
Member	4	0	0	2	1	1
Supporter	57	25	31	91	64	63
Opponent	7	1	2	1	1	1
No view	34	74	67	6	33	35
Total (%)	100	100	100	100	100	100

The last century has seen a major change in the values, beliefs and attitudes of people in Western Societies towards animals. That change is due to the increased acceptance of the intrinsic value of animals (Cohen *et al.* 2009). *“Animals are recognised as having value in their own right as beings with a life of their own, and a purpose in life that is inherent to their species-specific needs”* (Cohen *et al.* 2009 p.346). At the same time, there has also been a change in the nature of human-animal relationships. This can be seen in the shift from the generally held view that humans are superior to animals to one in which more people consider humans and animals to be equal (Cohen *et al.* 2009).

Signal and Taylor (2006a) found in their Australian study that members of the animal welfare community expressed significantly more pro-welfare attitudes than members of the general community. This difference in attitudes was even more apparent in the comparison between members of animal rights groups and those working in primary industries. In a review of studies examining gender differences in human-animal interactions, Herzog (2007) found that females were more sympathetic than males towards animal welfare. He also found that significantly more females than males are involved in animal rights groups, providing leadership and actively participating in demonstrations.

As explained above, concerns about animal welfare in the past have focused on farm animals (their production, transport and slaughter), and the use of animals for research, testing and teaching. However, there is now a general acceptance that all non-human animals are sentient beings and, consequently, it is important to avoid or minimise the suffering of all animals, whether domestic and non-domestic (Littin *et al.* 2004). Pest animals are no less capable of experiencing pain and distress than other animals and their management should acknowledge this.

Human attitudes towards pests are complex. Historically in Australia, pest animal control has sought to destroy as many animals as possible at the lowest cost, with humaneness a low priority. Common lethal methods used included trapping, poisoning, gassing and shooting. It is only in recent times that consideration has been given to animal welfare in the control of pest animals (Braysher 1993). Nowadays people do express concern if a pest animal experiences pain when it is killed (Littin *et al.* 2014).

Human attitudes towards a particular pest animal and the available control methods relates to moral and ethical concerns such as target specificity and humaneness, and perceptions of the risks and benefits of attempting to control a particular species (Fraser 2006). Although animals may be designated as pests, the control methods used must be ethically defensible. Ethical approaches to controlling pest animals need to consider: whether an action is necessary and justified given the aim of limiting the potential for pain and distress (Littin *et al.* 2004).

New Zealand is at the forefront of incorporating ethical and welfare principles into pest control. However, the welfare impacts of vertebrate pest control are increasingly under scrutiny in New Zealand, particularly around considerations of the relative humanness of traps and poisons. The New Zealand experience highlights the requirement that pest management approaches must be based on socially acceptable methods (Mellor and Littin 2004; Beausoleil *et al.* 2016). Following the New Zealand example, since the early 2000s Australia has been integrating animal welfare considerations into pest animal control. For example, the aim of the 2003 RSPCA Australia Scientific Seminar entitled, *“Solutions for achieving humane vertebrate pest control”*, was *“to examine how we can bridge the current gap between considering animal welfare and integrating animal welfare into the planning and implementation of vertebrate pest management”* (Jones 2003 p.5).

4.3 Key concepts: ‘social licence to operate’, ‘social acceptability’, ‘public’, ‘communities of interest’ and ‘stakeholder’

4.3.1 ‘Social licence to operate’

‘Social licence’ or ‘social licence to operate’ (SLO) is an important contemporary concept that can represent a challenge for those engaged in industries based on the production and supply of animal-based products in developed countries, including Australia. “It might be intangible but it is very very real” wrote Charles Berger, Australian Conservation Foundation's director of strategic ideas, about the ‘social licence’ concept (<http://www.smh.com.au/business/losing-a-social-licence-can-hurt-20110717-1hk1l.html> viewed 13 November 2017). Although it can be viewed as an intangible construct, SLO is associated with the notions of acceptance, approval, consent, demands, expectations, and reputations (Business Council of British Columbia 2015). SLO is a notion “for social or community acceptability that is based on trust and shared values which operators must live and operate by” (Ogier and Brooks 2016).

The term SLO is now used widely across a broad range of organisations, most notably, those associated with the resource sectors. The phrase is appealing in that “it evokes the idea of community acceptance...However, SLO tends to relate more to the negative drive of doing what is necessary to avoid loss of community acceptance and the resulting public opposition, than to the positive drive of striving for higher standards of social and environmental performance” (Business Council of British Columbia 2015). It has become the response by agricultural industries in face of opposition, particularly by interest groups, and as a mechanism to ensure the viability and ongoing success of that particular agricultural sector.

‘Social licence’ has been described by Emtairah and Mont (2008) as a “collective set of expectations on organisations beyond what is legally described”. Social license to farm is defined by Martin and Shepherd (2011) as “the latitude that society allows to its citizens to exploit resources for their private purposes”. “Failure to fulfil the obligations inherent to social license can lead to increased litigation, increased regulations, and increasing consumer demands all of which hamper the success of industries” (Coleman 2018).

SLO is a term that was coined in 1997 by James Cooney, a mining executive, who recognised the risk and associated economic cost of community opposition to a new or expanded mining project (Cullen-Knox *et al.* 2017). It was used as a metaphor comparing the power of communities to impose conditions or reject mining exploration or mining operations with the legal power of governments to do the same (Boutilier 2014).

According to the Food Integrity Organisation, SLO refers to the “*privilege of an industry operating with minimal formalised restrictions (legislation, regulation, or market requirements) based on maintaining public trust by doing what’s right. Public trust: a willingness to rely on others because of a belief that they will act in ways consistent with social expectations and the values of the community and other stakeholders*” (<http://www.foodintegrity.org/> cited 18 March 2017). An industry needs to gain the social acceptance and the trust of the community to be granted their SLO (Boutilier 2014).

‘Social licence to operate’ is, in effect, an unwritten “social contract” and, as such, must meet social expectations and norms to gain acceptance (Dare *et al.* 2014). If an industry fails to heed community expectations about specific activities, practices or issues then that industry will be punished. As a consequence, the community has significant power enabling it to have control over whether a social licence is given or withheld. Furthermore, the innovations in communication technology has facilitated the reach and potency of special interest groups to the broader public enabling these

groups to maximise public support (Cullen-Knox *et al.* 2017). It is also a reflection on the shift in attitude on public interest priorities including the environment and animal welfare (Business Council of British Columbia 2015).

4.3.2 ‘Social acceptability’

Social acceptability is made up of “*judgments by which individuals (1) compare the perceived reality with its known alternatives; and (2) decide whether the “real” condition is superior, or sufficiently similar, to the most favourable alternative condition. If the existing condition is not judged to be sufficient, the individual will initiate behaviour – often, but not always, within a constituency group – that is believed likely to shift conditions to a more favourable alternative*” (Brunson 1996 p.9). Thus, the acceptability of a particular control method is a function of one’s evaluation of that method, as compared to other methods, including taking no action (Bruskotter *et al.* 2009).

Although social acceptability is often equated with public opinion, judgements are normative and are influenced by the stakeholder or interest group with which an individual identifies (Mazur *et al.* 2014a). Judgements of acceptability do evolve (i.e. change over time) in response to changing social norms and expectations across communities. These changes in prevailing social expectations can have a significant impact on judgments about the acceptability of existing management practices and maintaining an industry’s social licence (Dare *et al.* 2014).

An individual’s judgment is influenced by their social interactions with others which, in turn, can provide the impetus for the formation of identifiable groups based on shared judgements and agreements (e.g. communities of interest) and associated group behaviours (Shindler *et al.* 2002; Shindler *et al.* 2004). To understand the social acceptance of pest animal control practices we need to know: how judgements are made, on what they are based, and what factors affect the durability of such judgments by these identifiable interest groups (Shindler *et al.* 2002).

If the extensive livestock industries in the southern Australian rangelands fail to meet community expectations about how they ‘ought’ to operate - in this case in the control of pest animals to manage for TGP - then those practices that lack social acceptance and approval will ultimately fail, even if they are cost-effective and supported by sound science (Zinn *et al.* 1998; Shindler *et al.* 2004). The social acceptability of practices to manage pest animals is, therefore, likely to be critical to maintaining the business continuity for producers and the future of livestock industries in these rangelands.

It is unlikely that people’s judgements will change simply by the provision of technical information (Brunson and Steel 1996; Toman and Shindler 2003). Rather, the nature and degree of social acceptability is informed by a multiplicity of factors including, in addition to knowledge, the degree of topic salience, people’s prior experience, personal values (guiding principles), beliefs about the practice (what individuals think is true), personal and social norms (how they should act), level of trust in decision-makers, and perception of risk about the problem (loss of something of value) (Shindler *et al.* 2004). It is these social/psychological factors that influence people’s attitudes about an issue and the action they choose to take.

Central to building trust, credibility and legitimacy with these opinionated and influential interest groups (and the wider community) will be the extensive livestock industry’s ability to respond to raised concerns, including through proactive engagement and an appropriately tailored communication strategy to ensure public support. In the development of such a strategy technical information is necessary but will be insufficient on its own to change public responses given the multiple factors that influence people’s judgments (Mazur *et al.* 2014a; Mendham and Curtis 2015).

There needs to be “*focus on the types and content of information, but also on how and why it is communicated*” (Toman and Shindler 2003 p. 251).

In Australia, community concern has already been expressed in relation to the acceptability of practices in the management of livestock. Campaigns initiated by animal rights groups, in particular, have attracted extensive media coverage that has resulted in changes in consumer behaviour and in the way livestock industries operate. Recent examples of organised campaigns seeking to win over the ‘public’ by animal rights groups in Australia including PETA, Voiceless, Animals Australia, and Animal Liberation state-based groups that have impacted on agricultural industries are provided in Table 4.2. Some of these issues are also the concern of animal welfare groups, e.g. live export of sheep for slaughter.

Table 4.2. Livestock industries subjected to recent organised campaigns by animal activist groups.

Industry	Practice	Media Headline	Media source	Author
Fur, leather industries	Use of fur, angora and leather in material in apparel, footwear	“VF Corporation prohibits use of fur in products, emphasizes ethical treatment of animals with new materials policy”	Press release (09/05/2017)	VF Corporation
Beef, sheep industries	Slaughtering of export cattle in Middle East, Indonesia and Vietnam	“Live exports under fire after Australian cattle cruelly treated in Middle East”	SMH (23/10/2014)	Melanie Kembrey (Fairfax media)
			SMH (01/08/2011)	Louise Hall (Fairfax media)
			ABC News (18/06/2016)	James Thomas (ABC)
Beef, sheep industries	Live export trade	“Vet removed for exposing appalling conditions on live export ships	ABC news (22/06/2016)	James Thomas & Rebecca Armitage
Egg	Phasing out of battery cages	“Woolworths to phase out all battery hen eggs”	The Age (04/10/2013)	Sarah Whyte (Fairfax Media)
Pig	Phasing out of sow stalls	“Setting free the pigs”	ABC Rural (27/07/2010)	Sarina Locke (ABC)
Sheep	Phasing out of mulesing	“Wool buyer warns rising demand for non mulesed wool will affect Australian growers still using the practice”	ABC Rural (04/04/2016)	Hailey Renault (ABC)
Dairy	Disposal of bobby calves	“Brutal secret behind the dairy industry”	SMH (28/10/2011)	B. and O. Sherman (Voiceless)

Given the capacity and past success of animal rights and animal welfare groups, it may be expected that efforts to control pest animals for TGP management will be closely scrutinised. Extensive livestock producers will need to use practices that are acceptable to the public as well as being effective, efficient and supported by sound science (Shindler *et al.* 2004).

Bruskotter *et al.* (2009) developed a model illustrating their understanding of the factors influencing social acceptability of lethal and non-lethal methods to control wolves that predate on livestock (Figure 4.1). A key point is the important influence of interest (or stakeholder) group identification which shapes both beliefs about the impacts/outcomes associated with the pest species, and attitudes towards the species, key factors that then influence acceptability judgements (Bruskotter *et al.* 2009).

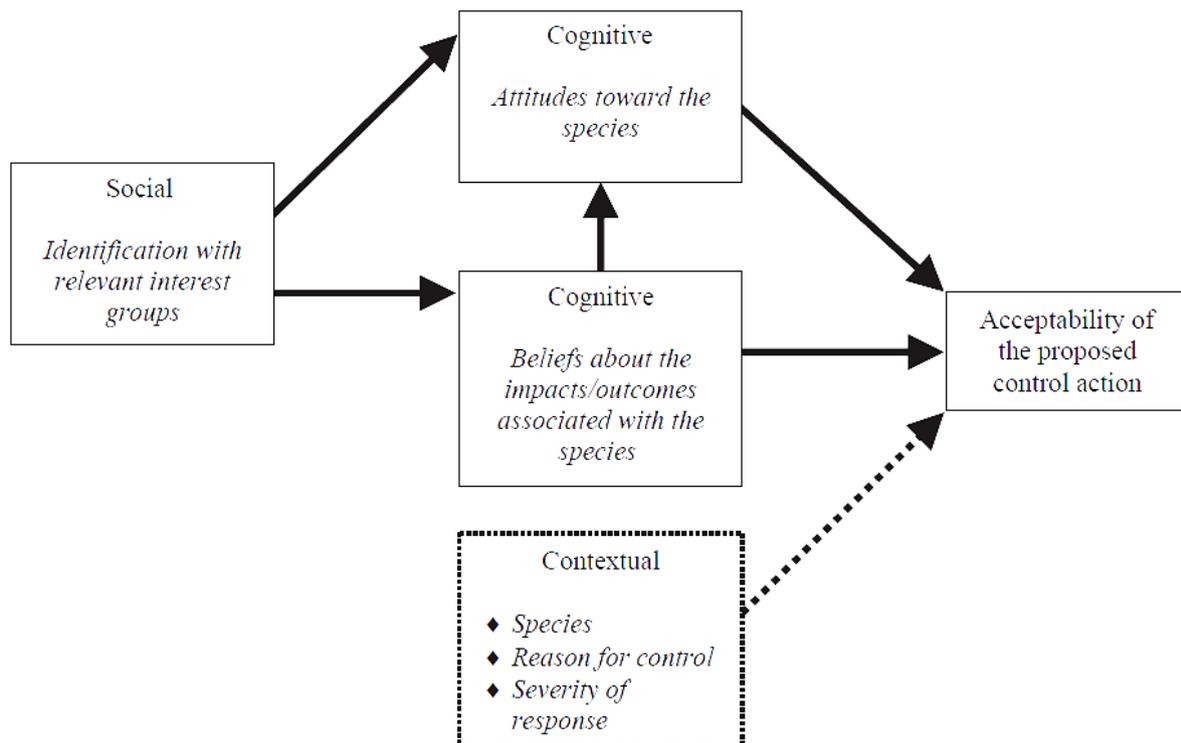


Fig. 4.1. Model predicting the acceptability of control actions (Bruskotter *et al.* 2009).

4.3.3 ‘Public’

In Australia and elsewhere in western democracies there has been a trend toward increased consultation of the ‘public’ about policy development, strategic planning and the implementation of works programs. The term ‘public’ typically refers to a representative sample of the wider Australian public or those people directly affected.

4.3.4 ‘Communities of interest’

A community typically embraces groups of people where there are personal interactions or ‘ties that bind’ individuals together. Community is not a unified entity that is homogenous but rather it is a heterogeneous entity that represents differences in values, beliefs, norms and interests (Harrington *et al.* 2008). A useful classification developed by Harrington *et al.* (2008) identifies key community

types: 1) communities of place (i.e., residents in towns, cities, countryside, neighbours, business owners, local government), 2) communities of identity (e.g., ethnic groups, indigenous), 3) communities of practice (e.g., pastoralist, ecologist, veterinarian) and communities of interest (e.g., recreational, animal welfare, conservation groups, government agencies). Important in this study will be the specific communities of interest stakeholder groups. Specific stakeholder groups include animal welfare and animal rights groups with a focus on the welfare impacts of pest animal management options, environmental groups with a focus on landscape function, recreational groups with a focus on hunting, and indigenous groups concerned with the cultural value of kangaroos.

The management of kangaroos is particularly difficult as they are not only a protected species but also have a broad range of interest groups such as pastoralists, conservationists, animal welfare, animal activists and tourist operators who hold diverse beliefs about how they should be managed: from no intervention to regular harvesting.

4.3.5 ‘Stakeholder’

The concept of stakeholder (i.e., all those with something at stake such as those involved in an industry supply chain) can include the different communities but typically extends beyond. Mazur (2006) provides “a broad and inclusive definition of ‘stakeholder’: *any individual or groups of people, organised or unorganised, who share an interest (financial, moral, legal, personal, community-based, direct or indirect) in a particular issue*”. For this study, stakeholder cohorts would include the pastoral industries and their producers, Federal and State government agencies, veterinary sector, indigenous communities, animal welfare, animal protection, wildlife conservation, sporting shooters, kangaroo processors and red meat supply chain stakeholders.

4.4 Managing Total Grazing Pressure in the southern Australian rangelands

Total grazing pressure (TGP) in the rangelands is the cumulative effect of three components: grazing pressure ((i.e. the demand for forage relative to forage (grass, herbs and browse) supply at a point in time) by domestic livestock, native Macropods and feral species (Bastin and ACRIS Management Committee 2008)). The effective management of TGP promotes sustainable livestock production by maintaining ground cover, minimising soil loss and protecting the potential regrowth of native pastures.

Grazing management in rangelands needs to consider the impact of all herbivores to ensure the sustainable capacity of the land is not exceeded, threatening the economic viability of the pastoral industries, and that the proper functioning of natural ecosystems is maintained (Fisher *et al.* 2004). However, managing the grazing pressure from kangaroos and feral species is complex and challenging. Relevant considerations include the need to monitor the distribution and abundance of populations, the high mobility of some species, the need for on-going control measures, and the expense of control activities. In effect, the grazing by kangaroos and feral species can be considered to be largely uncontrolled in the southern rangelands of Australia (Fisher *et al.* 2004).

Bastin and ACRIS Management Committee (2008) found that the contribution by kangaroos to TGP has been estimated at 20-40% and that at times they contributed more to TGP than livestock. Thompson *et al.* (2002) found that unmanaged goats contributed 3-30% of TGP in their study area located in south-western Queensland. While feral pigs are probably not directly competitive with livestock for forage, they can damage native habitat and transmit disease (Fisher *et al.* 2004). All three species thus contribute substantially to the management issues confronting rangeland pastoralists and retention of a capacity to manage them is fundamental to the sustainability of the rangeland pastoral industries.

4.4.1 Kangaroos

The most abundant kangaroo species in the pastoral areas of Western NSW are the red kangaroo (*Macropus rufus*), western grey (*Macropus fuliginosus*) and eastern grey (*Macropus giganteus*). The common wallaroo (*Macropus robustus*) is the most wide-spread species across Australia (NSW Office of Environment and Heritage 2017). Kangaroos have benefitted from the establishment of water points for domestic livestock and numbers in the rangelands are generally considered to be much higher than at European settlement. Hacker and McLeod (2003) provide a graphic example of the proliferation of water points in western NSW. Dingoes (*Canis lupus dingo*) are the only non-human predators of kangaroos but with their regulatory control the impact of dingoes on the kangaroo population has largely been removed (NSW Office of Environment and Heritage 2017).

Kangaroos and sheep are probably not competitive as long as biomass is above about 300 kg/ha (Short 1987) making the competitive interaction quite specific temporally and spatially. The capacity of kangaroos to limit regeneration of paddocks being rested from sheep is probably their major impact (Hacker and McLeod 2003). Note: for cattle the threshold for competition would be expected to be above 300kg/ha. In addition, managing the grazing pressure exerted by kangaroos is complicated as Commonwealth and State legislation protects them as native species with their control regulated (Fisher *et al.* 2004).

The monitoring of kangaroo populations has shown that their fluctuations are strongly influenced by the prevailing environmental conditions, with populations declining in dry periods and increasing in wet periods. For example, the Millennium Drought caused the kangaroo population in Western NSW to decline from 15.5M in 2002 to an estimated 5.5M in 2005. Following drought-breaking rains from 2010, the population increased significantly from an estimated 7M in 2010 to an estimated 15.3M in 2013, and then to an estimated 16M in 2015 (NSW Office of Environment and Heritage 2017) (Figure 4.2).

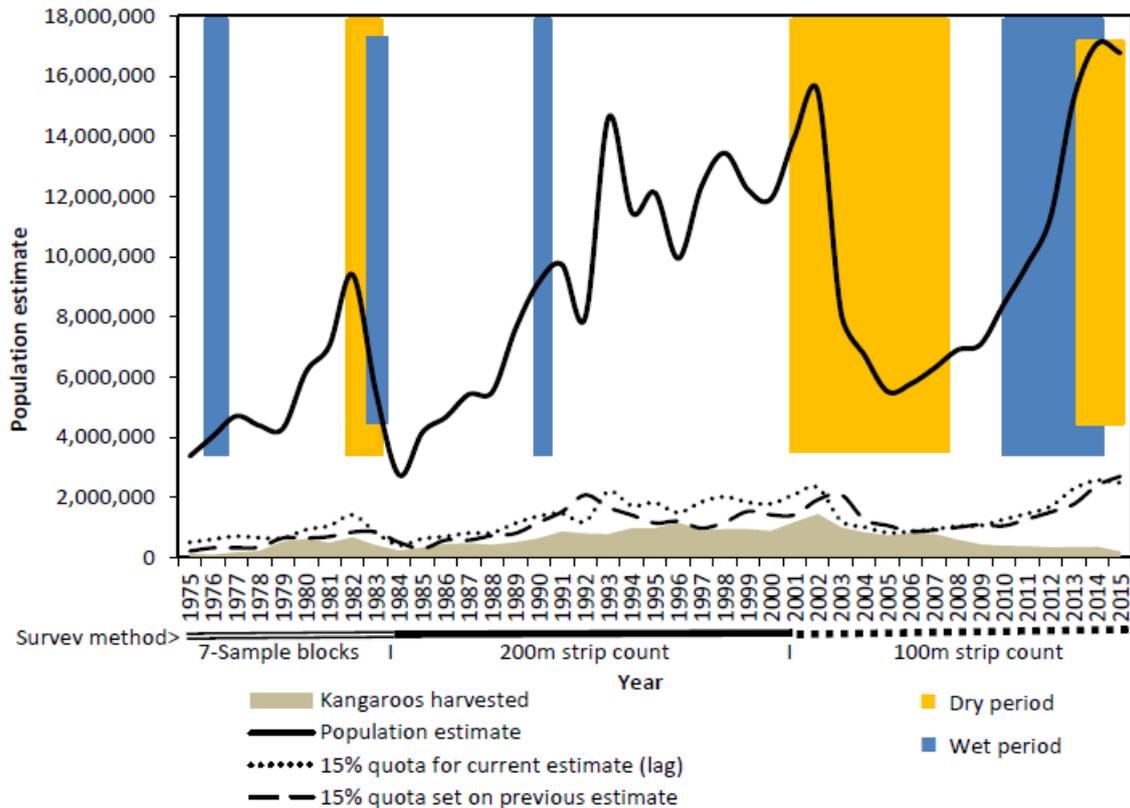


Fig. 4.2. Fluctuation in absolute NSW kangaroo populations between 1975 and 2015 (NSW Office of Environment and Heritage 2017).

The numbers of red, western and eastern grey kangaroos and euros are currently thought to be above the 2015 estimates in parts of the Western Division of NSW. This situation is placing increasing pressure on the carrying capacity of pastoral enterprises, and the condition of the rangelands, as well as posing a potentially serious animal welfare issue associated with the inevitable onset of dry conditions (Western Lands Advisory Council 2016). Kangaroos left in a weakened state from hunger and thirst can suffer for a prolonged period before death (NSW Office of Environment and Heritage 2017).

Over the past 60 years a significant industry utilising kangaroos for their meat (human consumption and pet food) and skin for leather has developed (Thomsen and Davies 2007): two thirds were used for pet food and leather (Kirkpatrick and Amos 1985). Although the commercial harvest originated as a means of utilising animals culled primarily for damage mitigation, over the past decade the industry has been recognised for providing significant economic and environmental benefits. In 2016 the kangaroo industry was worth more than \$200M per year and employed in excess of 2,000 people, most of those are in remote rural communities (<http://www.kangarooindustry.com/f.ashx/downloads/KangarooIndustryBackground.pdf> viewed 30 May 2017).

For 2012, the magnitude of the Macropod populations and commercial harvests in Queensland, NSW, South Australia and Western Australia are shown in Table 4.3. In that year, 22%, 31%, 31% and 54% of the quota were taken for Queensland, NSW, South Australia and Western Australia, respectively.

Table 4.3. Estimated population size, commercial harvest quotas and actual harvest for commercially harvested macropods in Australia in 2012 (www.environment.gov.au).

State	2011 Estimated population	2012 Harvest Quota	2012 Actual harvest
Queensland	20,345,243	3,103,950	975,304
NSW	9,815,115	1,518,628	336,001
South Australia	2,327,600	392,100	122,301
Western Australia	1,815,719	235,000	126,980
Total	34,303,677	5,249,678	1,560,586

In 2016, the actual kangaroo harvest in the NSW management zones of Tibooburra, Broken Hill, Lower Darling Cobar and Bourke realised 11% of quota (Table 4.4).

Table 4.4. Kangaroo Management Program commercial 2016 harvest statistics for the Tibooburra, Broken Hill, Lower Darling, Cobar and Bourke management zones (www.oeh.nsw.gov.au).

Zone	Harvest quota	Actual harvest	Quota (%)
Tibooburra	215,742	29,984	14
Broken Hill	453,298	56,142	12
Lower Darling	119,980	16,039	13
Cobar	134,570	6,831	5
Bourke	156,943	17,552	11
Total	1,080,533	126,548	Mean=11

Importantly for TGP management, Hacker and McLeod (2003) concluded that the kangaroo harvest has a negligible impact on kangaroo population dynamics. Kangaroo populations are estimated by an annual aerial survey and this estimation is used to determine the rate of harvest. Kangaroo populations have not been affected by the rate of harvest under the method used to set a quota (NSW Office of Environment and Heritage 2017).

4.4.2 Unmanaged goats

Unmanaged goats are widespread in the arid and semi-arid rangelands of Australia and under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* (Cwth) declared as a key threatening process. The *Endangered Species Protection Act 1992* (Cwth) identify unmanaged goats as a threat to native species (eSYS Development Pty Ltd 2016). Unmanaged goats are declared as pests in Queensland and South Australia but not in NSW (Khairo *et al.* 2013).

Unmanaged goats, as generalist herbivores, graze and browse a wide range of plant species and can cause substantial damage through direct grazing and trampling of plants, disrupting the habitat of native fauna, and eroding the soil (Fisher *et al.* 2004). It can lead to changes in species composition when more palatable species are eaten and removed, and can have a substantial impact on changes in vegetation structure through overgrazing (NSW Office of Environment and Heritage 2012). In the southern, predominantly sheep-grazed, Australian rangelands high unmanaged goat populations contribute substantially to the unmanaged component of TGP (Bastin and ACRIS Management Committee 2008).

In 2011, there was an estimated 2.95 million unmanaged goats in NSW representing around 70% of the estimated unmanaged goat population in Australia (Bastin 2012). However, unmanaged goats representing 90% of Australian goatmeat production underpin a \$258M (2014-15) goatmeat export industry highlighting their value as an informal cash resource for pastoralists (<https://www.mla.com.au/globalassets/mla-corporate/prices--markets/documents/trends-->

[analysis/fast-facts--maps/mla_goat-fast-facts-2015.pdf](#) viewed 30 May 2017). This creates the potential for competitive tension between the socio-economic benefit from opportunistic harvesting of unmanaged goats and the environmental damage caused by overgrazing (Khairo *et al.* 2013). This has resulted in an inconsistent approach to their management with pressure not to control goats regardless of their impact on the environment (Russell *et al.* 2011; Norris and Low 2005).

4.4.3 Feral pigs

Feral pigs in Australia are not native to Australia descending from domestic swine that were introduced by early European settlers. Population and distribution of feral pigs are influenced by the availability of water, food and cover and the effectiveness of control programs. Under favourable environmental conditions feral pig populations may increase by 500% in a 12-15 month period as breeding is possible year-round

(https://www.daf.qld.gov.au/data/assets/pdf_file/0008/63926/IPA-Feral-Pig-Control-Manual.pdf viewed 15 January 2018).

Feral pigs are declared as pest animals in all Australian states and territories with an estimated 13.5 million feral pigs spread across 45% of Australia with the largest populations in NSW and Queensland (eSYS Development Pty Ltd 2016). Even though there is a long history of active feral pig management in Australia, they remain a major pest in higher rainfall areas or where there is year-round access to water (Izac and O'Brien 1991; Bengsen *et al.* 2014).

In the semi-arid rangelands feral pigs may occur in localised high densities near water, and as known carriers of parasites and disease are a potential threat to livestock production (Bengsen *et al.* 2014). Generally, females weigh between 50 to 60 kg with males between 80-100kgs

(https://www.pestsmart.org.au/wp-content/uploads/2017/10/PSFS_feralpig_web-1.pdf viewed 08 January 2017). Temporally, pig densities are highly variable, particularly along the rivers systems and marshlands in western NSW (eSYS Development Pty Ltd 2016). Family groups consisting of sows, piglets and juveniles have a home range between 2-20 km² while boars are typically solitary with a range of 8-50 km². Although feral pigs form small mobs that are usually less than 12 in size, they can also be as large as 400 under the right conditions. Feral pigs tend to stay within defined home ranges: groups consisting of sows, piglets and juveniles have a home range of between 2-20 km² while boars are typically solitary with a range of 8-50 km². Feral pigs need free water and shade as they are unable to withstand high temperature (https://www.pestsmart.org.au/wp-content/uploads/2017/10/PSFS_feralpig_web-1.pdf viewed 08 January 2017).

Feral pigs can cause extensive environmental damage when rooting for food including trampling and consumption of native vegetation, spreading of weeds and degradation of natural habitats (Bengsen *et al.* 2014; Koichi and Halliday 2015). Modelling by Bengsen *et al.* (2014) showed that feral pigs grazing in semi-arid flood plains impacted on pastures at densities greater than 7 pigs/km². The key impact of feral pigs for livestock producers is predation on young stock: feral pigs can kill lambs under two weeks of age (NSW Office of Environment and Heritage 2012; eSYS Development Pty Ltd 2016). They also damage fences and watering facilities. Feral pigs have been estimated to cause \$13.5M in production losses in NSW, more than 90% of the national total (eSYS Development Pty Ltd 2016). In Australia, an estimated \$5M per annum is expended on feral pig management (Koichi and Halliday 2015).

Within the community there are contrasting attitudes towards feral pigs. Feral pigs are considered an agricultural and environmental pest and a potential spread exotic diseases. At the same time, they are valued by some for recreational hunting providing an economic benefit to rural communities. Pig hunting is also important culturally, socially and as a source of food for Indigenous

communities. However, feral pigs can have a negative impact in damaging culturally significant Indigenous sites (Koichi and Halliday 2015; Bengsen *et al.* 2014).

4.5 Commonwealth and State legislation

The Australian Pest Animal Strategy (APAS) (Natural Resource Management Ministerial Council 2007), guided by the Intergovernmental Agreement on Biosecurity, provides guidance for the effective and humane control of vertebrate pest animals. A number of national and State government agreements, strategies, Acts, plans and programs influence the regulatory arrangements for pest animal management. Although the on-ground management of pest animals is primarily the responsibility of the landholder (both public and private), albeit with support from State governments, State-based animal welfare legislation places an obligation on the landholder to ensure the humane treatment and destruction of pest animals (NSW Natural Resources Commission 2016). Options for the management of native species are more restrictive than for feral species and relevant regulations involve both Commonwealth and State legislation. However, legislation is not intended to prevent Indigenous peoples from exercising traditional uses of native wildlife (NSW Office of Environment and Heritage 2017).

The EPBC Act 1999 (Cwth) provides a national framework to ‘protect and manage nationally and internationally flora, fauna, ecological communities and heritage places’. In 2002 feral pigs were listed as a ‘Key Threatening Process’ under this Act and a Threat Abatement Plan was developed to contain their spread. Feral pigs are declared as a pest animal in the States of NSW, Queensland and South Australia.

In NSW, where most of the national production losses from feral pigs are incurred, the Department of Primary Industries has state-level responsibilities for pest animal management under various Acts including the *Biosecurity Act 2015* (NSW) and the *Game and Feral Animal Control Act 2002* (NSW). Local Land Services, established under the *Local Land Services Act 2013* (NSW), regulates pest animal management on private and agricultural land while the NSW Office of Environment and Heritage is responsible for pest management in National Parks. In Queensland and South Australia, respectively, the capacity for the declaration and regulation of pest animals is provided under, the *Land Protection (Pest and Stock Route Management) Act 2002* (Q’ld), feral pigs declared a Class 2 pest, and the *Natural Resources Management Act 2004* (SA).

4.5.1 Animal welfare legislation

The control methods used for managing pest animals mostly involve killing in order to reduce the harm they cause. Irrespective of an animal’s status as a pest, there is an ethical obligation to minimise any suffering a control method may cause i.e. the method of killing must be humane (Mellor and Littin 2004).

In Australia, all State governments have offences for cruelty or ill treatment of animals. Animal welfare legislation relevant to the southern rangelands includes the *Prevention of Cruelty to Animal Act 1979* (NSW) administered by the NSW Department of Primary Industries, the *Animal Care and Protection Act 2001* (Q’ld) administered the Queensland Department of Agriculture and Fisheries, and the *Animal Welfare Act 1985* (SA) administered by the South Australian Department of Environment, Water and Natural Resources.

