Identifying Best Practice Cat Management in Australia

A Discussion Paper
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Public consultation draft – May 2017
Feedback invited

This draft discussion paper aims to stimulate discussion and foster collaboration to develop and adopt formal strategies and action to achieve more effective domestic cat management in Australia.

While every effort has been made to ensure this paper is comprehensive, there are many aspects of cat management that are not reported and additional insights and information that may be gained from consultation.

RSPCA Australia invites comments from key stakeholders and other interested parties on any aspect of the discussion paper.

We are particularly seeking feedback on the 22 draft recommendations.

We encourage you to identify your reasons for support or non-support of the recommendations, as well as any issues or opportunities for improvement.

In addition, we welcome further information on:

- Successful domestic cat management initiatives that have been undertaken at the community, state or national level.
- Evaluations of previous strategies or initiatives.
- Additional scientific papers describing relevant research findings.
- Details of perceived barriers and challenges to achieve effective and sustainable cat management.

Submissions can be made using our online form (for further details visit http://www.rspca.org.au/facts/science/cat-management-paper) or via email to science@rspca.org.au

The closing date for submissions is Thursday 27 July 2017.
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Summary of recommendations

1. Declaring feral cats as a pest species under State biosecurity or natural resource management legislation is a key step in recognising the need for urgent action to address the impacts of feral cats. This measure should be adopted consistently across all States and Territories.

2. Legislation to control feral and domestic cats must recognise that they are sentient animals capable of experiencing pain, suffering and distress and provide protection from cruelty.

3. Practitioners responsible for implementing feral (and domestic) cat management should have an understanding of the animal welfare impacts of available methods, and know how to carry them out in the best possible way. Compliance with COPs and SOPs should be made a requirement of all government funding for cat management activities.

4. The inclusion of prescribed practices for pest species management under animal welfare legislation should be further examined to assess its potential to improve animal welfare.

5. The significant inconsistencies between states and between local governments, in legislation, approach and level of commitment to domestic cat management, need to be urgently addressed.

6. State-based cat management legislation should include a requirement that local councils develop and implement cat management plans which include:
   - defining and quantifying the cat management problem with a focus on impacts
   - setting clear, achievable and consistent objectives
   - using humane, ethical and sustainable strategies
   - identifying the responsibilities of key stakeholders
   - consideration of feral cat management activities
   - securing sufficient resources for implementation
   - formally evaluating management strategies using agreed measures.

7. State governments should consider establishing a cat management advisory group with terms of reference that include:
   - monitoring the implementation of cat management legislation and compliance with mandatory requirements
   - consulting with key stakeholders
   - developing relevant codes of practice and SOPs for cat control methods
   - identifying and funding relevant research and key metrics to evaluate the effectiveness of cat management strategies.

8. An integrated approach to the management of feral and domestic cats is vital to ensure that strategies are complementary, not opposing, and that no vital aspects in terms of responsibilities, laws and initiatives are overlooked.

9. The Australian Government should take a leadership role in developing a coordinated approach to cat management across Australia. This should include encouraging state and territory governments to share resources, coordinate research and evaluation activities and identify and implement consistent approaches to the management of stray, semi-owned and owned cats and to integrate this with feral cat management.
Best practice cat management requires communication and involvement of stakeholders in decision making and solutions. All stakeholders involved with cat management need to work collaboratively towards implementing effective and humane management strategies, with an MOU between major stakeholders.

Cat management plans and strategies must identify and address semi-owned cats as a separate group to unowned cats and ensure that cat semi-owners are specifically targeted in education, desexing and other relevant cat management programs.

Where trap and kill programs are considered they must be adequately assessed and judged to be justified, humane and effective, before they are undertaken and should include a process for adoption of socialised kittens and cats.

A research study should be conducted to evaluate whether, and under what specific circumstances, a program of trap, desex, adopt or return (TDAR) is an appropriate tool for urban cat management under Australian conditions.

A research study should be conducted to evaluate whether a targeted low-cost desexing program, combined with education of cat semi-owners, is an effective tool for managing semi-owned cats.

Cat surrender and abandonment should be reduced by promoting the value of cats, enhancing the human-cat bond and increasing access to rental accommodation.

Education programs are needed to increase the acceptance and uptake of 24-hour cat containment, with subsequent regulation especially in areas of high conservation value.

Cat management plans should aim to increase the number of cats who are identified through mandatory microchipping and physical identification.

Three key strategies are needed to reduce cat overpopulation through desexing:
- mandating the desexing (and microchipping) of cats and kittens prior to sale, transfer or return from impoundment
- increasing access to affordable desexing initiatives
- increasing the uptake of pre-pubertal desexing.

A limit should be set on the number of cats per household, however, where cats are desexed, microchipped, contained and well cared for, this limit may be increased to encourage more cat adoptions.

Changing community attitudes, beliefs and behaviours should be a component of every strategy to manage cat populations. Education programs should focus on increasing cat owner understanding of the need for cat management, especially regarding the threat to biodiversity and acceptance of critical cat management measures such as containment and desexing.

Key stakeholders should agree on measures to be used to enable comparative evaluation of cat management strategies and programs. Evaluation outcomes should be reported and incorporated into the development of cat management plans at the national, state and local level.

Further research is needed to inform future cat management strategies and will require allocation of resources, coordination and priority setting at a national level.
1. **Introduction**

There are an estimated 3.3 million owned cats in Australia; cats are the second most popular pet and 29% of households own a cat (RSPCA Australia 2016). However, while domestic cats are valued by humans as companions and pets, many cats end up uncared for and without a defined owner, and tens of thousands of healthy but unwanted cats and kittens are euthanased every year. Feral cats are found across most of the land mass of Australia: the most recent review estimates a population fluctuating between 2.1 and 6.3 million, with an estimated 0.7 million cats living in highly modified environments such as urban areas, rubbish dumps or intensive farms (Legge et al. 2017).

Feral cat predation is considered to be a major contributor to the extinction of 22 Australian mammals (Woinarski et al. 2015) and they are believed to be a major threat to at least 142 species of mammals, reptiles, frogs and birds in Australia (Australian Government 2014). Similarly, many domestic cats (non-feral) will also kill and injure native wildlife if given the opportunity. Hunting and killing is a very strong natural instinct, even for owned cats who are fed daily (Barratt 1997; Meeks 1998; Lilith 2006; Hutchins 2013; Loss et al. 2013; Kitts-Morgan 2015; MacDonald et al. 2015). Urban and suburban habitats, including people's gardens may serve as an important habitat for birds and other native animals (Angold et al. 2006; Tratalos et al. 2007; Pennington et al. 2008; Seewagen & Slayton 2008; Longcore et al. 2009).

In addition to the impact on Australian wildlife, the large numbers of free-roaming feral and domestic cats in Australia create many serious issues for animal management strategies to resolve. These include ethical concerns regarding the euthanasia of healthy domestic cats and kittens, the pain and suffering caused to cats by control methods, the psychological effect on people involved, financial costs to organisations that manage cats, environmental and biodiversity impacts, potential for disease spread, community nuisance, and welfare concerns for cats.

Although considerable efforts have been made to reduce the unwanted cat population, the complexity of the problem makes effective cat management very difficult. There is an inter-relationship between feral and domestic cats and consideration of this relationship is critical to the development of effective management strategies. Both feral and domestic cats can have negative impacts on wildlife biodiversity and survival of vulnerable species, albeit to differing extents. Given the serious consequences of inaction, greater collaboration and integration in the development of strategic approaches must be adopted urgently to address the key issues of predation of threatened species and reduce the number of healthy domestic cats killed.

Improving the management of feral and domestic cats and improving the humaneness of cat control methods are priority issues for both the RSPCA and the Threatened Species Commissioner. However, to be effective, cat management requires a high level of government and community support. A number of reports and papers have been produced that discuss the problems associated with cat management (Toukhsati 2007; Denny and Dickman 2010; Zito et al. 2015a) and in recent years several state jurisdictions have either introduced or reviewed their cat management legislation. However, evaluation of previous approaches and a consistent national approach is lacking.
The purpose of this discussion paper is to identify current best practice approaches to domestic cat management to resolve the key issues of their impact on wildlife, high euthanasia rates, public nuisance, and poor welfare. This process involves building on the knowledge gained from previous strategies, including the effectiveness of existing legislation, reviewing current research in this area, and considering relevant aspects of feral cat management. Over recent years the Australian community’s acceptance of cat management measures such desexing, cat containment, registration and microchipping has increased, as has public awareness of the adverse impact of feral cats on Australia’s biodiversity. With this shift in the level of public understanding of the significance of the problem and the urgent need for a solution, it is hoped that this discussion paper will help shape more effective and consistent strategies in the future.

1.1 Scope and methodology

This discussion paper focuses primarily on domestic cat management and where appropriate, its linkages with feral cat management: it will not comment directly on management techniques for feral cats, as this is covered elsewhere. However, reference to legislative aspects and the threatened species strategy regarding feral cat management have been included. The scope of the paper is to identify potential best practice domestic cat management measures through the following steps:

- Examine the current status of legislation and other formal strategies in place for cat management in Australia.
- Discuss ideal legislative settings for feral and domestic cats.
- Identify the best ways to implement, enforce and evaluate cat management legislation, formal cat management strategies and responsible cat ownership.
- Identify key roles for state government, local government, NGOs and the community.
- Identify ways to increase public understanding of the importance and benefits of responsible cat ownership.
- Identify how to improve the retention of owned cats and the adoption of stray and semi-owned cats.
- Identify the best ways to implement, enforce, and evaluate strategies to reduce stray and semi-owned cat populations.
- Identify how to increase the proportion of cats desexed prior to reaching sexual maturity (e.g. via pre-pubertal desexing).
- Identify how to increase the acceptance of containment of cats on owner’s properties and the potential to increase compliance with responsible ownership requirements.
- Comment on the feasibility of integrating cat management with dog management.

In gathering information for this paper, a number of people in various States were consulted regarding legislation and other related aspects of cat management and we thank them for their assistance (Appendix 1). The authors are also grateful for the feedback provided by members of the National Feral Cat Taskforce and RSPCA member Societies on a previous draft.
1.2 Cat categories

In the scientific and popular literature relating to cat overpopulation, the terms used to categorise cats in different populations are inconsistent and sometimes more than one term may be applied to the same group of cats, resulting in further confusion (Slater 2001; Akucewich et al. 2002; Hughes et al. 2002; Afonso et al. 2006; Toukhsati et al. 2007; Farnworth et al. 2010a). It is important to remember that while domestic or feral cat differ in relation to their dependence on and socialisation with humans, they are the same species (*Felis catus*).

The terms used to categorise cats in different populations share a common basis: they describe some aspect of a cat’s relationship with humans — whether they are ‘owned’, confined, socialised, or dependent on humans (Haspel et al. 1990; Moodie 1995; Zasloff et al. 1998; Levy et al. 2003a; Levy et al. 2003b; Toukhsati et al. 2007; Webb 2008).

Despite the confusion in definition and nomenclature, there is agreement in most of the literature that there are various populations of cats which make up a larger, interconnected network of populations called a ‘metapopulation’ (Jarman et al. 1993; Toukhsati 2005; Webb 2008; Marston 2009; Alberthsen 2014; Miller et al. 2014b; Miller et al. 2014a). This is a similar concept to the cat continuum described in Australia by Webb (2008) and Zito (2015) which also includes elements pertaining to the human-cat relationships involved, such as the human’s perception of ownership of the cat and feelings of responsibility for the cat, association time, attachment, caretaking and interaction behaviours, and the cat’s dependence on humans. This concept is illustrated diagrammatically in Figure 1.

Relationships are portrayed in this figure as linear, but in reality they are multi-dimensional and interactive. The complex multidimensional nature of these relationships is illustrated in Figure 2 demonstrating why these are so difficult to manage.

New approaches to management of this complex issue require an understanding of the cat populations and stakeholders involved and an assessment of existing management strategies.

The different populations/categories of cats must be considered to manage cat overpopulation because strategies designed to reduce the numbers of unwanted cats must address the source of the problem. For example, desexing programs that aim to reduce reproduction will have little impact on cats that do not have an owner or carer who is willing to facilitate the sterilisation process (Alberthsen 2014).

Cat populations are commonly divided into three sub-populations (Moodie 1995; New Zealand Government 2007):

- **Feral** – those cats completely independent of humans.
- **Stray** – those cats relying to some extent on humans.
- **Domestic** – those cats living with humans and having their needs intentionally met by humans.

However, semi-owned cats make up another group of cats that has been largely ignored in management strategies to date but which has been shown to make a significant contribution to cat overpopulation. Zito et al. (2015b) described this sub-population of cats as ‘having been fed or
cared for often, or always for at least one month, by a person who does not perceive ownership for the cat. Thus, these cats have a human ‘caretaker’ who can be targeted with management advice, but this must be done in a way that differs from communications with cat owners. Cat semi-owners do not consider themselves to be cat owners and so will not comply with regulations and other measures directed at cat owners. Thus, it is crucial that cat management strategies aimed at influencing relevant human behaviour recognise the ownership status of cats as well as their level of socialisation to, dependence on and relationship with humans (Figure 2).

It is worth noting that, strictly speaking, the word ‘stray’ refers to the activity of cats that wander from their owner’s property, not an ownership status. Cats that are called ‘stray’ cats tend to live in and around cities/towns and may be responsibly owned and temporarily escape (e.g. a gate or door left open), casually owned (e.g. wander due to inadequate containment) or semi-owned (e.g. the cats are regular visitors to one or more households who do not own them). Most municipalities around Australia consider cats and dogs to be stray once they leave the confines of their owner’s property.

Groups of unowned cats are sometimes called colony or community cats: these are cats of varying sociability, have casual and temporary interactions with humans and indirect dependence on

![Figure 1: The human-cat continuum (adapted from Zito 2015)](image-url)
humans. They live in a group of cats in areas in cities/towns where they can scavenge food or are fed by one or more people e.g. in school/university grounds, factory areas, shopping complexes. The cats may have been owned and abandoned or lost, or may be the progeny of straying owned, semi-owned or unowned cats with little human contact and dependence.

To account for all these factors, this document will use the following terms to describe different sub-populations of cats:

- **Feral** – these cats are unowned, unsocialised, have no relationship with or dependence on humans, and reproduce in the wild.

- **Domestic** – all cats with some dependence (direct or indirect) on humans. There are three sub-categories of domestic cats:
  - **Owned** - these cats are identified with and cared for by a specific person, and are directly dependent on humans. They are usually sociable although sociability varies.
  - **Semi-owned** – these cats are fed or provided with other care by people who do not consider they own them. They are of varying sociability with many socialised to humans.
  - **Unowned** – these cats are indirectly dependent on humans with some having casual and temporary interactions with humans. They are of varying sociability, including some who are unsocialised to humans, and may live in groups.

![Figure 2: Sub-populations of cats and their interactions with humans (adapted from Zito 2015 with additional input from Andrew Byrne)](image_url)
2. Cat management legislation and other formal strategies

2.1 Introduction

Legislation is often viewed as the key to resolving cat management issues. While legislation is important, there are many reasons why mandating specific aspects of cat management can only provide part of the solution. The challenge is to identify which aspects will be most cost effective and what other measures are required to provide an ethical, humane and sustainable approach. In addition to legal requirements, other approaches to cat management have been implemented in different states. Some have been very successful and generally rely upon good collaboration between key stakeholders with the focus on non-lethal methods of reducing domestic cat populations and promoting responsible cat ownership.

2.2 Feral cats

2.2.1 Commonwealth legislation

Predation by feral cats is listed as a key threatening process, first under the *Endangered Species Protection Act* (1992) and then under the *Environment Protection and Biodiversity Conservation Act* (1999). As a result of this listing, in 1999 the first Feral Cat Threat Abatement Plan (TAP) was developed, with the aim of promoting ‘the recovery of endangered or vulnerable native species and communities, and to prevent further species becoming endangered by reducing predation by feral cats to non-threatening levels’. Revision of the TAP in 2008 included greater emphasis on the need for closer cooperation of stakeholders and for an implementation plan with performance indicators, priority setting and a timeframe of actions to achieve an integrated approach to cat control. A further review was undertaken in 2014 to produce the current version of the TAP (Commonwealth of Australia 2015b), with the revised objectives being to:

- effectively control feral cats in different landscapes
- improve effectiveness of existing control options for feral cats
- develop or maintain alternative strategies for threatened species recovery
- increase public support for feral cat management and promote responsible cat ownership.

The TAP provides a blueprint for actions required to control feral cats across Australia (Denny et al. 2010) but the implementation of feral cat control methods occurs at the state and territory level.

2.2.2 State legislation

Most states have some legislated provisions for the control of feral cats, but the precise nature of these varies between jurisdictions. Legislation regarding feral cats has primarily focused on the need to undertake control measures to reduce the impact on threatened species and native wildlife in general. In some states (SA, Queensland and the NT), feral cats have been listed as a pest species under relevant biosecurity or natural resource management legislation. In Tasmania feral cats are declared an invasive species under the *Cat Management Act 2009* (Tasmanian Government 2009), which allows landholders to undertake control measures. Declaring an animal as a pest species...
recognises that the impact of that species as requires urgent action, and can assist in attracting resourcing for control programs. Other potential benefits include clarifying the roles and responsibilities of different stakeholders; this in turn should help to achieve effective planning, coordination, collaboration and accountability. Declaring an animal as a pest species places restrictions on movement, keeping, sale and release of that species. It may also require landowners to control or destroy declared pests on their property or to notify authorities about their presence. It also provides legal protection for landholders undertaking trapping and poisoning, although this also means there may be less incentive to choose the most humane methods available. In those states that have not declared feral cats as a pest species, people who undertake control measures may risk prosecution as these activities may contravene animal welfare legislation, as some control measures will inevitably result in animal cruelty.

Reducing the impact of feral cats requires a consistent effort across all Australian jurisdictions and ensuring feral cats have the same legislative status is a key element of this. In 2015, state/territory Ministers agreed to support legislative changes to enable landholders to undertake feral cat management on their properties (Australian Government 2014, 2015): at present feral cats are declared as a pest species in only three states/territories (Table 1).

The Feral Cat Threat Abatement Plan recommends that there is a need for consistent legislation that identifies feral cats as a pest and permits control according to specified techniques (Commonwealth of Australia 2015b). Some states have also identified this need. For example, the draft report of the NSW Pest Animal Management Review has recommended that feral cats be declared as a pest under the new NSW *Biosecurity Act 2015* and that the NSW Invasive Species Plan 2015-2022 align with the Federal Feral Cat Threat Abatement Plan (NSW Natural Resources Commission 2016). In Western Australia, it is unlikely that feral cats will be declared as a pest species under the *Biosecurity and Agriculture Management Act 2007* as feral cats are not considered an agricultural threat. However, there will be provision for such a declaration under the proposed *Biodiversity and Conservation Act 2015*. Where feral cats are declared a pest species, it is important they are not demonised in information materials. Legislation should recognise cats as sentient animals capable of experiencing pain, suffering and distress and afford them protection from cruelty under animal welfare legislation.

**FINDING #1**

Not all states/territories have declared feral cats as a pest species, despite being a recommendation of the Threat Abatement Plan for Feral Cats and being supported by relevant Ministers.

Declaring an animal as a pest species recognises that species as requiring urgent action, and can assist in attracting resourcing for control programs.

**RECOMMENDATION #1**

Declaring feral cats as a pest species under State biosecurity or natural resource management legislation is a key step in recognising the need for urgent action to address the impacts of feral cats. This measure should be adopted consistently across all States and Territories.
FINDING #2

Where feral cats are declared a pest species, it is important they are afforded protection from cruelty under animal welfare legislation.

RECOMMENDATION #2

Legislation to control feral and domestic cats must recognise that they are sentient animals capable of experiencing pain, suffering and distress and provide protection from cruelty.

Table 1: Status of declaration of feral cats as a pest species in Australia (source: Feral Cat Taskforce, 2016)

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Declared Pest</th>
<th>Legislation used to declare animal pests</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>No</td>
<td>Pest Plant &amp; Animals (Pest Animals) Act 2005</td>
</tr>
<tr>
<td>NSW</td>
<td>No</td>
<td>Local Land Services Act 2013 (pest control order)</td>
</tr>
<tr>
<td></td>
<td>No*</td>
<td>Biosecurity Act 2015 (not yet proclaimed)</td>
</tr>
<tr>
<td></td>
<td>KTP^</td>
<td>Threatened Species Conservation Act 1995</td>
</tr>
<tr>
<td>NT</td>
<td>Yes</td>
<td>Territory Parks &amp; Wildlife Conservation Act 2006</td>
</tr>
<tr>
<td>QLD</td>
<td>Yes</td>
<td>Land Protection (Pest and Stock Route Management) Act 2002</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Biosecurity Act 2014</td>
</tr>
<tr>
<td>SA</td>
<td>Yes</td>
<td>Natural Resources Management Act 2004</td>
</tr>
<tr>
<td>TAS</td>
<td>No</td>
<td>Vermin Control Act 2000 (under review)</td>
</tr>
<tr>
<td></td>
<td>No*</td>
<td>Cat Management Act 2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Not declared as a pest under the Animal Welfare Act 1993)</td>
</tr>
<tr>
<td>VIC</td>
<td>No</td>
<td>Catchment and Land Protection Act 1994</td>
</tr>
<tr>
<td>WA</td>
<td>No</td>
<td>Biosecurity and Agriculture Management Act 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Not declared as a pest under the Animal Welfare Act 1993)</td>
</tr>
</tbody>
</table>

^ KTP – key threatening Process
* Declaration of feral cats as a declared pest is recommended by NSW Natural Resource Commission (2016)
* Declared as an invasive species which legally allows landholders to remove or destroy cats

2.2.3 Animal welfare

State and territory governments have responsibility for safeguarding the welfare of animals under animal welfare legislation. Many feral cat management techniques, including trapping and poisoning, cause suffering to affected cats and thus constitute an act of cruelty. However, operators who use these methods to control pest animals are generally exempt from prosecution, as pest animal management legislation overrides animal welfare legislation.
Despite this, there is an acknowledgement that the welfare of pest animals and non-target species must be safeguarded. Key to this is ensuring operators have an understanding of the animal welfare impact of available control methods, and know how to carry them out in the best way possible. This is being achieved through the development of welfare codes of practice and standard operating procedures for the most commonly used techniques, and the assessment of their relative humaneness.

Feral cat management is covered by the Model Code of Practice for the Humane Control of Feral Cats (COP) and the following standard operating procedures (SOPs):

- CAT003: Trapping of feral cats using padded-jaw traps
- CAT001: Ground shooting of feral cats
- CAT002: Trapping of feral cats using cage traps

Unfortunately, compliance with these model COPs and SOPs is not mandatory, but they can be incorporated into state-based animal welfare legislation or compliance can be made a requirement of government funding for cat management activities.

In response to significant animal welfare concerns about many pest animal control techniques, in 2008 a model for assessing the humaneness of pest animal control methods was developed by the NSW Department of Primary Industry with funding from the Australian Government. The model assesses each control method with regard to the overall welfare impact prior to death and the humaneness of the mode of death. The model assumes all techniques are used in accordance with best practice, using the relevant SOPs as a basis. The scores for each technique for each species are plotted on a matrix that provides a means of comparing their relative humaneness (Figure 3). It is clear from this matrix that there is much room for improvement in the humaneness of most techniques used to control feral cats.

**FINDING #3**

Best practice feral cat management requires an understanding of the animal welfare impacts (humaneness) of control techniques and how to carry them out in the best possible way.

Mechanisms to ensure this include:

- ensuring best practice is documented in a Code of Practice (COP) and standard operating procedures (SOPs)
- incorporating the COP and SOPs into state-based animal welfare legislation
- making compliance with a COP and SOPs a requirement of government funding for cat management activities
- reviewing existing SOPs and developing additional SOPs for all new methods.
**RECOMMENDATION #3**

Practitioners responsible for implementing feral (and domestic) cat management should have an understanding of the animal welfare impacts of available methods, and know how to carry them out in the best way possible. Compliance with COPs and SOPs should be made a requirement of all government funding for cat management activities.

Additional SOPs are required for use of poison baits for feral cat control, including baits containing 1080 and para-aminopropiophenone (PAPP). There is also a need to review all existing SOPs to ensure current best practice aspects in relation to animal welfare are incorporated. The 2014 Feral Cat Threat Abatement Plan supported the need to develop SOPs for these new tools as well as updating the COP to include these. It also recommended in the TAP that the SOPs and COP were agreed and adopted by governments.

In Western Australia, the current provisions for declaring pest species are within the *Biosecurity and Agriculture Management Act 2007* (BAM Act). The *Animal Welfare Act 2002* (AW Act) contains a defence for killing a pest species in a manner that is generally accepted as usual and reasonable. This poses challenges in terms of potential for prosecution for animal cruelty or knowing what is generally acceptable as ‘usual and reasonable’ and what is not. The Department of Agriculture and Food Western Australia (DAFWA), which is responsible for both Acts, is reviewing the defence for killing pest animals. Incorporating relevant welfare standards or codes of practice into legislation may not be an effective mechanism to ensure good welfare as their primary purpose is as a defence to a charge of cruelty and are often poorly drafted from a legal perspective. Instead, DAFWA is considering prescribing pest species under animal welfare legislation as well as clarifying those practices which are ‘generally accepted as ‘usual and reasonable’ means of killing a pest in a manner that may be cruel (as defined by the WA *Animal Welfare Act 2002*). Prescribed pests and practices would be determined through stakeholder consultation. Feral cats and other species not deemed to be an agricultural threat, together with relevant existing declared species are intended to be included.