The *Prevention of Cruelty to Animal Act 1979* (NSW) contains several sections that are relevant to the control of vertebrate pests. Part 1 section 4- definitions and Part 2-offences. These include:

- **Part 1 Section 4 (clause 2)** For the purposes of this Act, a reference to an act of cruelty committed upon an animal includes a reference to any act or omission as a consequence of which the animal is unreasonable, unnecessarily or unjustifiably:
 - (a) beaten, kicked, killed, wounded, pinioned, mutilated, maimed, abused, tormented, tortured, terrified or infuriated, or
 - (d) inflicted with pain.
- **Part 1 Section 4 (3)** For the purposes of this Act, a person commits an act of aggravated cruelty upon an animal if the person commits an act of cruelty upon the animal (or (being the person in charge of the animal) contravenes section 5 (3) in a way which results in:
 - (a) the death, deformity or serious disablement of the animal, or
 - (b) the animal being so severely injured, so diseased or in such a physical condition that it is cruel to keep it alive.
- **Part 2 Section 5 Cruelty to animals**
 - (1) A person shall not commit an act of cruelty upon an animal
 - (3) A person in charge of an animal shall not fail at any time:
 - (a) to exercise reasonable care, control or supervision of an animal to prevent the commission of an act of cruelty upon an animal,
 - (b) where pain is being inflicted upon the animal, to take such reasonable steps as are necessary to alleviate the pain,
- **Part 2 Section 6 Aggravated cruelty to animals** Refers to a more serious act of cruelty.
- **Part 2 Section 24 Certain defences**
 - (1) In any proceedings for an offence against this Part or the regulations in respect of the animal, the person accused of the offence is not guilty of the offence if the person satisfies the court that the act or omission in respect of the offence of which the proceedings are being taken was done, authorised to be done or omitted to be done by that person:
 - (b) in the course of, and for the purpose of :
 - (i) hunting, shooting, snaring, trapping, catching or capturing the animal, or
 - (ii) destroying the animal, or preparing the animal for destruction, for the purpose of producing food for human consumption,

In terms of methods of vertebrae pest control, under *Part 2 Section 24 Certain defences*, a person needs to be able to justify whatever pain or distress is inflicted on an animal. In a sense, there is an obligation to use the most humane method possible: the Model for Assessing the Relative Humaneness of Pest Animal Control framework (Saunders and Sharp 2011) is important in providing an informed judgment about the welfare impact of a control method (Refer to Section 7 for a detailed explanation of the framework). Although NSW DPI is responsible for administering the *Prevention of Cruelty to Animal Act 1979 (NSW)*, the enforcement agencies are the RSPCA, the Animal Welfare League of NSW and the NSW Police. Like NSW, *Animal Care and Protection Act 2001 (Q'ld)* is enforced by RSPCA inspectors.

4.5.2 RSPCA and pest animal management

RSPCA Australia acknowledges in their *Policy EO2 (2.1)*, Management of wild animals, *that in some circumstances it is necessary to manage populations of wild animals, native or introduced. There are three main reasons used to justify the management of wild animals:*

- *to protect the welfare of individual animals*
- *to help conserve a threatened, endangered or vulnerable native species*
- *to reduce adverse impacts on human activities or environment.*

That is, non-domesticated animals regarded as ‘pests’ need to be managed in order to reduce their adverse impact on the environment, agricultural production, human health and safety, and human activities (2.9.1).

As stated in EO2, 2.6 “RSPCA Australia advocates the adoption and implementation of compulsory codes of practice and standard operating procedures for all wild animal management activities”. This is to ensure that the control method is applied as ‘best practice’ by trained where possible and competent operators”.

As stated in EO2, 2.10.1, “RSPCA Australia is opposed to the use of inhumane methods of controlling or managing wild animals. A totally humane method is one which does not cause any pain, suffering or distress to target and non-target animals”. Further, Policy EO2, 2.10.2, states, “When determining the method of control, the most humane method that will effectively achieve the aims of the management program must be used” (For the complete policy refer to http://kb.rspca.org.au/RSPCA-Policy-E02-Management-of-wild-animals_422.html viewed 13 April 2017).

4.5.3 Kangaroo harvesting

The majority of the kangaroos culled annually are taken by commercial harvesters with Indigenous peoples and non-commercial shooters accounting for only a small percentage of the total. Queensland, New South Wales, South Australia, Western Australia and Tasmania allow the commercial harvesting of Macropods (Descovich *et al.* 2015). Professional, licensed harvesters operate under a permit system to sell carcasses for the meat and skin to licensed processors. Indigenous people have the right to harvest kangaroos for food gathering or for ceremonies. Non-commercial shooters are unable to sell carcasses but are able to cull kangaroos for damage mitigation under a destruction permit (Thomsen and Davies 2007). Queensland and Tasmania permit the recreational hunting of Macropods. In Queensland a recreational licence allows a maximum take of 50 animals per hunting period (<http://www.ehp.qld.gov.au/licences-permits/plants-animals/documents/is-wl-rwhl-roos.pdf> viewed 16 May 2017).

The commercial harvest of kangaroos is overseen and monitored by the Commonwealth government under the EPBC Act 1999 (Cwth) which confers the power to control the export of wildlife products. The EPBC Act requires the development and approval of wildlife trade management plans in order for permits to be issued for the commercial export of wildlife products. Such export must meet the following objectives (Part 13A):

- a) to ensure compliance with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Biodiversity Convention;
- b) to protect wildlife that may be adversely affected by trade;
- c) to promote the conservation of biodiversity in Australia and other countries;
- d) to ensure that any commercial utilisation of Australian native wildlife for the purposes of export is managed in an ecologically sustainable way;
- e) to promote humane treatment of wildlife;
- f) to ensure ethical conduct during any research associated with the utilisation of wildlife; and
- g) to ensure the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife (NSW Office of Environment and Heritage, 2017).

The EPBC Act states that the Commonwealth Minister responsible for the environment may approve a wildlife trade management plan for a maximum of five years. The Act specifies that such approval must be given only if the Minister is satisfied that:

- the plan is consistent with the objects of Part 13A of the EPBC Act (above);
- an assessment of the environmental impacts of the activities in the plan has been undertaken;

- the plan includes management controls directed towards ensuring the impacts of the activities covered by the plan are ecologically sustainable;
- the activities in the plan are not detrimental to the species to which the plan relates or any relevant ecosystem; and
- the plan includes measures to mitigate, monitor and respond to the environmental impacts of the activity covered by the plan.

In deciding whether to declare a plan, the Minister must also have regard to whether:

- the legislation relating to the protection, conservation or management of the species to which the plan relates is in force in the State or Territory concerned;
- the legislation applies throughout the State or Territory concerned; and
- in the opinion of the Minister, the legislation is effective.

The Minister must also be satisfied that if an animal is killed, it is done in a way that is generally accepted to minimise pain and suffering. Animal welfare standards for the commercial harvesting of kangaroos are detailed in the *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes*. All kangaroos entering the commercial trade must be taken in accordance with this Code or any subsequent relevant nationally-endorsed codes that replace this document.

Each State that participates in commercial kangaroo harvesting develops its individual Kangaroo Management Plan emphasising conservation values, sustainability of harvest and the use of humane methods. The state-based Kangaroo Management Plan is the only tool currently available to manage the contribution of kangaroos to TGP via commercial harvest. This system of formal rules that governs the commercial harvest includes population monitoring (aerial surveys), quota setting controls (quota of 10-20% of the total population, average 15-16% within harvest regions), controls over take (individual, sequentially numbered, lockable tags), and licensing of kangaroo harvesters and processors. These formal rules are important to those involved in the kangaroo industry as they allow the industry to demonstrate its sustainability credentials to the international and domestic public, and to those particular interest groups (animal rights and wildlife groups) that oppose the utilisation of kangaroos (Thomsen and Davies 2007; Descovich *et al.* 2015).

The NSW commercial kangaroo management plan does not include regulations for non-commercial culling for damage mitigation on rangeland enterprises and prohibits the taking of kangaroos for skin only. As well, kangaroo management zones are used to allocate and monitor quota per species (NSW Office of Environment and Heritage 2017). The activities in the NSW Kangaroo management plan 2017-2021 are consistent with the International Union for Conservation of Nature (1990) recommendation 18.24, which states that 'the ethical, wise and sustainable use of wildlife can provide an alternative or supplementary means of productive land use and can be consistent with and encourage conservation, where such use is in accordance with the appropriate safeguards'.

In NSW kangaroos are protected under the *National Parks and Wildlife Act 1974* (NPW Act) and Regulations and the NPW Regulation (2009) is administered by the NSW Office of Environment and Heritage (OEH). These instruments include provisions for licensing of a range of activities relating to the commercial harvesting of kangaroos on privately owned land within NSW. Kangaroos can be taken only in accordance with this management plan under a licence issued by OEH. Licences for damage mitigation may be issued under Part 9 of the NPW Act to land owners (s121). OEH has the authority to attach conditions and restrictions to these licences under section 133 of the NPW Act. Tags are issued as a condition of licences, in accordance with the NPW Regulation Part 6, Division 1 (s53) (NSW Office of Environment and Heritage, 2017).

Similar provisions for the management of kangaroos operate in other States but are not described in detail here.

4.5.4 Assessment process for humane wildlife harvesting

RSPCA Australia advocates that, with respect to their ‘social licence to operate’, wildlife harvesters need to demonstrate that their use of wildlife is “*justified, effective and humane*”. The organisation has developed a decision-making tool known as the Sustainable Use Model to enable an assessment of wildlife harvest against these three key principles of acceptability (<http://event.icebergevents.com.au/sustainable-use-2016/keynote-abstracts> viewed 30 May 2017). The same approach may be used to assess the acceptability of pest animal control methods. The Sustainable Use Model uses a six stepped assessment process as outlined in Table 4.5 below.

Table 4.5. A six steps assessment process in the Sustainable Use Model developed by RSPCA Australia.

Step	Measure
1. Intention	Commitment to animal welfare
2. Standards	Best practice humane methods
3. Competency	Minimum requirements for operator training and education
4. Auditing	Verify compliance of operators
5. Incentives	Provide financial incentives to encourage compliance
6. Transparency	Open to public scrutiny

There is general agreement by the Australian Veterinary Association (AVA), and the Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART) that a humane killing infers death without pain, suffering or distress perceptible to the animal. Ideally, this requires the method of killing to induce instant insensibility and for the animal to remain unconscious until death (Jones 2003).

4.5.5 Codes of Practice and Standard Operating Procedures

In Australia, Codes of Practices (COPs) have been written for the humane control of the major pest species including unmanaged goats and feral pigs (Sharp and Saunders 2012a; Sharp and Saunders 2012b). These COPs provide general information on pest animal management including a framework for best practice management, available control techniques and their attributes in terms of humaneness, efficacy, cost-effectiveness, and target specificity.

The COPs also provide a link to Standard Operating Procedures (SOPs) which describe the procedures involved for each control technique and addresses any animal welfare issues associated with their use (<http://www.feral.org.au/animal-welfare/> viewed 20 May 2017). Together these two documents offer a uniform approach to those engaged in pest animal control ensuring that their management plan considers human safety and the humaneness of the control method. In practice, the actual humaneness of the control method is highly dependent on the skill of the operators and their ability to comply with the SOP.

Although these documents have been adopted nationally, they essentially only provide guidance as legislative responsibility rests with State and Territory governments. It is noteworthy that RSPCA Australia endorses the adoption and implementation of mandatory COPs and SOPs for the control of pest animals (Jones 2003). However, a survey dealing with compliance with the kangaroo shooting code (RSPCA Australia 2002) around kangaroo shooting code compliance found that of particular concern was the management of pouched young and dependent young-at-foot when the mother is shot.

4.6 Effectiveness of control methods for the focus species

A well-established principle of pest animal management is that the focus should be on the desired outcome, with control practices directed towards specific objectives e.g. conservation of biodiversity, prevention of land degradation, mitigation of agricultural damage. The focus should thus be on managing the impact to an acceptable level as opposed to simply reducing pest numbers to as low a level as possible (Braysher 1993). Pest animal control methods should cause the least animal welfare harms to the least number of animals. These nature and extent of these animal welfare harms vary with species, age, sex, social structure and other factors (Dubois *et al.* 2017).

The ideal pest animal control method should achieve a long-term reduction in population and be humane, target specific, efficient, cost-effective and safe to implement (Norris and Low 2005). Where suitable integrated control techniques are available they should be utilised to ensure that the control program will achieve its goals as efficiently and effectively as possible (Jones 2003). In general, the control of pest animals in the context of the present study involves the removal or destruction of animals by culling, harvesting, mustering, trapping, and water point control or their exclusion by fencing (boundary, internal and cluster) (Norris and Low 2005; Russell *et al.* 2011).

In terms of animal welfare the ideal lethal control method is one “that causes instantaneous unconsciousness followed by death, with no prior pain or distress” (Littin 2010 p. 173). However, the control method that is best for animal welfare may not be the most effective in reducing the impact of the pest animal to the desired level leading to a conflict in goals.

4.6.1 Kangaroos

The management of kangaroo populations is often controversial and divisive within Australia and internationally: kangaroos are viewed variously as a national symbol, a pest and a resource (Pople and Grigg 1999). Although kangaroos are an iconic group of native animals with high conservation value, they can also be regarded as pests when in high abundance. “*Competing values* [including human needs and interests, concern for individual animal welfare, impact on biodiversity and ecosystems], and *different prioritisation of values create ethical dilemmas and disagreements in kangaroo management*” (Gamborg *et al.* 2012).

Kangaroos are managed by lethal methods that include commercial harvesting and non-commercial culling by shooting and by non-lethal methods that include translocation, fertility control and exclusion. Of the non-lethal methods, only exclusion has application in the rangelands.

Commercially, kangaroos are a low value product and Hacker *et al.* (2004) have shown that under such economic conditions commercial harvesting will cease at kangaroo densities well above those likely to pose a risk to the survival of the species. In relation to commercial harvesting McLeod (2010) and Descovich *et al.* (2015) identified several welfare-related issues that need to be addressed or are being addressed including field auditing of Code of Practice compliance, euthanasia of in-pouch young, and the fate of orphaned young-at-foot.

Shooters taking these free-living Macropods are obliged to abide by the relevant National Codes of Practice for commercial and non-commercial shooting and endorsed by the Natural Resource Management Ministerial Council (Department of Environment 2008a; Department of Environment 2008b). These two Codes which provide technical specifications and procedures set an achievable standard of humane conduct and are the minimum requirement for the shooting of Macropods (Pople and Grigg 1999). The Codes emphasise that the sudden and painless death as the only acceptable means of killing; the primary objective for the shooter is to achieve instantaneous loss of

consciousness followed by a rapid death without regaining consciousness. Key elements of these Codes are provided in Box 4.1 below.

Box 4.1. Key aspects of the National Codes of Practice for commercial and non-commercial shooting of kangaroos and wallabies (Descovich *et al.* 2015 p. 257).

1. Where doubt exists that a sudden and humane death can be achieved, as defined by instantaneous loss of consciousness and rapid death, shooting should not be attempted;
2. The shooter must ensure the target animal is dead before attempting to shoot another animal, even if an animal has escaped after being injured;
3. Female macropods with obvious dependent young should not be shot unless extenuating circumstances apply, such as when the animal is sick or injured;
4. Shooters must thoroughly search the pouch of any females which have been shot, and the young that are found must be killed with the recommended method for the size of the joey. Where the mother of a dependent young-at-foot has been killed, the dependent should be shot. Each joey should be examined to confirm death;
5. While a commercial shooter and those using rifles must only aim to hit the target animal in the brain, non-commercial shooters using shotguns may also aim to hit the heart, although this must not be attempted from behind the animal;
6. Should a Macropod need to be euthanised to alleviate suffering, this must be carried out via a shot to the brain. If impractical or unsafe a shot to the heart is an acceptable alternative. If neither option is possible, a heavy blow to the base of the skull is permissible.

Alternative non-lethal methods have been explored in response to the opposition to lethal methods on animal welfare and ethical grounds. Translocation and fertility control are the most commonly proposed alternatives (Descovich *et al.* 2015).

Translocation involves the transfer of animals to another location. Critical to the success of such programs are the quality (suitable habitat, absence of competitors or predators) and location of the release site. However, kangaroos are susceptible to post-capture myopathy (a painful stress-induced condition that can result in death) and capture, handling and transport can result in death or injury. Failure to successfully relocate or reintroduce animals is common and welfare issues should not be underestimated (McLeod 2010; Descovich *et al.* 2015).

Fertility control includes surgical or chemical sterilisation, and immuno-contraception. Surgical sterilisation is expensive and the procedure can be stressful for wildlife. This form of fertility control is suitable only for small localised populations of animals. Although chemical fertility control has potential in urban environments, it is unsuitable where kangaroos are abundant and widespread. Surgical and chemical sterilisation carry significant welfare concerns as both procedures require capture, restraint and sedation. Little is known about potential welfare issues with immuno-contraception (McLeod 2010; Descovich *et al.* 2015).

Exclusion fencing that is kangaroo proof is expensive to erect and maintain. Although electric fencing is less expensive, it requires continual maintenance and only slows the rate of migration. Fencing can result in animals being trapped inside fences and starving to death if they are unable to move to new grazing areas (McLeod 2010).

McLeod (2010) assessed the welfare impacts of (1) shooting, (2) capture followed by sedation and translocation and (3) capture followed by euthanasia using an overdose of barbiturate in a peri-

urban scenario. Using the relative humaneness model (further explanation of this model below) Sharp and Saunders (2011) concluded that shooting (by trained, professional operators) was the most humane method and that capture followed by translocation was the least humane method.

4.6.2 Unmanaged goats

Control of unmanaged goats is complex as populations tend to make a rapid recovery when culled and eradication is usually impossible. There are a number of measures that can be used to manage goats but the challenge is to integrate these into an effective strategy that reduces the need for culling on a regular basis. The most commonly used techniques are mustering, trapping at water, aerial and ground shooting and exclusion fencing. “Judas” goats are sometimes used to help locate isolated groups. In NSW most of the effort is in the live removal of goats with mustering and trapping (Norris and Low 2005; Khairo *et al.* 2013).

Mustering and trapping are used as an opportunity harvesting strategy where goats are intended for commercial slaughter (Khairo *et al.* 2013). However, once goat populations are reduced to densities to about 1 animal per km² mustering and trapping becomes uneconomic. Aerial or ground shooting, or trapping and on-site slaughter, are more appropriate when population densities are low and/or in inaccessible terrain (Norris and Low 2005). A summary of the effectiveness of the methods to control unmanaged goats is shown in Table 4.6.

Table 4.6. Summary of effectiveness of unmanaged goat control methods (Norris and Low 2005; Sharp and Saunders 2012a).

Control Technique	Acceptability of technique with regard to humaneness*	Efficacy	Cost-effectiveness	Target Specificity	Comments
Exclusion fencing	Acceptable	Effective in suitable areas	Expensive	Can impact on non-target species by restricting movement or denying access to water sources	Cost prohibitive on a large scale. Cluster fencing and lower TGP fencing with hinge joint are considered effective in excluding goats. Effective short-term barriers. Appropriate as a tactical technique in a management program.
Aerial shooting	Conditionally acceptable	Effective	Relatively expensive. Can be cost-effective when goat density is high.	Target specific	Use for control at both high and low densities especially in rugged or inaccessible terrain. Effective for eradicating small numbers of goats remaining after the use of other control methods. Useful for achieving broad scale reductions when goat prices are low.
Ground shooting	Acceptable	Not effective	Not cost-effective	Target specific	Labour intensive, only suitable for smaller scale operations. Has variable efficiency dependent upon climatic conditions. Can be cost-effective when densities are high.
Use of Judas goats	Conditionally acceptable	Effective	Relatively cost effective compared with searching for goats from helicopters or on foot.	Target specific	Can be a useful adjunct to other control methods. Effective if for local eradication. Requires expensive equipment and skilled operators.

Control Technique	Acceptability of technique with regard to humaneness*	Efficacy	Cost-effectiveness	Target Specificity	Comments
Trapping at water	Conditionally acceptable	Effective	Cost-effective	Can have a significant impact on non-target animals, especially macropods and emus. Traps at natural water holes may severely restrict access by native species	Most effective during dry times. Cost-efficient when prices for goats are high.
Mustering	Conditionally acceptable	Effective	Cost-effective	Target specific	Efficient and cost-effective where goats are present in high densities, the terrain is relatively flat and goat prices are high. Welfare concerns associated with capture and transport of goats.

*Acceptable methods are those that are humane when used correctly. Conditionally acceptable methods are those that, by the nature of the technique, may not be consistently humane. There may be a period of poor welfare before death.

4.6.3 Feral pigs

Managing the feral pig population is challenging as they exhibit compensatory population growth associated with increased fecundity or reduced mortality of survivors and change their movement patterns and behaviour in response to control measure (Bengsen et al. 2014). According to Bengsen et al. (2014) effective feral pig control requires a 50 to 70% reduction in the population every year to inhibit population recovery.

A control management program will be most effective and long-lasting when a combination of control methods is employed. Non-lethal methods and lethal methods are available in Australia with poison baiting often used as the initial control method. The use of fertility control agents is unlikely to be available in the near future for widespread use under Australian conditions (Bengsen et al. 2014; Koichi and Halliday 2015). A summary of the effectiveness of the methods to control feral pigs are shown in Table 4.7.

Table 4.7. Summary of the effectiveness of feral pig control methods (Norris and Low, 2005, Sharp and Saunders, 2012b).

Control Technique	Acceptability of technique with regard to humaneness*	Efficacy	Cost-effectiveness	Target Specificity	Comments
Exclusion fencing	Acceptable	Limited	Expensive	Can be in certain situations.	Fencing can be effective for small, critical (economically or environmentally) areas, though the maintenance cost are high.
Ground baiting with 1080	Conditionally acceptable	Effective	Cost-effective	Relatively large amounts of 1080 are required to kill pigs; significant potential to poisoning non-target animals. Strategic ground baiting requires fewer baits than aerial baiting programs. Uneaten baits can be collected and destroyed.	Currently the most cost-effective technique available. 1080 ingestion can also kill non-target animals including native species, cats, dogs and livestock. 1080 is also toxic to humans.
Aerial baiting with 1080	Conditionally acceptable	Effective	Cost-effective	Relatively large amounts of 1080 are required to kill pigs; there is a significant potential risk of poisoning non-target animals. Uneaten baits cannot be collected. Dried meat baits remain toxic for longer periods than fresh meat.	Effective for broad scale control in remote areas. 1080 ingestion can also kill non-target animals including native species, cats, dogs and livestock. 1080 is also toxic to humans
Ground shooting	Acceptable	Not effective	Not cost-effective	Target specific	Labour intensive, only suitable for smaller scale operations.

Control Technique	Acceptability of technique with regard to humaneness*	Efficacy	Cost-effectiveness	Target Specificity	Comments
Aerial shooting	Conditionally acceptable	Effective	Relatively expensive. Can be cost-effective at high pig densities.	Target specific	Provides high level medium- to long-term control of feral pig populations.
Trapping	Acceptable	Can be in certain situations	Can be in certain situations	May catch non-target animals	Important control technique in areas where baiting or aerial shooting is not possible. Not practical for large scale control.
Use of Judas Pigs	Conditionally acceptable	Effectiveness variable	Expensive	Target specific	Targeted control of small residual populations. Requires a high level of proficiency. Not applicable at high densities.

*Acceptable methods are those that are humane when used correctly. Conditionally acceptable methods are those that, by the nature of the technique, may not be consistently humane. There may be a period of poor welfare before death.

Aerial shooting and aerial baiting are considered to be the most effective management techniques for the Rangeland environment (Norris and Low 2005). Many private landholders and some government agencies view recreational hunting as a useful form of pig control. However, the use of dogs in recreational hunting has been publicly criticised by political and animal welfare organisations (Bengsen *et al.* 2014).

4.7 Relative humaneness of control methods for the focus species

The concept of relative humaneness is important in choosing a control method to manage pest animals. “Humane” has been defined by Fraser (2008) as the ethic of animal welfare, i.e. promotes animal health, prevents suffering, and allows animals to express their natural adaptations. The key question to address in method selection: does the chosen method cause more or less pain, suffering or distress (Jones 2003). Essentially, the effect of a pest animal control method on animal welfare depends on the nature, severity, and duration of the impact, the manner of death, and the capacity of the animal to suffer (Littin 2010).

A internationally agreed definition of animal welfare (and accepted by Australia in the Animal Welfare Strategy 2010-2014 (<http://www.agriculture.gov.au/animal/welfare/aaws> viewed 24 October 2017) from the World Organisation of Animal Health (OIE), states, in part, in Article 7.1.1 the following:

“Animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress” Article 7.1.1.

(http://www.oie.int/fileadmin/Home/eng/Health_standards/tahc/current/chapitre_aw_introduction.pdf viewed 24 October 2017).

Harm is assessed against internationally recognised five domains that capture the various perspectives of animal welfare: physical attributes (nutrition and health), naturalness (environment and behaviour) and mental state (pleasure and suffering) (Mellor and Reid 1994; Bray 2017) (Figure 4.3). If there is compromise in any of the physical components (i.e. the first four domains) then this compromise will be expressed in the mental components (i.e. fifth domain), the elements of which represent suffering (Mellor and Reid 1994).

Sharp and Saunders (2011) have developed an assessment framework which enables a consistent approach to assessing the animal welfare impact (i.e. quantifying the severity and duration of impact) of pest control methods based on these five domains. This tool allows the user to make a judgement about the relative humaneness and acceptability of available control methods.

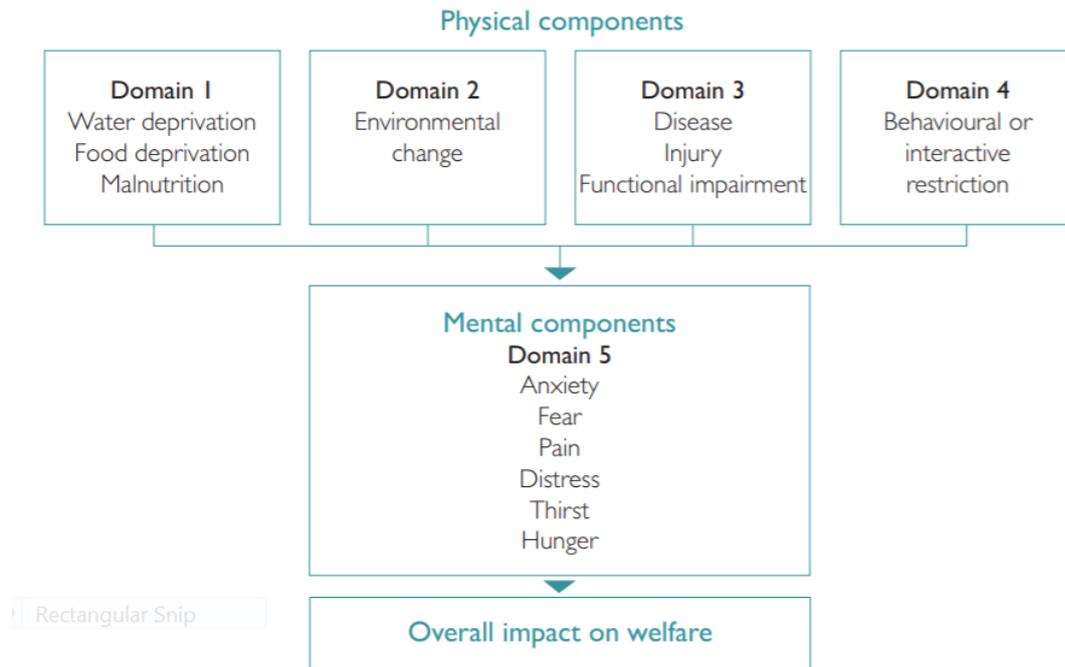


Fig. 4.3. Five Domains of potential welfare include four interacting physical/functional domains and a fifth domain of mental state ((Mellor and Beausoleil 2015; Beausoleil et al. 2016) modified from Mellor and Reid (1994)).

Use of the framework, known as the Model for Assessing the Relative Humaneness of Pest Animal Control, is based on empirical evidence and expert opinion, providing an informed judgement about the welfare impact on the target animal of a specific control method. Relative rankings of control methods are qualitative in nature - which is better and which is worse in terms of causing pain, suffering or distress (Sharp and Saunders 2011). The relative humaneness of the different control methods can thus be accounted for (along with other factors including cost-effectiveness, ease of use, and longevity of control) when land managers are evaluating which control method will be the most appropriate for their particular circumstances.

The relative humaneness model consists of a two part assessment process. Part A (Figure 4.4) generates a welfare impact score for a particular control method and target species based on an assessment of the overall welfare impact and the duration of the impact on the target animal for each of the Five Domains identified in Figure 4.3.

Overall impact on welfare	Duration of impact				
	Immediate to Seconds	Minutes	Hours	Days	Weeks
EXTREME	5	6	7	8	8
SEVERE	4	5	6	7	8
MODERATE	3	4	5	6	7
MILD	2	3	4	5	6
NO IMPACT	1	1	1	1	1

Fig. 4.4. Part A. Assessment of overall welfare impact matrix (Sharp and Saunders 2011).

Part B (Figure 4.5) is used only for lethal methods and involves assessing the mode of death in terms of the level of suffering and the duration of the suffering prior to the onset of insensibility. Suffering in this context includes anxiety, pain, fear, distress and apprehension (Sharp and Saunders 2011).

Level of suffering (after application of the method that causes death but before insensibility)	Time to insensibility (minus any lag time)				
	Immediate to Seconds	Minutes	Hours	Days	Weeks
EXTREME	E	F	G	H	H
SEVERE	D	E	F	G	H
MODERATE	C	D	E	F	G
MILD	B	C	D	E	F
NO IMPACT	A	A	A	A	A

Fig. 4.5. Part B. Assessment of suffering for lethal methods (Sharp and Saunders 2011).

By applying Part A and Part B separately or together the control practice or combination of practices can be in theory objectively evaluated and compared in terms of their welfare consequences (Hadidian 2012; Littin et al. 2014).

Figures 4.6 and 4.7, respectively, illustrate the application of the framework to assess the welfare impact of the control methods for unmanaged goats and feral pigs, respectively.

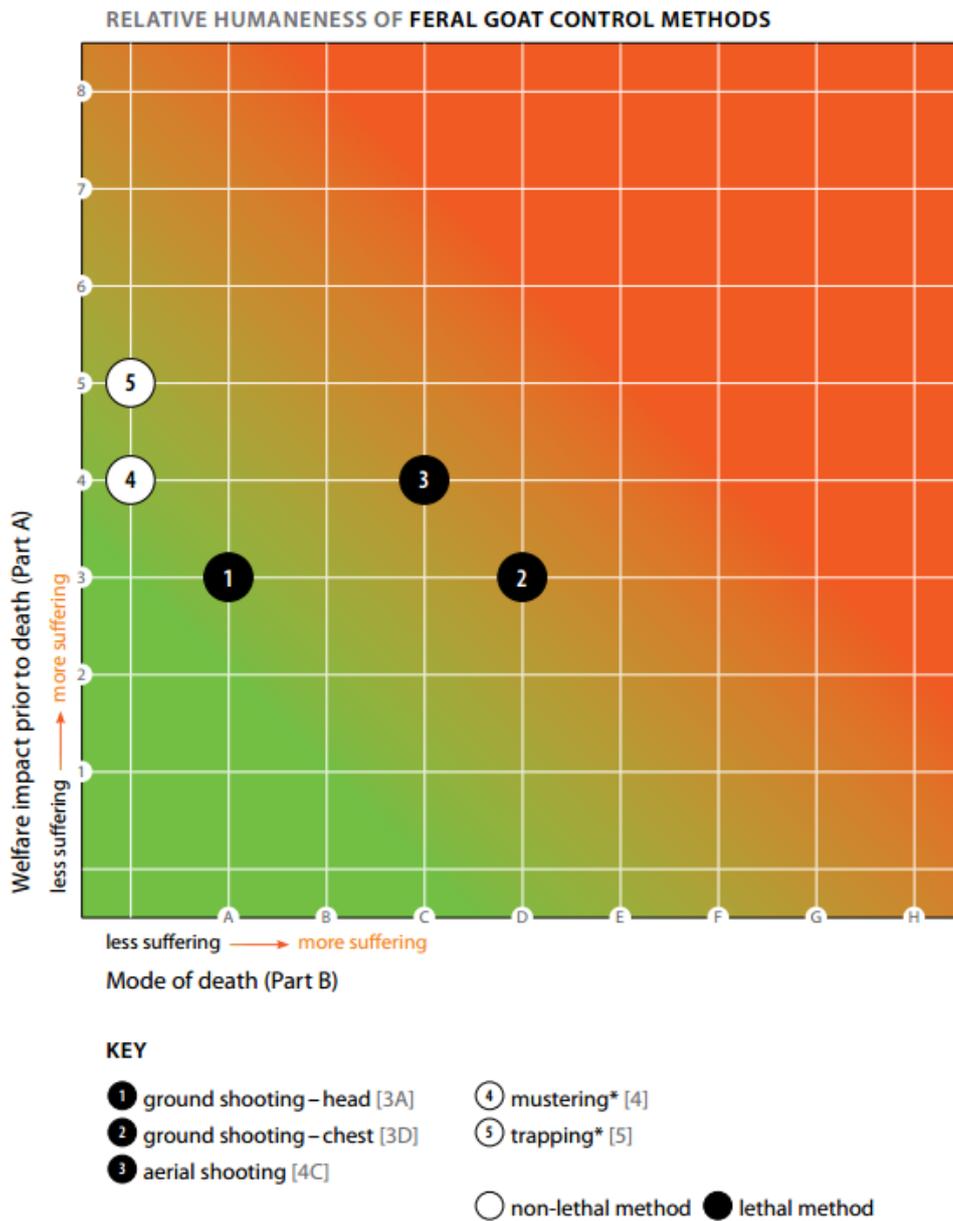


Fig. 4.6. Assessment of the relative humaneness of unmanaged goats control methods (Sharp and Saunders 2011).

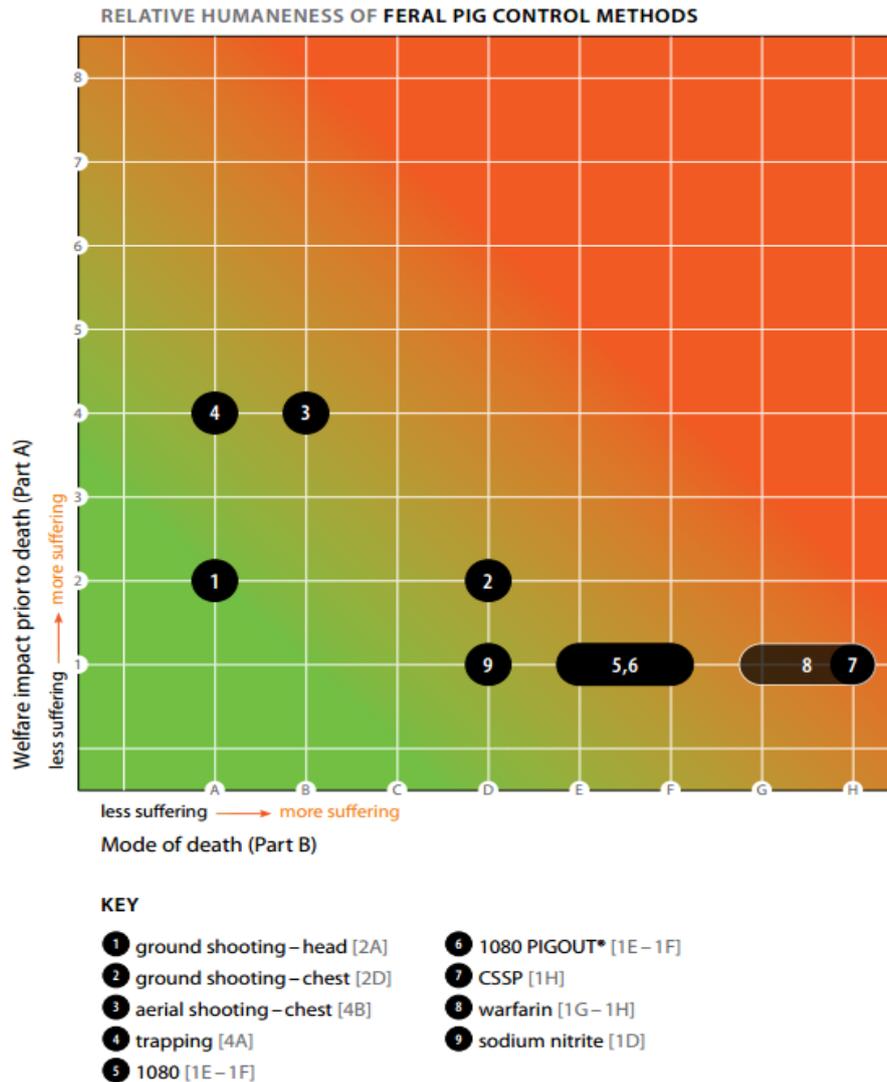


Fig. 4.7. Assessment of the relative humaneness of feral pig control methods (Sharp and Saunders 2011).

4.8 Pest animal management principles

The Sharp and Saunders (2011) welfare assessment model is a useful tool to discuss the welfare consequences of implementing the different control practices in a management program. However, it does not address in the first instance whether taking action is justified and whether the program objectives are achievable (Hadidian 2012).

A set of general guiding principles to underpin a pest animal strategy as outlined by Hadidian (2012) include:

- Justification, need to act must be articulated;
- Achievability, desired benefits must be realistic;
- Effectiveness, measures employed must be able to achieve benefits;
- Specificity, approach must be targeted to the problem-causing animal;
- Welfare priority, methods used must be the most humane available;
- Monitoring, consequences of action must be amenable to evaluation;
- Follow-up, benefits achieved must be maintained.

4.9 Public and interest groups' attitudes towards pest animals and their control methods

4.9.1 Public attitudes towards pest animals and their control methods

In a review of research examining public attitudes and perceptions towards invasive animals and their impacts, Fitzgerald *et al.* (2007pp.4-5) found *“that little primary research had been conducted on attitudes and perceptions of invasive animals in Australia. It also seems that studies to date have generally been reactive and not well-informed by previous work. The geographical coverage is patchy and no national Australian picture for pest animals is available. The species coverage is variable, as is the quality of the work, with almost no coverage of perceived or experienced social impacts”*.

Despite these limitations, Fitzgerald *et al.* (2007) concluded that significant differences in attitudes towards invasive animals exist among segments of the population. Furthermore, attitudes towards invasive animals are not held in isolation, but in the context of a range of other attitudes around invasive species, especially the control methods employed to manage them. A summary of findings by Fitzgerald *et al.* (2007) are presented in Table 4.8.

Table 4.8. General findings about public attitudes and perceptions towards invasive animals and their impacts (Fitzgerald *et al.* 2007 pp.4-5).

Criteria	Finding
Gender	Males are generally more likely to consider invasive animals a 'serious' problem, and more likely to support intervention and the use of lethal controls.
Age	Older people are generally more likely to regard an animal as a pest (and a more serious problem) than younger people.
Residence	Rural residents generally perceive invasive animals to be more of a problem than urban residents.
Species of invasive animals	Animals that are capable of being companion animals or are large, attractive mammals, are generally considered more favourably than rodents and non-mammalian species.
Personal situation	Attitudes towards species that are seen as a pressing national or local problem tend to be more negative than towards species that are seen as being less pressing, or farther from home.
Interest	Attitudes vary among people with ethical or conservation interests, animal industry practitioners, conservation groups, scientists and health professionals.
Culture	Certain species of animals are seen as companion animals in one culture but as pests and/or food in other cultures.

An important finding made by Fitzgerald *et al.* (2007) is that social acceptability judgements about control of pest animals can be influenced by judgements about specific control methods. Acceptance or non-acceptance of pest control methods can relate to both ethical and moral concerns including specificity and humaneness, and perceptions of risk and benefits (Fraser 2006).

Fitzgerald (2009) undertook a comprehensive review of Australian and international, notably New Zealand, research on public attitudes towards current and proposed invasive animals control methods. This review considered numerous pest animals found in urban and non-urban situations, including the focus species of the present study.

A summary of this research for kangaroos, feral goats and feral pigs is provided in Table 4.9. Key points from this review for the three species include:

1. Broadly, there was a lack of discrimination amongst species in terms of acceptability of control methods except for the management of kangaroos in urban situations;
2. There was a preference for the pest animal to be managed as a resource as opposed to eradication;
3. The most acceptable control method is by shooting or aerial culling where appropriate, with poisoning the least acceptable method.

Some more general points of note from the Fitzgerald (2009) review include:

- Often there is a difference of opinion between farmers/land managers and the “public” about the nature and extent of the pest animal problem and how best to manage it;
- Farmers differ in their views about pest management depending on whether the animal is viewed as a resource or a pest. Classifying certain species can be controversial as some can be considered pests by some and as a resource by others (Goldson *et al.* 2015);
- Indigenous people tend to regard introduced animals as a resource, and as being compatible with native animals;
- The “public” consider fertility control as the most acceptable method;
- Population management is favoured by the “public” for larger introduced species, especially if they have resource value;
- Key “public” decision-making criteria in choice of control method, in order of importance, are humaneness, capacity for economic and social benefits, specificity, and safety;
- Overall, shooting appears to be the most acceptable method to the “public” followed by fertility control, live capture and relocation, trapping and poisoning;
- Increasing preference by the “public” for the use of non-lethal methods such as exclusion fencing, reflecting increased concern for animal welfare.

Table 4.9. Summary of research on the acceptability/unacceptability of control methods for kangaroos, feral goats and feral pigs (Fitzgerald, 2009).

Authors	Population	State	Position on pest/wildlife control	(Most) acceptable methods	(Most) unacceptable methods
Kangaroos					
Johnston and Marks (1997)	Public	Vic	Manage as a resource	<ul style="list-style-type: none"> ●Shooting ●Biocontrol ●Permanent fertility control 	<ul style="list-style-type: none"> ●Trapping ●Poisoning
Ballard (2005)	Public	NSW		<ul style="list-style-type: none"> ●Capture and relocate ●Public education 	<ul style="list-style-type: none"> ●Aerial shooting
Feral goats					
Ballard (2005)	Public	NSW	Yes	<ul style="list-style-type: none"> ●Aerial culling (rural) 	Aerial culling (urban)
Feral pigs					
Robinson <i>et al.</i> (2005)	Indigenous people	NT	Resource extraction	<ul style="list-style-type: none"> ●Shooting and recovery 	<ul style="list-style-type: none"> ●Carcase left
Ballard (2005)	Public	NSW	Yes	<ul style="list-style-type: none"> ●Aerial culling 	

Fisher *et al.* (2012) conducted a survey to understand the views of members of the public about invasive animals and their control methods. The survey was conducted over a period of 30 months in which 40 participants were recruited each week over that period resulting in more than 5,000 responses (Table 4.10).

Table 4.10. A summary of the findings from the survey conducted by Fisher *et al.* (2012).

Criteria	Findings
'Top five' pests nominated	Cane toads, feral cats, wild rabbits, carp, and feral pigs
Pest control method	Fertility control, biocontrol and genetic control most preferred Baiting with traditional poison, gassing and shooting least preferred
Significant impact on native fauna, flora and agriculture	Cane toads, cats, rabbits, feral pigs, foxes and camels
Sources of information	Television, newspapers and magazines
'Urban' pests of concern	Indian mynah birds, pigeons, introduced rats and introduced mice Public more concerned about 'urban' pests
Attitudes by gender	Females tend to be less approving of any method of control
Attitudes by age	Younger people consistently less concerned about the effects of feral animals, except for rats and mice
Attitudes by location	Increasing concern with remoteness of location
Attitudes by education	Increasing concern with higher education level

The kangaroo industry has been the subject of public interest since the 1960s reflecting concerns for the welfare of harvested animals and conservation of the population (Thomsen and Davies, 2007). In response, a Parliamentary inquiry into kangaroo harvesting was established in 1971. Recommendations arising from this inquiry included the introduction of harvest limits and the recording of harvesting numbers (Thomsen and Davies, 2007).

Several recent studies have focused specifically on the general attitudes of the Australian public to kangaroos and their management. Ampt and Owen (2008) explored Australian consumers' current beliefs and attitudes towards kangaroo meat. The most common concern expressed by consumers was that the harvested animals were killed humanely. A majority of members of the public surveyed by McLeod and Sharp (2014) preferred non-lethal methods of control but if lethal methods were used then the preference was for commercial harvesting.

In general, for the Australian public the welfare of animals is an important issue and the humane treatment of all animals (domestic, farm, wildlife and pest animals) is a concern. This is often expressed by passively donating to animal welfare groups as opposed to actively joining a group and participating in their activities. In terms of pest animal control, a primary consideration in the acceptability of a particular method is that it must not cause unnecessary suffering.

4.9.2 Interest groups attitudes towards pest animals and their control methods

Koichi *et al.* (2013) evaluated the acceptability by tourists and local residents of four control methods (trapping, hunting, fencing, and poison baiting) to manage feral pigs in the Wet Tropics World Heritage Area, Australia. They found that residents were more supportive of controlling feral pigs than tourists and this related to residents having direct experience of their impact. The highest preference of both groups was for trapping with poisoning the least preferred method. However,

the groups differed in their reasons for their support of particular control methods: humaneness was more important to tourists while social and economic benefits were more important to residents.

In New Zealand, Farnworth *et al.* (2014) surveyed three groups, namely, Auckland public, animal protectionists and conservationists to explore their attitudes towards those vertebrate animals considered pests, and their available control methods. Conservationists consistently gave pest animals a higher pest status than the Auckland public, with the lowest status given by animal protectionists. The authors suggested this finding was probably a reflection of the conservationists' knowledge and concern about the impact of pest animals on the ecosystem. Animal protectionists consistently expressed concern for the welfare of the pest animal in their choice of control method. Conservationists were almost six times and three times, respectively, more likely to select lethal methods of control than the animal protectionists and the Auckland public. For the Auckland public only, there was a strong negative relationship between pest status and the importance of animal welfare in selecting a control method.

Although the concern for animal welfare is widespread throughout the community, the underlying values and beliefs used to interpret and act on this concern vary between individuals and groups (Productivity Commission 2016), as illustrated by the studies outlined above. This presents a significant challenge to the pastoral industry in the southern Australian rangelands in terms of the social acceptability of available control methods to manage Macropods, unmanaged goats and feral pigs as components of TGP.

4.9.3 Indigenous perspectives

Although kangaroos are culturally significant to Aboriginal people, “the specifics of cultural significance are dependent on the belief system of particular language groups and individuals” (Thomsen *et al.* 2006 p. 129). Thomsen *et al.* (2006) examined the perspectives of Aboriginal people in the Western Desert cultural region (Coober Pedy to Marla and Oodnadatta) and the Northern Flinders Ranges of South Australia both located within the commercial kangaroo harvest zone. Thomsen and Davies (2007) summarised the cultural beliefs and practices relating to kangaroos that were brought forward by the Aboriginal participants in their study (Table 4.11).

Table 4.11. Cultural beliefs and practices of the Aboriginal people of the Western Desert cultural region and the Northern Flinders Ranges of South Australia (Thomsen and Davies 2007).

Western Desert cultural region	Northern Flinders Ranges
Strong customary law associated with the harvest, preparation and distribution of red kangaroo (malu)	Red kangaroo (oodloo) and euro (mundja) have cultural significance
Some people have red kangaroo or euro as their personal totem*	Some people have red kangaroo or euro as their personal totem*
Eating kangaroo is very important to the physical and spiritual health of Aboriginal people	Eating kangaroo is very important to the physical and spiritual health of Aboriginal people, especially the elderly
Buying kangaroo products harvested using non-indigenous practices/laws is not culturally appropriate	Buying kangaroo products harvested using non-indigenous practices/laws is not culturally appropriate for some people

* “Totemism involves close relationships between humans and aspects of the natural world that include responsibility for the species and may also restrain killing or consuming that species” (Rose 1997 cited in Davies and Thomsen 2007 p.66).

Aboriginal people commonly eat the tails of commercially harvested kangaroos even if they do not consume other parts from these animals. They can identify the kangaroo species from their tails. In eating only these tails Aboriginal people can be sure that they are not eating their totem species. It is also traditional practice to sever the tail from the kangaroo and cook it separately (Thomsen and Davies 2007).

The culling of kangaroos without utilisation was considered objectionable by the Aboriginal participants in the study conducted by Thomsen and Davies (2007). This is in line with their belief not to waste any animal whether it is native or introduced.

4.10 Conclusion

This review of the literature highlights the importance of incorporating ethical and animal welfare principles in any approach to the management of kangaroos, unmanaged goats and feral pigs for TGP control. To retain their ‘social licence to operate’ it is essential that the red meat industries in the southern Australian rangelands can not only defend taking action (i.e. demonstrate the need to control these species in terms of the severity of their impact, prevention of land degradation, or the threat to industry viability) but can also justify the chosen control method (i.e. demonstrate its welfare impact - target specificity and humaneness) and, in the case of kangaroos, that it represents no threat to the conservation of the species. However, it can be expected that the use of lethal control methods will continue to cause public debate.

The nature and extent of the contribution of kangaroos, unmanaged goats and feral pigs to TGP varies temporally and spatially. Fluctuations in the populations of kangaroos and feral pigs, in particular, are strongly influenced by the prevailing environmental conditions, the populations of feral goats apparently less so. The management of kangaroos is complicated by their status as native species with control regulated by legislation. Inconsistencies in the status of unmanaged goats have given rise to tensions in their management. They are a declared pest in Queensland and South Australia, but not in NSW. Compounding this inconsistency is their value as a cash resource for pastoralists, even when they are declared a pest, potentially frustrating any control objective. Feral pigs are declared pests throughout Australia, making their management the least complex of the three focus species.

Over past twenty years a substantial effort has been made in developing principles, procedures and practices to enable the red meat industries to demonstrate their credentials in ‘best practice’ pest animal management. The Relative Humaneness of Pest Animal Control framework is a tool that enables these industries to demonstrate the animal welfare impact of control methods for unmanaged goats and feral pigs. Voluntary Codes of Practice and Standard Operating Procedures documents for these species offer a uniform and justifiable approach for producers engaged in their control. However, in practice, actual humaneness depends on operator skill and procedural compliance. In the case of kangaroos, mandatory Codes of Practice for the commercial and non-commercial shooting of kangaroos must be strictly adhered to by shooters. However, the field auditing of compliance does not appear to be consistently addressed.

In general, the welfare of all animals (domestic, farm, wildlife and pest animals) is an important issue for Australians. This is expressed by their concerns that all animals must be treated in a humane manner and that a primary consideration in the acceptability of any pest animal control method is that it must not cause unnecessary suffering. Although the underlying values, beliefs and attitudes that are used by people to interpret and act on these concerns differs among individuals and interest groups, there is a general acceptance that all non-human animals as sentient beings are capable of suffering.

A key point emerging from this Review of Literature is the importance of interest (or stakeholder) groups in shaping publicly-held beliefs about the impact of the focus species, and attitudes towards them, key factors determining the acceptability of any proposed control method. Specific interest groups important to this study include animal rights and animal welfare groups, environmental groups, recreation groups and indigenous groups. A particular difficulty is the controversy and divisiveness often associated with the management of kangaroo populations.

Although membership of particular interest groups, including animal rights, animal welfare and conservation groups, appears to be very low, those who are members have a strong commitment to influencing policy and the broader public to achieve their objectives. A significant portion of Australians identify as “supporters” of these interest groups, e.g. 31% for PETA, 64% for the Wilderness Society and 91% for the RSPCA. While these “supporters” are viewed as potential recruits they are also an important resource that can be mobilised to support their campaigns. There is also a substantial minority of Australians who appear to hold no particular views regarding the objectives of these interest groups e.g. 33% for the Wilderness Society and 67% to PETA.

Within the public domain, there are groups who are ideologically opposed to any form of pest animal control and they will continue to conduct their public demonstrations and media campaigns. The red meat industries need to acknowledge these interest groups and their held views. However, it is important for the red meat industries to engage with the “supporters” of the interest groups around their broader animal welfare/environmental objectives. There is also a need to target those who hold no particular views to convince them of the industries’ credentials in animal and land management.

5 Stakeholder assessment of control practices for kangaroos, unmanaged goats and feral pigs

Setting the scene

"The control of pest animals is as much about the attitudes of people to pests, and how those pests are controlled, as it is about the ecology of their impacts" (J Russell).

The issue

"TGP is probably the most important concept we have to manage out here. Go back 10 years TGP was managing your sheep and cattle and goats but in actual fact TGP should be holistic management of all grazing pressure and it has to be addressed accordingly. I believe that TGP is critical out here to be, firstly, successful [financially viable] and, secondly, for environmental protection or sustainability...I don't have a very good grasp of TGP because we don't have adequate control of kangaroo. So I can manage all the domestic livestock correctly but with the massive numbers of kangaroos now...We've probably got 10,000 DSE on the property...and 25,000 DSE equivalent of kangaroos...I'm making up less than a third of the TGP that I can manage easily" (Pastoralist 2).

"You might do whatever you want to do for your kangaroos, but if you haven't addressed your goats, you're still going to end up with no grass. You might muster all your goats and get rid of them, but if you haven't sorted out anything to do with your kangaroos, you've still got no grass. You might rest your paddock and manage your sheep, but if you haven't done anything with kangaroos or goats, you've still got no grass. You've got to... address all of these things, otherwise you've got no grass...the presence of grass drives the whole system" (Academic 1).

The management

"When it comes to pest animal management more broadly, it's about managing impacts, not about killing a certain number of animals... I think we used three words to try and frame our discussions around control of pest animals and animals that are having a negative impact on people. They're justified, effective and humane" (Animal welfare 1).

The concern

"So a puppy or a pig or a kangaroo to me it doesn't matter whether it's a pet or a resource. We would like to think that the methodology used in controlling or bringing the numbers down is humane regardless of the animal (Pastoralist 1).

"My big thing is don't do something to an animal that's going to make them suffer. If you're going to kill it, kill it quickly and cleanly and, hopefully, use it" (Kangaroo processor 1).

"I think just about all of the animal protection groups just want to stop cruelty and improve welfare. That is, give animals a life worth living" (Animal welfare 3).

"Obviously the first instinct of a lot of people who aren't closely associated with these sorts of issues [pests and animal management] is that they don't want to see lethal control undertaken" (Government agent 3).

Not all animals are equal

“I suppose in terms of issues that you’re looking at kangaroos would be where there is the most noise because there isn’t a great deal of concern raised in the animal activist community about goats or pigs. Not saying it shouldn’t be because from a strictly animal welfare perspective... they’re all suffering in the same way...I find it interesting that some groups will focus on animals because they are more charismatic than others. Feral horses, for example attract a huge amount of attention. But [feral] camels don’t, [feral] pigs certainly don’t, [feral] goats certainly don’t, foxes certainly don’t, cane toads really don’t...people are inconsistent in the way they treat animals... Demonising animals because they’re a pest tends to mean their value decreases in people’s minds and they find justification for treating them badly...the law means that animals are treated unequally as well” (Animal welfare 1).

5.1 Introduction

This section focuses on key influential stakeholder groups and their assessment of control practices for the management of kangaroos, feral goats and feral pigs as part of the management of TGP in the southern Australian rangelands. The section draws on data collected through semi-structured interviews with representatives of these stakeholder groups.

Total grazing pressure (TGP) is a key driver of productivity in extensive livestock production systems. Sustainable grazing management requires the management of grazing pressure from kangaroos and feral animals in addition to domestic livestock. Although there are practices available to manage these native herbivores and feral animals, these practices must be socially acceptable if the extensive livestock industries are to maintain its social license to operate (SLO).

While the attitudes of the Australian public are ultimately the most important factor in determining social acceptability, these attitudes will be influenced by specific stakeholders, including communities of interest (e.g. animal welfare, environment, consumer, recreation groups) that shape public perception and influence policy. The extensive livestock industries’ ability to implement specific control practices will largely be determined by the attitude of these groups which are thus the focus of this research.

5.2 Research method

The key research questions to be addressed by this project are listed below. This section responds to key questions 2 and 3:

1.) Which stakeholder groups are most influential in shaping public perception, policy and management initiatives relating to the control of the focus species (kangaroos, unmanaged goats and feral pigs) as components of TGP in the southern Australian rangelands?

2.) What are the (current and likely future) options to control these species? What are the relative merits of these control measures as assessed by key informants?

3.) What are the attitudes of key stakeholders (those who influence public opinion) to (the current and likely future) control measures?

Twenty four semi-structured interviews conducted between July 2017 and March 2018 were the principal source of data for this research. The strategy used in selecting interviewees was predominantly purposeful sampling with some snowball sampling to obtain a cross-section of

stakeholder groups and diversity of opinions within those groups. A list of nine stakeholder groups, and potential representatives within those groups, was compiled by the project Advisory Committee at the meeting held in Broken Hill on 21 March 2017. From this information an initial list of potential interviewees could be drawn up. In addition, in my discussions with a number of attendees at the Australian Rangelands Conference 2017, Port Augusta several South Australian stakeholders and their representatives were suggested as potential candidates for interview. As well, during an interview a number of the interviewees suggested other stakeholder group representatives that could have different opinions. These additional potential interviewees were considered and added to the interview list.

The stakeholder group representatives interviewed included three southern Australian rangelands pastoralists, one veterinary representative, one sporting shooters representative, one government agent (policy), four government agents (NRM), four academics, two animal welfare representatives, one animal protection representative, one wildlife conservation representative, three red meat industry representatives, two kangaroo meat processors and one indigenous representative (Table 5.1). Although the stakeholder group has been identified, the anonymity and confidentiality of the representative has been protected by allocating a unique alpha-numeric code (Table 5.1).

Stakeholder groups approached but not successful in gaining an interview include Australian Conservation Foundation, Bush Heritage, Nature Conservation Council NSW, NSW Greens, Animal Justice Party, Animal Liberation NSW, Queensland Farmers Federation: four did not respond to invitation to participate, two declined after some initial correspondence and one indicated they had a higher priority issue of concern.

Table 5.1. Stakeholder interview participant legend.

ID Code*	Stakeholder group
Academic 1	(AC1) Academic, University Southern Queensland
Academic 2	(AC2) Academic, Australian National University
Academic 3	(AC3) Academic, QDAF
Academic 4	(AC4) Academic, University Technology Sydney
Animal welfare 1	(AN1) Animal welfare, RSPCA Australia
Animal welfare 2	(AN2) Animal welfare, RSPCA NSW
Animal protection 3	(AN3) Animal protection, Animals Australia
Conservation 1	(CO1) Conservation, Australian Wildlife Conservancy
Government agent 1	(GA1) SA Pastoral Board
Government agent 2	(GA2) SA Biosecurity (policy), joint interview
Government agent 3	(GA3) National Parks and Wildlife Service (NSW Office of Environment and Heritage)
Government agent 4	(GA4) Natural Resources SA Arid Lands, joint interview
Government agent 5	(GA5) Western Local Land Services (NRM and Agriculture)
Indigenous 1	(IND1) Indigenous representative, Nulla Nulla Aboriginal Land Council
Kangaroo Processor 1	(KP1) Kangaroo meat processor, SA
Kangaroo Processor 2	(KP2) Kangaroo meat processor, SA
Pastoralist 1	(PA1) Pastoralist, NSW Western Division
Pastoralist 2	(PA2) Pastoralist, NSW Western Division
Pastoralist 3	(PA3) Pastoralist, NSW Western Division
Red meat industry 1	(RM1) Thomas Foods International
Red meat industry 2	(RM2) Meat & Livestock Australia
Red meat industry 3	(RM3) Livestock SA, advocacy organisation
Recreational Shooter 1	(RS1) Recreational Shooters Australia Association
Veterinarian 1	(V1) Australian Veterinary Association

*AN2 and KP2 were uncertain as to the acceptability of control measures apart from the commercial and non-commercial shooting of kangaroos. It was decided not to include these two interviewees in the analysis of control methods. RM2 offered personal views, not those of the industry organisation, as to the acceptability of the different control methods for the focus species.

There are a large number of stakeholder groups with a focus on animal welfare, protection and advocacy. For example, there are currently more than 300 registered animal charities in Australia (<http://australiancharities.acnc.gov.au/visualisations/explore-sector-detail/> accessed 29 January 2018). The list of stakeholders and their representatives is therefore a limited, albeit purposefully selected. We acknowledge the small sample of interviewees across the range of stakeholders as a limitation of this research.

Two interview guides were developed: one for the pastoralists and another for the non-pastoralists (Table 5.2 and 5.3). In addition, assessment sheets were prepared to summarise each interviewees' assessment of key topics (Table 5.4). Potential interviewees were initially contacted by telephone and invited to participate in the study. If they agreed to be interviewed they were emailed an information sheet with a project summary (Section 11.1) and a verbal assurance given that their identity would be protected.

Table 5.2. Interview guide for pastoralists.

1.	Introduction: Provide an explanation about the project, my role, the format of the interview, ethics.
2.	Background information: Personal characteristics (education level, goals, work history and skills, owner operator or manager, relationship with neighbours). How important is the property to you (identity, only income)? Do you manage multiple properties? Who makes the decisions? Do you employ labour/contractors?
3.	Description of the farm operation: What is the history of the property? How do you run your enterprise (sheep/cattle/goats, livestock numbers, stock management, grazing management, market type)? What are the physical characteristics of the property (area, type and management fencing, watering points, plant species)?
4.	Broad discussion around TGP management: To what extent is TGP an issue in managing your enterprise? If it is (or is not) an issue why is this the case (impact on farm business, operational practices) What then do you think is the best approach to managing TGP?
5.	Other issues: What are the issues (e.g. access to markets, treatment of animals) that are affecting your enterprise? Where does TGP rate in the set of issues that you have identified? (Use a 5-point scale to rank the level of importance of the issues: not important, somewhat important, neutral, important, very important)?
6.	Pest animals: Which animals are of concern in managing for TGP? How do these rank in terms of TGP (Use a 5-point scale to assess the level of importance of the issues: not important, somewhat important, neutral, important, very important)? What is the impact of these animals (ground cover, managing stock rate)? What do you need to do to reduce their impact?
7.	Control methods to manage TGP: Of the control methods available what control methods do you prefer? Why these particular methods (lethal, non-lethal, effectiveness, cost, permanence, property scale, regional scale, relative humaneness)? Who controls the pest animals (yourself or others) and why? Can you rate the available control methods in terms of their acceptability (Use a 5 point-scale to assess the relative merits of control methods: not acceptable, somewhat acceptable, neutral, acceptable, very acceptable)? What about likely future control methods (suitability and acceptability)?

Table 5.3. Interview guide for non-pastoralists.

1.	Introduction: Provide an explanation about the project, my role, the format of the interview, ethics.
2.	Background information: Personal characteristics (education level, work history and skills.
3.	Description of the company/organisation/agency: What is the history of the company/organisation and what does it do? What is their interest in the management of kangaroos, unmanaged goats and feral pigs? Do they consider social license to operate?
4.	Broad discussion around TGP management: To what extent is TGP an issue in the SA rangelands? If it is (or is not) an issue why is this the case (impact on farm business, operational practices) What then do you think is the best approach to managing TGP?
5.	Other issues: What are the issues (e.g. access to markets, treatment of animals) that are affecting your enterprise? Where does TGP rate in the set of issues that you have identified? (Use a 5-point scale to rank the level of importance of the issues: not important, somewhat important, neutral, important, very important)?
6.	Pest animals: Which animals are of concern in managing for TGP? How do these rank in terms of TGP (Use a 5-point scale to assess the level of importance of the issues: not important, somewhat important, neutral, important, very important)? What is the impact of these animals (ground cover, managing stock rate)? What do you need to do to reduce their impact?
7.	Control methods to manage TGP: Of the control methods available what control methods do you prefer? Why these particular methods (lethal, non-lethal, effectiveness, cost, permanence, property scale, regional scale, relative humaneness)? Who controls the pest animals (yourself or others) and why? Can you rate the available control methods in terms of their acceptability (Use a 5 point-scale to assess the relative merits of control methods: not acceptable, somewhat acceptable, neutral, acceptable, very acceptable)? What about likely future control methods (suitability and acceptability)?

Table 5.4. Six assessment sheets used to assess (a) the impact of issues affecting the pastoral enterprise, (b) the impact of kangaroos and other feral animals on the pastoral enterprise, (c) the acceptability of control practices to manage kangaroos, (d) acceptability of control practices to manage unmanaged goats, (e) acceptability of control practices to manage feral pigs.

5.4.(a)

Issues affecting enterprise	Not important	Somewhat important	Neutral	Important	Very Important
Managing ground cover					
Managing kangaroos					
Managing unmanaged goats					
Managing feral pigs					
Managing other pest animals					
Livestock health					
Animal welfare					
Access to markets					
Market risk					
Seasonal climate risk					
Drought					

5.4.(b)

Animal	Not important	Somewhat important	Neutral	Important	Very Important
Kangaroos					
Unmanaged goats					
Feral pigs					
Rabbits					
Wild dogs					
Feral horses					
Feral camels					
Deer					
Other					

5.4.(c)

Practice	Not acceptable	Somewhat acceptable	Neutral	Acceptable	Very acceptable
Commercial harvest (shooting)					
Non-commercial culling (shooting)					
TGP fencing					
Exclusion fencing					
Water point control (exclude access)					
Translocation					
Reproduction					

5.4.(d)

Practice	Not acceptable	Somewhat acceptable	Neutral	Acceptable	Very acceptable
Trap yards (at water point)					
Aerial mustering					
Ground mustering					
Aerial shooting					
Ground shooting					
Water point control (exclude access)					
TGP fencing					
Exclusion fencing					
Strategic fencing					
Use of Judas goats					

5.4. (e)

Practice	Not acceptable	Somewhat acceptable	Neutral	Acceptable	Very acceptable
Aerial shooting					
Ground shooting					
Trapping					
Ground baiting with 1080					
Aerial baiting with 1080					
Water point control (exclude access)					
Exclusion fencing					
Use of Judas pigs					
Dogging					

The interviews began with the interviewee providing personal information about their education and work experience. Next was a discussion of the interviewee's assessment of the importance of TGP and some of the other issues relating to pastoral enterprises. Interviewees were specifically asked about the impacts of kangaroos and feral animals on pastoral enterprises. Following on was a discussion of the acceptability of control practices for managing kangaroos, unmanaged goats and feral pigs. These practices were identified by the Project Advisory Committee, key informant interviews and from the Review of the Literature. The interview concluded with an invitation for the interviewee to provide any other comments.

The assessment sheets were used to structure the discussion around the topics listed above. For the face-to-face interviews the interviewees filled out the sheets. In the case of telephone interviews the lead researcher filled out the sheets based on information provided by the interviewee. Those interviewer assessments were immediately checked with the interviewee. Some of interviewees were uncomfortable completing the assessment sheets or did not complete all the sections. As a consequence there is some variation in the number of responses to items in the summary tables that are presented in Section 5.3.

With the permission of participants all interviews were recorded using a digital voice recorder. The median time for the interviews was approximately 75 minutes. The recorded interviews were downloaded and transcribed verbatim. The typical word count for each interview was around 10,000 words. The assessment sheets provided the quantitative data to enable a summary of the assessments made by each interviewee. The analysis of the qualitative interview data (i.e. transcribed audio) assisted in explaining the judgements of interviewees.

5.3 Key findings

5.3.1 Nature and extent of issues affecting the pastoral enterprise

Although managing kangaroos, unmanaged goats and feral pigs as components of TGP is the focus of this project, there are other important issues relating to resource condition and marketing facing pastoralists as they attempt to sustain viable businesses. These issues may take priority over the management of kangaroos, unmanaged goats and pigs in the operation of pastoral enterprises.

For the assessment sheets, interviewees were able to select one of five response options: *not important*, *somewhat important*, *neutral*, *important* and *very important*. To simplify the data presentation we have combined some response options. *Important* and *very important* were combined as important. *Not important* and *somewhat important* were combined as not important. A summary of interviewees' assessment of the issues affecting pastoral businesses is provided in Table 5.5.

Apart from feral pigs, all issues listed were rated as important by more than 80% of interviewees (Table 5.5). All stakeholders groups represented in the interviews identified management of groundcover and, thereby, the maintenance of ground cover and resource condition, as of utmost importance. As Government agent 3 explained: *"Managing your ground cover and understanding your ground cover is really important...It isn't necessarily just the number of animals but also where they are in the landscape and allowing for that spelling of pasture and the ability of vegetation to recover"*.

The value of maintaining ground cover is even more important for pastoralists when extended dry conditions prevail. For example, *“The more ground cover you can have on the more resilient it [the country] is to dealing with dust storms”* (Pastoralist 1).

Table 5.5. Interviewees’ assessment of the importance of issues for pastoral enterprises.

Issue	Important	Neutral	Not important
Managing ground cover (n=17)	100 (%) (n=17)	0 (%) (n=0)	0 (%) (n=0)
Livestock health (n=15)	93 (%) (n=14)	0 (%) (n=0)	7 (%) (n=1)
Animal welfare (n=15)	93 (%) (n=14)	0 (%) (n=0)	7 (%) (n=1)
Drought (n=15)	93 (%) (n=14)	7 (%) (n=1)	0 (%) (n=0)
Market risk (n=11)	91 (%) (n=10)	9 (%) (n=1)	0 (%) (n=0)
Managing kangaroos (n=17)	88 (%) (n=15)	0 (%) (n=0)	12 (%) (n=2)
Managing other pest animals (n=16)	84 (%) (n=15)	0 (%) (n=0)	6 (%) (n=1)
Managing unmanaged goats (n=17)	82 (%) (n=14)	6 (%) (n=1)	12 (%) (n=2)
Seasonal climate risk (n=15)	80 (%) (n=12)	20 (%) (n=3)	0 (%) (n=0)
Managing feral pigs (n=17)	53 (%) (n=9)	6 (%) (n=1)	41 (%) (n=7)

Managing ground cover was viewed as critical to the profitability and continuity of those businesses further up the supply chain. As one red meat industry processor explained: *“Managing ground cover...is very important because that’s intrinsically linked to supply to us as a processor...If they’ve got plenty of ground cover we’re going to get plenty of livestock that are prime...the last thing we want is a drought...I think there is a misconception at times... People think processors love a drought. They can buy stock for half the money...but it’s about quality. It’s about the next year...there’s nothing”* (Red meat industry 1).

Livestock health, animal welfare, drought and market risk were identified as the next most important issues by interview participants. Those issues were then followed by kangaroo management, managing other pests and managing unmanaged goats.