**FINDING #4**

The Department of Agriculture and Food Western Australia is considering the inclusion of prescribed practices for pest species under animal welfare legislation to define acceptable and unacceptable methods.

**RECOMMENDATION #4**

The inclusion of prescribed practices for pest species management under animal welfare legislation should be further examined to assess its potential to improve animal welfare.
2.3 Domestic cats

2.3.1 Commonwealth legislation

There is no legislation relating to domestic cat management at the Commonwealth level other than to prevent the importation of wild-domestic cat hybrids into Australia. Hybrids between species (regardless of how many generations removed from an original mating or wild ancestor) are not permitted into Australia unless specifically listed on the [live import list](https://www.environment.gov.au) under the *Environment Protection and Biodiversity Conservation Act 1999*. The list specifically excludes one cat hybrid –
the Savannah cat, a cross between a domestic cat and an African Serval – as this was assessed as an extreme risk to the Australian environment. No other domestic-wild cat hybrids have been assessed but it is unlikely that any cat hybrid would be permitted to be imported into Australis for the same reasons.

2.3.1 State legislation

Dog and cat management is regulated at both the state/territory and local government level. In states where companion animal management legislation has combined both dogs and cats (e.g. South Australia, Queensland, Victoria, New South Wales and ACT), recent changes have been applied to cats as well as dogs. This has been a significant step as mandatory standards for cat management in these states and territories have not been an area of consideration until recent times, compared to Tasmania and Western Australia where cat specific legislation was established in 2009 and 2011 respectively (Table 2). It should be noted that the Northern Territory does not have territory-based legislation relating to cat management but Darwin and Alice Springs do have some relevant bylaws. State/territory Acts also have attached Regulations; these have not been reviewed as part of this report.

In addition, local government jurisdictions have the capacity to create bylaws pertaining to either cats or dogs. These have generally focused on registration, identification, maximum number of animals per household and nuisance complaints. State Acts and Regulations describe offences, appointment and powers of authorised officers, as well as appeal requirements.

In recent times, legislative reform on companion animal management has focused on helping to prevent puppy farming (intensive breeding where conditions compromise welfare) and to reduce the number of unwanted dogs and cats. This has created a new direction in legislative requirements mainly pertaining to breeders becoming registered and licensed, and in some states, mandatory desexing.

Mandatory desexing of cats and dogs was first implemented in the ACT under the *Domestic Animals Act 2000*, primarily in response to high levels of euthanasia of healthy dogs and cats. The introduction of mandatory desexing has recently been proposed in Tasmania, South Australia and New South Wales.

In terms of structure and content of cat management legislation, some Acts describe the purpose of the legislation. For example, the introduction to the Tasmanian *Cat Management Act 2009* states the purpose of the Act is to:

- *promote the responsible ownership and welfare of cats, including the desexing and microchipping of domestic cats; and*

- *provide for the effective management of cats, in particular allowing for the humane handling and management of unidentified, stray and feral cats; and*

- *reduce the negative effects of cats on the environment.*
Table 2: Overview of recent reviews of state-based legislation for cat management

<table>
<thead>
<tr>
<th>State</th>
<th>Legislation</th>
<th>Review details</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Domestic Animals Act 2000</td>
<td>Approx. 2004 for declared containment areas 2016 – two new proposed cat containment areas</td>
<td>Since 2005, cat containment areas have been declared in 12 Canberra suburbs adjacent to nature reserves</td>
</tr>
<tr>
<td>NSW</td>
<td>Companion Animals Act 1998</td>
<td>NSW Pest Animal Review supports greater education of responsible cat ownership</td>
<td>Proposed that breeder details be added to microchip database information</td>
</tr>
<tr>
<td>Qld</td>
<td>Animal Management (Dogs and Cats) Act 2008</td>
<td>Mandatory registration was repealed in 2013</td>
<td>Councils able to implement mandatory registration</td>
</tr>
</tbody>
</table>
| SA    | Dog and Cat Management Act 1995 | Instigated in response to high numbers of unwanted dogs/cats and to stop puppy farms. Select Committee Inquiry reported in July 2013 with 12 recommendations mainly relating to dog/cat owners including registration of companion animal breeders | Amendments passed 20/7/2016 Key aspects:  
  - Breeder registration, compliance with Code and breeder registration number to be included in all advertisements  
  - Cats must be desexed by 6 months  
  - Cats must be microchipped by 3 months |
| Tas   | Cat Management Act 2009 | Draft Cat Management Plan developed in 2016 includes amendments to Cat Management Act 2009. Revised Cat Management Plan expected by end of 2016 | Recommended changes to Cat Management Act 2009 include removal of care agreement so that desexing and microchipping is undertaken by owner before sale or transfer |
| Vic   | Domestic Animals Act 1994 | Major review of dog/cat breeding legislation in 2013 with key changes to stop puppy farms | Introduction of breeder registration & compliance with Code for dogs and cats |
| WA    | Cat Act 2011 | Announced in 2011, implemented in 2013; review due 2018 | |

* There is no territory-based legislation relating to cat management in the NT

Although it may not be explicit, the purpose of most companion animal legislation in other states is very similar to points (a) and (c) above, but not point (b).

Some aspects of state-based legislation include delegating enforcement powers to authorised officers, as well as naming specific offences, the right to appeal and special initiatives, such as establishment of advisory boards and funds, which are managed by the state authority responsible for the legislation, (e.g. South Australia).
Who must comply with cat management laws?

In general, the laws apply to owners to compel them to be responsible for their cat. However, there are also provisions regarding people who trap stray cats in order to transfer these cats to the local council and/or an authorised person for euthanasia/rehoming/reclaiming (e.g. Western Australia and Victoria). Some states permit any person to kill a trapped unowned cat under certain provisions, such as being at least one kilometre from the closest residence (e.g. South Australia).

Recent amendments to legislation in several states also target cat breeders for the first time requiring them to comply with specific requirements. These vary between states but include requirements for breeder registration, microchipping and vaccinating kittens prior to sale and in some states desexing prior to sale or transfer.

Who administers cat management laws?

The administration of cat management legislation is primarily the responsibility of local government authorities. The reason for two levels of legislation (state and local government) for companion animal management is unclear. However, it is presumed that flexibility is needed to allow councils to decide which aspects are of local importance as well as being able to prioritise resource allocation for effective enforcement. State laws are generally framed to authorise local government to enforce specific state-based requirements or provide for them to introduce local bylaws. For example, under the Queensland *Animal Management (Dogs and Cats) Act 2008*, cat registration was introduced as a statewide mandatory requirement but was repealed a few years later to give authority to councils to introduce mandatory cat registration as a local bylaw instead.

In general, local bylaws mainly relate to the limit of the number of cats per household and nuisance complaints caused by cats.

There is wide disparity in the level of commitment to cat management and associated activity by local councils. Some councils are very active in rehoming cats, and promoting responsible cat ownership and subsidised desexing, whilst others appear to only undertake minimal community engagement activities. Education and community programs appear to be having some success in specific jurisdictions (see Section 3.3.3).

2.3.2 Key requirements of state-based cat legislation

Despite all jurisdictions other than the Northern Territory regulating cat ownership and management, there are significant differences in the offences contained within the different acts and regulations (Table 3). Not all states cover all aspects and there is also inconsistency within some aspects. For example, with regard to identification, Western Australia is the only state which requires owned cats to display a collar and tag at all times but all states require cats to be microchipped. Victoria and Western Australia appear to have the most comprehensive laws whilst the Northern Territory has no territory legislation governing cat management, although City of Darwin bylaws require cats to be registered and not to wander from the resident property. Consistency between states is essential to ensure all critical areas that require regulation are addressed in the same manner to optimise effectiveness nationally.
### Table 3: Comparison of key elements of state-based cat management legislation*

<table>
<thead>
<tr>
<th>Element</th>
<th>ACT</th>
<th>NSW</th>
<th>QLD</th>
<th>SA</th>
<th>TAS</th>
<th>VIC</th>
<th>WA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat registration</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>by 12 weeks or transfer, for life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification (collar &amp; tag)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microchip</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>prior to sale or transfer by 12 weeks</td>
<td>prior to sale or transfer by 12 weeks</td>
<td>prior to sale or transfer</td>
<td>by 3 months (pending)</td>
<td>by 6 months</td>
<td>prior to sale or transfer</td>
<td>by 6 months of age</td>
</tr>
<tr>
<td>Desexing</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>by 3 months</td>
<td>No</td>
<td>by 6 months (pending)</td>
<td>by 6 months</td>
<td>No</td>
<td>Yes by 6 months or before sale or transfer</td>
<td></td>
</tr>
<tr>
<td>Breeder registration</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>from 3 months for entire cat</td>
<td>No</td>
<td>Yes (pending)</td>
<td>No</td>
<td>Yes if have &gt;3 fertile cats</td>
<td>Yes by 6 months</td>
<td></td>
</tr>
<tr>
<td>Breeder required to comply with Standards</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>No</td>
<td>Yes (pending)</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Must not abandon a cat</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Must not feed feral/stray cat</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Nuisance</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Stray cats to be surrendered</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Prohibited areas</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Animal Management Plans</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

* There is no territory-based legislation relating to cat management in the NT

The main legal requirements contained in state-based cat management legislation are:

1. **Identification** (All states, SA pending)

   The most common requirement is for cats to be microchipped. Most states require all kittens to be microchipped by a maximum of 3 months of age or prior to sale or transfer, but in Tasmania the maximum age is 6 months. Western Australia is the only state that requires cats to wear a collar with an identification tag displaying owner contact details, in addition to being the cat being microchipped.
2. **Desexing** (ACT, WA, Tasmania, SA pending)

In 2001, the introduction of the *Domestic Animals Act 2000* meant that the ACT became the first Australian jurisdiction to mandate the desexing of all cats by 6 months of age, unless the owner obtains a permit to keep the animal ‘intact’. The cost of the permit was set higher than the price of desexing as an incentive for owners to comply. Since that time, the age for mandatory desexing has been reduced to 3 months. The WA *Cat Act 2011* and the Tasmanian *Cat Management Act 2009*, also require all cats by 6 months of age to be desexed. Proposed amendments to the SA *Dog and Cat Management Act 1985* will also require all cats to be desexed by 6 months of age. Some cats reach sexual maturity as young as 4 months of age, so a mandatory requirement to desex by 6 months will not prevent some first litters from being born, as many owners are unaware that kittens can become pregnant at such a young age. In NSW, both the Companion Animal Taskforce and Natural Resources Commission have recommended compulsory desexing of owned cats.

In Queensland, it is a legal requirement for veterinarians to place an ear tattoo in cats who have been desexed. This suggests that a cat might have been previously owned, even if no microchip or collar are present and also assists shelters to determine desexing status in females.

3. **Breeder registration** (ACT, Vic, WA, SA pending)

Cat breeder registration has mainly been introduced in parallel with requirements for dog breeders. However, the ACT has required a permit to be obtained to retain an entire animal, irrespective of whether they are used for breeding. Victoria only requires registration for breeders who have three or more breeding females. Thus, there is inconsistency in relation to the definition of a breeder. Also, all states that have introduced breeder registration have exemptions for breeders who are members of a recognised breed society. Although, it does not directly impact on cat management issues, it is a significant loophole in terms of standards of care and welfare if registered breeders are not compelled to comply with a welfare code of practice (see below). It is important that all breeders are registered through a government authority and cats and kittens are not sourced from non-registered breeders.

4. **Breeder standards** (ACT, Vic, SA pending)

In all but one state (WA) where breeder registration/licensing is required, a condition for registration/licensing as a breeder is compliance with a welfare code of practice to ensure minimal standards of care are complied with. Western Australia does not have a welfare code of practice for cat breeders.

5. **Containment and curfews** (ACT, Vic, Tas)

ACT, Victoria and Tasmania are the only three states/territories that include clauses in legislation to compel owners to confine their cats for a specified time in specific areas (a cat curfew). However, the laws differ (see Table 4). For example, the ACT *Domestic Animals Act 2001* (Part 3 Division 3.2 S81) allows the Minister to declare cat containment areas, whereas the Tasmanian *Cat Management Act 2009* (Part 4 S 18, 19, 20) and Victorian *Domestic Animals Act 1994* (S26 (1), (2)) authorise councils to declare cat containment areas, including specified times
cats are not to be found in specified areas. In the ACT, there are currently 12 declared cat containment areas where cats must be confined to the owner’s property at all times (a 24-hour curfew). In 2016, the ACT Minister for Territory and Municipal Services sought public consultation on two further cat containment areas. In addition, the ACT Responsible Cat Ownership Steering Committee recommended changes to the *Domestic Animals Act 2000*, to declare specific areas subject to cat containment, making it an offence for owned cats to roam in these areas (Eyles 2014). Councils in those states which do not have legislation authorising them to declare curfews on cats in specific areas are still able to set containment bylaws, at least for individual cats causing a nuisance. There are no state-based laws totally prohibiting the keeping of cats in specific areas.