Although kangaroo management was ranked above the management of other pest animals, most interviewees recognised that the impact of kangaroos varied spatially and temporally. As one academic and two government agents explained:

“It’s important the impact that kangaroos have on the landscape...on the profitability of livestock enterprises and sustainability. But it’s highly variable in space and time” (Academic 3).

“I think kangaroos have always been an issue but they’re a seasonal issue...kangaroo populations go up and down and no one worries about them when they’re low” (Government agent 5).

“Look kangaroos, mainly after a significant rainfall event, they are a big issue. There’s a big issue in our North East country ...north of the Barrier Highway towards Broken Hill. There’s a huge influx of mainly red kangaroos there any time it rains. You go from 15 to 20 kangaroos per square kilometre to 50 in a matter of about four weeks and that total grazing pressure is huge” (Government agent 1).

The competing values of kangaroos as a native animal, a national symbol, and as a pest when in overabundance was expressed by several of the interviewees. For example:

“Landholders are all about balance...we’ve got to balance our production with the environment. We respect the fact that the kangaroo is an iconic animal but the numbers are out of control” (Red meat industry 3).

“Kangaroos aren’t a pest just because they’re there. Kangaroos are an animal that’s there in the landscape...It’s not that kangaroos are inherently bad. But if they are having impacts then they do need to be managed. It’s about mitigating that damage that they are causing to those agricultural enterprises” (Government agent 3).

One of the pastoralists interviewed articulated the constraints associated with managing kangaroos: *“Kangaroos are always an issue. It’s an issue for everybody. It’s probably the biggest one from those listed and we are directly involved in their welfare and their associated market risk. When it comes to kangaroos we really don’t have what we would call effective management of them because we don’t own them rather the Crown does” (Pastoralist 1).*

By managing their TGP and groundcover base pastoralists believed they were better placed to manage their seasonal climatic risk. As one pastoralist said: *“I think more and more there’s an acknowledgement that if you’ve got a good groundcover base you will get a better response from smaller rainfall events” (Pastoralist 1).* One of the government agents also confirmed the benefit of managing TGP: *“So seasonal climate risk is important but people who can manage total grazing pressure can manage that a lot better” (Government agent 5).*

5.3.2 Impact assessment of kangaroos and other feral animals on pastoral businesses

“The majority of the work with Farm Assist program [conducted by the Sporting Shooters Association Australia] is with kangaroos, pigs and wild dogs...Probably had 150 jobs out of Queensland” (Recreational shooter 1).

“So you know, we’ve had these issues [kangaroos and wild dogs] before but it’s around the cost involved to eradicate the issue” (Red meat industry 1).

Again whilst kangaroos, unmanaged goats and feral pigs are the focus animals in this project, there are other feral animals that impact on the viability of pastoral businesses. Table 5.6 provides a summary of interviewees’ assessments of the impact of kangaroos and other feral animals on pastoral businesses. To simplify the data presentation we have combined some response options. *Important* and *very important* were combined as important. *Not important* and *somewhat important* were combined as not important.

Of the three focus species in this study, kangaroos were rated as an important issue for pastoral enterprises by 84% of interviewees followed by unmanaged goats at 63% and then rabbits at 53% (ahead of feral pigs at 50%). However, the nature and extent of the importance of the focus species differ between the states, particularly in regards to South Australia.

Table 5.6 Interviewees' assessment of the impact of kangaroos and other feral animals on pastoral enterprises.

Impact	Important	Neutral	Not important
Wild dogs (n=19)	84 (%) (n=16)	11 (%) (n=2)	5 (%) (n=1)
Kangaroos (n=19)	84 (%) (n=16)	5 (%) (n=1)	11 (%) (n=2)
Unmanaged goats (n=19)	63 (%) (n=12)	16 (%) (n=3)	21 (%) (n=4)
Rabbits (n=19)	53 (%) (n=10)	5 (%) (n=1)	42 (%) (n=8)
Feral pigs (n=18)	50 (%) (n=9)	17 (%) (n=3)	33 (%) (n=6)
Feral horses (n=20)	25 (%) (n=5)	5 (%) (n=1)	70 (%) (n=14)
Deer (n=19)	21 (%) (n=4)	16 (%) (n=3)	63 (%) (n=12)
Feral camels (n=20)	15 (%) (n=3)	10 (%) (n=2)	75 (%) (n=15)

As one government agent explained the need to manage kangaroos: *"Kangaroos aren't a pest just because they're there. Kangaroos are an animal that's there in the landscape...It's not that kangaroos are inherently bad. But if they are having impacts then they do need to be managed. It's about mitigating the damage that they are causing to those agricultural enterprises"* (Government agent 3).

One of the pastoralists explained how their management creates favourable conditions for kangaroos: *"If the feed gets dry we reduce our sheep and cattle and goat numbers in accordance with our feed and water availability and you look after your groundcover as best you can. So you're actually creating an environment extremely conducive for a million kangaroos"* (Pastoralist 1).

One of the NSW government agents described the impact of unmanaged goats: *"Goats are a key competitor with yellow-footed rock wallaby. So like we've got lots of potential habitat for yellow-footed rock wallabies in New South Wales but we've got no rock wallabies and all our best habitat-the little rocky uplands-are totally trashed by goats"* (Government agent 5).

Feral goats in the Flinders Ranges of South Australia do have a high impact on specific areas of the landscape. As one government agent explained: *"So because the goats tend to live up in that rugged hill country away from the grazed areas of the sheep and cattle a lot of pastoralists say, 'well, I never graze up there what does it matter if the goats are up there'....but they will degrade the hills...they'll take out all the perennial shrubs and there'll be no recruitment of perennial shrubs and trees"* (Government agent 1).

Unmanaged goats are currently legislated as a pest in South Australia where *“there’s around 400,000 goats”* (GA1). As one government agent explained : *“As many Acts and Regs say this is what you should do and then there’s the ability to enforce it...they’re [goats] not a ‘permitted livestock species’ in the rangelands or pastoral lease country...they have a maximum of six weeks to hold them in pastoral lease area. Then they have to either shoot them or truck them to an abattoir or elsewhere where they can be domesticated ...enforcement is the responsibility of the NRM board...not broad landholder support for total compliance because you’re making money out of goats”* (Government agent 2). *“So really once they're in a captive situation no matter whether this big or this big, you can't let them out. Dare I say there are a few people just let the kids go”* (Government agent 1).

“The state [South Australia] is looking at changing its policy slightly on feral goat management at the moment...They're about to release a new state management plan for them which... they're hoping to allow things like depot stations. So instead of everybody having to muster their own goats and then trucking them 500 kilometres away they may have smaller depots scattered around, you know, within 100 kilometres. They can just take small mobs there. That person will be dedicated to hold those goats and then send them off...It'll help for smaller numbers but I don't think it's going to help the big guys and the big numbers. They'll still have to truck big numbers” (Government agent 1).

However, as one red meat small stock processor explained: *“We see the control of goats as paramount. We believe it’s an industry and that [South Australian] landholders should be able to fence of areas, muster goats into those areas...then they can truck them...The current legislation says that goats are feral in the rangelands. We don’t disagree with that. But there are restrictions at the moment as to how long you can hold goats on your property...we would like to see that extended”* (Red meat industry 3).

In contrast to the situation in South Australia and at present time unmanaged goats can be considered a valuable resource in Queensland and even more so, in NSW. However, this was not always the case as explained by one pastoralist: *“Where we would have looked at them [goats] 10 years ago when they were virtually worthless what do I do with them. How do I handle their grazing pressure? Right now because of the way that they’ve increased in value equivalent to sheep I wouldn’t say that they are an unmanageable grazing pressure component...They are part of our grazing pressure I accept that but they are something that I can very actively and quite accurately control”* (Pastoralist 1).

Feral pigs are seen as an ongoing problem in Queensland and NSW. One of the pastoralists explained: *“We’ve always had pigs in the channels. The damage of pigs is twofold. One is on your lambing and you can get lambing as low as 20-25% if you’ve got a lot of pigs. The other side of it is if you’ve got big pig numbers the amount of country they turn over every time you get a flood and the water goes back or you get 20 or 30 points of rain they just plough up hundreds and hundreds and hundreds of acres of country which often won’t grow properly again until you get another big rainfall event”* (Pastoralist 1).

The feral pig situation is different in South Australia as one government agent explained: *“Feral pigs are not widespread in South Australia. We only have three to may be four established populations...the population is not well known...3,000 to 6,000...that’s a really big guess. There’s a big concern about controlling those populations...on the back of what is happening in the eastern states. ...there’s a bit of interest in strengthening the legislation around the control of them...you’ve got infiltration coming from Queensland...Cooper [near Innamincka] and Diamantina systems [south of Birdsville]...natural movement from interstate”* (Government agent 2).

Across all stakeholders interviewed, 84% rated wild dogs as having an important impact on pastoral enterprises. As one red meat industry interviewee commented: *“They’re [wild dogs] a big, big, big problem in our industry. If we don’t get wild dogs under control we won’t have a small stock industry in 20 years”* (Red meat industry 1).

Another red meat industry interviewee also expressed concern about wild dog predation on sheep and its impact on the viability of the Australian sheep industry: *“The wild dog problem is a national problem. There are areas in most states except Tasmania where you can’t run sheep because of wild dog predation...I’ll give you some examples. There are only 200,000 sheep left in the pastoral areas of WA and Queensland’s sheep population has dropped from over 20 million down to under 2 million...biggest threat to the Australian wool industry and the sheep industry are wild dogs”* (Red meat industry 3).

One of the pastoralist interviewed also expressed concern about the wild dog population becoming more common, *“We’ve all got a wild dog problem out here now. The degree of importance is increasing as the dogs become more entrenched and widespread and are impacting on our sheep”* (Pastoralist 1).

There are, however, consequences in controlling wild dogs as explained by the following interviewees:

“The half of South Australia where they don’t control dingoes and wild dogs, they don’t have a goat problem. So if you control the dogs then you end up with a goat problem and the kangaroo problem is a lot worse” (Academic 2).

“If you take all the dogs out of the system, improve pasture for stock and put artificial water everywhere the kangaroos are going to love it” (Conservationist 1).

Feral camels were assessed as having the least impact (with an 18% important rating) with around 25% of interviewees indicating that feral horses and feral deer were having an important impact (Table 5.6).

5.3.3 Interviewees’ assessment of control practices for kangaroos.

Pastoralist 1 explained that to successfully manage the unmanaged component of TGP the kangaroo population must be reduced and not just moved to somewhere else in the landscape: *“At the end of the day like it or not you can only control total grazing pressure in relation to kangaroos by reducing their numbers. Relocating them doesn’t reduce their numbers and that’s one of the biggest issues”*.

One of the government agents believed that fencing was a more effective management tool compared to shooting. *“I don’t think lethal control, whether it’s commercial or non-commercial, as far as kangaroos [are concerned] is the answer to the issue...if a landholder shoots a dozen kangaroos because he’s got too many in his paddock...there’ll be another 12 there tomorrow...if you have some sort of perimeter fence whether it’s a porous TGP fence or exclusion fence he’s actually got some level of control”* (Government agent 5).

However, fencing is not an option in South Australia. *“In South Australia legislation prohibits TGP fencing...There’s no total grazing pressure fencing. Same with exclusion fencing...The cost of doing that in South Australia wouldn’t be viable because the properties are a lot bigger”* (Red meat industry 3).

A summary of interviewees' assessment of the social acceptability of kangaroo control practices is provided in Table 5.7. To simplify the data presentation we have combined some response options. *Acceptable* and *very acceptable* were combined as acceptable. *Not acceptable* and *somewhat acceptable* were combined as not acceptable.

Across all interviewees, commercial shooting was the most acceptable practice with an acceptance rating of 86%. The practice of translocation was the least acceptable control practice, judged as unacceptable by 80% of interviewees. The non-commercial shooting of kangaroos had an acceptability rating of 55% which was much lower than for commercial shooting.

Table 5.7. Interviewees' assessment of kangaroo control practices.

Practice	Acceptable	Neutral	Not acceptable
Commercial shooting (n=22)	86 (%) (n=19)	5 (%) (n=1)	9 (%) (n=2)
TGP fencing (n=21)	62 (%) (n=13)	19 (%) (n=4)	19 (%) (n=4)
Exclusion fencing (n=20)	60 (%) (n=12)	10 (%) (n=2)	30 (%) (n=6)
Water point exclusion (n=22)	55 (%) (n=12)	5 (%) (n=1)	40 (%) (n=9)
Non-commercial shooting (n=22)	55 (%) (n=12)	14 (%) (n=3)	31 (%) (n=7)
Reproduction control (n=21)	38 (%) (n=8)	19 (%) (n=4)	43 (%) (n=9)
Translocation (n=21)	10 (%) (n=2)	10 (%) (n=2)	80 (%) (n=17)

Following commercial shooting as the most acceptable practice were the use of TGP fencing, exclusion fencing and water point exclusion. Those practices and non-commercial shooting were acceptable to a majority of interviewees but that was not the case for reproduction control and translocation.

Note: The proportions of *neutral* responses (from 5% to 17%) for the various control practices were much lower than the research team has experienced with other studies assessing social acceptability of NRM practices such as applying environmental water along the Murray River (e.g., Mendham and Curtis 2015; Mendham and Curtis 2018). The project team suggests that this difference largely reflects the high level of awareness, knowledge and experience of those purposefully selected for this study of TGP compared to the randomly selected landholders surveyed in other studies, including about environmental watering.

Table 5.8 summarises the responses by stakeholder type. To simplify the data presentation the response options *acceptable* and *very acceptable* were combined as acceptable and only data for the option of acceptable is presented.

Apart from the animal protection group, commercial shooting was assessed as acceptable by at least one interviewee from each stakeholder group. Commercial shooting and reproductive control (but must be effective, no negative impacts) were assessed as acceptable by the animal welfare interviewee. TGP and exclusion fencing were considered acceptable by at least one interviewee in

each stakeholder group (apart from animal welfare representative and animal protection representative). Non-commercial shooting was viewed as unacceptable by all red meat industry interviewees and the kangaroo processor representative. Within the different stakeholder groups those with an interest in conservation and those with an academic background were more likely to have divergent views. Note: this analysis is based on small numbers of informants.

Table 5.8. Extent of acceptability of kangaroo control practices by stakeholder group.

Control practice	Pastoralists (n=3)	Conservation interests* (n=5)	Government agent (policy) (n=1)	Veterinary (n=1)	Animal welfare (n=1)	Recreational shooters (n=1)	Academics (n=4)	Red meat industry (n=3)	Kangaroo processor (n=1)	Animal protection (n=1)	Indigenous (n=1)
Commercial shooting	✓✓✓	✓✓✓✓✓	✓	✓	✓	✓	✓✓✓	✓✓	✓		✓
TGP fencing	✓✓✓	✓✓✓	NR	✓		✓	✓✓	✓✓			✓
Exclusion fencing	✓✓✓	✓✓✓	NR	✓		✓	✓✓	✓✓			
Water point exclusion	✓✓✓	✓✓✓✓	NR	✓			✓✓	✓			
Non-commercial shooting	✓✓✓	✓✓✓	✓	✓		✓	✓✓				✓
Reproduction control	✓	✓	NR	✓	✓		✓	✓✓✓			
Translocation	✓	✓	NR								

*Conservation interest group included 4 government agents and 1 conservationist. NR: declined to respond

Table 5.9 provides a summary of the comments for the acceptance or non-acceptance of the practices for kangaroo management based on the analysis of the interviewee transcripts. Reading through the transcripts a list of possible explanations was identified. The transcripts were then re-read looking for evidence of when an explanation was repeated and by whom. It was commonly found that the acceptability of a practice was conditional. That is, associated with the acceptability of a practice was a caveat. This was not the case for non-acceptance where a caveat was rarely given.

Table 5.9. Interviewees' justifications for the acceptance and non-acceptance of practices for managing kangaroos.

Practice	Assessment	Justifications
Commercial shooting	Acceptable	<p>Shooters are professional, good marksmen, need to pass competency test, audits undertaken, well policed (RM3, AN1, V1, RM1, AN2, IND1);</p> <p>Most humane and professional way, can demonstrate humaneness, animal welfare addressed (PA1, RS1);</p> <p>A head shot is one of most humane methods of killing, no prior pain, suffering or distress (AN1, V1, RM1);</p> <p>I think the way it's done is pretty good, it's pretty well regulated (AC3, AC1, AN1);</p> <p>Highly controlled operation on our properties (CO1);</p> <p>It's controlled, know the number of kangaroos taken, has a value (KP2);</p> <p>Most animal welfare friendly meat source (AC2);</p> <p>Most humane way of obtaining protein, good use of protein, it's a terrific resource, not wasted, sustainable harvest (AC1, AC2, PA2, AN1, RS1);</p> <p>If kangaroos need to be destroyed, positive that it is utilised (GA3);</p> <p>Aboriginal Land Council fully supports harvest and consumption (IN1)</p>
	Reservations	<p>Ineffective in managing population dynamics (GA5, PA1);</p> <p>Ineffective, male only harvest (PA1);</p> <p>Instances where animals are wounded, extent of wounded animals unknown (AC3);</p> <p>Need to be able to justify killing to be acceptable (AN1);</p> <p>Assuming Codes of Practice are being followed (AN1,GA2);</p> <p>Need more shooters to be effective(GA1)</p>
	Not acceptable	<p>Kangaroos do not compete with livestock, not required (AC4);</p> <p>There is regulation but no enforcement (AC4);</p> <p>Biases decisions about whether to kill because involves making money (AN3);</p> <p>Concern about welfare, concern for joeys (AN3)</p>
	Reservations	No reservations given

Practice	Assessment	Justifications
TGP fencing	Acceptable	Highly recommended, great idea (PA3, PA2, RM1); Provides protection to stock (IN1)
	Reservations	Problem with entanglement of emus and kangaroos (GA5); Need to make fences more visible to discourage kangaroo, need to install structures to allow movement of kangaroos across fences(GA5); Need to remove kangaroos inside the fence (PA2); Not effective in keeping kangaroos outside (PA2, PA1); Does not reduce numbers, viable means of movement control (PA1)
	Not acceptable	Does not allow for coexistence with livestock (AC4); Depends on scale of fencing (AN1, GA3); Concern about movement across the landscape, not closely linked to water, migration stopping (GA3, AC2, AN3); Restrict access to water (AN3); Possibility of entanglement (AN3)
	Reservations	No reservations given

Practice	Assessment	Justifications
Exclusion fencing	Acceptable	Improves control of dog and kangaroo populations, very good idea (RM1, RM3); OK for conservation areas (GA4); More successful than TGP in excluding kangaroos (PA1)
	Reservations	Potential for long term impacts on population associated with fragmentation (GA5); No-one really knows how well it's going to work, could be more problems outside than inside, increased concentration of dogs and kangaroos outside fences (AC3, RM2); Disaster in terms of impacting on the movement of animals, disrupts normal movement through the landscape, stops kangaroos coming in and getting out (PA3, GA4, PA1); Difficult as kangaroos don't accept boundaries, does not reduce the numbers, movement control (PA1, RM3); If kangaroos don't move away from fence, can overgraze the immediate country, impact on neighbours (PA1); Needs to have a formal management plan to reduce kangaroo numbers in a humane way (PA1); Problem with entanglement of emus and kangaroos, need to make fences more visible to discourage kangaroos, need to install structures to allow movement of kangaroos across fences (GA5); Perceived as inhumane with animals perishing, need to manage the kangaroos including females (PA3)
	Not acceptable	Does not allow for coexistence with livestock (AC4); Basically cruel, Kangaroos caught up inside the exclusion fence (GA3, KP1); Depends on scale of fencing especially where continuous where landholders have come together could be a problem (AN1, GA3); Not known if detrimental or not to kangaroos, may take 2 to 3 years to know, impact on kangaroo movement, kangaroos dying at fences, stops migration (AC4, KP1); Need to have alternative sources of water (AN1); Limits the ability of kangaroos and other wildlife including emus to use the landscape (GA3, AN3); Kangaroos are a natural part of the landscape, potentially changes the natural balance, areas will not have kangaroos in them all the time (KP 2, GA3); It's containing an animal, can't get access to food they want, forced to eat plants not in normal diet, potential for poisoning (KP1)

Practice	Assessment	Justifications
	Reservations	No reservations given
Water point exclusion	Acceptable	Evidence suggest that kangaroo distribution is not dependent upon water sources (AC4); Kangaroos drink in one location and feed in another, don't graze out from water (GA3)
	Reservations	Inhumane if water fenced off denying access to kangaroos, allowing them to perish (AC1, RS1); Humane if water is removed altogether in an area allow kangaroos to disperse or perish, more normal way (AC1, PA3, RS1); Should not restrict access to natural water in the landscape, OK to prevent access to troughs or dams (GA3); Can control kangaroo movement but does not reduce numbers (PA1, RM1); Fairness, impact on neighbours moving kangaroos onto their property (PA1, PA3) Must be monitored (RM1); Pastoralist accept it but not some conservation constituents (GA4)
	Not acceptable	Difficult as kangaroos don't accept boundaries (RM3); Excluded to the point where animals are perishing from lack of water (AC3); Scale dependent; Not humane if animals die of thirst, cruel (RM2, PA1, IND1); Animal welfare issue if you don't provide water (GA4); People like to see kangaroos in the landscape (GA4)
	Reservations	No reservations given

Practice	Assessment	Justifications
Non-commercial shooting	Acceptable	Got to be done, very necessary (PA2, PA3); Sometimes necessary for damage mitigation, carcasses can be used within property as a resource (GA3); Acceptable to government for damage mitigation (GA1); Do not hear about any cruel pastoralists, connected to their family land (IN1)
	Reservations	Not very effective in managing TGP (PA2, PA1); Not cost effective (PA2); Must ensure that it's for damage mitigation (GA3); Assuming Codes of Practice are followed (GA2, RS1, AN2); Commercial and non-commercial culling should be under the one legislation, better policed (V1); Accreditation process offered (RS1); Pastoralists haven't got the time, carcass not being used, source of blowfly (GA1); No independent welfare assessment (AN2)
	Not acceptable	Not done professionally, no audits (RM3); No competency test applied, no auditing of Code of Practice, outcomes likely worse (AN1, AN3); Shooter competency not a requirement (AN3); Kangaroos do not compete with livestock, coexistence (AC4); Animal welfare issue, inhumane (RM2, AC2); Viewed as a necessary evil by people (GA4); Food source for vermin-foxes, dogs, eagles, impact of vermin on sheep (RM2, KP1); Pointless just killing an animal, it's needs to be used, has a value, wasteful (KP1, AC2); Uncertainty around numbers shot, permit required, no tag system, no check on property (SA, KP1); Inability to audit, no-one knows what goes on out there (AC2, AN3); Don't have to worry about shooting females and joeys, lets them shoot everything, (AC2)
	Reservations	Less acceptable than commercial culling (GA4); People see it as a necessary evil (GA4)

Practice	Assessment	Justifications
Reproduction control	Acceptable	No explanation given, only reservations
	Reservations	Need for R & D (RM3, KP1, RM1); Provided it is effective, achieves outcome (AN1); Not practical, for small populations in a defined area (e.g., golf courses) (GA4, V1, AC1)
	Not acceptable	Not possible at scale, not practical, pointless, not when kangaroos in abundance (KP1, AC2, PA1, PA2); Cost \$150 per kangaroo, not cost effective (PA2) (KP1); Unacceptable stress placed on animal (RS1)
	Reservations	Only in peri-urban situations, small populations, ok for zoos, vet must be present (GA4, AC2, AN3)
Translocation	Acceptable	No explanation given
	Reservations	Not relevant
	Not acceptable	Issue of scale, not economic, expensive, not practicable in the rangelands, not for abundant species (GA4, KP1, AC2, RM1, PA2); Redistributing the problem from one place to another, probably other kangaroos already present, don't know what happens on release (AC3, AC1, RM2, PA2,V1); Kangaroos are not very resilient to being handled or stressed out, poor outcomes, delays death, unacceptable stress on animals (RS1, AC1); Poor animal welfare to move animals, capture myopathy(GA4, V1, GA4); More humane to use lethal means, public perception can influence decision (GA3); Lack of research, uncertainty about what happen on release (V1); Pointless, ridiculous (PA1, RM1)
	Reservations	Only for critically endangered species (bettongs, yellow-footed rock wallaby) (PA2); Only in peri-urban situations, small populations (GA4, AN3); Under some circumstances appropriate, other times preferred by the community (GA3); Not necessarily more humane or appropriate compared to lethal control (GA3);

Practice	Assessment	Justifications
	Where would the kangaroos be relocated to? (AC2)	

5.3.3.1 Commercial shooting

Many of interviewees who in accepting the commercial shooting of kangaroos said that a single head shot is the most humane method of control. As one of the animal welfare interviewees explained: *“Commercial harvest where kangaroos are shot in the head is one of the most humane methods of killing anything. There’s no prior pain, suffering or distress...From the animal’s point of view it’s unaware of what’s happened to it”* (Animal welfare 1).

In addition, there was the belief that commercial shooters were good marksmen who had to pass a competency test and were audited by government agents. For example two of the red meat industry representatives explained:

“It’s just they’re professionals...They’ve got to shoot them in the head, the kangaroos. So, you know it’s very, very humane...and these guys are pros...I think they’ve got to get like 95% in the head or so. It’s just incredible they reckon what they’ve got to do. So they can’t miss” (Red meat industry 1).

“As far as professional shooters...they’ve got to pass a course and they’re very good at it...Very professional...Very responsible...and there’s auditing from what I understand (Red meat industry 3).

However, one academic expressed the possibility of kangaroos being wounded by commercial shooters. *“I think the way [commercial harvesting] is done is pretty good. Sure, there’s going to be some instances where animals are wounded or something and they’re not killed. I don’t know the extent of it”* (Academic 3).

A common theme from the pastoralists interviewed was that they believed that commercial harvesting was preferable to allowing an animal to naturally perish. *“Is it good to starve a kangaroo or is it good to take him in a commercial harvest with a clean one shot to the head with a spotlight...he’s dead before he even knows that the spotlight’s been put on him? That’s actually not such a bad way to bring a number back”* (Pastoralist 1).

One academic believed that commercial harvesting of kangaroos in the field was far less stressful compared to domesticated livestock which had to be transported and slaughtered in an abattoir. *“A professional shooter is without question the most animal friendly way to achieve your meat. The animal is killed instantly in the field instead of them being transported...put in a feedlot...taken to an abattoir where it can hear all the bellowing as the other animals are killed”* (Academic 2).

Several of the interviewees accepted commercial shooting as the harvested kangaroo was available for consumption as exemplified below.

“It’s a terrific resource. It should be encouraged, should be developed and should be utilised more. I believe it would be the solution to the kangaroo problem as it was to the goat problem. The commercial harvest would self-regulate the numbers of roos because they’re valuable” (Pastoralist 2).

“I think we should use kangaroos more. I think they’re a good source of protein. It’s a shame to waste them” (Veterinarian1).

Although one of the animal welfare interviewees accepted commercial shooting, there was the qualification that it needed to be justified. *“But if you haven’t got a good reason for doing it in the first place, then I would say it wasn’t acceptable”* (Animal welfare 1).

The animal protection interviewee did not accept commercial shooting. As was explained: *“My concern about managing kangaroos is that I don't think there should be a commercial industry... [I] oppose the commercial industry because it doesn't take into account properly whether there really is a problem or the competition... It's their land... they should be there... I think commercial harvesting biases the decisions about whether to kill them because, of course, they can make money as well. So I don't think that's good”* (Animal welfare 3).

Even though a number of interviewees accepted commercial shooting, they believed that the reduction in kangaroo numbers associated with commercial harvesting was insufficient to reduce the impact of kangaroos on TGP. As one government agent said, *“I think commercial harvest is acceptable but it is ineffective in a population dynamics sense”* (Government agent 5).

5.3.3.2 TGP fencing

Although TGP fencing as a non-lethal form of kangaroo management was considered somewhat acceptable to the animal protectionist interviewee, several reservations were expressed. *“TGP fencing is obviously an attempt to reduce their pressure without killing them. But, I mean, you have to worry about what it does to their natural range, of course... Access to water, all sorts of things, and whether or not the fencing actually damages them or they get caught up in the fencing [that] can be an issue as well”* (Animal welfare 3). Likewise, one of the animal welfare interviewees also found TGP fencing to be somewhat acceptable with acceptability dependent on the scale of the fencing and the impact on the movement of wildlife across the landscape.

One red meat industry interviewee was concerned about the impact of entanglement if exposed by an animal activist. *“All we need is a PETA (People for the Ethical Treatment of Animals) person to take a photo of this kangaroo hanging upside down still alive... if the pastoralists monitor their fence every day and took all the carcasses out, fair enough. But who's got the time to do that?”* (Red meat industry 1).

One government agent also concerned with entanglement provided some suggestions to improve the design and development of the TGP fence. *“TGP fencing has its hazards in terms of basically entanglement and I think there are measures that we need to improve on and develop... like the orange poles. [Another is] fladry which is just flapping tape hung on the fence. Just to make the fences more visible to roos and to deter them... But the other thing is the collateral damage, specifically the impact on emus not being able to get through fences... have a little section of plain wire where emus can actually get through”* (Government agent 5).

The three pastoralists interviewed found TGP fencing an acceptable control practice: *“a great idea”* and *“highly recommended”*. However, they did express some concerns about managing kangaroos inside the fence. For example:

“How do you remove the kangaroos that are inside it and kangaroos are a pretty smart creature. I've put the hinge on fence over hard clay and within three or four days they've dug a two-foot hole... to get out. So it's not effective” (Pastoralist 2).

“I accept that TGP or exclusion fencing can be a viable means of movement control. It doesn't reduce numbers and can create problems. I think you need to have a management plan in place” (Pastoralist 1).

5.3.3.3 Exclusion fencing

Several of the interviewees raised a concern about the possible consequences associated with the large scale construction of exclusion/cluster fencing that has taken place in south-west Queensland and now in the NSW Western Division. For example:

“Nobody knows how it is really going to work...[Exclusion fencing is] “an emerging practice....How is it actually going to be used? How successful is it in terms of what it’s trying to achieve? But also what sort of unintended consequences...?” (Government agent 3).

“Exclusion fencing is probably acceptable but needs more research” (V1).

“I have a huge issue with exclusion fencing because it’s containing an animal. No-one has done enough to work out whether that is totally detrimental to the animal” (KP1).

One government agent described his concern about the potential impacts of exclusion fencing on native wildlife. *“You may end up with kangaroos caught up inside exclusion fences. Also not having kangaroos in the landscape they are a natural part of that landscape. It becomes bad for their existence if you are having large sections where their ability to traverse is broken up. It potentially changes the natural balance. Again none of that says it shouldn’t happen. But it’s more about understanding how that will impact kangaroos, emus and other wildlife that are a natural part of the environment...when it comes to kangaroos...The problem is that they travel so much further than goats and they aren’t closely linked to water. There are lots of places they can travel to. Once you are putting up those exclusion fences you are limiting their ability to use the landscape so you’re potentially changing the way they go” (Government agent 3).*

In general, the pastoralists interviewed believed that the erection of exclusion fencing was a sound business decision but were concerned there could be consequences in the future. *“I think [cluster fencing] (the terms cluster and exclusion were often interchangeably in conversation) is a particularly good business decision. It’s a no brainer. If we can manage our total grazing pressure, we can increase our production and increase our diversity of [plant] species. But at what cost?...The discussion that’s going to come about exclusion fencing...it’s just something that’s waiting to happen” (Pastoralist 3).*

A common concern expressed related to managing kangaroos inside and outside once the fence is erected.

“The fence itself doesn’t kill anything, or doesn’t grow a single extra blade of grass... a fence’s job is designed to stop things moving from one side to the other. That’s what it does. It’s not a control tool. It’s a movement tool. So when the fence is up, that’s when the work begins with managing your kangaroos...” (Academic 1).

“Well, that’s great. But how do I get rid of the roos already in there. It stops more coming in but it also stops what’s in there getting out” (Pastoralist 2).

“The one concern I have with that sort of fencing [exclusion] with kangaroos is that it doesn’t reduce numbers...that a kangaroo can no longer go through that fence. [When] he comes up against it he might move up and down it long ways but he may not move off it. If ...you get a heap of say a thousand kangaroos hit exclusion fencing and don’t move away you’ve created a massive environmental problem in terms of overgrazing that immediate country...when you put up that kind of fencing you

probably need to have worked out with OEH a management plan to reduce the number in a humane way” (Pastoralist 1).

A government agent explained to me how kangaroos inside the fence could be managed, *“I’m a great advocate of fencing as a component of kangaroo management because it is a non-lethal approach...The answer will be in having some sort of barrier fencing so that they have a management area. Within that management area they take whatever commercial harvest they can get out of it. But then they’ll have to clean up the females using non-commercial” (Government agent 5).*

The animal welfare and animal protection interviewees were both concerned about the impact of exclusion fences on the movement of kangaroos across the landscape. As one of the animal welfare interviewees explained: *“Certainly there’s a lot of concern where that exclusion fencing becomes almost like the dog fence...Where it’s just continuous because landholders have come together...Concern around the impacts on kangaroos and their movement, and kangaroos dying at fences because they haven’t got access to where they would normally move. So I would put that as somewhat [acceptable], because again it depends on how it’s applied...It’s the scale” (Animal welfare 1).*

5.3.3.4 Water point exclusion

A major concern for many of the interviewees was that water point exclusion was inhumane as it could result in kangaroos dying from thirst. *“Is it acceptable that by closing off that water...those kangaroos perish of mass thirst? That’s not acceptable. It’s acceptable if there is a management protocol in place to deal with it” (Pastoralist 1). “If [water control] moves them onto another area, that’s fine. If water control starves them of water and they die then that potentially has a different feel to it” (Recreational shooter 1). “Exclude access to water. Well, to me that would be cruel. That would never be supported by aboriginal people I don’t think” (Indigenous 1).*

The animal protectionist interviewee explained that acceptability would depend very much on how water point exclusion was done. *“Because if you had mobs of kangaroos that have grown and developed in a certain area they don’t move very far...If they then had their water taken away from them, that may well have - real detriment to their welfare if they can’t find other water sources or can’t quickly find them in the summer. It could be a problem if it’s a long way to another one and they’re not aware of it because they’re been born and bred in that area” (Animal welfare 3).*

One academic explained the difference in acceptability between excluding all animals from water and only allowing livestock access to water. *“When you turn off the water altogether or the dam goes dry, there’s no water there to be interested in, so they [kangaroos] all shoot through, or they all die...But when you’ve got water there, but it’s fenced off, they’ll all sit at that fence and try and get in. If everybody else is being allowed in, like sheep, but I’m not allowed in then you still sit there and keep trying to get in. So you end up basically starving to death or dying of thirst, where you might not get that if you just shut the whole water off and then move your stock around. In terms of humaneness, I heard people make the case that there’s a big difference between removing the water altogether and just allowing some things to access it, but not others. The former was seen as humane, and the latter was seen as inhumane” (Academic 1).*

A number of interviewees questioned the effectiveness extent of water point exclusion in reduce grazing pressure. *“Kangaroos will travel a lot further from water. They don’t graze out from water. So they will drink in one location and then tend to feed in another location. When you’re turning off the tap you’re stopping them from drinking at that location. It won’t necessarily stop them feeding at*

that location. If the feed is there they're likely to feed there. If the feed is better elsewhere then they're likely to go elsewhere" (Government agent 3).

However, for some pastoralists questioned the fairness of turning off the water tap and allowing the kangaroos to another area. *"Is that fair to my neighbours? Probably, not. It's acceptable...It depends on which way you look at it"* (pastoralist 1).

5.3.3.5 Non-commercial shooting

The pastoralists, government agents and recreational shooter interviewed accepted non-commercial shooting for damage mitigation purposes. However, the pastoralists acknowledged it was not cost effective and, importantly, not very effective in managing TGP. As one red meat industry commented: *"I guess a lot of farmers...have got to cull a few [kangaroos] themselves but it wouldn't be the most pleasant job...I think they would rather have professionals. I think the cost of doing it is just too much for them...to get a professional to come and shoot...I just think a lot of people have come to the realisation...they might as well just go to bed because you'd be out all night shooting and they're there the next day"* (Red meat industry 1).

The practice of non-commercial shooting was acceptable to the government agent representatives and the recreational shooter representative provided the Codes of Practice for the non-commercial shooting of kangaroos were being followed. *"We're certainly 'very acceptable' with non-commercial shooting...as long as it follows the code of practice. There should be no issue with that"* (Recreational shooter 1).

Shooter proficiency and permit compliance were the major concerns for many of those interviewees who marked non-commercial shooting as unacceptable: *"Not done professionally. It can be a bit of a cowboy thing"* (Red meat industry 3).

Those interviewees representing the animal welfare/ protection groups found the non-commercial shooting unacceptable. This related to the ability to comply with the Code of practice and the inability to audit: *"They get these damage permits. Then that gives them permission to shoot ostensibly a certain number of animals. But, of course, no one knows what goes on out there...you can't audit it"* (Academic 2).

"Get a permit, yeah, but again my experience of the permit system is that they don't check and there is this attitude that if you've got kangaroos there you can shoot them and I don't think that's a good thing...The other problem with non-commercial shooting, of course, is that they don't have to have passed any skills test. They don't have to show that they're capable of humanely killing an animal and so that's to some extent even worse than commercial shooting in the actual doing of, because farmers can go out and shoot kangaroos every now and again and have no skill" (Animal welfare 3).

"From a non-commercial perspective, how would you ever find out if something was being done contrary to the conditions of the Code [of Practice] or contrary to the conditions if the licence...there's no audit. How many tags do they get? How many animals do they shoot? Was it done in accordance with the Code of Practice?" (Animal welfare 2).

Another concern with non-commercial shooting and the 'shoot and let lie' practice is that the carcass cannot be utilised except for pet food on the property. It provide the opportunity when carcasses are left for vermin.

“I’m dubious about the benefits of shooting frankly because of the welfare aspect and you are also providing food for foxes, dogs or whatever might be in the region” (Red meat industry 2).

“When the animal is not left in the field you’ve got no vermin-be it wedge-tailed eagles, foxes, dogs-being introduced onto that property because they’ve got food sources there. If they’re just shot and left you’ve got all those things that affect farmer’s sheep. I have a very strong feel about if you’re going to shoot an animal or take an animal, use it, don’t leave it there, it’s got value” (Kangaroo processor 1).

The veterinary interviewee accepted non-commercial shooting *“but it should be regulated with commercial I think you need to put the two in together to make it acceptable...That is, I think it would [address] welfare...I would like to see all of kangaroo culling and harvesting brought under the same umbrella legislatively with the OEH to do that” (Veterinarian 1).*

One of the animal welfare interviewees expressed concerns around damage mitigation: the shooting of females and lack of data around the number of kangaroos taken. *“We’ve advocated for the potential to avoid shooting females but only if the actual impacts are understood. So the impacts on population and the impacts on who’s shooting kangaroos. So if the net outcome is that females are still being shot but they’re being shot by people who are less competent at doing it then that’s not a good outcome from an animal welfare point of view. I’ve got concerns about what is happening now, although it’s difficult to know because the figures that are available are all about the commercial harvest and not about the non-commercial” (Animal welfare 1).*

5.3.3.6 Reproduction and translocation

Reproduction control and translocation are control practices that may be used in zoos and peri-urban areas, particularly if the endangered animal is a bettong or a yellow-footed rock wallaby. The veterinary representative found translocation unacceptable as was explained:

“I feel that translocation...I would not accept that. I think that’s poor welfare to move these animals [kangaroos]. I think you get capture myopathy and a lack of research at this stage...To me it’s kinder just to shoot them than to dart them, then move them somewhere else...We don’t know what happens to those animals when they are released...you don’t know whether they survive” (Veterinarian 1).

Reproduction and translocation are, however, not appropriate practices in a rangeland setting and will not be further discussed in detail.

5.3.4 Interviewees’ assessment of control practices for unmanaged goats

Although most of interviewees discussed in-depth the control practices for kangaroos, there was much less discussion around the control practices for unmanaged goats. The control of goats *“is a social, environmental and economic issue. No doubt about it” (Government agent 1).*

In South Australia, *“within the NRM Act goats are declared for control and the landholder is meant to control them. But the Act doesn’t specify how. That may be by ground or aerial shooting or it may be by mustering and trapping...we don’t sort of say one control method is better than another one...Our perspective is for controlling to remove from landscape...must be within animal welfare standards, landholder approvals, and WHS [work, health and safety] South Australian policy” (Government agent 2).*

Table 5.10 provides a summary of interviewee' assessment of the social acceptability of unmanaged goat control practices. To simplify the data presentation we have combined some response options. *Acceptable* and *very acceptable* were combined as acceptable. *Not acceptable* and *somewhat acceptable* were combined as not acceptable.

Across all stakeholders interviewed, trap yards (at water points) was the most acceptable practice with an acceptance rating of 90%. The practice of shooting goats was the least acceptable control practice. However, ground shooting was judged only slightly more acceptable than aerial shooting (52% v 50%, respectively).

Table 5.10. Interviewees' assessment of unmanaged goat control practices.

Practice	Acceptable	Neutral	Not acceptable
Trap yards (at water point) (n=20)	90 (%) (n=18)	0 (%) (n=0)	10 (%) (n=2)
Ground mustering (n=22)	86 (%) (n=19)	0 (%) (n=0)	14 (%) (n=3)
Aerial mustering (n=21)	81 (%) (n=17)	0 (%) (n=0)	19 (%) (n=4)
Strategic fencing (n=20)	75 (%) (n=15)	15 (%) (n=3)	10 (%) (n=2)
TGP fencing (n=21)	71 (%) (n=15)	19 (%) (n=4)	10 (%) (n=2)
Exclusion fencing (n=21)	71 (%) (n=15)	14 (%) (n=3)	14 (%) (n=3)
Judas goats (n=21)	67 (%) (n=14)	14 (%) (n=3)	19 (%) (n=4)
Water point exclusion (n=20)	55 (%) (n=11)	5 (%) (n=1)	40 (%) (n=8)
Ground shooting (n=21)	52 (%) (n=11)	0 (%) (n=0)	48 (%) (n=10)
Aerial shooting (n=22)	50 (%) (n=11)	5 (%) (n=1)	45 (%) (n=10)

The second most acceptable practice following trap yards at water points was mustering with a preference for ground mustering over aerial mustering. Those practices were followed by the construction of different types of fencing, with a preference for strategic fencing over TGP and exclusion fencing, and the use of Judas goats. Although excluding access to water, ground shooting and aerial shooting were the least acceptable, all practices were acceptable to a majority of interviewees (Table 5.10).

Table 5.11 summarises the responses by stakeholder types. To simplify the data presentation the response options *acceptable* and *very acceptable* were combined as acceptable and only data for acceptable is presented.

The animal welfare stakeholder considered all practices as unacceptable. The pastoralists and those with conservation interests had very similar assessments of the acceptability of the different control practices.

Table 5.11 Extent of acceptability of unmanaged goat control practices by stakeholder groups.

Practice	Pastoralists (n=3)	Conservation interests* (n=5)	Government agent (n=1)	Veterinarian (n=1)	Animal welfare (n=1)	Recreational shooters (n=1)	Academics (n=4)	Red meat industry (n=3)	Kangaroo processor (n=1)	Animal protection (n=1)	Indigenous (n=1)
Trap yards (at water point)	✓✓✓	✓✓✓✓✓	✓	NR		✓	✓✓✓	✓✓✓	✓		✓
Ground mustering	✓✓✓	✓✓✓✓✓	✓	NR		✓	✓✓✓	✓✓✓	✓		✓
Aerial mustering	✓✓✓	✓✓✓✓	✓	NR		✓	✓✓✓	✓✓✓	✓		✓
Strategic fencing	✓✓✓	✓✓		NR		✓	✓✓✓	✓✓	✓	✓	
TGP fencing	✓✓✓	✓✓✓	✓	NR		✓	✓✓✓✓	✓✓	✓		✓
Exclusion fencing	✓✓✓	✓✓	✓	NR		✓	✓✓✓	✓✓	✓	✓	✓
Judas goats	✓✓✓	✓✓✓✓	✓	NR		✓	✓✓✓	✓	✓		
Water point exclusion	✓✓	✓✓✓✓✓	✓	NR			✓✓	✓✓			
Ground shooting	✓✓	✓✓✓✓	✓	NR		✓	✓✓		✓		
Aerial shooting	✓✓	✓✓✓✓	✓	NR		✓	✓		✓		

*Conservation interest group included 4 government agents and 1 conservationist. NR declined to respond.

Table 5.12 provides a summary of the justifications for the acceptance or non-acceptance of the practices for goat management based on the analysis of the interviewee transcripts. Reading through the transcripts a list of possible explanations was identified. The transcripts were then re-read looking for evidence of when an explanation was repeated and by whom. It was commonly found that the acceptability of a practice was conditional. That is, associated with the acceptability of a practice was a caveat. This was not the case for non-acceptance where a caveat was rarely given.

Table 5.12. Interviewees' justifications for the acceptance and non-acceptance of practices for managing unmanaged goats.

Practice	Assessment	Stakeholder justifications
Trap yards (at water point)	Acceptable	Widely used in inaccessible areas of rangeland country (GA1, RM3, PA3); Good design and practice important in acceptance (GA5, RM2); Makes it easier to catch goats (IN1);
	Reservations	Need to coordinate with neighbours to be effective, not effective when rain falls; must not have springs in the hills (GA1); Need to empty yards regularly and provide food in holding yards(PA1);
	Not acceptable	Concern over post-trapping impacts (AN1);
	Reservations	But not too bad (AN3)
Ground mustering	Acceptable	Supported by aboriginal people, employment opportunity (IN1)
	Reservations	Effectiveness reduced with noise from motorbikes, goats will move onto neighbouring property (GA1)
	Not acceptable	Needs data to demonstrate good animal welfare (AN1); Causes considerable stress (AN3)
	Reservations	Might be ok in some circumstances (AN 1)
Aerial mustering	Acceptable	Supported by aboriginal people, people being encouraged into training, employment opportunity (IN1)
	Reservations	Needs to be done safely and humanely (GA3)
	Not acceptable	Needs data to demonstrate good animal welfare (AN1)
	Reservations	Noise of aircraft causes goats to move off to next place, not a government approach as skill required (GA2); Might be acceptable in some circumstances (AN3)

Practice	Assessment	Stakeholder justifications
Strategic fencing	Acceptable	Useful to direct to trap yards, makes it more manageable (RM1, PA1, PA3); Influences goats use of the landscape (GA3); Controls population movement to protect the environment (AN3)
	Reservations	Not a long-term solution (GA5);
	Not acceptable	Legislation needs to change in South Australia (GA2, RM3)
	Reservations	No reservations given
TGP fencing	Acceptable	No downsides; containing them to muster ok, provides good control (common response by those who found practice acceptable)
	Reservations	No reservations given
	Not acceptable	Legislation prohibits TGP fencing in SA (GA1, RM3); Not cost effective in SA (GA2)
	Reservations	No reservations given
Judas goats	Acceptable	Effective to mop up the tail end of mobs (PA3)
	Reservations	No animal welfare concerns if leading goats to a trap yard (PA1); Not understood where and when required or appropriate (GA3)
	Not acceptable	No justification given (common response); I just actually hate it (AN3)
	Reservations	No reservations given

Practice	Assessment	Stakeholder justifications
Exclusion fencing	Acceptable	No downsides; No Problems (common response by those who found practice acceptable); Control population to protect the environment (AN3)
	Reservations	But fences a resource out (RM1); Needs to be in conjunction with a plan to manage the consequences(PA1); Not cost effective in SA (GA2); Kangaroo management, barbaric practices will destroy industry image (PA3)
	Not acceptable	Don't like;
	Reservations	No reservations given
Water point exclusion	Acceptable	No explanation given
	Reservations	Moves goats onto neighbouring property (GA1); Ground tanks should be fenced off to manage kangaroos and goats, minimum TGP fence, preferably an exclusion fence (GA5); Must allow goats to move on but who monitors?(AC4); Difficult, need to monitor (RM3)
	Not acceptable	If it results in death through dehydration (AC4); If animals are perishing (PA1); Consider animal welfare obligations (GA2); Cruel (KP2); Not supported by aboriginal people (IN1)
	Reservations	Can be used as a management tool to harvest goats, close water off in one area and provide access to water in another-becomes acceptable (PA1); If artificial water was turned off in a controlled manner (AN3)

Practice	Assessment	Stakeholder justifications
Ground shooting	Acceptable	Cheaper than aerial shooting
	Reservations	Not effective in reducing numbers (GA1); Animal needs to be despatched quickly and painlessly (KP2); Chest or head shot required (IN2)
	Not acceptable	What's the point? Why don't you muster them there's a dollar in them; Virtually irrelevant, value placed on goats in Western NSW (common response by those who found practice acceptable) Waste of resource in western NSW but necessary in Flinders Ranges in inaccessible country (RM1, PA1); Needs data to demonstrate good animal welfare (AN1); Even more difficult to manage wounded animals than aerial (AN3)
	Reservations	No reservations given
Aerial shooting	Acceptable	In inaccessible country (KP2)
	Reservations	Effective for cleaning up the last 30 or 40, not 500 or 600 (GA1); Landholder approval important (GA2)
	Not acceptable	Virtually irrelevant, value placed on goats in Western NSW; Waste of resource in western NSW but necessary in Flinders in inaccessible country (RM1, PA1); Humanness, need to be accurate (AC2); Needs data to demonstrate good animal welfare (AN1); Unable to kill wounded, wounded left (AN3); Cruel, wounded left, number unknown (IND1);
	Reservations	Clean up small mobs (GA1)

5.3.4.1 Trap yards (at water point)

Almost all interviewees found the use of trap yards at water points to be very acceptable. However, several interviewees voiced their concerns relating to trap yard design and construction. As one government agent explained: *“It gets back to trap yard design, how it's done and whether it's roo friendly and how landholders have it so that they can readily get roos out of a trap yard separate to goats”* (Government agent 5).

Another issue of concern related to the welfare of the trapped animals. One pastoralist explained: *“You've got to empty your [trap] yard regularly. There's the whole animal welfare side to that. Regularly round them and put them in a holding yard with food”* (Pastoralist 1). The process of trapping goats for slaughter had welfare impacts and as one animal welfare interviewee explained: *“Putting them through the stress of trapping, transport, holding, further transport then putting them into an abattoir environment most people recognise that that's a very stressful process”* (Animal welfare 1).

Trap yards were commonly used in South Australia as an effective tool to manage the unmanaged goat population but landholders needed to work cooperatively to achieve success. As one government agent explained: *“Trap yards...are really effective as long as you don't get any rain and you haven't got any springs up in the hills. But again what's not effective is they don't work with their neighbours. It's got to be coordinated. Have two or three properties in one little patch and they all do it. That's how you remove goats”* (Government agent 1).

5.3.4.2 Ground and aerial mustering

Mustering of goats by air and, more so, by ground was considered acceptable by many of the stakeholder interviewees: *“There's no dramas there”* (RM2). However, one government agent cautioned that *“We still need to look at it [aerial mustering] to make sure that it is done safely and humanely”* (Government agent 3).

One of the animal welfare interviewees and the animal protection interviewee expressed concern about the level of stress that the goats may experience during mustering.

“So I can't with any confidence say that the way these things [aerial and ground mustering] are being done is ensuring good animal welfare outcomes...So I mean aerial mustering if it's done in a low stress way can work and the same with ground mustering” (Animal welfare 1).

“[Aerial] mustering I think causes considerable...stress for them. In some circumstances it might be alright. Similarly, with ground [mustering], I mean there's always stress involved in mustering” (Animal welfare 3).

5.3.4.3 Strategic fencing

Of the fencing options for the management of goats, strategic fencing was preferred to TGP and exclusion fencing. As one government agent said: *“My preference is for strategic fencing. So using sections of fencing that are going to influence goat's use of the landscape without fencing off entire areas which then still allows for native wildlife such as kangaroos and emus to be able to move around because they aren't tied to water”* (Government agent 3).

One pastoralist explained how adding in strategic fencing improved the effectiveness of his trap yards: *“If I could put in a certain [strategic] fence so that they’ll go down a channel and then they’ll cross that sandhill because over the side...I’ve got a set of trap yards. Yep, that’s fine”* (Pastoralist 1).

5.3.4.4 TGP and exclusion fencing

Although exclusion fencing and TGP were acknowledged as effective in managing goats there was the concern that the potential impacts on other animals needed consideration.

Although the animal protection interviewee found exclusion fencing to control kangaroos as unacceptable, the interviewee explained: *“I have a slightly different view of goats because I would hope that we could control the population as such that they’re not affecting our environment whereas kangaroos I don’t feel that way. I think it is their environment. So I would say exclusion fencing would be okay and [also] strategic fencing”* (AN3).

5.3.4.5 Judas goats

The animal protection interviewee explained why the use of Judas goats was somewhat acceptable, *“Oh, that really plays with my sensibilities I have to say...I’ll put somewhat perhaps but I just actually hate it. I think most people in the community would. I mean I understand exactly the principle of finding other animals so they can be shot...Once you’ve used the Judas goat really you go to one of these other ones [control practices]”* (Animal welfare 3).

In contrast, the recreational shooter found *“Judas goats are very acceptable because they actually help you with culling by keeping one goat you know exactly where the herd goes and then can be shot”*. Likewise, one of the pastoralists found the use of Judas goats as a benign practice: *“I don’t have an issue with that [Judas goats] because you’re not actually implementing any practice that’s going to lead to an animal welfare detriment. You’re just using the Judas goat as a means of bringing those other goats...into a trap yard or whatever”* (Pastoralist 1).

In practice, the use of Judas goats is limited to specific circumstances. *“You really only want to be using Judas goats when you’re down to very low numbers and you’re trying to wipe out the last few animals”* (Government agent 3).

5.3.4.6 Water point exclusion

The concerns raised by interviewees around water exclusion as a tool for managing goats were similar to those raised around managing kangaroos.

“If it was artificial water and if they did it in a controlled manner then maybe, but again similar to what I was talking about with kangaroos, if you just turn it off abruptly you’ve got a problem” (Animal welfare 3).

“If an animal has a chance to move away then that’s fine but if it results in death that’s not a humane death” (Academic 4).

5.3.4.7 Ground and aerial shooting

Aerial and ground shooting were the least acceptable practices for managing goats. The concerns raised by interviewees included the skill of the shooters and the extent that animals could be wounded, and the value of goats as a resource in western NSW.

“Aerial shooting is all about competency and the same for ground shooting. So there’s just a lot of ifs” (Animal welfare 1).

“Aerial shooting. No...I worry that they will miss...Not being able to put them out of their misery or not even knowing that they're not dead...it doesn't matter which species. You can shoot from the air, even helicopters, with very skilled people and you disable them. You shoot their spine, of course, because you're at the back and so they're disabled but they're not dead...With shooting [on the] ground, I mean that's even more difficult because they move and you can't necessarily...follow up with another shot if you've injured them” (Animal welfare 3).

As one academic pointed out, *“People have been managing goats for yonks so all of this stuff is pretty acceptable...the public don’t really like aerial shooting” (Academic 1).*

As a resource one of the NSW pastoralists believed shooting goats was not wanted: *“I don’t see the need for shooting in our country because we’ve got a resource that can be managed” (Pastoralist 1).*

“[Aerial] shooting I guess is somewhat acceptable. But I think it’s a terrible waste of a resource. I guess there are areas in national parks and different areas where it’s nigh on impossible to try and muster them out. I guess as a last resort you’d shoot them out of a helicopter” (Red meat industry 1).

5.3.5 Interviewees’ assessment of control practices for feral pigs

The discussion with interviewees around the topic of feral pigs and their control practices often included negative emotive language that was not evident in previous discussions around the managing kangaroos and unmanaged goats.

“Probably my answer for feral pigs would be similar to the others...I mean it’s really difficult. It’s a bit different isn’t it” (Animal welfare 3).

“I know that they [feral pigs] can be a horrific animal if cornered...can cause quite a lot of damage to dogs or people...they’re not attractive and they’re fairly vicious...I think anyway that you could get rid of them as far as just humanely get rid of them would be something to consider” (Kangaroo processor 1).

“They’ll get in and kill all the lambs, the baby lambs. There could be 80, 100, 200 pigs or 300 pigs. You’ve got to really bait them or aerial shoot them. It’s the only way you’ll get them...I don’t see any benefit of wild pigs. People don’t eat them” (Red meat industry 1).

“Feral pigs are just destructive machines, particularly, to riparian areas and wetlands. I’d personally go out and shoot the last pig in Australia if I could” (Academic 2).

Table 5.13 provides a summary of stakeholder judgements of the social acceptability of feral pig control practices. Acceptable and very acceptable were combined as acceptable. Not acceptable and somewhat acceptable were combined as not acceptable.

Across all interviewees, ground shooting, trapping and ground baiting with 1080 were the most acceptable practices all had an acceptance rating of 77% (Table 5.13). Aerial baiting with 1080 had a substantially lower acceptability compared to ground baiting with 1080 (50% acceptability rating compared to 77%). The practice of dogging was clearly the least acceptable practice with only one stakeholder interviewed rating it as acceptable.

Table 5.13. Interviewees' assessment of feral pig control practices.

Practice	Acceptable	Neutral	Not acceptable
Ground shooting (n=22)	77 (%) (n=17)	5 (%) (n=1)	18 (%) (n=4)
Trapping (n=22)	77 (%) (n=17)	5 (%) (n=1)	18 (%) (n=4)
Ground baiting 1080 (n=22)	77 (%) (n=17)	0 (%) (n=0)	23 (%) (n=5)
Aerial shooting (n=22)	72 (%) (n=16)	5 (%) (n=1)	23 (%) (n=5)
Exclusion fencing (n=21)	71 (%) (n=15)	5 (%) (n=1)	24 (%) (n=5)
Use of Judas pigs (n=22)	68 (%) (n=15)	9 (%) (n=2)	23 (%) (n=5)
Aerial baiting 1080 (n=22)	50 (%) (n=11)	14 (%) (n=3)	36 (%) (n=8)
Water point exclusion (n=22)	45 (%) (n=10)	14 (%) (n=3)	41 (%) (n=9)
Dogging (n=22)	5 (%) (n=1)	9 (%) (n=2)	86 (%) (n=19)

Table 5.14 summarises the responses by stakeholder type. To simplify the data presentation the response options acceptable and very acceptable were combined as acceptable and only the acceptability data is presented.

Acceptability ratings were similar across the different stakeholder groups. The veterinary and animal welfare stakeholders differed from the other stakeholder groups in that they judged aerial shooting and aerial baiting with 1080 as unacceptable.

Table 5.14. Acceptability of feral pig control practices by stakeholder group.

Practice	Pastoralists (n=3)	Conservation interests* (n=5)	Government agent (n=1)	Veterinarian (n=1)	Animal welfare (n=1)	Recreational shooters (n=1)	Academics (n=4)	Red meat industry (n=3)	Kangaroo processor (n=1)	Animal protection (n=1)	Indigenous (n=1)
Ground shooting	✓✓	✓✓✓✓✓	✓	✓	✓	✓	✓✓✓	✓✓	✓		✓
Trapping	✓✓	✓✓✓✓	✓	✓	✓	✓	✓✓✓	✓✓	✓		✓
Ground baiting 1080	✓✓✓	✓✓✓✓✓	✓	✓	✓	✓	✓✓✓	✓✓	✓		
Aerial shooting	✓✓✓	✓✓✓✓✓	✓			✓	✓✓✓	✓✓			✓
Exclusion fencing	✓✓✓	✓✓	✓	✓	✓	✓	✓✓✓	✓✓	✓		
Use of Judas pigs	✓✓✓	✓✓✓	✓	✓	✓	✓	✓✓✓	✓	✓		
Aerial baiting 1080	✓✓✓	✓✓✓				✓	✓✓✓	✓	✓		
Water point exclusion	✓✓	✓✓✓✓		✓	✓		✓✓	✓			
Dogging						✓					

*Conservation interest group included 4 government agents and 1 conservationist.

Table 5.15 provides a summary of the justifications for the acceptance or non-acceptance of the practices for goat management based on the analysis of the interviewee transcripts. Reading through the transcripts a list of possible explanations was identified. The transcripts were then re-read looking for evidence of when an explanation was repeated and by whom. It was commonly found that the acceptability of a practice was conditional. That is, associated with the acceptability of a practice was a caveat. This was not the case for non-acceptance where a caveat was rarely given.

Table 5.15. Interviewees' justifications for the acceptance and non-acceptance of practices for managing feral pigs.

Practice	Assessment	Stakeholder justifications
Ground shooting	Acceptable	Viable, cost effective and cleanly despatched (KP1); Preferable to aerial shooting (KP1); No monetary value, kills livestock, damages fences (IND1)
	Reservations	Humane but less effective compared with aerial shooting (GA5); Numbers not great (RM3); Must be done humanely (V1)
	Not acceptable	Data to demonstrate good animal welfare practices, auditing (AN1); Issues around that it's a kill shot, leaving dependents to starve to death, food source for other animals (RM2)
	Reservations	No reservations given
Trapping	Acceptable	Trapping followed by shooting (KP1)
	Reservations	Daily checking of traps for wildlife; Risks in management-must be regularly checked (GA5); If traps are checked according to best practice, daily (AN2)
	Not acceptable	Labour intensive (GA1)
	Reservations	No reservations given

Practice	Assessment	Stakeholder justifications
Ground baiting 1080	Acceptable	Ground baiting with 20 milligram baits, baits not widely used in SA, small pig population (RM3); Use of HogHopper™, a feral pig specific bait hopper; Not a lovely thing to use (KP1);
	Reservations	1080 dose not strong enough to kill pigs (GA1); How effective? (KP1); Lesser of two evils (AC2)
	Not acceptable	1080 is legal but it's appalling, it's an horrific death (AC4, RM2); 1080 not acceptable for pigs, most things (AN1); Cannot be used with organic status(PA3); Affects other animals and livestock (IND1)
	Reservations	No reservations given
Aerial shooting	Acceptable	Effective and humane (GA5); No monetary value, kill livestock, ruin fences (IND1);
	Reservations	Not common practice when population small (GA1);
	Not acceptable	Data to demonstrate good animal welfare practices, auditing (AN1); Issues around that it's a kill shot, leaving dependents to starve to death, food source for other animals (RM2); Not sure you can get a really good shot (V1)
	Reservations	No reservations given

Practice	Assessment	Stakeholder justifications
Exclusion fencing	Acceptable	If effective in keeping pigs out and then destroying those inside (KP1)
	Reservations	Needs to be robust (GA5); Probably would damage many fences (RM1); Difficult to implement (GA3);
	Not acceptable	No explanation given
	Reservations	No reservations given
Use of Judas pigs	Acceptable	Relies on shooting to mop up left overs (KP1); Useful when finding particular populations (GA3); Not widely used (GA5);
	Reservations	No reservation given
	Not acceptable	No explanation given
	Reservations	No reservation given
Aerial baiting 1080	Acceptable	More indiscriminate than ground baiting (GA5); Reduces the specific nature of where 10801 is introduced
	Reservations	Needs to be used in specific circumstances (GA3)
	Not acceptable	Not within current policy in SA (GA2, RM3); 1080 is legal but it's appalling...it's an horrific death (AC4, RM2); 1080 not acceptable for pigs, most things (AN1), affects other animals and livestock (IND1) Uneconomic(PA3); Not when organic (PA3);
	Reservations	No reservations given

Practice	Assessment	Stakeholder justifications
Water point exclusion	Acceptable	Common sense once livestock removed from paddock (GA5); Slow down or impeded pig movement (GA4)
	Reservations	Difficult to implement (GA3, PA3);
	Not acceptable	Possibly cause damage getting to water (KP1); Excludes other animals (IND1);
	Reservations	No reservations given
Dogging	Acceptable	If follows code of practice set out by the Australian Pig Doggers Association, find and hold pigs (RS1);
	Reservations	No reservations given
	Not acceptable	Dogs are lost which can then kill sheep; Not an effective control measure, associated with recreational hunting (GA5); It's just not on, animal welfare, cutting piglet ears off to make more difficult to hold pigs (GA5); Associated with trespass and illegal shooting, uncontrolled and irresponsible component associated with dogging (GA5); It's horrific (AC4); Issue of animal ethics and humane treatment of animals in relation to how dogs fight with pigs (i.e. lug on to the pig) or use of dogs to detect and hold feral pigs for humane disposal (CO1); Very inhumane (RM1, RM2) Dangerous to pigs and dogs (GA3); Very risky (RM3) Aboriginal people take what they need to consume, hunters use a knife just to kill them, carcass left (IN1)
	Reservations	No reservations given

5.3.5.1 Ground and aerial shooting

The issues raised and expressed by several interviewees concerning the shooting of feral pigs are the same as for any other animal. It's about "whether you can guarantee a kill shot, whether they've got dependents on the ground that you've missed and are going to starve to death and then as fodder for something else that like to eat pigs" (Red meat industry 2). "It's [shooting] about knowing that it's being well done...so again if it was audited I could say yes because 93% of pigs die within three minutes" (Animal welfare 1).

The veterinary stakeholder interviewed explained the difference in acceptance between ground and aerial shooting, "*Ground shooting I think it's acceptable. I don't have a problem with shooting animals as long as it's done humanely...I'm not acceptable with aerial shooting. I'm not sure you can get a really good shot*". Likewise, the animal protectionist interviewee had a similar concern about aerial shooting: "*I just worry about them not being killed properly*" (Animal welfare 3).

However, one of the red meat industry interviewees found shooting feral pigs was an effective control measure: "*Aerial shooting I think is very acceptable. I think it's the only way they can really get them, and on the ground*" (Red meat industry 1). Further, a government agent added, "*Aerial shooting is probably effective and humane...ground shooting is probably more humane but less effective*" (Government agent 5).

5.3.5.2 Trapping

The trapping of feral pigs was acceptable provided the trappers followed a protocol of regularly checking the traps. However, as one government agent pointed out, "*It's labour intensive. You've got to check them every day*" (GA1).

One of the animal welfare interviewees and the animal protection interviewee held similar views concerning trapping and then shooting the trapped pigs.

"So these pigs are going to be shot if they're trapped I'm assuming because there is no commercial value. It's probably out of those methods one of the most acceptable...if traps are checked on a daily basis" (Animal welfare 1).

"Trapping is somewhat acceptable only because then you have a better shot at them. You're likely to be able to kill them outright once they're trapped" (Animal welfare 3).

5.3.5.3 Ground and aerial baiting 1080

Some of those interviewees who did not accept the use of 1080 were vociferous in their responses to the use of the poison.

"1080 is totally unacceptable. It causes terrible suffering...regardless of how you get it to them. We absolutely oppose 1080. There are better ways even if you're talking about poisoning and I hate poisoning. But 1080's disgusting" (Animal welfare 3).

"1080 is legal but it's appalling. It is totally unacceptable. It's a horrific death. I don't think there is enough known about the time to loss of consciousness...We don't know exactly how much suffering occurs prior to loss of consciousness" (Academic 4).

"From an animal welfare point of view, 1080 we wouldn't regard that as acceptable for pigs, for most things" (Animal welfare 1).

One of the red meat industry representatives accepted the need to use 1080 baiting to control feral pigs: *“I mean, most pigs are in like watercourse and heavy foliage and they only come out at night. They are very hard to find and they breed like...these are real feral pests...it’s the only way to get them under control”* (Red meat industry 1).

The recreational shooter interviewee accepted 1080 baiting but acknowledged it would be better if it was replaced. *“Baiting is acceptable because it’s the only tool at the moment that has a landscape level of control. 1080 is not an ideal toxin. There are other new toxins coming through like PAPP which I think is more humane”*.

Aerial baiting with 1080 was deemed less acceptable than ground baiting as it was considered a little bit more indiscriminate compared with ground baiting and as such could have indirect impacts including on dogs.

5.3.5.4 Exclusion fencing and water point exclusion

Few comments were made around the use of exclusion fencing and water point exclusion for feral pig control apart from the following comments.

“I think pigs would be pretty tough on fences...I think they’ll go through a lot of fences”
(Red meat industry 1).

“Controlling access to the water point particularly in areas where domestic stock have been moved out of a paddock it’s common sense” (Government agent 5).

“Water control if it was done properly I’d cope with that” (Animal welfare 3).

5.3.5.5 Use of Judas pigs

Although a majority of the interviewees accepted the use of Judas pigs, it was acknowledged that it only applied in specific circumstances.

“It’s about when you’ve got relatively low numbers and you’re trying to find those last individuals to try and stop them from spreading” (GA3).

The animal protectionist interviewee response to the use of Judas pigs was simply, *“I don’t know. I hate that anyway”*.

5.3.5.6 Dogging

Dogging was the by far the least acceptable control practice to the interviewed stakeholder representatives. The recreational shooter was the only interviewee who found dogging to be an acceptable practice. As was explained:

“Dogging is acceptable if it’s done as per codes of practice. You’ll find that proper dogging involves using hunting dogs that find and hold pigs. They don’t find and attack pigs. Probably even the animal welfare legislation says you can’t put an animal onto another one. I think Australian Pig Doggers’ Association has a code of practice. Dogs are only there to find and hold not to attack”.

The non-acceptance of dogging centered on the belief that dogging was not humane in relation to how dogs lug on to the pigs.

“A lot of the ways the pig dog is used is not acceptable. It’s dangerous to the pigs. It’s dangerous to the dog. It’s not really appropriate for large numbers of pigs....Even the best trained dogs you have to be very careful to make sure that they don’t actually go after the pig and either damage the pig or get damaged themselves” (Government agent3).