6. **Trap, seize, transfer and/or destroy cats** (all states except NSW)
   In many states/territories, trapping, seizing, transfer, destruction and disposal of cats is permitted under certain conditions. Trapping is often done in conjunction with containment requirements (see Table 4). This provision is aimed at removing wandering stray and domestic cats to help reduce nuisance complaints and wildlife predation.

7. **Registration of cats** (NSW, Vic, WA)
   Only three states require mandatory cat registration under state legislation. The main purpose of registration is to determine ownership but in those states without mandatory registration, compulsory microchipping is considered adequate to identify owners. Councils that promote and enforce cat registration utilise the fees to support local cat management initiatives.

   In 2009, the Queensland state government compelled all councils (through amendments to the *Animal Management (Cats and Dogs) Act 2008*) to introduce compulsory registration for cats. The new laws required that cats be registered with the local council, wear physical identification and also allowed for council to provide incentives for desexing in registration fees. However, the laws were repealed after just three years. However, some parts of Queensland, such as Mackay, still require the registration of cats (see Section 2.3.4).

   SA, TAS, ACT and the NT do not impose statewide cat registration requirements. However, in most jurisdictions councils are able to implement local bylaws requiring registration. It is noted that the ACT Responsible Cat Ownership Steering Committee has recommended that statewide registration be introduced (Eyles 2014). However, a permit is required for owners who have more than three cats.

8. **Not abandoning a cat** (Tas and Vic)
   In two states, it is illegal to abandon a cat under animal management legislation. It is noted however, that in general abandoning an animal is an offence under animal welfare legislation. Given that abandoned cats are often entire and have the potential to predate native wildlife, inclusion of abandonment under animal management legislation allows local government officers, in addition to officers authorised under animal welfare legislation, to also enforce this.
Victoria is the only state that prohibits the feeding of stray or feral cats which is unlikely to be effective in managing stray and semi-owned cats. Community programs should be considered to help reduce stray cat populations humanely and sustainably. Cat semi-ownership is discussed in Section 3.

**FINDING #5**

Cat management is legislated at both the state/territory and local government level. Some states have combined companion animal legislation whilst others have separate legislation for dogs and/or cats.

There are significant inconsistencies in the provisions of cat management legislation between different states and territories that need to be addressed.

The purpose of cat management legislation is not always clearly stated: the Tasmanian *Cat Management Act 2009* clearly places importance on the management of unowned and feral cats that is not evident in other state legislation.

**RECOMMENDATION #5**

The significant inconsistencies between states and between local governments, in legislation, approach and level of commitment to domestic cat management, need to be urgently addressed.

2.3.3 Other state-based management approaches

**Animal management plans**

Only South Australia and Victoria have included a mandatory requirement under state legislation for councils to prepare animal management plans. The emphasis of these has been on dog management but there are some councils that are incorporating more provisions relating to cat control. For example, Kangaroo Island is viewed as having one of the most stringent feral and domestic cat management requirements due to strong community support to protect native wildlife and minimise disease transmission to livestock by enforcing responsible ownership and removing free roaming unowned cats (Natural Resources Kangaroo Island 2015). Since 2005, council bylaws were introduced to ensure all domestic cats were registered, desexed and confined, which has achieved very high compliance. Current discussions are underway to gauge community support for Kangaroo Island to become totally cat-free.

**Cat management board**

South Australia established the Dog and Cat Management Board (DCMB) when the *Dog and Cat Management Act 1995* was introduced. The Board comprises eight members with different expertise including experience in local government, legislation, financial management, education and training, veterinary science, keeping and management of dogs and cats, and community health. It is the only statutory body of its kind in Australia.
<table>
<thead>
<tr>
<th>State</th>
<th>Legislation</th>
<th>Public land</th>
<th>Private land</th>
<th>Reserve or Sanctuary</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Domestic Animals Act 2000</td>
<td>Cat containment in areas of ecological significance, remove &amp; destroy if cat is unclaimed within 7 days</td>
<td>Removal of cats that are on a contained property is not allowed</td>
<td>Remove and destroy if cat is unclaimed within 7 days</td>
</tr>
<tr>
<td></td>
<td>ACT Pest Management Strategy 2012-2022</td>
<td>Cat containment recommended for new suburbs &amp; areas of environmental significance</td>
<td>Landholder encouraged to do pest control based on risk assessment and guidelines</td>
<td>Ongoing management plan to remove feral cats and fence maintenance</td>
</tr>
<tr>
<td>NSW</td>
<td>Companion Animals Act 1998</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Game &amp; Feral Animal Control Act 2002</td>
<td>Permit needed to control on public land</td>
<td>Landholders permitted to control feral cats on their property</td>
<td>Government employees can control</td>
</tr>
<tr>
<td>Qld</td>
<td>Animal Management (Dogs and Cats) Act 2008</td>
<td>Councils able to remove and destroy if cat is unclaimed within 7 days</td>
<td>Removal of cats that are on a contained property is not allowed</td>
<td>Remove and destroy if cat is unclaimed within 7 days</td>
</tr>
<tr>
<td>SA</td>
<td>Crown Lands Act or National Parks &amp; Wildlife Act 1972</td>
<td>Authorised person may lawfully seize, detain, destroy or otherwise dispose of an unidentified cat on Crown Land</td>
<td>Owner may lawfully seize, detain, destroy or otherwise dispose of any cat found in a proclaimed sanctuary *</td>
<td>Authorised wardens may lawfully seize, detain, destroy or otherwise dispose of any cat found in a reserve or protected area</td>
</tr>
<tr>
<td></td>
<td>Dog &amp; Cat Management Act 1995</td>
<td>A person may lawfully seize, detain, destroy or otherwise dispose of any cat found in a place that is more than one kilometre from any place genuinely used as a place of residence</td>
<td>A person* may lawfully seize, detain, destroy or otherwise dispose of any cat found in a place that is more than one kilometre from any place genuinely used as a place of residence</td>
<td>A person may lawfully seize, detain, destroy or otherwise dispose of any cat found in a place that is more than 1 km from any place genuinely used as a place of residence*</td>
</tr>
<tr>
<td>Tas</td>
<td>Cat Management Act 2009</td>
<td>Removed and sent to cat management facility to be collected or destroyed</td>
<td>Lawful for primary producers to remove or destroy cats on their property</td>
<td>State can destroy cats on site in crown, reserves and private timber reserves</td>
</tr>
<tr>
<td></td>
<td>Draft Cat Management Plan 2016</td>
<td>No change</td>
<td>Recommend to include non-livestock primary producers</td>
<td>No change</td>
</tr>
<tr>
<td>Vic</td>
<td>Domestic Animals Act 1994</td>
<td>Authorised officer may destroy a cat at large in any area designated as a control zone</td>
<td>Landowners can trap on own property</td>
<td>Authorised officer can destroy cats at large in any area classified as a conservation zone</td>
</tr>
<tr>
<td>WA</td>
<td>Cat Act 2011</td>
<td>Councils able to remove and destroy if cat is unclaimed within 7 days</td>
<td>Landholders permitted to control feral cats on their property</td>
<td>N/A</td>
</tr>
</tbody>
</table>
The Board undertakes many functions including planning, promoting and providing advice about the effective management of dogs and cats throughout South Australia, undertaking or facilitating research and educational programs as well advising the Minister and the Local Government Association on the operation of the Act (www.dogandcatboard.com.au/).

The DCMB has coordinated and implemented a number of key activities including:

- Promotion of responsible cat ownership through website materials and bus stop posters promoting desexing, microchipping and cat containment – evaluation has been limited to monitoring website traffic seeking more information on containment.
- Conducting surveys of cat owners to collect data on levels of desexing, microchipping and containment.
- Facilitating research, e.g. University of South Australia Citizens Science Cat Tracker Project to demonstrate the distances owned cats will travel in the local neighbourhood; the final report was released in February 2017 (http://www.discovercircule.org.au/projects/cat-tracker/results/)
- Development of Guidelines for councils on cat bylaw preparation.

**FINDING #6**

A cat management plan may be a useful tool for local government to identify key priorities, develop strategic and operational plans as well as evaluation measures.

**RECOMMENDATION #6**

State-based cat management legislation should include a requirement that local councils develop and implement cat management plans that include:

- defining and quantifying the cat management problem with a focus on impact
- setting clear, achievable and consistent objectives
- using humane, ethical and sustainable strategies
- identifying the responsibilities of key stakeholders
- consideration of feral cat management activities
- securing sufficient resources for implementation
- formally evaluating management strategies using agreed measures.

**FINDING #7**

Some states have established cat management advisory groups that appear to play an important role in monitoring and evaluating cat management strategies.
RECOMMENDATION #7

State governments should consider establishing a cat management advisory group with terms of reference that include:

- monitoring the implementation of cat management legislation and compliance with mandatory requirements
- consulting with key stakeholders
- developing relevant codes of practice and SOPs for cat control methods
- identifying and funding relevant research and key metrics to evaluate the effectiveness of cat management strategies.

2.3.4 Local government bylaws

Due to a lack of state-based legislation regarding cat management or where councils are given authority to set legislation, some local government authorities have established their own cat bylaws to enable the introduction of legal requirements for cat owners. The main focus of these bylaws has been to address the number of wandering cats causing a nuisance. This has been done by limiting the number of cats per household, compelling owners to confine their cats to their property, where necessary and requiring identification, registration and desexing.

As with state-based cat management legislation, there are also significant inconsistencies with local government bylaws as evident by differences in South Australian councils (Table 5). For example, in Adelaide, the Mitcham City Council has introduced mandatory registration, microchipping and a limit on number of cats per household whilst adjacent Marion City Council introduced compulsory desexing and a limit on the number of cats per household.

In Queensland, the Gold Coast City Council was one of the first councils to introduce comprehensive cat bylaws that include mandatory desexing and breeder licensing. The council has also been active with community engagement programs including subsidised desexing. The Mackay Regional Council in Queensland has also been active in cat management by requiring cats over the age of 12 weeks to be registered. Cat registration is required each year with the fees being used for the local animal control programs (e.g. maintaining a pet database, reuniting lost pets with their owners and pound operating costs).

2.3.5 Animal welfare

Some cat management activities pose welfare risks including cat containment, trapping, seizing, transport and humane killing. Different approaches are used by different states to manage these risks including requiring residents to sign an indemnity form and demonstrate that they fully comprehend trapping instructions and their legal responsibilities (e.g. City of Casey, Victoria) or only authorised officers setting and retrieving trapped cats (e.g. WA) or promotion of humane trapping guidelines (e.g. Victoria). Similarly, the ACT Responsible Cat Ownership Steering Committee has recommended that trapping only be conducted through a government supervised program to ensure good welfare standards (Eyles 2014).
Table 5: Council bylaws on cat management in South Australia 2012/13. (SA Select Committee on Dogs and Cats as Companion Animals Final Report July (2011) page 54):

A: Limit on cat numbers  
B: Mandatory registration  
C: Mandatory microchipping  
D: Mandatory desexing  
E: Mandatory identification  
F: Expiate nuisance cats  
G: Cat curfew  
H: Expiate cats wandering

<table>
<thead>
<tr>
<th>Council</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adelaide City Council</td>
<td>X</td>
<td></td>
<td></td>
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<td>Barossa Council</td>
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<td>X</td>
<td></td>
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<tr>
<td>DC of Barunga West</td>
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<tr>
<td>DC of Berri-Barmera</td>
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<td></td>
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<td>City of Charles Sturt</td>
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<td>DC of Cleve</td>
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<tr>
<td>DC of the Copper Coast</td>
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<td>X</td>
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<td></td>
</tr>
<tr>
<td>City of Holdfast Bay</td>
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<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kangaroo Island Council</td>
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‡ Scheduled for implementation in May 2013.
Animal welfare can be seriously compromised if trapping, seizing, transporting and killing cats is undertaken by untrained people. This is of particular concern in peri-urban areas where landholders may not be experienced in using humane techniques. Trapping guidelines developed by some states and councils contain some similar information but are not totally consistent.

It is necessary for all trapping to be undertaken in compliance with an agreed code of practice and standard operating procedures.

It is also noted that a cat welfare code is included under animal welfare legislation in Victoria (Private Keeping of Cats) which includes useful information on the health and welfare of cats such as recommending desexing by 8 weeks of age. The ACT is the only other jurisdiction to have incorporated a cat welfare code ([Animal Welfare (Welfare of Cats in the ACT) Code of Practice 2007]) under animal welfare legislation. Incorporating a cat welfare code under legislation has many benefits including raising the importance of safeguarding cat welfare and providing specific requirements to minimise adverse welfare.