“I think dogging is probably not fair for the pig or the dog. It’s like going to cause grief and pain...I don’t know that it’s a great way of controlling an animal” (Kangaroo processor 1).

There was also the concern about the effectiveness of dogging and that it was linked to poor social behaviour.

“Dogging and hunting overall it’s probably not effective in pig control because they only get a few pigs. They stir all the other pigs up and make the other pigs difficult to manage by any other approach...like if people knew what was going on...the whole welfare thing...It’s associated with a lot of trespass and illegal shooting on property...a certain uncontrolled and sort of irresponsible component [to it]” (Government agent 5).

Dogging aroused some of the interviewees’ emotions. For example, the animal protectionist interviewee described dogging as *“totally disgusting...Why it hasn’t been outlawed is beyond me”* and one academic responded by saying, *“Dogging is horrific”* (Academic 4).

5.4 Summary of key findings

The commercial shooting of kangaroos was the most preferred practice in managing the kangaroo population. The basis for a more positive judgment for commercial shooting than for non-commercial shooting of kangaroos included:

- There was the **belief** that commercial harvesters were professional and highly proficient in shooting kangaroos with a head shot. As a consequence, the **risk** that a kangaroo would experience an inhumane death was quite low.
- There was the **risk** to causing harm by wounding kangaroos was less of an issue as shooters had to pass a competency test.
- There was the **belief** that commercial harvesters could be **trusted** to act responsibly as they were regulated by government agents under a licensing system.
- There was **transparency** around harvesting with a system of formal rules to demonstrate sustainability credentials with a preference for a male only take to address the management of young-in-pouch and at-foot (almost all those shot are males).
- The kangaroo is **valued** as a resource with the ability to utilise the entire carcass as well as the hide.

The basis for a more negative judgement for non-commercial shooting included:

- There was the **belief** that non-commercial shooters lacked proficiency as there was no requirement to undertake a competency test. As a consequence, the **risk** of a kangaroo experiencing an inhumane death was probably much higher.
- The **risk** of causing harm by wounding kangaroos was a significant concern since shooter competency was considered questionable.
- There was the **belief** that non-commercial shooters could not be **trusted** to act responsibly in shooting kangaroos. Although there is a system of formal rules, commonly these were not

monitored. The damage mitigation permits obtained by landholders were often based on their damage assessment and there was a lack of auditing by government agents.

- There was a **lack of transparency** around the proportion of male and female kangaroos taken and the management of joeys-in-pouch and at-foot by non-commercial shooters.
- The kangaroos were not **valued** as a resource with the carcass mostly left in the field and, thereby encouraged vermin.

Although the acceptability of TGP and exclusion fencing were similar, there were substantially more concerns expressed in relation to the erection of exclusion fences. The basis for a more positive judgement for TGP fencing than for exclusion fencing included:

- There was the **belief** that TGP fencing was a viable method to manage the movement of kangaroos.
- There was the **risk** of causing harm to native wildlife (kangaroos and emus) with entanglement. However, it was believed that with improved design it would be possible to mitigate the extent that entanglement took place.
- There was the **concern** that the natural migration of native wildlife across the landscape was hindered by the fence.

The basis for a more negative judgement for exclusion fencing than TGP fencing included:

- There was the **belief** that exclusion fencing would be more successful in controlling kangaroos than TGP fencing.
- There is a **risk** for unintended consequences associated with the large scale erection of exclusion fencing.
- There was the **concern** that exclusion fencing could impact on wildlife, particularly in constraining their movement across the landscape and for their management inside the fence.
- There was the **concern** that the natural balance of the landscape could potentially be altered with areas without the presence of kangaroos.
- There was a **lack of transparency** about the justification for erecting exclusion fences: ostensibly for wild dog control but also allowed kangaroo management.
- There was a **lack of transparency** about how kangaroos were being managed inside and outside the exclusion fence. A formal wildlife management plan lodged with a government agency would improve acceptability.

The basis for a more negative judgment for water point exclusion than fencing included:

- There was the **belief** that acceptability in excluding access to water was dependent on how it was managed and the extent that man-made or natural water sources were fenced.
- There was the **risk** to kangaroos if the fenced-off water allowed domestic animals to enter but excluded kangaroos. There was the potential for kangaroos to congregate outside the fenced water source and perish from thirst. However, this could be avoided if the water point was closed off and that the kangaroos would disperse.

The practice of erecting trap yards at water points was judged as a highly acceptable practice for managing goats. The basis for a highly positive judgement for erecting trap yards at water points included:

- There was the **belief** that good design and construction was required to manage trapped goats and to avoid kangaroo becoming entangled in the goat-proof fences.
- There was the **concern** that trap yards should be monitored on a regular basis to avoid starvation and stress in the trapped goats. There was also the **concern** for goats to be moved to holding yards where forage and water were readily available.
- There was the **concern** that the trapped goats intended for slaughter were no different to domesticated animals would experience stress in the transport to and at the abattoirs.

The construction of strategic fencing was judged as highly acceptable. It was considered to be a useful management tool to guide unmanaged goats to a trap yard at a water point. The basis for a highly positive judgement for erecting strategic fencing included:

- There was the **belief** that strategic fencing can influence goats' use of the landscape and, thereby, protect sensitive environmental areas without fencing off an entire area.
- At the same time, it would allow native wildlife to move through the landscape unimpeded addressing a key **concern** by stakeholders.

Although the acceptability of ground and aerial mustering for managing unmanaged goats were similar, there were more concerns raised in relation to aerial mustering than for ground mustering. The basis for a positive judgement for ground and aerial mustering included:

- There was the **belief** that ground mustering goats is safer and less stressful than aerial mustering.
- There was the **concern** that, in general, mustering of goats involves stress and that there is a lack of confidence as to how this is being managed.

In general, the basis for accepting the use Judas goats and Judas pigs was not clearly articulated by stakeholders. Stakeholders did not understand when and where it would be applicable to use Judas animals. With no explanation given a negative emotive response could be, "*I just don't like it*".

The practice of ground and aerial shooting for goats was judged the least acceptable practice as goats were considered to be a valuable resource that can be managed.

In contrast to unmanaged goats, feral pigs have little or no monetary value and were described "*as real feral pests*". Ground shooting was judged to be a more acceptable practice than aerial shooting in managing feral pigs. The basis for a more positive judgement for the ground shooting of feral pigs included:

- There was the **belief** that ground shooting was more likely to result in a humane death from a kill shot than when shooting from the air.
- There was an increased **risk** of animals being left wounded from aerial shooting than from ground shooting.
- There was the **risk** that the left-dependents of those killed could die from starvation or could be killed by other animals.

The practice of trapping feral pigs was judged to be as acceptable as ground shooting and ground baiting with 1080. The basis for a positive judgement included:

- There was the **belief** that trapping followed by shooting was one of the most acceptable methods to despatch feral pigs. A kill shot was more likely when, in the first instance, feral pigs were trapped.
- There was the **concern** that trappers would not regularly check traps. That is, traps needed to be checked daily.

Poisoning with 1080 elicited some strong negative responses from some of stakeholders interviewed. Other stakeholders interviewed acknowledged that although 1080 was not an ideal toxin, it was the only tool currently available for feral pig management. Even though ground baiting with 1080 ranked as acceptable as ground shooting and trapping, it was recognised that a more humane toxin was required. The practice of ground baiting with 1080 was judged to be more acceptable than aerial baiting. The basis for baiting by ground than by air included:

- There was the **belief** that aerial baiting was more indiscriminate than ground baiting in targeting feral pigs.

- There was the **risk** that aerial baiting was more likely to impact on domestic dogs.

The practice of dogging was judged as the least acceptable practice for feral pig control. Taking into account all the control practices available to manage the three focus species, dogging was judged the least acceptable practice. The basis for the non-acceptance of dogging included:

- There was the **belief** that dogging was a completely uncontrolled practice and it was as dangerous to the feral pig as it was to the dog being used.
- There was the **risk** of trespass and illegal shooting on properties as it was believed that this was often associated with dogging.

5.5 Further discussion points

In addition, to the key findings relating to the acceptability of the management practices in relation to kangaroos, unmanaged goats and feral pigs, stakeholder interviewees raised some important considerations. Firstly, the acknowledgement that the pastoralists form a heterogeneous group, just like any stakeholder group. Secondly, there was concern expressed about the management of native wildlife post-construction of exclusion/cluster fencing. Thirdly, the animal welfare and animal protection interviewees were concerned that there was no measurable impact assessment prior to justify implementing a control program or an evaluation of the outcome at the program's completion.

5.5.1 The pastoralists

Pastoralists hold different values and attitudes towards the kangaroos that will influence their decision-making around their management. As one government agent explained:

“There are a lot of landholders out there that are quite happy having kangaroos on their properties or are distressed when they do have to deal with them...We also recognise there are some landholders out there that do have a very negative view towards kangaroos and would prefer not to have them on their properties...ultimately these animals are protected. They can be managed but only in the process of ensuring they're not damaging those enterprises...not to be destroyed just because they're there” (Government agent 3).

5.5.2 Management of native wildlife post erection of exclusion fencing

The opportunity to erect cluster fences with government financial support for the purposes of wild dog management has been positively received. However, as one interviewee summed up the situation:

“There appears to be a lack of transparency around, firstly, the justification for erecting an exclusion fence and, secondly, how the kangaroos are being managed.”

Detailed comments were provided by a number of different stakeholders as outlined below:

“In my view the great advantage of cluster fencing is that like-minded property owners that want to get rid of the dogs and by putting up that cluster fence around those properties you can control the dogs. You can also control the kangaroo population a lot better. Now what happens outside those cluster fences is probably an issue because you'll have more concentration of dogs and kangaroos outside...a great move forward but using technology that's 150 years old” (a red meat industry interviewee).

“There has been some interest from some sectors of the community in talking to us about it [exclusion fencing]...The information that I’m picking up from field processors that have either had some experience or been speaking to other people in Queensland and New South Wales that it’s a disaster...For the kangaroos, in particular, and the emus I think...Disaster in terms of impacting on the movement of animals. Disaster in terms of the landowner putting it up under the guise of dog control...In areas where there isn’t a dog issue basically taking out kangaroos so they can run more sheep. That’s what I’m hearing and then there’s this wholesale slaughter of kangaroos just to get rid of them from the landscape. That’s hearsay...That’s what I’m hearing from people involved with the kangaroo industry” (a government agent interviewee).

“I’ve heard of some people doing a helicopter muster before they seal the fence off and trying to usher them out. Some people would be employing roo shooters within the cluster just to keep a control on the numbers generally. Depends on the size of the area as to whether or not it’s going to work. Paddock by paddock...If you are outside the cluster you would be quite concerned...obviously they’re drinking and feeding on your place now” (Red meat industry interviewee).

“There are places in fences where people will find kangaroos caught up...when they’ve erected a new fence. They’ll see that happening for, say, three months after the fence is erected. Then kangaroos become used to the fence being in and then they don’t get caught up in the fence. That’s the feedback” (Government agent interviewee).

5.5.3 Program justification and evaluation

A very important consideration raised by one of the animal welfare interviewees was the need for the public to know why a control program was necessary. That is, a control program needs to be justifiable. As was explained:

“Acceptability is linked to people feeling that you’ve got a good reason for doing something...then communicating that to the public...understanding the impacts and acceptance of control methods are really linked”.

For the animal welfare/protectionist interviewees a prerequisite to taking action is to provide a justification. That is, what is the basis for deciding that a damage threshold has been exceeded? Likewise, what is the basis for making the decision to stop a particular control program? This was explained in detail by two of the animal welfare interviewees:

“What’s the trigger for a landholder to make the decision that they need to have someone come in and shoot kangaroos...Is it a perception? Because they’re driving through the paddocks and they’re seeing them there? Or is it actually that they are measuring those impacts and they’re determining what they need to do to reduce those impacts?...Is it part of their annual management or is there a point that they say that I can see that their impact is such that we need to manage them now... But kangaroo management is more complicated than that because you’ve got this commercial harvest aspect that’s actually designed not to reduce populations too much...So this question about is it effective with kangaroos is really important. Because you can’t measure whether something’s effective if you haven’t actually captured what it is you’re trying to achieve”.

“How sound is the basis for any population control? I understand why in many cases it would be needed but I don’t see that there’s a proper assessment of populations and

their actual impact. There's usually not any good assessment of whether or not it's been successful. So all the stress and distress...that comes with mustering and trapping and such things, and the cruelty that can be involved in the killing methods, like injuring animals and such, all of that can be for nought if the population management and, therefore, the damage or the reduction in grazing pressure hasn't been ameliorated, hasn't been reduced. That means it's unnecessary".

5.6 Implications of stakeholder acceptability of control practices for the red meat industry

1. The industry needs to be aware of the concerns raised by stakeholders, and be able to justify its control practices where possible. Stakeholder views on control practices for kangaroos, unmanaged goats and feral pigs were wide-ranging. The stakeholders interviewed expressed different values, beliefs and attitudes towards the management of each of the focus species. Often stakeholders who found a practice acceptable did so with a caveat.

2. The industry needs to ensure that the Code of Practice (non-commercial shooting) is promoted, accepted, and adhered to. There was clearly a higher level of interest and diversity of views expressed by the interviewed stakeholders about the management of kangaroos compared to unmanaged goats and feral pigs. The management of kangaroos will continue to be controversial. Shooting of kangaroos by commercial shooters (skills tested) was much more acceptable than by commercial shooters (skills not tested): expecting fewer wounding of kangaroos by commercial shooters.

3. The industry needs to acknowledge that the acceptability of control practices for the different focus species depends on how they are valued and perceived by individual stakeholders. Stakeholders generally displayed a preference for the culling of 'feral' animals over native wildlife, and the culling of 'pest' animals over 'resource' animals. There were inconsistencies in the acceptability of lethal and non-lethal methods for each of the focus species. Lethal practices were more acceptable in managing feral pigs and less acceptable for managing unmanaged goats.

6 Influence of key stakeholders influence public perception and policy in managing kangaroos, unmanaged goats and feral pigs

6.1 Introduction

'Stakeholder' is a term that refers to those that have something at stake (interest) in what you are doing. Mazur (2006) provides "a broad and inclusive definition of 'stakeholder': *any individual or groups of people, organised or unorganised, who share an interest (financial, moral, legal, personal, community-based, direct or indirect) in a particular issue*".

The stakeholder groups identified in this research project represented those communities with an interest in the management of kangaroos, unmanaged goats and feral pigs (referred to as the focus species) in the southern Australian rangelands. Although the different stakeholder groups were identified as having an interest, these groups will hold different perspectives, interests and capacities to influence the public, policy and focus species management. That is, these groups will hold divergent positions about the control practices used to manage the focus species and will have different capacities to influence through power or persuasion, the behaviour of other people.

The key research questions to be addressed by this project are listed below. This section responds to key question 1.

1.) Which stakeholder groups are most influential in shaping public perception, policy and management initiatives relating to the control of the focus species (kangaroos, unmanaged goats and feral pigs) as components of TGP in the southern Australian rangelands?

2.) What are the (current and likely future) options to control these species? What are the relative merits of these control measures as assessed by key informants?

3.) What are the attitudes of key stakeholders (those who influence public opinion) to (the current and likely future) control measures?

The stakeholder groups from which individuals were interviewed for this project included the pastoral industries and their producers, Commonwealth and State government agencies (NRM, agriculture and policy), academics, veterinary practitioners, indigenous communities, animal welfare, animal protection, wildlife conservation, recreational shooters, kangaroo processors and the red meat supply chain (refer to section 5.2).

This section identifies the key influential stakeholders and how they shape public perception and influence animal welfare policy in Australia. It does this by providing:

1. A brief history of animal welfare and protection policy in Australia;
2. An examination of the Australian public's attitude towards animals and their treatment;
3. An exploration of the representation of animal welfare issues in the media;
4. An examination of the policy intersection between animal welfare and protection groups, livestock industry groups and political parties;
5. A description of animal protection, welfare and kangaroo protection groups;
6. A description of agricultural industry groups and other key animal interest groups;
7. A description of the political groups and their relevant policies.

The implications for the red meat industry are included in the main sections. Finally, a summary of the findings is presented.

6.2 The historical context of animal welfare and protection in Australia

Although public deliberation about the human treatment of other species has been heightened in Australia since the publication of Peter Singer's book, *Animal Liberation* (1975), the concern for the protection of animals is not a new phenomenon (White, 2007, Chen, 2016). Rather the interest in animal protection in Australia has waxed and waned since the time of first settlement.

In 1822 the "*Cruel Treatment of Cattle Act*" was passed in England. This legislation was designed to protect working animals including 'horses, mares, geldings, mules, asses, heifers, steers, oxen, sheep, and other cattle' from cruel and improper treatment (Chen, 2016). This legislation served as a model for similar legislation in Australia. In 1837 the first anti-cruelty legislation was enacted in Van Diemen's Land followed by New South Wales and the other colonies (White, 2007). However, as White (2007) noted "the fundamental structure of anti-cruelty legislation, established in the 1850s and 1860s, and refined through exemptions, remains in place today". The broad objectives of Animal Welfare Acts in Australia are the prohibition of cruelty: to protect animals from 'unnecessary', 'unjustifiable' and 'unreasonable' suffering (Arbon and Duncalfe, 2014).

The anti-cruelty movement was built on the assumption that animals deserved protection although human interests still prevailed, provided these interests could be justified and were humane (Park and Singer, 2012). The Royal Society for the Protection of Cruelty to Animals (RSPCA) was formed in England two years after the passage of the "*Cruel Treatment of Cattle Act*" to support the bill and assist in its policing. The early Societies for the Protection of Cruelty to Animals (SPCAs) formed within Australia were modelled on the RSPCAs in the United Kingdom: they engaged in campaigning and assisted in funding inspectors to enforce legislation.

Beginning in the 1920s and apart from the SPCAs there was a decline in many groups concerned with animal protection in Australia and as a result there was a slowdown in activity within the movement for next 40 years. It was not until the 1960s and 1970s that there was a re-emergence of concern about animals: a radical second wave associated with the formation of new, distinctive groups who used the language of animal 'rights' as well as a renewed interest by the public. This second wave was associated with a challenge to the primacy of human interest over animals and thus to the basis on which Animal Welfare legislation in Australia had been formed (Chen, 2016). A timeline of animal welfare events in Australia from the 1960s is presented in Table 11.1 (Section 11.2)

Early in the 20th century the state and territory governments in Australia began to include exemptions livestock management practices, including cattle dehorning and branding in animal welfare legislation. It was, however, not until the 1970s and 1980s that the state and territory governments introduced blanket exemptions for livestock management practices that were undertaken in accordance with 'accepted farming practice' (Jamieson, 1991). Today, under animal welfare legislation, exemptions from offences remain in place where compliance with relevant Codes of Practice (COPs) can be demonstrated. These COPs are especially important for livestock and their transportation as they set out the minimum standard for livestock welfare. That is, the COPs are concerned with preventing or lessening negative states of animal welfare.

Although exemptions continue in some statutes for specific practices, including the control of feral animals and pests, there is often the requirement that pest control practices should be carried out in a 'humane way' or 'cause as little pain as is reasonable' (White, 2003). In New South Wales, compliance with an adopted COP can be admissible as evidence to defend a charge under the *Prevention of Cruelty to Animals Act 1979* (NSW). Conversely, non-compliance can be admitted as evidence for prosecution.

Since 2003, COPs have been written for the major Australian pest species including unmanaged goats and feral pigs (Sharp and Saunders, 2012a, Sharp and Saunders, 2012b). They provide guidance, like other COPs written for domestic livestock, and are seen as voluntary and without legislative power. In addition, a Model for Assessing the Relative Humaneness of Pest Animal Control Methods has been developed as a framework to determine which control practices are considered more or less humane (Sharp and Saunders, 2011). However, the question remains as to how implementation of COPs and accompanying Standard Operating Procedures (SOPs) can be achieved on the ground when they are voluntary and producers have a high degree of control over what management practices they do or don't accept.

More recently, a significant development in anti-cruelty legislation has been the inclusion of the notion of 'duty of care' owed to animals i.e. a positive obligation on those responsible for animals to take reasonable measures to ensure their welfare. Such a provision recognises that animal welfare requires more than the prevention of cruelty and the adoption of minimal standards (White, 2007). It requires treatment of animals that will meet their needs: the provision of food, water and accommodation, ability to display normal behaviour and treatment of disease or injury (Arbon and Duncalfe, 2014).

6.3 The Australian public's attitude towards animals and their treatment

"Many of our social norms about the treatment of animals depend on how different species are valued and perceived" (Chen, 2016). As described above, the latter part of last century has seen a major change in the values, beliefs and attitudes of people in Western Societies towards animals. That change is due to the increased acceptance of the intrinsic value of animals (Cohen et al., 2009). *"Animals are recognised as having value in their own right as beings with a life of their own, and a purpose in life that is inherent to their species-specific needs"* (Cohen et al., 2009).

The Humane Research Council (2014) with funding by Voiceless surveyed 1041 Australians online (in large cities, smaller cities and rural area; by State, by age group and by gender). This study found that most respondents believe animals have the capacity for thought and emotion and that people should not mistreat animals (Table 6.1).

Table 6.1. Attitudes towards the treatment of animals (Humane Research Council, 2014).

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Animals are capable of thinking and feeling emotions	36.6(%)	42.5 (%)	17.0 (%)	2.8 (%)	1.2 (%)
People have an obligation to avoid harming all animals	33.8 (%)	36.6 (%)	21.9 (%)	5.4 (%)	2.3 (%)

Other data from this survey (Table 6.2) indicate that although 60% of the public supported the legal protection for farm animals, almost 30% of those surveyed were undecided. Importantly for the current project, almost 60% of those surveyed were unsure if the commercial kangaroo industry does enough to ensure that kangaroos do not suffer (Table 6.2).

Table 6.2. Distinctions drawn between animals (Humane Research Council, 2014).

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Farm animals deserve the same legal protection as companion animals	24.3 (%)	36.1 (%)	28.3 (%)	9.7 (%)	1.6 (%)
The commercial kangaroo industry does enough to ensure that kangaroos do not suffer	6.7 (%)	22.5 (%)	57.6 (%)	9.3 (%)	3.8 (%)
Killing animals is sometimes necessary for ecological purposes	13.4 (%)	52.4 (%)	24.3 (%)	6.4 (%)	3.6 (%)

The survey also found that when participants were asked: How much do you support or oppose the proposal, 'Ending the commercial industry of killing kangaroos for food and leather' the response was 38.4% (neutral), 33.5% (strongly oppose + somewhat oppose) and 28.1% (somewhat support + strongly support).

Other survey results (Table 6.3) indicate that nearly one-third of the surveyed public attributed considerable rights to animals with nearly two-thirds supporting the status quo where human interests are prioritised over those of animals.

Table 6.3. Attitudes to animal treatment; n=1,000 ((Essential Media Communications, (2012) cited in Chen (2016)).

Statement	Agree
Animals deserve the same rights as people to be free from harm and exploitation	30 (%)
Animals deserve some protection from harm and exploitation, but it is still appropriate to use them for the benefit of humans	61 (%)
Animals don't need much protection from harm and exploitation since they are just animals	4 (%)
Don't know	5 (%)

To add to the complexity, there is a continuing tradition of drawing a distinction in worthiness between companion animals, 'useful' animals and pests. A hierarchy of concern is discernable such that companion animals and wildlife tend to be valued more highly than farm animals which in turn are valued more than animal designated as 'pests' (Chen, 2016).

6.3.1 Implications for the red meat industry

4. The industry needs to conduct research to understand the changing nature of contemporary human-animal relationships. The Australian public's attitudes towards animals and their protection are evolving. Although a significant proportion of the public attribute considerable rights to animals, the majority still support the view that human interests should take priority over those of animals.

5. The industry needs to demonstrate they can be trusted to do the right thing by accepting and adhering to strong Codes of Practice. Animal cruelty will not be tolerated. The public recognise the intrinsic value of animals and that people will not tolerate mistreatment.

6 The industry needs to accept that people are not consistent in their views about the treatment of animals. The public draws a distinction between types of animals with some animals valued more highly than others. Companion animals and wildlife are valued most highly followed by farm animals and pests.

7. The industry needs to use the opportunity to influence public opinion in favour of the commercial kangaroo industry. The public is split equally between support for, opposition to, or uncommitted (i.e. neutral) about the commercial kangaroo industry. Both the industry and the animal welfare/protection organisations have the opportunity to influence the ‘uncommitted public’.

6.4 Representation of animal welfare issues in the media

Apart from companion animals, most Australians have limited interaction with domesticated and non-domesticated animals. Farms are geographically distant from the highly urbanised Australian population, and remote in most people’s consciousness. This separation increases the power of the media to shape people’s understanding of animals and animal industries, and to influence popular opinion about animal protection (Chen, 2016).

The media, however, are always interested in dramatic news stories. At the same time, media coverage is an essential ingredient for giving a campaign by animal advocacy groups the legitimacy and publicity it needs for ‘success’ (Munro, 2005).

6.4.1 Print Media

Animal welfare issues associated with the live export of cattle to Indonesia in 2011 is seen as responsible for a change of reporting on animal protection issues in Australia’s print media. The coverage of welfare standards is generally higher than before 2011 but is still highly variable (Figure 6.1). The coverage of welfare issues is highly episodic rather than systematic.

On 30 May 2011, the ABC aired the infamous program, ‘A bloody business’, which included graphic footage of the slaughter of Australian cattle exported to Indonesia. This program had been prepared in collaboration with Animals Australia and RSPCA Australia and revealed scenes of cruelty at a level that had probably had never before been seen on television. All major newspapers reported extensively on the content of the program and the fallout: the public reaction and mobilisation, the political decisions made and the industry’s counter reaction. In response, a model of welfare assurance, the Exporter Supply Chain Assurance System (ESCAS) was implemented, the possibility of an abolition ban subsided and the growth trajectory within the industry resumed with renewed contracts (Chen, 2016).

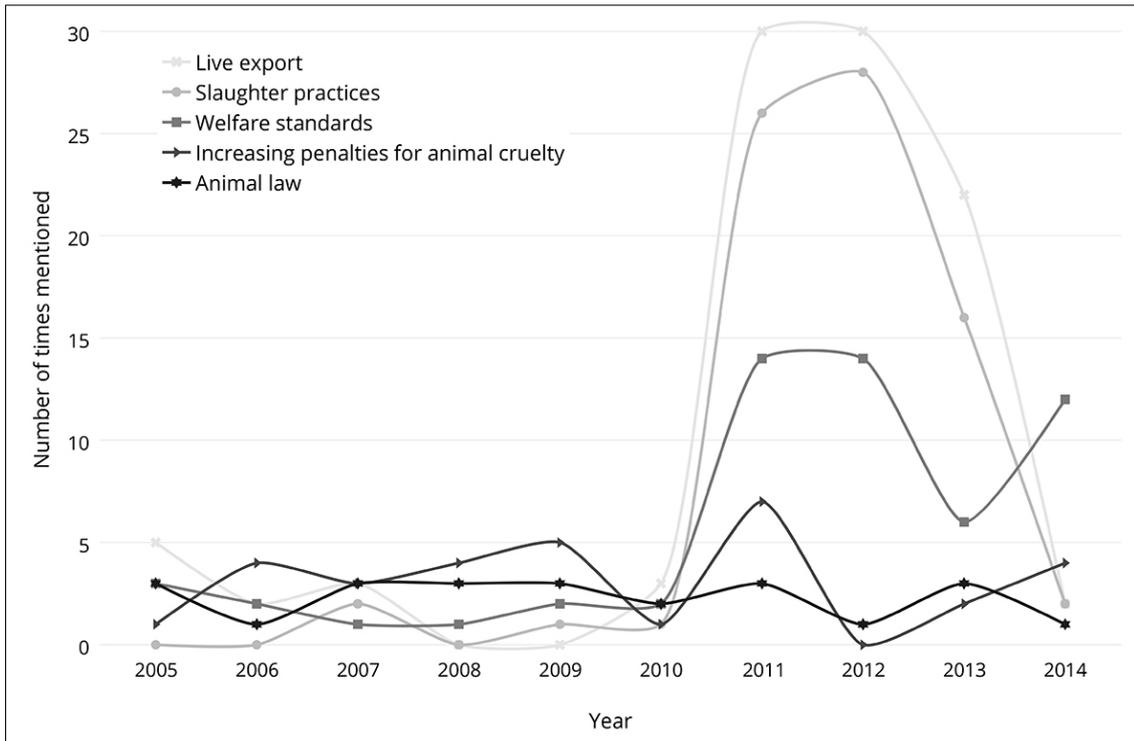


Fig. 6.1. Frequency of issues mentioned in newspapers, 2005-2014 (Chen, 2016).

More generally, which animal protection issues are reported and how they are reported appears to be highly variable (Chen, 2016). Often domestic animal welfare issues result in fairly muted coverage. Although those animal protection issues that do turn into a major public debate are infrequent, they are also highly unpredictable and, in terms of the media coverage, are the most difficult for the defending parties to manage.

Considerable regional differences exist in the nature and extent of print media coverage of welfare-related issues (Figure 6.2). Specific animal cruelty incidents and animal activist protests and animal welfare fund raising events tend to be reported more by metropolitan papers than rural papers.

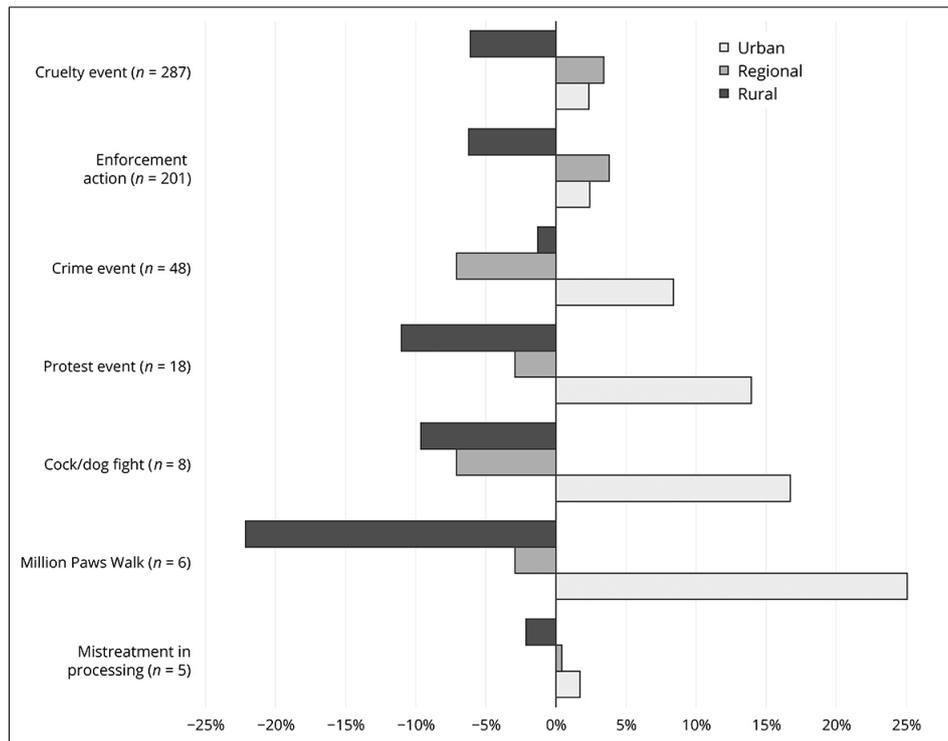


Fig. 6.2. Regional variations in event reporting from the national average, 2005-2014 (Chen, 2016).

6.4.2 Other media platforms

Animal welfare/protection organisations use social media platforms including SMS, blogs, Facebook, YouTube and Twitter to promote their campaigns as widely as possible in combination with traditional public media (newspaper, television and radio) (Rodan and Mummery, 2014). The strategic use of multiple platforms by these organisations is first, to create public interest in their issue of concern and second, to use this interest to effectively apply pressure and to achieve the desired changes in policy and management (Mummery et al., 2016).

Animals Australia utilises multiple platforms to engage with and mobilise the public in strategic campaigns (Mummery et al. 2014). A current example is the 'Make it possible' campaign (<http://www.makeitpossible.com/> viewed 24 May 2018) launched in October 2012 with a campaign message to 'Imagine a world without factory farming', and with a dedicated website: 'Animals Australia's landmark campaign to end factory farming' (<http://www.animalsaustralia.org/issues/> viewed 24 May 2018). This campaign employed multiple modes of communication, combining billboards, print, television and radio advertising and websites with social media tools to bring 'factory farming' into prominence in the public domain (Rodan and Mummery, 2014).

On the homepage of the 'Make it possible' website there are several components 'constructed to actively engage visitors, facilitating their uptake of the campaign message and to, thereby, increase traction for the campaign message' (Mummery et al., 2016). On the campaign website there is:

- YouTube video (584,378 views, 3.8K likes when viewed 24 May 2018) including the appearance of high profile Australians providing commentary and endorsement;
- A pledge facility that links to personal action options (291,674 pledges have been made when viewed 24 May 2018) which include to 'refuse factory farmed products', 'eat fewer animal products', 'go meat free' and 'donate';

- The use of Facebook (66,110 likes when viewed 24 May 2018), Twitter and Instagram to share messages and images, express their opinions and reactions, and confirm their support for the campaign.

6.4.3 Media circuits

To enhance their campaigns Animals Australia constructs and uses media circuits that allow them to post repackaged content in in easy-to-share formats cross their multiple websites and platforms (Table 6.4). Reposting is encouraged with the capacity to repost through emails to members, YouTube sharing and hyperlinks within their websites (Rodan and Mummery, 2014).

Table 6.4 Media platforms used by Animals Australia.

Media	Address
Websites	Animals Australia.org Animals Australia Unleashed! (youth site) BanLiveExport.com MakeItPossible.com
Facebook sites	Animals Australia Animals Australia Unleashed! Ban Live Export Make It Possible Lucy Pig's Campaign Trail
YouTube channels	Animals Australia YouTube Animals Australia Unleashed! YouTube
Twitter sites	Animals Australia Animals Australia Unleashed! Ban Live Export

Animals Australia's use of these various platforms demonstrates the organisation's capacity to network their message and its ability to reach individual followers nationally and globally. The organisation's multi-media architecture allows users to comment, post, and repost information and commentary across multiple platforms enabling the continuous circulation of images and messages in which Animals Australia is tagged within social media networks (Mummery et al., 2016).