### 2.4 Formal cat management strategies

To date, there have been many individual but isolated programs and campaigns to improve responsible cat ownership, especially intended to reduce the number of unwanted cats. The most common initiative to try and reduce the impact of cats in the community is through subsidised or reduced cost desexing schemes.

There do not appear to be any existing programs that comprise a holistic, collaborative and coordinated approach to manage owned, semi-owned, stray and feral cats at a local, state or national level. However, there are a number of recent developments that draw on current knowledge to address more than one aspect of the cat management continuum. This is discussed in detail in Section 2.4.1.

#### 2.4.1 Government initiatives

**Australian Government Threatened Species Strategy**

The Threatened Species Strategy (TSS) has identified predation by feral cats as one of three key factors leading to the extinction of many species of native wildlife. The strategy is a positive step in achieving national agreement and collaboration for feral cat management by identifying key success factors, sharing resources and gaining consistency in identifying and ensuring best practice for feral cat control.

Of the five targets of the Threatened Species Strategy relating directly to feral cat management, the following two are most relevant to best practice cat management, especially in peri-urban and urban areas in regional locations:

- 10 million hectares of feral cat action, using the best techniques for each location.
- Best practice feral cat action implemented across 2 million hectares of Commonwealth land.

In 2015, the Feral Cat Taskforce was established to drive delivery of the TSS targets aimed at tackling feral cats and their impacts. The Taskforce comprises representatives from commonwealth/state/territory government, Natural Resource Management organisations, the
RSPCA and environmental, conservation and invasive animal research organisations. The key activities of the Taskforce are to:

- Link initiatives, innovations and progress on managing feral cat threats
- Build relevant partnerships and national cooperation on feral cat management
- Inform government policy, planning and investment on strategic feral cat management
- Provide clear and accessible data, monitoring and public reports on feral cat management activity.

The Taskforce’s work is primarily framed by the Threatened Species Strategy’s key actions and targets on feral cats, with reference to the Threat Abatement Plan for predation by feral cats (TAP). The TAP provides a national framework to reduce the impact of feral cats on biodiversity through the effective coordination of management and research activities. The TAP acknowledges the link between management of domestic cats and feral cat control, as evidenced by the inclusion of responsible cat ownership as one of its overall objectives:

- Effectively control feral cats in different landscapes
- Improve effectiveness of existing control options for feral cats
- Develop or maintain alternative strategies for threatened species recovery
- Increase public support for feral cat management and promote responsible cat ownership.

**Tasmanian Cat Management Plan**

Tasmania is aiming to achieve an integrated approach for feral and domestic cat control through a Draft Cat Management Plan released for public consultation in May 2016.

The plan is specific for the situation in Tasmania but is based on generic principles aimed at reducing the environmental, health and social impact of cats. These include:

- Clarification of roles and responsibilities of eight key stakeholders (state government; local government; cat owners, breeders and sellers; animal welfare organisations; land owners; industry and community groups; researchers and Australian government) to achieve collaboration
- Quantifying the problem, setting clear achievable objectives and implementing effective evaluation strategies
- Incorporating effective communication, education and training opportunities to gain community support and increase capacity to contribute to the success of the management plan
- Improving legislation to enable more effective enforcement relating to responsible cat ownership
- Supporting research to improve effectiveness and humaneness of control measures.
NSW Pest Animal Review

The New South Wales Natural Resource Commission released a draft report in March 2016, Shared Problem, Shared Solutions – Pest Animal Management Review, which acknowledges the importance of domestic cat management in relation to achieving effective feral cat control. Key principles include facilitating collaboration between government, community and other stakeholders, and adopting an evidence-based and outcome-focused approach. The draft report recommends amendments to the NSW Companion Animals Act 1998 to include mandatory desexing, breeder registration (for owners of entire cats), cat registration (for entire cats) and cat containment. These recommendations are in step with changes occurring in other states particularly for mandatory desexing (see Table 3).

FINDING #8

The Threat Abatement Plan for predation by feral cats acknowledges the link between management of domestic cats and feral cat control, as evidenced by the inclusion of responsible cat ownership in its overall objectives.

Other recent government initiatives from Tasmania and NSW have also acknowledged these links.

The Feral Cat Taskforce provides a model for a coordinated national approach to cat management that could be extended to include domestic cats.

RECOMMENDATION #8

An integrated approach to the management of feral and domestic cats is vital to ensure that strategies are complementary, not opposing, and that no vital aspects in terms of responsibilities, laws and initiatives are overlooked.

2.4.2 Other initiatives

Australian Cat Action Plan

The Australian Cat Action Plan (ACAP) is being developed under the Getting to Zero program, an initiative by the Animal Welfare League, Queensland. The Getting to Zero program aims to improve responsible pet ownership so that no healthy or treatable dogs and cats are euthanised. The ACAP focuses on domestic cats and has involved discussions with Australian Cat Federation, Australian National Cats, Australian Institute of Animal Management, Animals Australia, Australian Wildlife Rehabilitation Council, Australian Veterinary Association, Sentient, Animal Welfare League Australia, RSPCA Australia, and the National Animal Rescue Groups of Australia.

The key actions recommended include:

- Increase levels of desexing prior to sexual maturity (4 months of age) and by owners on low income through effective low-cost/subsidised programs and veterinary training to do early age desexing.
• Ensure all cats to be desexed, vaccinated, microchipped and socialised prior to sale/transfer (including rescue organisations with some exemptions).

• All breeders to be registered and for details to be recorded on microchip database; sellers to record new owner details on microchip database.

• All breeders and sellers to comply with mandatory care and welfare standards.

• Greater availability of cat friendly accommodation especially rental properties.

• Cat rescue groups to publicise rehoming and euthanasia statistics.

Some progress has already been made in terms of legislative change regarding desexing, microchipping and breeder registration. However, more work needs to be done to gain consistency in legislation as well as provide widespread access to low-cost desexing and cat friendly rental accommodation. It is thought that publication of rehoming and euthanasia statistics will compel shelters and rescue groups to continue to improve adoption rates whilst other measures such as mandatory identification and desexing will help to increase retention by owners, reclaim rates and reduce overpopulation.

‘Who’s for Cats?’ campaign

Few welfare and government agencies have focused efforts and campaigns on trying to address the contribution that semi-owned cats make to unwanted cat numbers. The only campaign on record is the ‘Who’s for cats?’ campaign in Victoria that operated from November 2007 to November 2008. This campaign was a joint initiative of the Animal Welfare Science Centre, Victorian Department of Primary Industries, Australian Veterinary Association, RSPCA Victoria, Cat Protection Society, Lort Smith Animal Hospital, Monash University, The Lost Dog’s Home, and Victorian Animal Aid. Under the Australian Animal Welfare Strategy, funding was provided to expand the campaign nationally but due to administrative delays in releasing funds and a lack of resources at the state level, this did not occur.

The main focus of the ‘Who’s for Cats?’ campaign was to encourage semi-owners to either take ownership of the cat they cared for or surrender it to a shelter or municipal pound (Webb 2008; Victorian Department of Primary Industries 2009). This campaign was not really a new approach to cat management but rather an expansion of the traditional impoundment and euthanasia of unowned cats. The campaign was regarded as a success when measured against the key performance indicators of ‘changing behaviour’ and ‘community collaboration’, but it also led to an increase in cat impoundments and euthanasia rates (Victorian Department of Primary Industries 2009). On reflection, it appears the program did not sufficiently engage with cat semi-owners to achieve outcomes that were acceptable to them as well as to government. A review of the media revealed considerable anger from the public and subsequent research has shown that cat semi-owners continue to semi-own cats and contribute to shelter intakes (Zito 2015; Zito 2015b, 2016a).

FINDING #9

Many different initiatives have been developed to improve responsible cat ownership, especially to reduce the number of unwanted cats. However, there are
no existing programs that comprise a holistic, collaborative and coordinated approach to managing owned, semi-owned, stray and feral cats at a local, state or national level.

There is currently no national leadership driving domestic cat management strategies to achieve a coordinated and consistent approach.

RECOMMENDATION #9

The Australian Government should take a leadership role in developing a coordinated approach to domestic cat management across Australia. This should include encouraging state and territory governments to share resources, coordinate research and evaluation activities and to integrate this with feral cat management.

FINDING #10

Few collaborative programs have formal written agreements in place to ensure a clear understanding of key roles and responsibilities.

RECOMMENDATION #10

Best practice cat management requires communication and involvement of stakeholders in decision making and solutions. All stakeholders involved with cat management need to work collaboratively towards implementing effective and humane management strategies, with an MOU between major stakeholders.
3. Approaches to effective domestic cat management

3.1 Introduction

The following sections use the categories set out in Section 1.2 to examine the full range of approaches to manage domestic cats. A detailed examination of cat ecology and methods for feral cat management has already been carried out (Denny et al. 2010) and thus is not covered here. An examination of the effectiveness of these techniques is beyond the scope of this paper, but it is clear that controlling feral cats in the Australian landscape is a significant, if not impossible, challenge. Successful approaches have required the implementation of two or more strategies: even in an island situation, it has not been feasible for a single control method to eradicate cats (Denny et al. 2010).

3.2 Managing unowned and semi-owned cats

Unowned cats are found in and around human habitations, may depend opportunistically on some resources indirectly and unintentionally from humans, and have no identifiable owner, although they may have been previously owned or become lost (Aguilar et al. 2012; Finkler and Terkel 2012; Alberthsen 2014). It is also likely that a proportion of unowned cats were originally unwanted kittens of owned or semi-owned cats (Casey et al. 2009; Marston 2009). Semi-owned cats are under the direct and intentional care of humans but are not considered owned by their carers. Unowned and semi-owned cats both add to cat overpopulation and predation of wildlife.

The problem of unwanted cats in urban areas is anthropogenic and consequently requires stakeholder and community engagement to devise cat management plans that have a good chance of success (Medina et al. 2016). In order to achieve this, relevant social, cultural, political and economic issues must be considered (Proulx 1988; Oppel et al. 2011; Medina et al. 2016).

There are three main strategies that can be used to reduce unowned and semi-owned cat populations:

- Limiting the flow of cats from the owned and feral cat populations into the unowned and semi-owned populations.
- Reducing the number of unowned and semi-owned cats through removal of cats (by non-lethal or lethal methods).
- Controlling reproduction of unowned and semi-owned cats.

In addition, anecdotally some jurisdictions have reduced access to food sources to minimise the number of cats congregating in specific areas, e.g. fencing rubbish tips, effective disposal of food scraps from food outlets etc.

3.2.1 Limiting flow of cats into the unowned cat population

Limiting the flow of feral cats into the unowned and semi-owned cat population by controlling the feral population is described elsewhere (Denny et al. 2010; Sharp et al. 2012; Lazenby et al. 2015; Commonwealth of Australia 2015a, b; b, a; Biosecurity Tasmania 2016a, b).
Limiting the flow of owned cats into the unowned cat population involves reducing abandonment and the incidence of cats roaming and not returning home. These topics are addressed later in this paper (see Section 3.3). Limiting the flow of semi-owned cats into the unowned cat population involves controlling their reproduction and supporting the long term responsible care of semi-owned cats.

3.2.2 Reducing the number of unowned and semi-owned cats

Adoption

There is a limited capacity to absorb unowned cats into the owned population, especially as there is already an oversupply of surrendered owned cats needing adoption and easily obtained cheap or free cats from other sources. In an effort to limit cat numbers animal shelters generally desex cats prior to rehoming as a matter of policy but some private rescue groups, and many council pounds, do not, thus potentially contributing to cat overpopulation. In addition, the situation is compounded by the higher cost of buying desexed kittens/cats whereas undesexed kittens can be obtained very cheaply and easily. Low-cost adoption of desexed kittens/cats from all welfare/rescue groups could help compete with other cheap sources of kittens/cats.

Although unowned cats are the major source of cats entering shelters, addressing the issues leading to surrender or abandonment of owned cats can help to provide more positive options for unowned cats in shelters. If the number of surrendered and abandoned owned cats can be reduced, this will help create more adoption opportunities for semi-owned and unowned cats. However, sadly, a proportion of semi-owned and unowned cats will not be of suitable temperament or socialisation status for rehoming, resulting in their euthanasia (Levy 2012; Levy et al. 2013).

Nonetheless, animal welfare organisations can employ a range of strategies to increase adoptions of cats, including semi-owned and unowned cats by, for example, creative marketing and advertising campaigns, off-site adoption centres, adoption drives, and improving the accessibility and attractiveness of adoption centres (Fournier 2004; Marsh 2010; Marsh 2012; Lord et al. 2014; Zito et al. 2015b). Examples in Australia include: ‘Adopt Meow’ $50 cat adoption drive, Big Adopt-Out, Pop up adoption events and ‘The Paws Awaken’ $20 adult cat adoption drive from RSPCA Queensland. In addition, the Petbarn franchise has actively supported adoptions through cat hubs in their stores in collaboration with the RSPCA; this has resulted in thousands of kittens and cats being adopted Australia-wide. Some councils also promote adoption of impounded cats and this could be undertaken on a larger scale to alleviate the burden on cat rescue groups and shelters.