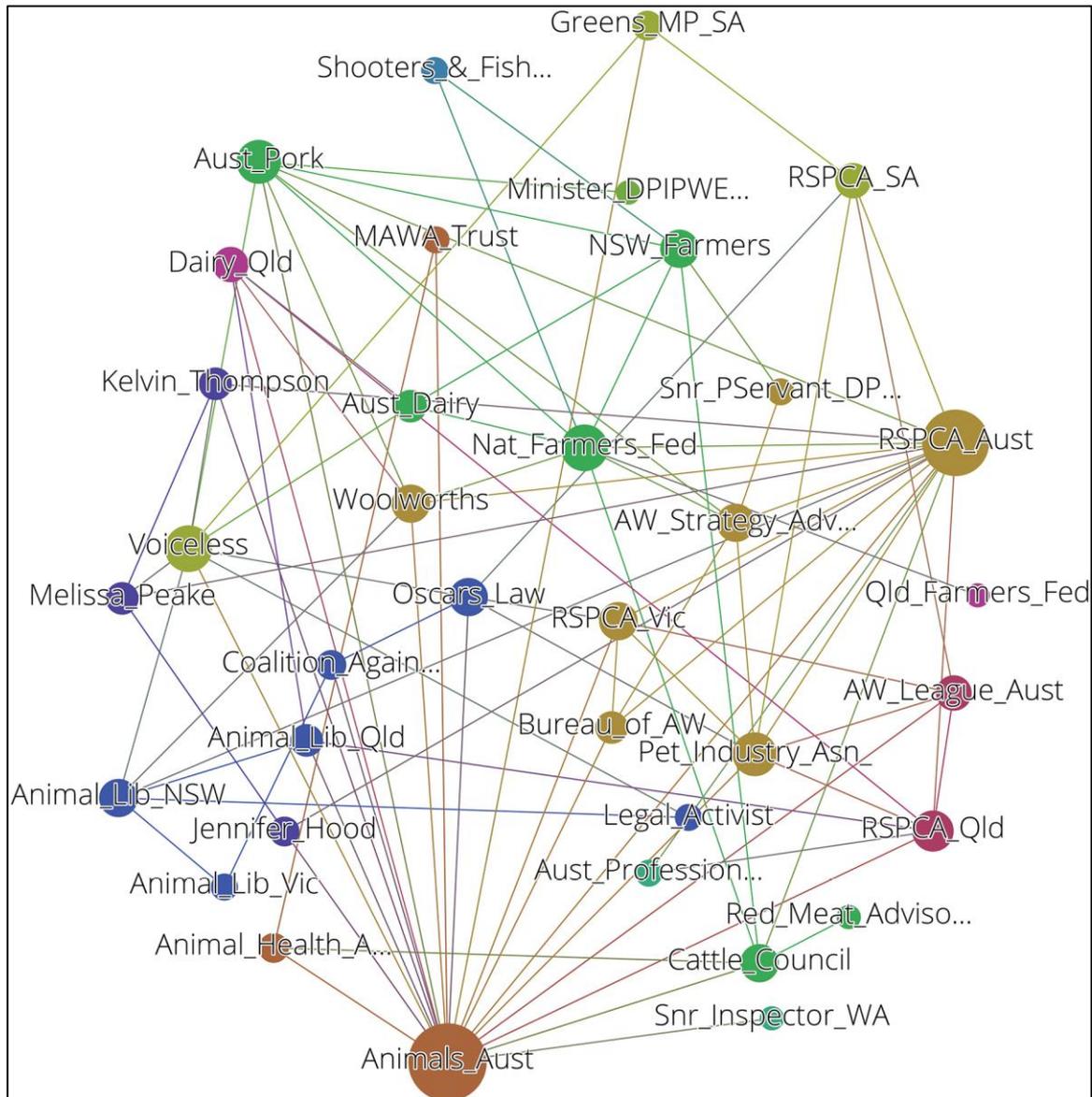
6.4.4 Implications for the red meat industry

8. The industry must be prepared and well-resourced to have the capacity to provide a coordinated response to specific incidents. Public outrage around animal protection issues is infrequent but also highly unpredictable. Its impact is fast moving and difficult to manage for an unprepared industry. The animal welfare/protection organisations are skillful at using multiple social media platforms and the traditional media. These organisations have the capacity to outstrip the capacity of an unprepared industry to effectively respond to an exploding welfare issue.

6.5 The policy intersection between animal welfare and protection groups, livestock industry groups and political parties

Since 1980 there has been a substantial increase in the number of organisations with a focus on animal welfare, protection and advocacy. The larger charities often organised at state and territory levels, as well as at the nationally. At the same time as the animal welfare and animal protection organisations have expanded, a wealth of agricultural industry organisations has also emerged representing specific farming sectors or agricultural interests more generally. Like the animal welfare and animal protection organisations these agricultural organisations are state and territory based with national organisations and peak bodies.

Given the proliferation of these animal welfare, animal protection and agricultural organisations it is important to understand their networks and relationships as they are by no means homogenous. Figure 6.3 shows that within the policy network there are some key participants most notably the major animal protectionist advocacy groups (Animals Australia and Voiceless), the animal welfare groups (the RSPCAs and Animal Welfare Leagues), and key industry groups, most notably the NFF, the state-based farmer advocacy groups and some specific industry groups including the Cattle Council. The complexity of the animal welfare policy network is illustrated in Figure 11.1 (Section 11.3).



Legend:

Organisation	Colour	Organisation	Colour
RSPCA Australia	Yellow	National Farmers Federation	Green
Animals Australia	Brown	NSW Farmers	Green
Voiceless	Green	Cattle Council	Green
Animal Liberation NSW	Blue		

Fig. 6.3. A simplified map of the animal welfare policy network. The higher the number of connections, the larger the node. The different colours represent distinctive clusters or communities within the policy domain (Chen, 2016, <http://hdl.handle.net/2123/16292>).

Animals Australia and Voiceless are bridging organisations acting “as information hubs between the smaller groups, as gateways and gatekeepers, and as decision-makers in their interaction with industry and government” (Chen, 2016). In terms of political parties, the Greens Party has links with the animal protectionist and animal welfare groups whereas the Shooters, Fishers and Farmers party has links with the farmer advocacy groups.

Table 6.5 details the credibility of various sources of information about animal wellbeing derived from the Humane Research Council survey (2014) described above. The NGOs with their animal welfare inspectors were seen as the most credible sources of information about animal wellbeing with business organisations having the poorest credibility rating. Animal protection/advocacy groups were rated as highly credible but not as high as farmers and agriculturalists. Farm industry associations and academics were ranked reasonably highly but not as high as farmers and agriculturalists.

Table 6.5. Organisation's credibility as sources of information about animal wellbeing (Humane Research Council, 2014).

Organisation	Credibility rating by Australian public				
	None	Very Little	Moderate	Significant	Do not know
Academics and scientists	4.4 (%)	15.3 (%)	45.8 (%)	24.7 (%)	9.8 (%)
Animal protection/advocacy groups	4.2 (%)	15.1 (%)	39.5 (%)	32.6 (%)	8.7 (%)
Business and corporations	14.5 (%)	40.0 (%)	31.4 (%)	4.8 (%)	9.3 (%)
Farmers and agriculturalists	2.9 (%)	13.1 (%)	46.5 (%)	29.8 (%)	7.6 (%)
Local or national media	6.0 (%)	28.1 (%)	46.9 (%)	10.3 (%)	8.7 (%)
Farm industry associations	5.0 (%)	19.2 (%)	45.9 (%)	19.9 (%)	10.0 (%)
NGOs authorised to inspect and enforce animal legislation (e.g., RSPCA, AWL)	1.1 (%)	7.9 (%)	34.4 (%)	47.8 (%)	8.8 (%)

6.5.1 Implications for the red meat industry

9. The industry needs to initiate a dialogue with key animal advocacy/protection organisations.

Key animal advocacy organisations identified include the RSPCAs, Animals Australia, Voiceless, and the Animal Welfare Leagues. The RSPCAs and Animals Australia, in particular, seek representation on government advisory groups and to extend their influence in policy development. Both organisations are viewed by the public as highly credible sources of animal welfare information.

10. The high credibility of farmers represents a huge positive on which the industry can capitalise.

The public rates farmers and agriculturalists more highly than key animal advocacy/protection organisations as sources of animal welfare information. Key farmer advocacy groups identified include the National Farmers Federation (NFF), the state-based farmer advocacy groups, and specific industry organisations including the Cattle Council. The NFF and their state counterparts are politically influential.

6.6 Animal welfare and animal protection groups

In Australia, there are 537 registered charity organisations with an interest in animal welfare, protection and advocacy (<http://australiancharities.acnc.gov.au/visualisations/explore-sector-detail/> viewed 17 May 2018) compared to around 50 in the 1970s (Villaneuva, 2018). However, the vast

majority (83%) are small organisations with <\$500,000 in annual revenue. The larger charities that receive most of the donor income include the federated RSPCAs each with annual budgets in the tens of millions dollars. Chen (2016) found that when these organisations were classified according to their primary activity 43% provided welfare services, 45% supported advocacy and 12% were committed equally to both.

6.6.1 Animal advocacy organisations

With animal welfare legislated at the state level advocacy organisations have focused their attention at state governments when advocating for change. However, with the rise of national issues, most notably the live export trade and the setting of animal practice and livestock transport standards, these organisations were encouraged by federal politicians to form national representative structures and shift power to these peak bodies: in the 1980s RSPCA Australia and Animals Australia were established (Villaneuva, 2018).

Chen (2016) found that the majority of active organisations in Australia today were formed post-2001 and has resulted in a rapid increase in animal advocacy around specific interests: access to the Internet has facilitated the formation of interest groups, and collective action. For example, Voiceless (with its large private financial base) was formed in 2004 specifically to address an identified gap, namely, animal law: its legal theory and practice.

Turner and Killian (1987) cited in Munro (2005) identified four tactical tools used by animal activists and advocates to draw attention to their cause. These four tactics are (1.) persuasion (e.g. pamphleteering, petitions, demonstrations, and writing submissions to inquiries), (2.) facilitation (e.g. vegetarianism and veganism), (3.) bargaining (e.g. boycotts) and (4.) coercion (e.g. undercover surveillance and animal rescue).

While tensions may arise between the three largest organisations in Australia, (RSPCA, Animals Australia and Voiceless) it has been observed that they actively co-operate with one another in sharing common interests and tactics (Chen, 2016). This is exemplified in the recent investigation of greyhound training and racing practices that involved the ABC, Animal Liberation, Animal Australia and state RSPCAs. The activists took direct action by obtaining access to workplaces and acquiring video footage, Animal Australia used their expertise in running public media campaigns and RSPCA had mainstream legitimacy and the ability to prosecute if necessary. This collaboration reflects the networked nature of these organisations and their willingness to engage in mutually beneficial relationships to achieve a common goal. Table 6.6 provides a summary of influential animal welfare and protection organisations in Australia.

Table 6.6. Summary of influential Australian animal welfare and protection organisations (Chen, 2016).

Organisation	Formation date	Ideological focus	Core activity
RSPCA Australia	1981	Welfare	Lobbying
Animals Australia	1980	Mixed welfare & protection	Lobbying
Voiceless	2004	Strong rights	Legal, capacity building
Animal Liberation NSW	1976	Liberationist	Protest

Tables 6.7, 6.8, 6.9 and 6.10 below provide a brief synopsis of influential animal protection and welfare organisations in Australia compiled from information provided on the Internet.

Table 6.7. RSPCA Australia (<https://www.rspca.org.au/> viewed 18 May 2018).

Focus	<ul style="list-style-type: none"> ● RSPCA works to enforce animal cruelty laws and prompt new legislation where required. ● RSPCA also operates animal care and adoption facilities, and seeks to raise community awareness regarding the humane treatment of animals. ● RSPCA works with government and industry to establish standards for animal care.
Mission and values	<ul style="list-style-type: none"> ● The RSPCA’s mission is to prevent cruelty to animals by actively promoting their care and protection. ● RSPCA Australia believes that animals must be treated humanely. Where humans make use of animals or interfere with their habitat, they should bestow a level of care befitting human dignity as rational, intelligent, compassionate beings, and a level of care merited by the nature of the animal as a sentient creature capable of responding to human care and attention. Such care should be marked by sympathy, consideration, compassion and tenderness towards animals.
Approach	<ul style="list-style-type: none"> ● To prevent cruelty to animals by ensuring the enforcement of existing laws at federal and state level. ● To procure the passage of such amending or new legislation as is necessary for the protection of animals. ● To develop and promote policies for the humane treatment of animals that reflect contemporary values and scientific knowledge. ● To educate the community with regard to the humane treatment of animals. ● To engage with relevant stakeholders to improve animal welfare. ● To sustain an intelligent public opinion regarding animal welfare. ● To operate facilities for the care and protection of animals.
Relevant topics of interest	<ul style="list-style-type: none"> ● Kangaroo commercial and non-commercial shooting

Table 6.8 Animals Australia (<http://animalsaustralia.org/> viewed 18 May 2018)

Focus	<ul style="list-style-type: none"> ● Animal Australia’s work is focused around two strategic areas: investigations to expose animal abuse wherever it occurs, and public awareness initiatives to empower and inspire the community to adopt cruelty-free lifestyle choices.
Mission and values	<ul style="list-style-type: none"> ● Animals cannot cry out against cruelty. They have no voice to oppose injustice. Due to economic interests, most of these animals are not even afforded basic legal protection from extreme acts of cruelty.
Approach	<ul style="list-style-type: none"> ● To investigate, expose and raise community awareness of animal cruelty. ● To provide animals with the strongest representation possible to Government and other decision-makers. ● To educate, inspire, empower and enlist the support of the community to prevent and prohibit animal cruelty. ● To strengthen the animal protection movement.

Relevant topics of interest	Kangaroo commercial and non-commercial shooting Pig dogging
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Table 6.9 Voiceless (<https://www.voiceless.org.au/> viewed 18 May 2018)

Focus	<ul style="list-style-type: none"> ●Voiceless is the home of animal protection and animal law education. ●Through science-based research, law and education, Voiceless explores the key issues in animal protection.
Mission and values	<ul style="list-style-type: none"> ●Animals are sentient beings with their own rich, complex emotional and social lives. Like us, they feel joy and pain. And, like us, they want to be safe from harm and cruelty.
Approach	<ul style="list-style-type: none"> ● To support, develop and deliver Animal Law education in Australia and around the world. This will result, we believe, in improved legal protection for animals. ● To conduct research and publish reports on animal industries and the law.
Relevant topics of interest	<ul style="list-style-type: none"> ●Kangaroo commercial and non-commercial shooting

Table 6.10 Animal Liberation NSW (<https://www.animal-lib.org.au> viewed 18 May 2018)

Primary activity	<ul style="list-style-type: none"> ●Animal Liberation lobbies for the rights of all animals to live the life of their choosing, free from human intervention, use and abuse.
Mission and values	<ul style="list-style-type: none"> ●Animal Liberation NSW mission is to permanently improve the lives of all animals through legislation, consumer advocacy, action, and education. ●Animal Liberation works to expose the brutal realities of animals used for food, entertainment, fashion, science, companions, and those subjected to management or control programs. ●Animal Liberation is proud to fight for the rights of all species.
Approach	<ul style="list-style-type: none"> ● To lobby to all levels of government and various industries complicit in animal exploitation, in an attempt to influence legislation and permanently improve the lives of all animals. ● To protest ● To investigate and expose ● To educate
Relevant topics of interest	<ul style="list-style-type: none"> ●Kangaroos ●Pig Dogging

The animal welfare/protection community is now a prominent political force in animal welfare with its large community of followers. Representation in government consultative forums is primarily through the RSPCAs and Animals Australia. For example, RSPCA is a member of the NSW Kangaroo Advisory Panel which “provides advice on important matters relating to the *NSW Commercial Kangaroo Harvest Management Plan 2017–2021*” (<http://www.environment.nsw.gov.au/wildlifemanagement/KangarooManagementAdvisoryCommittee.htm> viewed 22 May 2018).

6.6.2 Kangaroo advocacy organisations

There are a number of Australian and international organisations that are dedicated specifically to the protection of kangaroos and the abolition of the commercial kangaroo industry. A number of these organisations seek to influence the marketing and sale of kangaroo products nationally and globally.

An example is the campaign, 'Kick Cruelty Out' run by Viva to stop the use kangaroo skin in football boots (<https://www.savethekangaroo.com/kick-cruelty-out> viewed 31 May 2018).



“In 2010 Wayne Rooney, John Terry and Frank Lampard came under fire (along with other major football stars) over the slaughter of baby kangaroos to make football boots. As a result of pressure from animal welfare groups, Viva! and the Australian Wildlife Protection Council, a Nike spokesperson confirmed that they would [stop using the skins of kangaroos in their football boots](#) by claiming the company was moving towards [eradicating the use of kangaroo leather altogether](#).

In 2012 [Adidas promised](#) to phase out the use of kangaroo leather by 98 per cent over the following 12 months, due to [concerns over cruelty and pressure from animal lovers](#). It was a move that would without a doubt save the lives of countless kangaroos and their baby joeys.

In 2018 kangaroo leather football boots remain widely available in high-street stores” (<https://www.savethekangaroo.com/kick-cruelty-out> viewed 31 May 2018).

Some of the Australian and international kangaroo protection organisations are listed in Table 6.11.

Table 6.11. Some Australian and international kangaroo protection organisations and their representations.

Organisation	Representation
Australian Society for Kangaroos (ASK)	<ul style="list-style-type: none"> ●ASK endeavours to represent all species of kangaroos and wallabies across Australia and internationally, and protect them from unnecessary suffering, killing, orphaning and extinction. ●ASK endeavours to represent the general public who value the preservation of kangaroo and wallaby populations across Australia and who wish to protect them from unnecessary death, killing, suffering, orphaning and extinction. ●ASK endeavours to educate the public about the plight of kangaroos and wallabies across Australia as victims of the world's largest land-based wildlife massacre, and dispel the misconceptions that have led to their ongoing destruction and persecution in Australia. ●http://www.australiansocietyforkangaroos.com/
Kangaroos at risk	<ul style="list-style-type: none"> ●Kangaroos at Risk is an affiliation of scientists, academics, & other public figures who are increasingly concerned about the status of kangaroos and the rigour of the science used to support kangaroo shooting & the commercial kangaroo industry. ●This group summarises the research investigating survey methodology, count data, ecology, economics and the industry itself. ●http://www.kangaroosatrisk.org/
Australian Wildlife Protection Council	<ul style="list-style-type: none"> ●The Australian Wildlife Protection Council (AWPC) is a non-profit organisation, founded in 1969, dedicated to the protection and preservation of Australian wildlife and its habitat. ●AWPC is actively engaged in the revisions and consultation of wildlife legislation, the opposition of wildlife exploitation and advocate for wildlife rescuers and shelters. ●AWPC established the National Kangaroo Campaign in 1992 which has grown to incorporate the wider International Community. ●AWPC coordinates many Campaigns to bring an end to the commercial kangaroo killing industry. ●https://awpc.org.au/
Viva!	<ul style="list-style-type: none"> ●Viva!'s campaign supports Australian wildlife groups and individual activists who work tirelessly to protect their indigenous wildlife. ●'Viva! scores another victory in our long-standing kangaroo campaign as budget supermarket chain Lidl finally caves to public pressure and ends trade in kangaroo meat.' ●https://www.savethekangaroo.com/

6.6.3 The policy intersection between the red meat industry and animal welfare/protection groups

The conceptual framework in Figure 6.1 illustrates the relationship between the red meat industry, animal protection/welfare stakeholders, the decision-makers and the public. In setting out to shape policy and management animal protection/welfare stakeholders employ three broad pathways to influence government and businesses either directly or indirectly via the public.

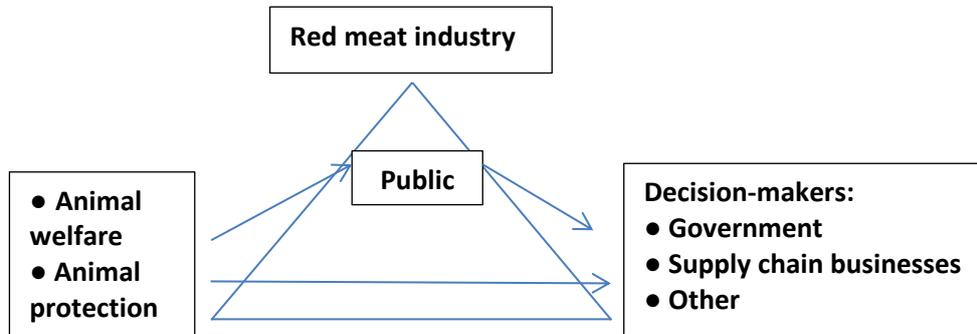


Fig. 6.1. Conceptual framework illustrating the relationship between the red meat industry, the animal protection/welfare stakeholders, the decision-makers and the public.

The three pathways employed by animal welfare/protection groups shown in Figure 6.1 are:

1. Influence the public (a.) not to purchase and (b) for the public to pressure the decision-makers
2. Lobby politicians directly, especially the Greens party but also others in some cases.
3. Lobby directly other businesses who are decision-makers, for example, the supermarkets.

In recent times, a number of agricultural industry organisations have initiated informal meetings with animal welfare/protection organisations. In his interviews with agricultural industries, Chen (2016) found that for some industries this was a positive experience while for others less so. When positive, it provided the opportunity for genuine exchange of information and the raising of concerns by both parties, and to take the tentative steps towards building trust (Chen, 2016).

The RSPCAs according to (Chen, 2016) are the ‘most significant and amenable’ organisation to engage with. One of the stated objectives of the RSPCA is to work with government and industry to establish standards for animal care (<https://www.rspca.org.au/what-we-do/about-us/mission> viewed 21 May 2018). The nature and extent of RSPCAs engagement with industry and government is complex: it can include ad-hoc information exchange meetings, representation in industry policy-making bodies and membership of national and state committees (<https://www.rspca.org.au/what-we-do/working-farming-industries> viewed 21 May 2018).

6.6.4 Implications for the red meat industry

11. The industry needs to acknowledge it is faced with managing the expectations of some well-resourced animal welfare/protection organisations. The vast majority of the 500+ registered charity animal welfare/protection organisations (most formed post 2000) have annual revenues below \$500,000. The larger charities, most notably the RSPCAs and Animal Australia, receive most of the donor income with multi-million dollar budgets.

12. The industry needs to be vigilant in scanning for emerging animal welfare issues, nationally and internationally. The animal welfare/protection organisations will form alliances to increase their

power and influence to achieve change in policy, supply chain purchasing and management of the focus species.

13. It is important for the industry to acknowledge the potential of kangaroo protection organisations to influence consumers, particularly internationally. A number of advocacy organisations specifically dedicated to the protection of kangaroos have, at times, been very effective in their campaigns to influence international markets and their consumers.

6.7 Agricultural industry groups and other key animal interest groups

There is a wide range of farmer and commodity groups that directly represent the interests of livestock producers at a state and national level. State and national farmers' associations such as the National Farmers Federation (NFF) and its various state counterparts are among the livestock industries' most powerful advocates. Although the importance of agriculture to the Australian economy has continued to decline, agricultural industries, in general, have remained politically influential, most notably, with the National Party (Chen, 2016).

In addition to farmer organisations a number of other stakeholders are represented by specific associations. These include meat traders, including kangaroo processors, recreational interests including recreational hunting and professional associations, the most notable being the Australian Veterinary Association (AVA). This demonstrates the diversity of stakeholders other than the animal welfare and animal protection groups with an interest in animals and their management. Some of these stakeholder groups have considerable financial resources with long-standing access to policy makers allowing them to promote their interests and achieve their policy objectives (Chen, 2016).

6.7.1 Organisations with an interest in management of the focus species

There is an extensive range of producer stakeholder groups with an interest in the management of kangaroos and feral animals in the southern Australian rangelands. Relevant national and state farmer organisations are presented in Table 6.12 and relevant commodity councils are presented in Table 6.13. Other relevant organisations are listed in Table 6.14.

Table 6.12. Relevant national and state farmer representative organisations.

Farmer representative organisation	Representation
National Farmers Federation (NFF)	<ul style="list-style-type: none"> ● Peak national body representing farmers and agriculture ● NFF works extensively in policy and advocacy across the broad spectrum of issues to ensure agriculture remains a growing contributor to Australia's economy, society and environment. ● http://www.nff.org.au/
NSW Farmers (Member of NFF)	<ul style="list-style-type: none"> ● NSW Farmers is a lobby group for the farming sector, championing the rights of farmers and rural communities at all levels of government and with industry stakeholders. ● We are apolitical, independent from government, and our policy is driven from the grassroots up. ● http://www.nswfarmers.org.au/

Farmer representative organisation	Representation
The Pastoralist Association West Darling (PAWD) (Member of NFF)	<ul style="list-style-type: none"> ●The PAWD objective is to preserve and promote pastoral and agricultural enterprises in the Western Division of NSW. ●As a union of employers PAWD seeks to represent its members on all industrial matters. ●It lobbies and negotiates with all levels of governments and their departments, and statutory bodies and corporations whose business is related to primary industry. ●http://www.pawd.org.au/
AgForce Queensland (Member of NFF)	<ul style="list-style-type: none"> ●AgForce is a peak organisation representing Queensland's rural producers. ●AgForce strives to ensure the long term growth, viability, competitiveness and profitability of broad acre industries of cattle, grain, sheep and wool in Queensland. ●https://agforceqld.org.au/
Queensland Farmers Federation (QFF)	<ul style="list-style-type: none"> ●QFF is a federation that represents the interests of peak state and national agriculture industry organisations, which in turn collectively represent more than 13,000 primary producers across the state. ●QFF engages in a broad range of economic, social, environmental and regional issues of strategic importance to the productivity, sustainability and growth of the agricultural sector. ●QFF's mission is to secure a strong and sustainable future for Queensland primary producers by representing the common interests of our member organisations. ●https://www.qff.org.au/
Livestock SA	<ul style="list-style-type: none"> ●Livestock SA is a not-for-profit organisation representing beef cattle, sheep and goat producers in South Australia. ●Livestock SA advocates on all livestock-related issues, working to inform government, businesses and the wider community on the contribution of livestock producers to the food and fibre industries. ●https://livestocksa.org.au/

Table 6.13. Relevant representative commodity organisations.

Commodity organisations	Representation
Goat Industry Council of Australia (Member of NFF)	<ul style="list-style-type: none"> ●The Goat Industry Council of Australia (GICA) is the peak national body representing the interests of goat producers. ●GICA's objective and purpose is to represent and promote the national interests of Australian goatmeat, fibre and dairy producers. ●http://www.gica.com.au/

Commodity organisations	Representation
Cattle Council of Australia (Member of NFF)	<ul style="list-style-type: none"> ●Cattle Council of Australia is the peak producer organisation representing Australia's beef cattle producers. ●It progresses the interests of Australian beef cattle producers through consultation with, and providing policy advice to, key industry organisations, relevant Federal Government Departments and other bodies regarding issues of national and international importance. ●http://www.cattlecouncil.com.au/
Sheep Producers Australia (SPA) (Member of NFF)	<ul style="list-style-type: none"> ●SPA is the voice on issues that affect sheep production businesses by advocating for better business outcomes, monitoring investment of producer levies and improving information flow up and down the value chain. ●SPA provides reputable strategic and high level technical advice on behalf of sheep producers to government and industry service providers in order to position the Australian sheep industry for future success. ●http://sheepproducers.com.au/
WoolProducers Australia (WPA) (Member of NFF)	<ul style="list-style-type: none"> ●WPA is the peak national body for the wool producing industry in Australia, representing farmers who have an interest in growing wool. ●WPA advocates the industries interests to the Federal Government and internationally enabling woolgrowers to determine policy and drive change in their industry. ●https://woolproducers.com.au/
Red Meat Advisory Council (RMAC)	<ul style="list-style-type: none"> ●RMAC is a collaborative network of producers, lot feeders, manufacturers, retailers and livestock exporters representing 75, 000 Australian beef, goatmeat and sheepmeat businesses from gate to plate. ●The Australian red meat and livestock industry is a network that works across advocacy, marketing, research, policy and industry engagement. ●http://rmac.com.au/
Australian Meat Industry Council (AMIC)	<ul style="list-style-type: none"> ●AMIC is the Peak Council that represents retailers, processors, exporters and smallgoods manufacturers in the post-farm-gate meat industry. ●http://www.amic.org.au/
Kangaroo Industry of Australia Association (KIAA)	<ul style="list-style-type: none"> ●KIAA is the peak representative body for the kangaroo industry. ●Its principal membership base is the kangaroo meat and hide processing sector. KIAA members represent over 90% of industry throughput.

Commodity organisations	Representation
	<ul style="list-style-type: none"> ●The KIAA is the voice of the industry to governments at all levels both within Australia and overseas ●The KIAA advocates for sustainable, ethical harvesting of kangaroos and works with industry and Government to ensure appropriate policy and regulatory frameworks are in place. ●http://www.kangarooindustry.com/

Table 6.14. Other relevant associations with an interest in the focus species.

Associations	Representation
Australian Veterinary Association (AVA) (Member of NFF)	<ul style="list-style-type: none"> ●AVA is the national organisation representing veterinarians in Australia. ●AVA aims to take a lead on animal welfare issues across livestock, companion and performance animals. ●Member of the Kangaroo Management Advisory Council ●http://www.ava.com.au/
Sporting Shooters Association of Australia (SSAA)	<ul style="list-style-type: none"> ●SSAA promotes the shooting sports and protects firearm owners' interests. ●With more than 187,000 members and more than 440 clubs, the SSAA is the premier sports shooting body representing licensed owners in Australia. ●The Farmer Assist program enables landholders and managers to find licensed, accredited and insured volunteer shooters to assist with pest control for conservation purposes and to assist with kangaroo control. This program is operational across a number of states including Queensland, NSW and South Australia. ●https://ssaa.org.au/

6.7.2 Implications for the red meat industry

13. The industry needs a single 'voice' to represent its interests and engage with media. There are multiple farmer and commodity organisations representing the interests of the industry. Given the diversity of organisations with an interest in the management of the focus species, there is the need for an agreed representative who can create linkages with politicians and journalists.

14. The industry needs a coherent and consistent narrative in managing the focus species in the context of TGP management. The state and national farmer associations are among the industry's most powerful advocates, and collectively, the industry requires a narrative that specifically addresses the need to manage the focus species in the context of sustainable grazing.

6.8 Political parties and policy

When considering issues of importance to the public, including health and education, Southwell et al (2006) cited in Mazur (2006) found that those surveyed ranked animal welfare as ninth out of ten

issues of concern with only 4% of Australians ranking animal welfare as the top priority issue. Nevertheless, many Australians have a strong interest in the well-being of animals and this is reflected in the attitudes held by voters towards their treatment (Table 6.15). Although Australian Greens' voters are more likely to take a stronger animal rights perspective than other political partisan groups, the difference is not marked. In general, party preference is not a strong predictor of peoples' attitude towards animals. However, it is likely that within these party affiliations are smaller groups that hold strongly disparate views (Chen, 2016).

Table 6.15. Political partisan attitudes to animal treatment; n=1,000 ((Essential Media Communications (2012), cited in Chen (2016)).

Which of the following statements comes closest to your view about the treatment of animals?	Vote within party affiliation		
	Labor	Coalition	Greens
Animals deserve the same rights as people to be free from harm and exploitation	30 (%)	28 (%)	40 (%)
Animals deserve some protection from harm and exploitation, but it is still appropriate to use them for the benefit of humans	61 (%)	66 (%)	55 (%)
Animals don't need much protection from harm and exploitation since they are just animals	4 (%)	3 (%)	2 (%)
Don't know	5 (%)	3 (%)	3 (%)

There are, however, considerable differences between the formal policies of political parties on animal protection and the management of animal welfare/protection issues. The Greens have the most comprehensive policies for animal welfare/protection issues (Lee Rhiannon as the national animal welfare spokesperson) whereas Coalition policies tend to be more generalised statements (Chen, 2016).

The Animals Justice Party was formed in 2009 and in 2015 had its first member elected to parliament when Mark Pearson MLC, a former executive director of Animal Liberation NSW, won a seat to the NSW upper house. Its policy in relation to kangaroos states "Legislation that protects kangaroos, wallabies and other macropods is urgently required. We must work to counter the misinformation from those with commercial interests so that kangaroos are valued for their intrinsic worth. We must help maintain their basic needs, instead of seeing them as resources or pests".

The key objectives of the Animal Justice Party are:

1. "To rapidly phase out the commercial killing of kangaroo and wallabies and close down processing industries.
2. To change negative attitudes to kangaroos and wallabies through widespread education about their considerable ecological benefits.
3. To reform relevant legislation, policies and the agencies that administer them to prohibit the killing or brutalising of kangaroos and wallabies.
4. To increase and enforce penalties for deliberate wildlife cruelty.
5. To encourage increased growth in and support for kangaroo friendly wildlife-based tourism in Australia.

6. To review the policies for licensing and the operational practices of wildlife caring and rehabilitation groups and individuals.
7. To prohibit the use of barbed wire fencing in rural residential areas where it is a hazard to macropods as well as birds and bats.
8. To ensure adequate kangaroo corridors are implemented during all relevant development projects.
9. To use exclusion fencing instead of lethal controls to protect vulnerable species at threat from kangaroos.” (<http://animaljusticeparty.org/policieslist/animals/kangaroos/> viewed 21 May 2018).

The Australian Greens in their environment policy relating to animals aim to minimise animal cruelty and to protect native wildlife. Of particular relevance to the present project is their aim that, “The most humane, effective means available to be used in the control of introduced species, including humane population management methods” (<https://greens.org.au/policies/animals> viewed 22 May 2018).

The NSW Greens have a more explicit policy in relation the kangaroos and invasive animals with statements including:

1. “Establish a moratorium on all large-scale commercial killing of native wildlife populations, including kangaroos, pending investigations into animal welfare concerns and environmental claims.”
2. “Manage invasive animals, humanely, including by encouraging non-lethal methods, and where such measures do not exist, provide resources for research and development of non-lethal methods.”
3. “Ensure that lethal and non-lethal measures of population management are based on meaningful population control. All methods employed must be professional and scientifically proven to be effective before undertaken.” (<https://nsw.greens.org.au/policies/nsw/animal-welfare> viewed 22 May 2018).

Apart from seeking to liberalise gun laws, one of the core interests of the Shooters, Fishers and Farmers Party in NSW is the expansion of hunting rights and, specifically, the promotion of the concept of ‘conservation hunting’ through the elimination of pest animals by recreational hunters (Chen, 2016). This concept has been developed by the Sporting Shooters Association in their Farm Assist Program which is operational across several states including Queensland, NSW and South Australia (<https://farmerassist.com.au/> viewed 22 May 2018).

In 2013, the Australian Animal Welfare Strategy (AAWS) was abolished with responsibility devolved to the states. The Australian Animal Welfare Advisory Committee (AAWAC) and the Animal Welfare Committee subsequently disbanded. This has resulted in a lack of national leadership in development of animal welfare standards, loss of a forum for community consultation, and a foregone opportunity for livestock industry organisations to engage and exchange information with animal welfare/protection organisations.