There is currently no specific data on adoption of semi-owned cats as this category of cats has not been differentiated from unowned cats. This also means that data on the adoption of unowned cats are inaccurate, as these data will include some semi-owned cats.

Potential role in future cat management

Despite the range of strategies used by welfare organisations such as the RSPCA to increase adoptions of cats, the available information that shows large numbers of cats which are categorised
as ‘unowned/stray’ are not being adopted. This indicates that these strategies to increase adoption of semi-owned and unowned cats are not sufficient to have a substantial positive impact on the outcome for some cats from this population.

**FINDING #11**

Semi-owned cats need to be recorded as a separate category from unowned and owned cats in shelter/pound statistics.

**RECOMMENDATION #11**

Cat management plans and strategies must identify and address semi-owned cats as a separate group to unowned cats and ensure that cat semi-owners are specifically targeted in education, desexing and other relevant cat management programs.

**Trapping programs**

There are two potential outcomes for cats that are trapped and permanently removed from the population: a live outcome where cats are rehomed through adoption (known as trap and remove; see above), or a lethal outcome where trapped cats are killed (known as trap and kill).

Trapping and subsequent humane killing is generally considered to be a relatively humane method of controlling cat populations compared to other lethal methods. Nevertheless, even the use of humane traps cannot fully alleviate the significant welfare risks associated with trapping cats. Welfare outcomes are affected by a range of factors including the type of trap used, positioning of a trap with regard to environmental exposure, frequency of checking, potential for injury during escape attempts and distress caused by containment (Robertson 2007). Any trapping needs to be undertaken in compliance with an agreed code of practice and standard operating procedures (see Section 2.2.3). Trap and kill also has minimal impact on non-target species and poses less danger to humans and pets than other lethal methods (Palmer 2014).

Some jurisdictions have developed guidelines for trapping unowned (non-feral) cats but these are not consistent. Ideally, all domestic cat trapping programs should comply with a welfare code of practice and procedures to ensure humane measures are undertaken. One example is the ‘Humane cage trapping of domestic, unowned and wild cats’ (2012) publication developed in Victoria (Moore 2008). In addition, an ongoing commitment is needed to continuously refine existing methods and identify new methods to improve humaneness for trapping of cats. Some councils require that trapping is only to be done by authorised officers who will set up, monitor and remove trapped cats (usually individual cats that are causing a nuisance) to a local cat management facility, as occurs in Western Australia (pers comm Colin Hyde). There are benefits in other jurisdictions adopting a similar approach to achieve consistency and minimise welfare risks associated with trapping. This in turn may help gain greater community acceptance for trapping programs. In other states including Victoria and South Australia, property owners are legally permitted to trap cats on their property using recommended methods with the cat being transferred as quickly as possible to a designated cat management facility.
The current system of trap and kill results in minimal overall reduction in cat numbers, due to the very small percentage of cats actually affected by these programs, and the limited capacity of shelters and pounds to remove unwanted cats (Hatley 2003; Levy 2012; Levy et al. 2013). Recent research from Australia found that low-level culling of feral cats led not to a population decrease, but an increase in cat numbers (Lazenby et al. 2015). This study raises important considerations about traditional trap and kill efforts (typically triggered by nuisance complaints) undertaken by animal control agencies or through animal welfare organisations when members of the public trap and bring unowned cats into animal shelters. These isolated and indiscriminate efforts are effectively low-level culling and, as currently practiced, are unlikely to result in any significant long-term improvement for issues of concern, such as wildlife predation, spread of disease, public health, or cat welfare. Computer-based modelling has consistently predicted failure of lethal control methods to eliminate cat populations unless high removal rates are achieved consistently and for long periods; these conditions are considered unrealistic in urban areas (Andersen et al. 2004; Foley et al. 2005; Budke and Slater 2009; Schmidt et al. 2009; McCarthy et al. 2013). One simulation model estimated that over 82% of cats in a population of 200 cats would need to be removed to result in elimination of the population over 4,000 days (McCarthy et al. 2013). Other estimates for effective removal rates range from over 50% of the female population (Andersen et al. 2004) or 55-60% in the absence of immigration (Nutter 2005); again this is unrealistic as immigration will always occur. In order to achieve significant cat population decline and resultant decrease in wildlife predation an intensive and large-scale culling program that killed a high proportion of the cat population and was maintained over a long period of time would be necessary. Models have predicted that colonies can be kept small by very high-level culling every one or two years, but that this will not lead to long-term reduction in the numbers of cats as colonies will re-establish due to immigration (Nutter 2005).

It is important that the socio-political and practical implications of a trap and kill program be taken into account when considering if this is a viable option for urban and peri-urban cat management (Hatley 2003). It would not be possible to ensure that unconfined owned cats and semi-owned cats will be unaffected by such a program (Robertson 2007). Furthermore, many members of the community are opposed to lethal cat control programs, particularly in urban areas (Ash 2001; Robertson 2007; Marston et al. 2008; Wilken 2012; Hurley 2013; Levy et al. 2013; Paterson 2014) and non-lethal cat control measures, or even inaction, are more often accepted (Loyd and DeVore 2010; Medina et al. 2016). Consequently, it is unlikely that implementation of intensive, high level and large-scale culling would be accepted in most urban areas. Indeed such programs can meet with fierce opposition, protests and even sabotage attempts in some cases (Sterba 2002; Nealy-Brown 2002; Hatley 2003; Nogales et al. 2013; Parkes et al. 2014).

If an intensive and large-scale culling program was considered, a pervasive, intense and continuing campaign to educate the public about the impacts of cats on wildlife and human health and the need for culling would be necessary (Proulx 1988; Medina et al. 2016). The public education campaign would need to be planned and implemented well before any culling operation commenced and would need to include public service announcements on television, radio, social media and in newspapers, and education in schools. Rehoming is attempted on a small scale by some councils where possible (e.g. individual trapping of nuisance cats) but may be problematic on
a large scale due to extra resources required unless local community support was available (pers comm Colin Hyde). It can be difficult to develop effective communication programs; it is necessary to begin the development process with a clear understanding of target audiences, including their attitudes and beliefs (Jacobson 2009; Fishbein and Ajzen 2010). Changing public attitudes takes time and the ideas need to be continually put before the public. In addition, local government programs aimed at reducing immigration of cats into the unowned population would need to be strictly enforced (Hatley 2003). However, cat control, and particularly the lethal control of cats in urban areas, has never been popular with federal, state or local government. Previous efforts to address cat overpopulation issues have been poorly funded and have rarely received ongoing support.

Another important component contributing to the success of a lethal cat removal program is to eliminate the source of food that cats were relying on. If this is not done then immigration into the area to utilise the source of food reduces the likelihood that the program will be successful (Winter 2004).

Trap and kill programs are far from simple to implement effectively and would involve significant investments of resources to have any chance of success. The effort required to eradicate cats from even geographically isolated islands with intensive lethal control methods including trapping, shooting and poisoning is very high. It was found that the mean reported effort to eradicate feral cats from six large islands was 543 ± 341 person-days per 1000 ha of island over 5.2 ± 1.6 years (Parkes et al. 2014).

Trapping activities in peri-urban and urban areas need to be considered carefully due to the difficulty in implementing a program that would be able to remove sufficient numbers of cats and the evidence that less than optimum removal rates may actually increase cat numbers (Lazenby et al. 2015). In addition, eradication methods would need to be continually applied as there would be immigration and introduction of new cats into the population, through abandonment and new litters from remaining cats (Hatley 2015).

**Potential role in future cat management**

The current system of indiscriminate catch and kill of unowned cats in urban areas is unlikely to result in any significant long-term improvement for issues of concern, such as wildlife predation, spread of disease, public health, or cat welfare. Lethal control methods only have the potential to eliminate cat populations if high removal rates are achieved consistently and for long periods; this is considered unrealistic in urban areas due to community opposition, potential for owned cats to be mistakenly caught and killed and other difficulties in implementation such as lack of sufficient and sustained resources.

If trap and kill programs cannot be effectively introduced due to the problems described above then they are unlikely to be successful in reducing the number and impact of cats. As a result, the future management of unwanted cats in urban areas may be best served by concentrating on non-lethal control methods if these can be more effectively implemented.
FINDING #12

Unconfined owned cats and semi-owned cats can be affected by trap and kill measures in addition to the unowned cats targeted.

Trap and kill programs in peri-urban and urban areas are very difficult to effectively implement. Ineffective implementation results in failure to reduce cat numbers in the long term and consequently no significant improvement for issues of concern such as wildlife predation.

The community is increasingly opposed to lethal cat control programs, particularly in urban areas.

Some councils who are involved in cat trapping also promote adoption of trapped unowned and socialised cats on a small scale.

RECOMMENDATION #12

Where trap and kill programs are considered they must be adequately assessed and judged to be justified, humane and effective, before they are undertaken and should include a process for adoption of socialised kittens and cats.

3.2.3 Controlling reproduction of unowned and semi-owned cats

Desexing options

Surgical ovariohysterectomy (or ovariectomy) and castration remain the mainstay and gold standard for inducing permanent sterility in cats (desexing). Permanent sterilisation of cats contributes to controlling the cat population, as well as having other health and behavioural benefits (Murray et al. 2008). Recently, vasectomy has been assessed as a theoretical alternative to castration (McCarthy et al. 2013) but there is no field evidence to support use of vasectomy alone. Additionally, there are significant cat welfare concerns as hormonally intact cats are, more likely to fight and roam, resulting in injury, disappearance and/or death and are more prone to the nuisance behaviours that so often result in cat impoundment and destruction.

The development of a safe, practical, cost-effective single-dose lifelong non-surgical sterilant for cats of both sexes would revolutionise cat population control. There have been many advances in this area over the last ten years and there is active research continuing into potential methods including immunocontraception with a single-administration vaccine against gonadotropin releasing hormone (GnRH), long-term therapy with GnRH agonists administered in controlled-release devices, targeting cells in the brain or gonads with cytotoxins, gene therapy which leads to protein expression that suppresses reproduction and gene silencing of peptides essential to reproduction (Johnston et al. 2015). Continued support for this type of research is essential to achieve successful cat management in the future.

Recently geographic information systems (GIS) have been used overseas to identify specific areas that contribute disproportionate numbers of kittens to shelter intakes (Reading et al. 2014), and areas where there are high concentrations of unowned cats (Aguilar et al. 2012) and unmanaged
cat colonies (Aguilar et al. 2013). These areas can then be made the focus of targeted desexing and education campaigns (Aguilar et al. 2012; Reading et al. 2014) and used to assess the efficacy of implemented programs (Reading et al. 2014).

**Trap, neuter and return programs**

Trap, neuter and return (TNR), also known as trap, desex and return, is used as an alternative to lethal cat control in some developed countries. A number of animal welfare organisations internationally support some form of TNR as a humane method of cat population control (RSPCA UK 2014; ASPCA 2017; BC SPCA 2017; Levy et al. 2003a).

Indicators that have been used to assess the success of TNR programs include:

- Decrease in cat colony size
- Reduction in nuisance complaints relating to the cats
- Reduction in unowned cat intakes into local animal shelters and animal control facilities.

Using these measures, there are variable reports of TNR’s success as a cat management tool (Jones and Downs 2011; Levy et al. 2014; Slater 2015; Kilgour et al. 2017). Some cat colonies managed with TNR that have been studied have declined in numbers (Levy et al. 2003a; Natoli et al. 2006) but other studies report an increase in cat numbers over time (Castillo 2003; Gunther et al. 2011); an increase in population is particularly evident when there are high rates of immigration into the colony from unowned or abandoned owned cats (McCarthy et al. 2013; Miller et al. 2014). In many places legislation is already in place to discourage abandonment, but enforcement is difficult to achieve (Robertson 2007).

Population modelling suggests that 75-80% of breeding adult cats in a colony need to be desexed to result in a decrease in the cat population (Foley et al. 2005; McCarthy et al. 2013; Miller et al. 2014). However, the actual percentage of cats needing to be desexed will depend on many factors including the mean lifespan of cats in the colony, migration rates, population density, urbanisation, climate, availability of resources and other environmental factors (Schmidt et al. 2009; Miller et al. 2014; Boone 2015; Kilgour et al. 2017).

The majority of reported studies of TNR are from the USA (Centonze et al. 2002; Levy et al. 2003a; Levy and Crawford 2004; Stoskopf et al. 2004; Weiss et al. 2013) and all are overseas (Natoli et al. 2006; Finkler and Terkel 2010; Kilgour et al. 2017).

An increasing body of evidence demonstrates that long-term TNR programs can effectively reduce free-roaming cat populations, especially those programs that include an adoption program, monitoring and desexing of new cats arriving into the colony (Hughes and Slater 2002; Levy et al. 2003a; Stoskopf and Nutter 2004; Kilgour et al. 2017). In addition, TNR programs have potential benefits beyond just reducing cat numbers, including the potential to improve cat health and reduce cat related conflict with the local community due to the reduction in cat nuisance behaviours in desexed animals, such as aggression (Finkler and Terkel 2010; Gunther et al. 2016; Kilgour et al. 2017). Some authors have also suggested that maintaining a small number of desexed cats in a community is beneficial in terms of controlling rats and mice (Kilgour et al. 2017) as rats...
and mice have been shown to represent a high proportion of urban cat prey in those countries where this has been documented (Barratt 1997; Tschanz et al. 2010).

The factors that affect the potential efficacy of TNR (for example, the immigration rate and environment) vary considerably between different areas and countries (Kilgour et al. 2017). It is also important to note that the definition of ‘success’ of a cat management program is likely to differ for welfare organisations, conservation biologists, local government and policy makers (Longcore et al. 2009) and this creates controversy (Dauphine and Cooper 2009; Kilgour et al. 2017). For welfare organisations and cat advocates, success is likely measured in terms of improved cat health and welfare, a stable or reducing population and reduced admissions and euthanasia of unowned cats in animal shelters (Neville 1983; Zaunbrecher & Smith 1993; Longcore et al. 2009). For conservation biologists complete and rapid extinction of a cat colony and reduction or elimination of cat predation on wildlife is likely to be the measure of success (Jessup 2004; Nogales et al. 2004; Longcore et al. 2009). For local government and policy makers success will most likely be measured by reduction of nuisance complaints, improved public opinion and reduced cat management costs and conflicts. It is important to note that no assessments of success of TNR programs based on the impact on wildlife have been reported.

**Successful TNR programs**

The following are examples of TNR programs reported as being successful:

- In the USA, the Texas A&M university campus implemented a TNR program to manage their cat population. The numbers of cats and kittens and the number of cat complaints received by the university’s pest control service were found to have decreased over the two-year study period (Hughes and Slater 2002).

- In the USA, a TNR program on the University of Central Florida campus was monitored over an 11-year period. The cat population decreased by 66% over that time and no kittens were born on site after the fourth year of the program. There was some immigration of cats into the colony (strays and abandoned cats) but the new cats were desexed or adopted before they could reproduce (Levy et al. 2003a). This TNR program included an adoption component and 47% of cats were removed for adoption during the study period (Levy et al. 2003).

- Another US study of 6 cat colonies in which TNR programs were introduced found that all of the colonies stabilised and had population declines compared with control colonies in which the cats were not neutered. There was a mean population decline in the TNR colonies of 36% during the first two years of study and the populations continued to decline after the two-year study period. In contrast the three control colonies had a mean increase in population of 47% over the same period (Stoskopf and Nutter 2004). Seven-year follow up on these same colonies found that the TNR colonies were stable in composition and declining in size while non-TNR control colonies increased in size and had high turnover of cats. There was consistent low level immigration into both TNR and control colonies. After two and a half years since the implementation of TNR, one of the colonies ceased to exist, and the other colonies reduced to five or less cats in the 7 years of follow-up (initial colony
sizes ranged from 10 to 27 with a mean of 13 ± 6 cats per colony). The researchers concluded that TNR is an effective strategy that provides a viable option for feral cat management (Nutter 2005).

- In Rome, Italy a well-established long-term TNR program consistently decreased cat colony size by 24% over 6 years. It was noted in this study that the constant abandonment of cats into the colony kept the numbers relatively high despite 86% of the original number of cats being neutered over the 6 years (Natoli et al. 2006).

- Another TNR program in Florida, USA desexed approximately 54% of the cat population in the targeted area over the two-year study period. In addition, the program involved adoption of socialised cats and nuisance resolution counselling for residents. The study compared per capita shelter intake and euthanasia in the target and a non-target area. Compared to the target area, the per capita shelter intake was 3.5-fold higher and per capita shelter euthanasia was 17.5-fold higher in the non-target area. Shelter cat intake from the target area decreased by 66% compared to a decrease of 12% in the non-target area. It was concluded that high-impact TNR combined with the adoption of suitable cats and nuisance resolution counselling for residents is an effective strategy to reduce shelter cat intake. In addition, only 0.5% of cats admitted to the TNR clinic in the study needed to be euthanased due to health issues and only 0.3% cats died peri-operatively (Levy et al. 2014).

Unsuccessful TNR programs

The following are examples of TNR programs that were reported as unsuccessful:

- The cat population of a colony in London over four years was found to fluctuate between 19 and 17 but not decline (Neville 1989).

- One US study reported that two colonies that were part of a TNR program in Florida had their population size increase over the year of study due to immigration of new cats dumped at the highly visible sites (Castillo and Clarke 2003).

- In Israel a study compared rates of immigration, emigration, and kitten survival over one year between two cat colonies that were subjected to TNR with two cat control colonies that were undesexed. The number of adult cats in the two TNR colonies increased over the study period due to higher immigration and lower emigration rates than in the control colonies in which the number of adult cats decreased. In addition, it was found that kitten survival in the TNR colonies was higher than in the control colonies. The researchers suggested that the increase in cat numbers in the TNR colonies was a result of sexually intact cats immigrating into the desexed colonies more readily and desexed cats reducing their emigration rates, possibly due to a reduction in reproductive and competitive pressures (Gunther et al. 2011).

Simulation model reports

- A theoretical population model was used to assess the countywide implementation of TNR in San Diego County, California and Alachua County, Florida in the US. This study concluded
that there was not a consistent reduction in per capita growth, the population multiplier, or the proportion of female cats that were pregnant over 10 years in San Diego and after 7 years in Alachua County (Foley et al. 2005).

- Another study using computer-based modelling estimated that it would take 12.8 years to eliminate a cat population with a TNR program with an annual neutering rate of 75% to 85% that was maintained throughout that time (Nutter 2005).

- Another computer-based model predicted that desexing of over 75% of the female cat population would effectively control the cat population (Andersen et al. 2004).

- Similar modelling was used to compare the theoretical effect of a three-year single-treatment nonsurgical contraception program with traditional surgical TNR. This model indicated that stabilisation of the cat population size would require that over 51% of non-desexed female cats were surgically desexed annually. Once the population had been stabilised it was predicted that approximately 14% of the total female population would need to be desexed annually or 71% of the total female population would have to be desexed at all times to maintain a stable population (Budke and Slater 2009).

- Another theoretical model was used to predict the effects of TNR on an actual cat colony using different capture and immigration rates in the model. If there was no immigration into the colony (which is unrealistic), the cat population size was predicted to decrease 46% after 25 years of TNR implementation and this was the same for a lethal control program (Schmidt et al. 2009).

- One study compared an additional approach to lethal control and TNR: ‘trap-vasectomy-hysterectomy-return’ (TVHR). In this model TVHR was predicted to be superior to both lethal control and TNR in reducing cat population as it resulted in a decrease in feral cat populations at lower capture rates than either lethal control or TNR. In addition, cat days in the environment (one way of assessing potential impact on wildlife) were also predicted to decrease more rapidly with increased capture rates for TVHR (McCarthy et al. 2013). However, this approach has not been fully evaluated in the field and would need field studies to adequately assess its efficacy and impact on cat welfare. In another study it was reported that vasectomised male cats were more likely to be killed by vehicles than intact or castrated males (Nutter 2005). This is likely to be related to the greater distances that vasectomised male cats were found to travel and larger home range size compared to intact or castrated males. It was suggested that the greater distance travelled and larger home range size for vasectomised male cats resulted from the cats’ search for breeding females because the females in their home colonies were desexed (Nutter 2005).

- A recent study presented data from a simulation model that compared the potential effects on unowned cat populations of TNR with trap and remove methods of cat control (in the model cats were trapped and permanently removed from the population without specifying their fate). The model demonstrated TNR’s potential to stabilise and reduce cat populations and the relative effectiveness of TNR in comparison to the traditional trap and kill method (Miller et al. 2014b). However, it is to be noted that this model assumed that the trapping efficiencies for trap and kill and TNR were identical and this may understate TNR’s
effectiveness. The authors acknowledged that economic, social and other considerations must factor prominently into the final choice(s) among multiple management options. One of the most important social considerations is the public support for the control method. TNR has been shown to have broad public support compared to trap and kill methods in overseas studies but this has not yet been adequately studied in Australia. There is often a significant disparity between public opinion and the operating policy of local governments, animal control and even some welfare organisations (Lloyd et al. 2012).

Welfare concerns

Another controversial issue related to TNR is the concern about the welfare of cats that are desexed and returned to colonies to live; this is largely due to the potential for a negative impact of anthropogenic pressures on the health, behaviour and lifespan of the cats (Levy et al. 2003; Jessup 2004; Finkler et al. 2011a; Loyd et al. 2013; McManus et al. 2014). Some research has found high rates of kitten morbidity and mortality in high-density free-roaming cat populations (Izawa and Ono 1986; Mirmovitch 1995, Gunther and Terkel 2002; Stoskopf and Nutter 2004; Gunther et al. 2011). It has been reported that the two most common outcomes for individual cats in colonies were disappearance from the colony or death, most often due to motor vehicle trauma (Nutter 2005).

One concern expressed regarding the welfare of colony cats is that they are likely to be at high risk of infectious disease. However, the baseline health status and infection rate of FIV (feline immunodeficiency virus), FeLV (feline leukemia virus), Cryptosporidium spp., Giardia spp. and Toxocara cati of colony cats have been found to be similar to that reported in both feral and owned cats (Lee et al. 2002; Luria et al. 2004; Levy and Crawford 2004; Nutter 2005; Levy et al. 2006). Other studies have reported a higher incidence of FIV in feral cats compared to companion cats (Nutter 2004; Norris et al. 2007). Feral cats have been reported to have higher seroprevalences of Bartonella henselae and Toxoplasma gondii, and it has been proposed that this was due to greater exposure of feral cats to the vectors or hosts of these organisms (Dubey 1973; Nutter 2005). One study of urban ‘feral’ cats in Brazil found that fleas were present on 28% of the cats, and Haemobartonella felis, piroplasms (Cytauxzoon spp. or Babesia spp.) and FIV infected 38%, 47% and 21% of the cats respectively. No cat was found to be infected by Dirofilaria immitis or FeLV (Mendes-de-Almeida et al. 2004). Infectious conditions of cats will vary in different countries and locations and this will affect the welfare of those cats, which in turn will require careful evaluation if a TNR program is to be considered. In addition, the accumulation in the environment and effect of ectoparasites and other pathogens that can be carried by cats and affect other species must also be considered (Longcore et al. 2009), these include fleas Haemobartonella felis, Ricksettia spp, and Coxella spp (Chomel et al. 1996; Shawet al. 2001; Akucewich et al. 2002) hookworms or roundworms (Uga et al.1996; Anderson et al. 2003; Dubn’a et al. 2007) and Toxoplasma gondii (Dubey 1973).

The capture, transportation and surgery of cats for TNR certainly could cause some distress and some cats will be pregnant when desexed. However, overall it is possible to minimise distress during the TNR procedure and pregnant females can be safely desexed with careful management (Levy et al. 2002; Association of Shelter Veterinarians’ Veterinary Task Force to Advance Spay-Neuter 2016).
A recent study raised concerns about the welfare of free-roaming cats living in highly developed and crowded cities in Israel due to the high number of public complaints related to cat injuries and distress. Higher incidences of welfare problems were associated with higher levels of breeding and numbers of kittens. The authors suggested that controlling the reproduction of the cats, thereby reducing the number of births (and associated parturition dangers) and number of kittens (which tend to suffer high mortality) could have the potential to reduce the welfare concerns associated with free-roaming cats (Gunther et al. 2015).

Despite these concerns, the evidence indicates reasonable welfare for cats in managed TNR colonies that have been researched, which would negate the strong opposition to TNR on health and welfare grounds.

Recent research in New Zealand found that cats in managed cat colonies had good welfare of a comparative level to owned cats, while even unmanaged cats’ quality of life scores were fair-to-good (Dale 2015). In a number of studies of TNR colonies only a small proportion of the cats trapped needed to be euthanased due to debilitating conditions (Wallace and Levy 2006). In addition, desexed free-roaming female cats have been found to have reduced cortisol levels and aggression compared to entire free-roaming female domestic cats (Finkler and Terkel 2010). This suggests that the welfare of the individual cats is improved by desexing, likely due to reduced social and reproductive pressures, evidenced by lower aggression of the desexed females.

Other evidence has shown that desexed cats in colonies lived significantly longer than their non-desexed counterparts (Nutter 2005). In another recent study it was reported that the morbidity rate for cats in colonies significantly decreased with increased desexing rate. The authors concluded that desexing may improve cat welfare (Gunther et al. 2016).