The importance of this forum has been acknowledged by Animals Australia executive director Glenys Oogjes, who represented the animal advocacy sector on the Advisory Committee, has stated, “The Committee has been able to bring animal advocates, veterinarian, government welfare people and livestock industry leaders around the table to have progressive discussions” (<http://www.abc.net.au/news/rural/2013-11-08/animal-welfare-committee-scrapped/5079284> viewed 23 May 2018). To date no broad forum has been established that provides the opportunity for all stakeholders to meet, discuss animal welfare issues and to develop strategies to address concerns (Coleman, 2018).

6.8.1 Implications for the red meat industry

15. The industry will need to be prepared to respond to increased political scrutiny. The interests of animal welfare are now directly represented in parliament; increased representation is likely in the future. The Animal Justice Party in NSW has an explicit policy for protecting kangaroos and for phasing out the commercial industry.

6.9 Summary of key findings

Important stakeholder groups

- Within the policy network there are some key animal advocacy groups that include Animals Australia, Voiceless, the RSPCAs and the Animal Welfare Leagues, and farmer advocacy groups that include the National Farmers Federation (NFF), the state-based farmer advocacy groups and specific industry groups including the Cattle Council.
- The NGOs, RSPCAs and Animal Welfare League, are viewed as highly credible sources of information regarding animal welfare. However, farmers and agriculturalists are rated even more highly. Academics and the farm industry associations have good credibility ratings but were lower than for farmers and agriculturalists.

Public attitudes to animal welfare

- The public's attitudes toward animals and their protection are complex. Animal advocates are challenging the status quo and creating a new narrative around human-animal relations that reflect these changing values.
- The public recognise the intrinsic value of animals and that people should not mistreat animals.
- Although a significant proportion of the public attribute considerable rights to animals, the majority support the view that human interests should take priority over those of animals.
- The public draws a distinction between types of animals: companion animals and wildlife are valued most highly followed by 'useful animals' and pests.

Animal welfare/protection organisations

- There are more than 500 registered charity organisations with an interest in animal welfare, protection and advocacy compared to 50 in the 1970s: more than 80% have annual revenues below \$500,000.
- The larger charities receive most of the donor income including the federated RSPCAs which have multi-million dollar annual budgets.
- Amongst the animal-focused charity organisations 43% provide welfare services, 45% support advocacy and 12% committed equally to both.
- A rapid increase in advocacy around specific animal interests has occurred since 2001 e.g. Voiceless was formed in 2004 specifically to address animal welfare law.
- Animal advocacy groups form alliances to increase their power and influence to support their campaigns and achieve 'success' e.g. Animal Liberation NSW, Animals Australia and RSPCA collaborated in the investigation into the greyhound industry.
- Animal advocacy groups, most notably, the RSPCAs and Animals Australia seek representation on government advisory groups and to extend their influence in policy development.
- There is a number of advocacy organisations specifically dedicated to the protection of kangaroos. These include the Australian Society for Kangaroos, Kangaroos at risk, Australian Wildlife Protection Council and Viva! These organisations have at times been effective. For example, they have successfully campaigned for the banning of kangaroo meat products internationally, most notably in the United Kingdom. However, the campaign to ban the use of kangaroo leather in football boots has not been entirely successful despite early gains.

Agricultural industry organisations

- There are numerous farmer and commodity groups representing the interests of the red meat industry and their producers. The kangaroo industry is represented by the KIAA. The livestock industry organisations across the supply chain need to form alliances to increase their power and influence.
- The state and national farmer associations such as the NFF and the state counterparts are among the livestock industries most powerful advocates.
- The state and national associations are politically influential, most notably with the National party.
- The industry organisations recognise the increasingly contested nature of livestock production systems.
- The livestock industries recognise their vulnerability to negative publicity.
- There is a diverse range of organisations including the AVA and SSAA with an interest in the management of kangaroos, unmanaged goats and feral pigs.

Policies of political parties

- Political preference is not a good predictor of people's attitude towards animals with considerable within party differences to be expected.
- The Greens Party has links to animal advocacy groups whereas the Shooters, Fishers and Farmers Party has links to farmer advocacy groups.
- The Animal Justice Party has an explicit policy on kangaroo protection and the phasing out of the commercial industry.
- The NSW Greens party has an explicit policy that calls for a moratorium on commercial killing of kangaroos pending investigations into animal welfare concerns and environmental claims. The policy on invasive animals is to manage them humanely, preferably using non-lethal methods.
- One of the interests of the Shooters, Fishers and Farmers party is to promote conservation hunting using recreational shooters to eliminate pest animals. The concept has been developed by the SSAA.
- With the abandonment of the AAWS there is no longer a national forum in which those competing interests around animal welfare and management practices can exchange information.

Animal welfare legislation

- Broadly, animal welfare legislation in Australia relates to the prohibition of cruelty: to protect animals from 'unnecessary', 'unjustifiable' and 'unreasonable' suffering.
- Within some statutes exemptions exist for feral animals and pests, the requirement being that any control practice is humane or causes as little pain as is reasonable.
- Compliance with the legislation is demonstrated by adopting COPs which set out the minimum standards. Voluntary COPs are available for unmanaged goats and feral pigs. Compulsory COPs exist for the commercial and non-commercial shooting of kangaroos.

Role of the media

- The geographical separation of farms and the highly urbanised population increases the power of traditional and social media to shape public understanding of livestock production industries and to influence popular opinion about animal protection.
- The traditional media (newspapers, television and radio) is always interested in dramatic news stories and media coverage is an essential ingredient for animal advocates to have 'successful' campaigns.
- Public outrage around animal protection issues is infrequent but also highly unpredictable, fast moving and difficult to control for any unprepared organisation to manage.
- The animal advocacy groups are adept at using multiple social media platforms including SMS, blogs, Facebook, YouTube and Twitter to create public interest in their campaigns, recruit support and apply pressure to achieve change in policies and management.
- Poor practices in the livestock supply chain, particularly in the live export trade, have been exploited by animal advocacy groups.

7 Practical considerations for red meat industry producers

The main challenge that producers in the southern Australian rangelands face in their TGP management is their ability to manage the impact of kangaroos. This is the conclusion drawn from an analysis stakeholder interview data, the review of literature and the input from the project Advisory Committee and Red meat industry workshop. The impact of goats on TGP to a large extent will be managed through their economic value to producers. There appears to be no strong objection to feral pig control practices to reduce their impact on the landscape, most notably around water courses. However, there is still an impost on the cost and time for producers to manage feral pigs.

However, it is valuable to highlight the gap between the acceptability of the control practices for and their effectiveness in reducing their impact on TGP. The focus is on the steps that are possible to improve the acceptability as ranked by the interviewed stakeholders and/or effectiveness of those practices that have been ranked by the project Advisory Committee (Table 7.1).

Table 7.1. Opportunities to improve the acceptance and/or effectiveness of control practices to manage kangaroos, unmanaged goats and feral pigs.

Control practice	Acceptance	Effectiveness: regional/property scale	Opportunity for improvement
Commercial kangaroo shooting	High: transparent system, shooter professional and trusted, limited wounding, valued resource.	Low: limited by markets, quota not filled, male-only harvest.	Cap removed on Fauna Dealer's Licences, increase minimum carcase weight, introduce mobile chillers
Non-commercial kangaroo shooting	Low: current permit system lacks credibility, shooter competency questioned, not trusted, extent of wounded unknown, proportion of females taken unknown, joey management unknown, not valued as a resource.	Low: can be highly effective at property scale but depends on effort, new policy could improve effectiveness.	Shooter accreditation required, assurance that Code of Practice is followed, change to a code based system, engage in the Farmer Assist program run by SSA (https://farmerassist.com.au/), cost-sharing an accredited shooter between neighbours, government subsidy (public good) to apply at peak population times.
TGP fencing (mesh and top barb)	Moderate: viable method to manage kangaroos, risk of entanglement to wildlife, could restrict natural migration of wildlife.	Low-moderate: regional effectiveness moderate if coordinated.	Improve fence design to mitigate against possible entanglement.

Control practice	Acceptance	Effectiveness: regional/property scale	Opportunity for improvement
Exclusion fencing (1.8m high with apron)	Low: potential risk for unintended consequences, notably impact on wildlife movement and altering the natural balance of the landscape, requires transparency in terms of stated objectives (aimed primarily at wild dogs but also impacts kangaroos and goats), impact may be shifted to neighbours, may disrupt community relationships (insiders vs outsiders).	Moderate-high: highly effective at property scale, regional effectiveness unknown, ability to control multiple species, more effective than TGP fencing	'Cluster fencing' may be a more acceptable term, a formal management plan that outlines how to wildlife will be managed inside and outside the fence and is lodged with a government agency, benefit of a group of landholders 'learning together'.
Water point exclusion	Low: acceptance dependent on how it was done and the extent that man-made or natural water sources were fenced, concern for kangaroo welfare if water is fenced allowing only livestock access leaving kangaroos congregate outside smelling the water.	Low-moderate: regional effectiveness low unless co-ordinated with neighbours, effectiveness depends on seasonal conditions.	Should only be applied to man-made water points, water piped to troughs that can be opened and closed as required for livestock, kangaroos must be allowed to disperse to other water supplies if stock water turned off.
Trap yard (at water point) for goats	High: must be monitored regularly to ensure the welfare of trapped goats, kangaroos can become entangled in goat-proof fences, concern that trapped goats would experience stress in transport to and at abattoirs.	Low-high: regional effectiveness depends on degree of coordination, effectiveness depends on seasonal conditions, not an option in cool weather or when surface water available.	Good design and construction required to manage trapped goats and to prevent kangaroo entanglement, once trapped goats should have water, forage and shade available, if trap yards are not suitable goats should be moved to holding yards as soon as practicable, follow the codes of practice applicable to livestock for transport and at the abattoirs.

Control practice	Acceptance	Effectiveness: regional/property scale	Opportunity for improvement
Ground and aerial mustering of goats	High: ground mustering safer than aerial, mustering in sensitive environments can be damaging, mustering goats can stress the animal, extent of stress is unknown.	Low –high: regional effectiveness depends on coordination, property effectiveness depends on density of goats.	Indigenous people see ground mustering as an employment opportunity. Drones may prove cost-effective in the future.
Strategic fencing	High: protects sensitive environments without fencing off the entire area, less likely to restrict movement of wildlife.	Moderate:	Consideration given for a government subsidy (public good) to protect environmental assets.
Ground and aerial shooting of feral pigs	High: ground shooting preferred to aerial, ground shooting more likely to achieve a kill shot than aerial shooting, risk that left dependents will die from starvation or other animals.	Low-high: regional effectiveness for aerial shooting is high if coordinated, property and regional effectiveness low for ground shooting.	Ensure that pilot and shooter are accredited to reduce risk of wounding.
Trapping of feral pigs	High: Trapping followed by shooting was a most humane, kill shot more likely with trapped pigs.	Low:	Traps must be checked regularly.
Ground and aerial 1080 baiting of feral pigs	High: Some strong emotive responses elicited, generally accepted that 1080 is not an ideal toxin but only one available, death not instantaneous	Low-moderate: effectiveness on property and regional scale depends on coordination.	Pig feeder can reduce risk to non-target species. Investigation into the use and registration of alternative toxins are in progress.

Control practice	Acceptance	Effectiveness: regional/property scale	Opportunity for improvement
Dogging	Low: least acceptable practice overall, dogging was uncontrolled and dangerous to the dogs and the feral pigs, associated with trespass and illegal shooting.	Low:	Practice should be strongly discouraged by landholders and communities, potential for adverse public reaction if video footage presented to the media.

8 Recommendations to the red meat industry

The recommendations provided aim to ensure that the extensive red meat industries develop an engagement strategy that will improve the acceptability of control practices to manage kangaroos, unmanaged goats and feral pigs in the southern Australian rangelands. Some of these recommendations may also be applicable to those in the southern rangelands of Western Australia and the Northern Australian rangelands.

8.1 Objectives of an effective stakeholder engagement strategy

The objectives of an effective stakeholder engagement strategy for an industry should include some or all of the following:

- An industry being capable of scanning for emerging issues so that the industry can properly respond or prepare to address these before they become contentious public issues.
- An industry understanding the values, beliefs and attitudes of other stakeholders, especially those with approaches to policy or management that are likely to compete with those of the industry. The goals here should be to identify common ground for constructive dialogue so as to resolve issues before they affect the industry's social licence to operate; and/ or develop and support narratives that will ensure policy and management decisions do not have negative impacts on livelihoods.
- An industry building trust between stakeholders so that they see the value of constructive engagement rather than pursuing their interests through public campaigns.
- An industry demonstrating that it is a trustworthy stakeholder and partner for other organisations.

8.2 Key recommendations for engagement around the management of native and feral herbivore control for TGP

The recommendations to the red meat industry for engagement around the issue of native and feral herbivore control for TGP management may be grouped under three broad headings:

1. Establishing platforms and processes for effective stakeholder engagement, particularly those influential stakeholders;
2. Establishing a unified and resourced industry "voice" to effectively engage with government and other stakeholders; and
3. Ensuring that the industry self-regulates in order to avoid the potential for rogue elements to undermine its credibility and trustworthiness.

8.2.1 Establishing platforms and processes for effective stakeholder engagement

1a. Recognise that not all your identified stakeholders are equal. Some stakeholders will be more powerful than others in influencing the public and shaping policy.

It is important not to ignore those who are unengaged as there is a latent interest that can be mobilised. For example, almost 60% of those surveyed by the Humane Research Council (2014) were unsure if the commercial kangaroo industry does enough to ensure that kangaroos do not suffer (Table 6.2). This presents an opportunity to shape public opinion both by the red meat industry and by the animal advocacy groups.

2a. Initiate a positive dialogue with key animal welfare/ protection organisations, particularly RSPCA Australia and Animals Australia who have demonstrated a willingness to engage on this topic.

Engagement starts with one-on-one conversations, informal meetings and casual meetings to enable a genuine exchange of information. Build trusting relationships through formal and informal meetings, acknowledge and confirm concerns that may/may not be in conflict with industry and establish open lines of communication for continued dialogue. Look for common ground, for example, is the primary concern for the welfare of animals or the environment. What do they like and what don't they like about the available control practices. What do they know and what don't they know about the impact of the focus species on TGP.

3a. Regularly scan the domestic and international environment to proactively identify potential issues with the practices available to control the focus species. Public outrage around an animal welfare issue may be infrequent but it is difficult to manage for any unprepared organisation.

An example is the on again/off again banning of kangaroo products in Sainsbury stores and other supermarkets in the United Kingdom following a campaign by Viva at the behest of Voiceless. The following article in *The Australian Dairy Farmer*, May-June 2018 provides an example of an agricultural industry proactively scanning their operating environment to identify potential issues.



Maintaining a social licence to operate



By Ian Halliday
Managing director
Dairy Australia

- Key points**
- ✓ Urban population has long list of demands of dairy
 - ✓ Trust can be eroded quickly
 - ✓ More than half population doesn't understand how milk produced

YEARs of work to ensure dairy's nutritional bona fides are firmly planted in the Australian consumer psyche have resulted in a broad understanding that dairy is good for you. That is no longer enough.

The modern consumer wants to know more than simply whether the product on offer tastes good and is healthy. They seek answers to a broader set of questions, like whether it's ethically sourced or whether it harms the environment.

The battle for the hearts and minds of the modern consumer — and the sustainability of our industry — will be decided on our ability to continually answer those questions in a way that satisfies community expectations and retains their trust.

In the past year, Dairy Australia's marketing focus has shifted from driving consumption to maintaining a social licence to operate.

We must accept that the urban population has a long list of demands of the dairy sector and these demands won't go away.

For us to retain our social licence to operate, we must continually meet those demands or a breakdown in trust will see consumers voting against us at the checkouts or lawmakers seeking to change the way we farm.

Trust can be eroded quickly and a single event has been known to bring down an industry overnight — the NSW greyhound racing ban springs to mind.

Or it can be eroded over time with a steady stream of hard questions and negative coverage.

Regardless, if any of the issues facing our industry are allowed to reach a tipping point, the consequences will be dire.

Our Dairy Monitor tells us that public trust in the dairy industry is in decline, dropping from 70 per cent in 2011 to 63 per cent in 2017.

It is critical that everyone involved in dairy becomes more engaged in the task of reversing this trend.

'We must accept that the urban population has a long list of demands from the dairy sector and these demands won't go away.'

As proud as we are of the standards we uphold in areas such as animal welfare and environmental sustainability, we must continue striving to go beyond compliance until the community sees us as a beacon of good practice in these areas.

When we see something that doesn't meet the expectations shared by the industry and the broader community, it needs to be called out.

We need to continually demonstrate our alignment with society's values.

Another key to staying ahead of the community's expectations and keeping their trust lies in information and managing the gap between what people think happens and what actually happens in our industry.

It is easy for us to assume people know where milk comes from, how it's made and what happens on farm.

However, our research highlights the reality that more than half don't

have a good understanding of how milk is produced.

In the past, it would have seemed prudent to shy away from aspects of our industry that raise difficult questions.

However, this approach has allowed animal rights and vegan groups to control the narrative around these issues with their 'awareness raising campaigns'.

For dairy to retain its social licence, we must reclaim the narrative with open, honest and transparent communication about everything we do.

We need to build awareness of all the good reasons why our practices are essential, and not let activists tell the story.

We have identified the 10 main issues affecting trust in dairy across the areas of health and nutrition, animal welfare and environmental and technological practices.

We have also undertaken a large piece of work to break down and better understand who we are talking to, what they need to know in relation to those issues and the messages and channels we need to better activate to increase their level of trust in dairy.

This research has enabled us to zero in on a group we are calling 'The Changemakers'.

They make up about 45 per cent of the population, they have a high desire to make change, an appetite for facts, are open to what we have to say and they hold influence over others.

They want to fully understand the impact of our product to their health and know that our animals are treated well, that our farmers are supported through challenging times and that our industry is environmentally sustainable.

These insights will guide Dairy Australia's approach to campaigns, digital content, issues response and media relations. While challenging conversations will be a big part of this, so too will celebrating the reasons why we are proud and passionate about this great industry. 

The Australian Dairyfarmer May-June 2018 11

(The Australian Dairy Farmer, May-June 2018, p. 11)

8.2.2 Establishing a unified and resourced industry “voice” to effectively engage with government and other stakeholders

2a. With numerous farmer and commodity groups representing the red meat industry, it is important to appoint a respected farmer spokesperson to represent the industry, engage with the media and build trusting relationships.

Seek cooperation with journalists from major newspapers and aim at justifying the need to avoid crises of animal welfare and not just react to them.

2b. The red meat industry needs to present a positive narrative to around animal welfare and environmental stewardship (i.e. industry need to go beyond meeting ‘duty of care’) to promote its credentials and create public interest.

Clearly articulate the importance of the concept of TGP and the role that kangaroos, unmanaged goats and feral pigs play in TGP management. Promote knowledge and understanding that a control program is effective in reducing the impact while demonstrating that the most socially acceptable and humane practices have been used.

The industry should develop and disseminate key messages on a regular basis to communicate with the public and to share case study stories using multiple social media platforms including YouTube, Website, Facebook and Twitter.

2c. Communicate with the public when there is public interest

As an example, the death of kangaroos in the Western Division of NSW, reported earlier this year provided an opportunity for a follow up the newsprint story with targeted messages e.g., drying conditions, having to watch kangaroos in ‘poor health’ dying in large numbers, concern for their welfare.

2d. Incorporate a communications strategy to disseminate information and address any misinformation.

Disseminate information that is balanced and evidence based to interested organisations, groups and individuals. Promote the knowledge and understanding of the focus species including their biology, ecology and behaviour.

Address any misinformation through a respected and trusted third party source e.g. the Australian Veterinary Association or university academics.

2e. Lobby governments so that TGP is addressed as an issue of national significance rather than being a rangeland producer issue.

TGP is a multidimensional issue with environmental, welfare and biosecurity aspects.

Significant issues include for biodiversity conservation; as drought policy/structural adjustment; managing an iconic national symbol; addressing farmer welfare.

8.2.3 Ensuring that industry self-regulates to avoid the potential for rogue elements to undermine its credibility and trustworthiness

3a. The industry needs to be able to clearly articulate and communicate its core values.

It is necessary to ensure that the industry is seen not to be just about the bottom line but also maintaining values important to other stakeholders and the public. Examples could include practising TGP, producing high quality meat and wool sustainably, looking after the landscape, and caring for the health and welfare of animals.

3b. The industry needs to make it clear to its members the risk posed by ‘bad behaviour’ and that rogue actors will not be tolerated.

In order to prevent reputational damage it is important to establish social norms and expectations for the control of the focus species. These norms need to be articulated and enforced within regional communities to ensure the industry is not compromised. For example, it is unacceptable for non-commercial shooters to shoot kangaroos and leave them wounded or to use illegal control practices.

3c. The industry needs to be open and transparent about the purpose for which a particular control practice is being employed.

For example, the erection of exclusion or cluster fencing for wild dog control should not be justified solely for wild dog control when in reality it is also being erected to manage kangaroos.

3d. The industry needs to take the initiative to prevent cases of mistreatment. This involves the acceptance of, and adherence to, strong Codes of Practice and Standard Operating Procedures to demonstrate good stewardship. This will build trust that industry participants will ‘do the right thing’ when no-one is looking.

For example, moving away from producers doing non-commercial shooting and ensuring no females are shot reducing the risk of harm to joeys in-pouch and at-foot.

8.3 Recommendations for future research

1. *Exclusion fencing.* There is a gap in understanding the consequences of exclusion or cluster fencing in the south Australian rangelands. A longitudinal biodiversity survey, interviews with participating landholders and an economic analysis will provide the knowledge and an understanding of the triple bottom line impacts arising from constructing exclusion fencing.

2. *Improved control practices.* There is the need for continued research in regards to the control practices for managing the focus species to improve their humaneness and effectiveness, and to be wildlife friendly.

3. *Addressing contemporary social expectations.* The red meat industry has a strong connection with the public in relation to marketing its products but not its production practices. There is a gap in understanding the nature of contemporary public values related to the protection of animals and the environment, and the organisations that actively advocate for these. A comprehensive national survey that benchmarks ‘public’ values, beliefs attitudes, knowledge and interest about these topics will enable the industry to better engage with and build trust with the public by appropriately addressing their expectations about the industry’s practices.

9 Acknowledgements

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Finally, I would like to acknowledge the project Advisory Committee for their support and their very valuable contributions to the project. The members of the Advisory Committee and their respective affiliations are shown in Table 9.1.

Table 9.1. Members of the project Advisory Committee and their respective affiliations.

Name	Organisation
Mr Lachlan Gall	Pastoralists Association of West Darling
Mr Garry Hannigan	Pastoralists Association of West Darling
Ms Fiona Garland	Western Local Land Services
Mr Douglas Jobson	Kangaroo Industry Association of Australia
Ms Adair Garemyn	NSW Farmers
Mr Peter Michelmore	Rangeland Alliance
Mr Jaymie Norris	NSW National Parks and Wildlife Service
Dr Amanda Paul	NSW Primary Industries
Mr Gus Whyte	Southern Australia Meat research Council

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11 Appendix

11.1 Project information sheet



Social acceptability of native herbivore and feral animal management in meeting Total Grazing Pressure targets

Project team:

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Dr Ron Hacker, Consultant (Rangelands)
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Project aim:

This project will assess the social acceptability amongst key stakeholders of current and likely future control measures to manage kangaroos, unmanaged goats and feral pigs as components of Total Grazing Pressure in the rangelands of southern Australia.

Project background:

Total grazing pressure (TGP) is a key driver of productivity in extensive livestock production systems. Sustainable production in these environments requires the management of grazing pressure from native and feral herbivores as well as livestock. The control of non-domestic animals generally involves their removal or destruction, for example by culling, harvesting, mustering, trapping and water point control, or their exclusion by fencing.

Maintaining a 'social license to operate' is challenging for many industries, including agricultural industries engaged in livestock production. Societal acceptance of industry practices is fundamental to producers' ability to maintain business continuity and avoid potentially serious negative economic and social impacts.

For the extensive livestock industry, there are influential stakeholders, i.e. those representing animal welfare, environment, consumer and recreation interests who influence public perceptions and policy decisions and, therefore, the industry's ability to implement specific control practices. At present, there is considerable uncertainty around the social acceptability of existing and emerging TGP control measures for the focus species in this project. Without that information it is unlikely the extensive livestock industry can develop and implement effective strategies to engage key stakeholders and the wider public about TGP management.

Research approach:

The overall approach is to work with key stakeholders, rather than the general public, to understand the attitudes that will influence public perceptions of practices to manage TGP. Data collection will focus on the southern rangelands, particularly in NSW, SA and SW Queensland, but with an evaluation of the wider relevance of findings. The process will involve:

1. A project Advisory Committee with representatives from key stakeholder groups will be established.

2. Round 1 interviews with 10-15 key informants who will provide information about current and likely future measures to control the focus species, and assessments of the strengths and limitations of those measures.
3. A review of literature/media to identify control measures for the focus species and their acceptability to the Australian public.
4. Round 2 semi-structured interviews with 25-30 opinion leaders and representatives of key stakeholders, including producers, industry, animal welfare, indigenous, recreation and conservation groups. These interviews will explore stakeholder's assessments of the social acceptability of current and likely future control measures and the basis for those judgements (e.g. values, beliefs, knowledge, experience, trust).
5. A workshop with red meat industry leaders to present the findings and consider their implications for guiding the industry's engagement with influential interest groups and the wider Australian public.

Research outcome:

The red meat industry will draw on the research findings to implement strategies for more effective engagement and communication with influential interest groups and the Australian public about TGP management. Research findings will also enable industry organisations to more effectively support producers to manage TGP in ways that are socially acceptable. The red meat industry, particularly in the rangelands, will thus be better placed to manage risks to its social licence to operate.

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11.2 Timeline of animal welfare events in Australia

Table 11.1. Timeline of animal welfare events in Australia from the 1960s (modified from Chen (2016)).

Date	Event
c1960	Beginning of the first live sheep export
c1963	First national meeting of Australian RSPCAs
1969	Formation of the Australian Wildlife Protection Council
1970	Establishment of the Kangaroo Protection Committee NSW
1971	Formation of the Australian Animal Protection Society
1975	Peter Singer publishes <i>Animal Liberation</i>
1977	Formation of Animal Liberation NSW
1978	Vegan Society becomes a national organisation
1979	Formation of Animal Liberation Victoria Formation of Animal Societies Federation of NSW Formation of Greenpeace Australia Formation of the World Wildlife Fund, Australia
1980	Passage of the <i>Prevention of Cruelty to Animals Act (NSW)</i> Formation of Animal Liberation Queensland Formation of the Cattle Council Australia Formation of the Fund for Animals in Australia Establishment of the National Farmer's Federation
1981	Formation of Animal Liberation South Australia Formation of the Australian Federation of Animal Societies (later Animals Australia formed in 1998) Formation of RSPCA Australia, a national merger of individual RSPCAs
1982	Formation of the World Society for the Protection of Animals Australia
1983	Formation of Australians for Animals
1984	Establishment of the Senate Committee on Animal Welfare, and the initiation of the Senate Inquiry (completed 1991)
1986	Passage of the Animal Welfare Act South Australia (current governing act)
1987	Formation of the Humane Society (NSW)
1988	Release of Model Code of Practice-Sea Transport of Livestock
1993	25,000 people rally in Sydney for the 'Day for Animals' Formation of Queensland Farmers Federation Formation of Shooters, Farmers and Fishers Party
1995	Formation People against Cruelty in Animal Transport (later Stop Live Exports)

Date	Event
1998	Formation of the Australian Livestock Exporters' Council
2000	Formation of AgForce Queensland
2002	Passage of the Animal Care and Protection Act (Queensland) (current act)
2004	Death of 5,500 sheep on the MV Cormo Express, establishment of the Keniry Livestock Export Review
2005	Establishment of the Australian Animal Welfare Strategy PETA USA begins campaign against mulesing Establishment of Sentient: The Veterinary Institute for Animal Ethics Establishment of Voiceless
2006	Formation of Lawyers for Animals (Melbourne)
2008	Formation of Animal Welfare League Australia National COP for the commercial and non-commercial shooting of kangaroos and wallabies
2010	Russia suspends kangaroo meat imports (until 2012) Formation of PETA Australia
2012	Formation of Animal Justice Party (AJP) COPs developed for the humane control of unmanaged goats and feral pigs
2015	Russia suspends kangaroo meat exports once more Election of AJP candidate, Mark Pearson, to the NSW Legislative Assembly

11.3 Animal welfare policy network

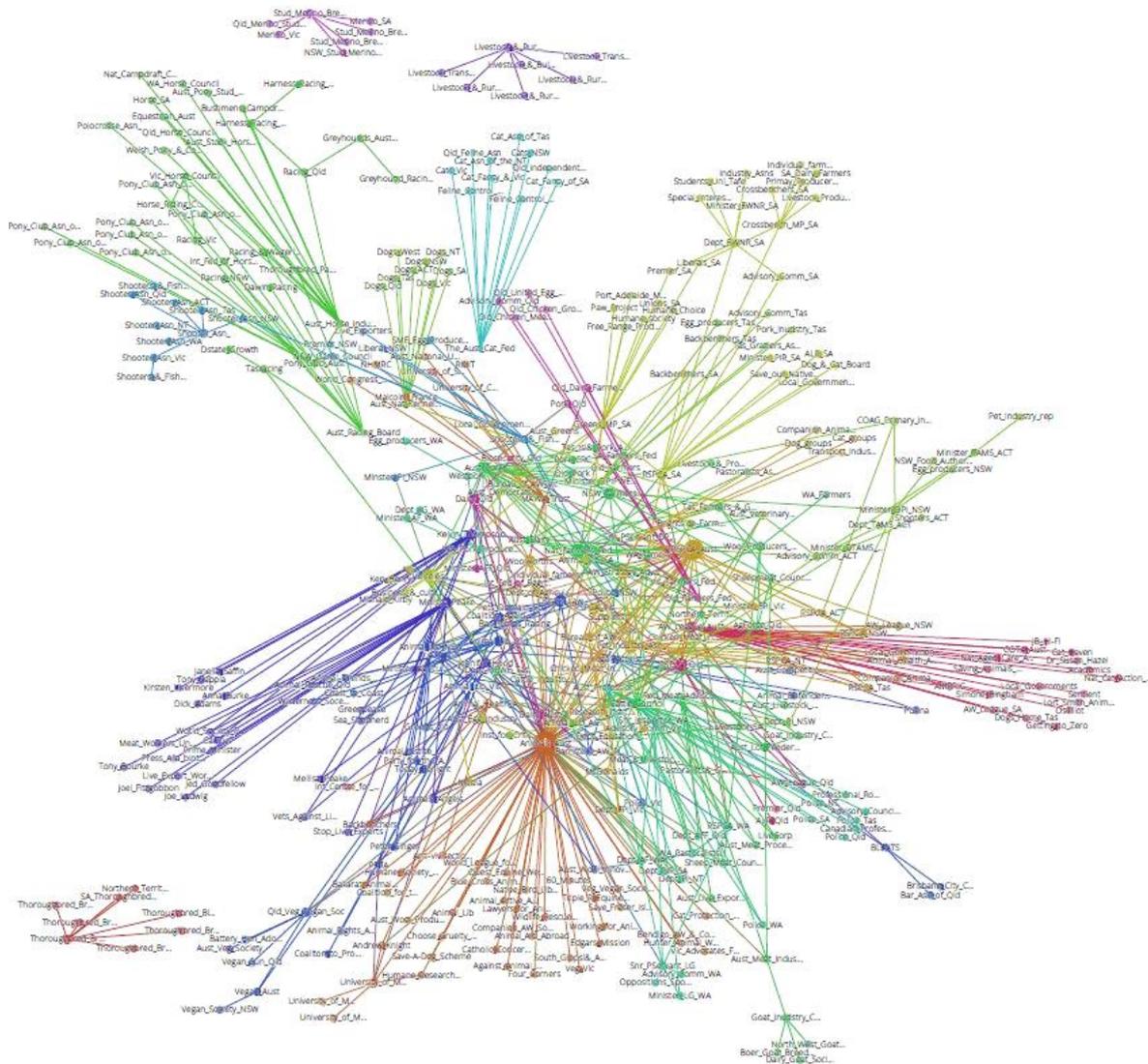


Fig. 11.1. Complex animal welfare policy network ([https://ses.library.usyd.edu.au/bitstream/2123/16292/1/9781743324738 AnimalWelfare PolicyNetworks.pdf](https://ses.library.usyd.edu.au/bitstream/2123/16292/1/9781743324738_AnimalWelfare_PolicyNetworks.pdf) viewed 30 May 2017).

11.4 List of abbreviations

ANZCCART	Australia and New Zealand Council for Care of Animals in Research and Teaching
APAS	Australian Pest Animal Strategy
APRC	Animal Pest Research Council
AAWS	Australian Animal Welfare Strategy
AAWAC	Australian Animal Welfare Advisory Committee
AVA	Australian Veterinary Association
AWL	Animal Welfare League
COPs	Codes of Practice
CWTH	Commonwealth
EPBC	Environment Protection and Diversity Conservation
ESCAS	Exporter Supply Chain Assurance System
GICA	Goat Industry Council Australia
KIAA	Kangaroo Industry Association Australia
NFF	National Farmers federation
NPW	National Parks and Wildlife
NSW	New South Wales
OEH	Office of Environment and Heritage
PAWD	Pastoralists Association of West Darling
PETA	People for the Ethical Treatment of Animals
Q'LD	Queensland
QFF	Queensland Farmers Federation
RSPCA	Royal Society for the Prevention of Cruelty to Animals
SA	South Australia
SLO	Social licence to operate
SOPs	Standard Operating Procedures
SPA	Sheep Producers Association
SPCA	Society for the Prevention of Cruelty to Animals
SSAA	Sporting Shooters Association of Australia
TGP	Total Grazing Pressure
WPA	Wool Producers Association

11.5 Glossary of terms

Attitudes	What we think should happen in relation to a specific social issue; expresses some positive or negative evaluation of a person, object or action.
Beliefs	What we think is true.
Ethics	Ethics is a system of moral principles that govern people’s behaviour. They affect how people make decisions and lead their lives. Ethics covers dilemmas including how to live a good life, our rights and responsibilities, and moral decisions - what is good and bad?
Humane killing	Death without pain, suffering or distress perceptible to the animal.
Morals	Concerned with right or wrong behaviour and is determined by norms of society.
Norms	How we/others think we ought to behave. These can be personal or social norms.
Risk	Exposure to harm or loss of something of value.
Speciesism	The differential and discriminatory treatment of animal species.
Stakeholder	Any individual or groups of people, organised or unorganised, who share an interest (financial, moral, legal, personal, community-based, direct or indirect) in a particular issue.
Trust	Willingness of those who are vulnerable to rely on others, which in part depends on the trustworthiness of those seeking to be trusted.
Trustworthy	Trustworthiness is based on assessments by others of our ability, benevolence and integrity.
Values	Guiding principles/what is important to people.