Since the welfare of free-roaming cats has been associated with the amount of care that is provided to them (Slater 2007) the better the care provided to the cats in a cat colony the better the animal welfare related outcomes are likely to be (Gunther et al. 2015). This evidence should provide some reassurance to those who are concerned that unowned cats have poor welfare and consequently believe that unowned cats should be humanely killed rather than desexed and managed in their environment.

**Factors contributing to successful TNR programs**

TNR programs have the potential to be a useful cat management tool in urban areas where time and resources will allow the long-term reduction and eventual extinction of cat colonies (Stoskopf and Nutter 2004). The evidence in the literature can assist in identifying the factors that contribute to the success of a TNR program:

1. **Immigration of cats is prevented or minimised.** TNR is likely to be successful in reducing and controlling cat numbers only if immigration into the colony can be prevented or reduced to a very low level and where any cats that do join the colony are desexed or adopted before they can reproduce (Guttilla and Stapp 2010; Paterson 2014). Immigration can be minimised by implementing public education programs aimed at improving responsible cat ownership and where geographical boundaries prevent the immigration of cats into the program area.
2. *The cat population is continually monitored.* The ability to monitor cat numbers and arrival of new cats into colonies so that new arrivals can be adopted out or desexed promptly will contribute to the success of a TNR program (Gunther et al. 2016).

3. *Researchers are active participants.* Dedicated teams who implement the TNR program with strict attention to detail are an important component of TNR success. Successful TNR programs reported in the scientific literature have generally been implemented with participation of the researcher team (Hughes and Slater 2002; Levy et al. 2003).

4. *Cat adoption is an integral part of the program.* An adoption component is considered a crucial part of successful TNR programs (Levy et al. 2003; Stull 2007). Combining adoption with TNR can offset immigration into colonies and help reach the removal threshold necessary for population decline (Andersen et al. 2004).

5. *Carers/semi-owners are involved.* Involving cat semi-owners in any TNR plan is vital as they can provide support and access to cat colonies, can help to maintain positive public perceptions of the TNR program and encourage community support and engagement (Haspel and Calhoon 1990; Centonze and Levy 2002; Ash and Adams 2003; Finkler et al. 2011a; Zito et al. 2015a; Kilgour et al. 2017).

6. *The cat colony is well managed and the program adequately resourced over the long term.* A significant factor determining the success of a TNR program is likely to be good management of the cat colonies involved. This requires good communication and building of trust with all stakeholders, and the engagement and involvement of all participants (Gunther et al. 2016; Kilgour et al. 2017). TNR programs must have long-term commitment and resourcing in order to achieve their aims (Levy et al. 2003; Kilgour et al. 2017).

7. *Stakeholders have an understanding of the program and its aims.* To achieve public support, information about the impacts of cats on wildlife and human health, the need for TNR and how TNR works would be an important component of implementing a widespread TNR program.

8. *Program outcomes are properly evaluated and reported.* In order to effectively assess the success of TNR programs it is vital that the cat populations being targeted are accurately measured prior to management efforts and throughout the study (Kilgour et al. 2017). If TNR is to be used for urban cat population management, the use of tools like population modelling, population monitoring and adaptive management will be necessary to engage all stakeholders and improve its effectiveness (Perry and Perry 2008; van Heezik 2010; Boone 2015). This would involve the implementation of standardised TNR approaches based on best-practice methods that are coordinated under the framework of ‘adaptive management’, where monitoring data are regularly evaluated in order to improve the management program.

9. *The program does not conflict with wildlife management priorities.* TNR programs are not suitable in urban areas adjacent to ecologically sensitive areas where wildlife protection is a priority (Guttilla and Stapp 2010) Although TNR can lead to the extinction of a cat colony over time, this is likely to take 5-13 years. Therefore, TNR is not a suitable tool when acute
issues (e.g. significant cat impacts on threatened or endangered species) require rapid extinction of a cat colony (Stoskopf and Nutter 2004).

**Potential role in future cat management**

There seem to be four major concerns in relation to the implementation of TNR programs in Australia: its potential effectiveness, the welfare of cats subject to TNR, the cost of implementation and the impact of cats on wildlife. Most research seems to indicate that TNR is effective in that it can successfully reduce cat numbers and nuisance and result in the eventual extinction of cat colonies. The evidence also indicates that cats in managed TNR colonies have reasonable welfare if they are managed appropriately. When it comes to cost, although substantial investments of both time and money are required, these costs diminish over time and both TNR and catch and kill programs require significant investment if properly implemented. In terms of wildlife impacts, TNR has not been implemented and assessed in areas where predation on wildlife is considered a significant issue. TNR would be unlikely to be considered suitable in such areas. Where TNR results in the reduction and eventual extinction of cat colonies, then wildlife impacts will also be reduced, but this aspect has not yet been properly assessed.

There is great variability in how well TNR programs are implemented and it seems likely that poor implementation in the past has contributed to TNR programs not producing substantial and persistent reductions in cat populations. In addition, those programs that are effective often fail to effectively document or publicise their success.

Based on international evidence it seems likely that the public would support the implementation of TNR as an alternative to widespread lethal cat management in urban areas but conservationists are likely to have concerns about the potential impacts of cats on wildlife. However, these concerns may be mitigated by specifying conditions on its use, ensuring adoption of cats is an integral part of the program (this approach is termed TDAR or trap, desex, adopt or return) and assessing and reporting the effect on wildlife predation.

All of the documented studies on TNR have been conducted overseas, thus it is difficult to fully assess TNR as a potential cat management tool in Australia at this time. Since factors affecting the potential efficacy of TNR vary considerably between different areas and countries data under obtained under Australian conditions is needed to determine the potential of TNR to assist in controlling urban cat populations in this country. This could be achieved by implementing a study of TNR in Australia in an appropriate setting using the above success factors as a starting point. Cat colony management guidelines could be created and a requirement of participating in the study could be to adhere to the guidelines and for the semi-owner or cat colony carer to register the cat(s) on a centralised register for monitoring and assessment of the program’s outcomes.

**FINDING #13**

There are reports of overseas trap, neuter, return (TNR) programs stabilising stray and semi-owned populations.
Poor implementation is likely to have contributed to unsuccessful TNR programs where substantial and persistent reductions in cat populations have not been demonstrated. Data on the impact on wildlife have not been collected or reported in association with successful TNR programs.

Nine factors are identified which contribute successful TNR programs, including monitoring and evaluation, involvement of researchers and semi-owners and adequate long-term resourcing.

Concern over the use of TNR could be mitigated by improving specifying conditions on its use, ensuring adoption of cats is an integral part of the program (this approach is termed TDAR or trap, desex, adopt or return) and assessing the effect on wildlife predation.

**RECOMMENDATION #13**

A research study should be conducted to evaluate whether, and under what specific circumstances, a program of trap, desex, adopt or return (TDAR) is an appropriate tool for urban cat management under Australian conditions.

**Targeted low-cost desexing**

Targeted low-cost desexing campaigns have traditionally involved proactively encouraging and facilitating cat owners to have their cats desexed. However, there may be potential benefits to specifically target cat semi-owners to desex the cat in their care. This differs from desexing under a TNR program in that specific cats are desexed that are cared for by specific people who consent to having the cat desexed and returned to them.

Free or low-cost cat desexing by animal shelters, animal welfare organisations or through local government programs are likely to encourage cat semi-owners to desex the cat(s) in their care. The success of such programs is likely to be increased by also facilitating desexing through targeted education, community engagement campaigns, and providing assistance for cats to be transferred to the veterinary surgery, e.g. volunteer support to pick up and drop off cats. Most animal shelters and rescue groups rely on volunteers to be able to undertake their life-saving work, and support to transport animals for desexing may be available through this avenue. In addition, some councils also coordinate a local volunteer network which includes support to care for companion animals, especially for older residents. For example, City of Charles Sturt in Adelaide initiated the Companion Animal Project in 2015 that has, to date, focused on dog walking assistance. However, there may be an opportunity to extend this type of initiative to provide transport assistance to owners and semi-owners to facilitate cat desexing.

**Potential role in future cat management**

Targeted desexing programs for semi-owned cats could form a valuable option for reducing the number of unwanted kittens born to semi-owned cats, reducing the number of semi-owned cats
(and likely reducing the impact of cats on wildlife as a result) and improving the welfare of semi-owned cats (as carers would be less likely to become overwhelmed by having too many cats).

3.2.4 Educational strategies to manage semi-owned cats

A potential tool to address cat semi-ownership is a customised education program designed to acknowledge and connect with the perceptions and emotions of cat semi-owners. Recent research indicates that education campaigns specifically aimed at cat semi-owners are likely to be more effective at redirecting this behaviour than eliminating it (Zito 2015). Cat semi-owners are likely to be more amenable to non-lethal than lethal cat management strategies since they are reported to be attached to the cats they care for and feel protective of them (Zasloff et al. 1998; Centonze et al. 2002; Zito 2015, Zito et al. 2015a). Consequently, efforts to combat the contribution of semi-ownership to unwanted cat numbers should concentrate on encouraging and facilitating more responsible caretaking, in particular desexing, regardless of whether the semi-owner accepts ownership for the cat (Toukhsati et al. 2007; Toukhsati et al. 2012a; Zito 2015). Acceptance of ownership is not necessary to achieve the goal of reducing the contribution of semi-owned cats to unwanted cat numbers and improving cat welfare. The goal is not to encourage cat semi-ownership but rather, where people are already doing this, the suggestion is to support them in the interests of improving cat welfare and management success as long as certain conditions are met.

**Potential role in future cat management**

Education programs targeting cat semi-owners are a vital component of any strategy to manage semi-owned cats. This approach would require the revision and clarification of current cat classification systems in some jurisdictions to allow semi-owned cats to be desexed and remain with their semi-owner, even if the semi-owner cannot or will not take full ‘ownership’.

**FINDING #14**

There is a lack of published data specifically relating to targeted desexing programs aimed at semi-owned cats.

Allowing semi-owned cats to be desexed and remain with their semi-owner, even if the semi-owner cannot or will not take full ‘ownership’ would require the revision and clarification of current cat classification systems in some jurisdictions.

Education programs are a vital component of any strategy aimed at trying to manage semi-owned cats.

A combination of targeted desexing, education of cat semi-owners and TNR is likely to be a more effective approach than applying a single strategy.

**RECOMMENDATION #14**
3.3 Managing owned cats

Good management of owned cats is an important component of managing the overall cat metapopulation and in ensuring good animal welfare, community satisfaction and reduced wildlife predation. Many of the strategies to manage owned cats address more than one of these objectives.

Owned cats are under the direct and intentional care of humans and are considered owned by their carers. Owned cats contribute to both cat overpopulation and predation of wildlife.

There are three main methods that can be used to manage owned cat populations:

- Reducing owned cat surrender and abandonment
- Promoting and facilitating responsible cat ownership including desexing before sexual maturity
- Improving cat owner education.

3.3.1 Reducing owned cat surrender and abandonment

High rates of surrender overload animal shelter and rehoming systems and reduce the number of places available for unowned cats needing to be adopted. A detailed review of cat surrender is beyond the scope of this discussion paper but there is extensive literature available on this topic (Miller et al. 1996; DiGiacomo 1998; Salman et al. 1998; Shore et al. 2003; Kass 2005; Rinzin et al. 2008; Casey et al. 2009; Marston 2009; Alberthsen 2014; Zito 2015; Zito et al. 2016). Many welfare organisations have made some progress in tackling this issue through a number of initiatives including: adoption counselling that incorporates advice on pet-friendly accommodation (RSPCA Queensland), provision of financial aid to help potential surrenderers care for their cat such as food banks (Sacramento Pet Food Bank 2011; Bi-state Pet Food Pantry 2014; Project Maddie 2014) and low-cost health care (Lort Smith 2014; The Humane Society of the United States 2014). Lort Smith offers a 25% discount on fees for standard consultation, desexing and vaccination for health and pension card holders. In 2015, Lort Smith provided veterinary care for over 24,000 animals. The Animal Welfare League operates three community veterinary clinics in Australia (Gold Coast, Ipswich and Hobart) through the provision of low-cost veterinary services to help reduce the number of abandoned pets. Further discounts and payment plans are available to ensure that no animal will suffer or be euthanased due to the financial situation of the owner.

Cat abandonment is illegal under animal welfare legislation in all states/territories in Australia but continues regardless. It seems likely that abandoned cats add to the unowned and feral cat populations, although there is no reported evidence to confirm this. Cat abandonment can be associated with the following circumstances (but is not limited to just these circumstances):

- Tenants move out of a rental property but leave their cat at the property
• Tenants are unable to find a rental property that permits cats
• The human-cat bond is not established thereby devaluing the relationship
• The cat is not desexed (investment) or microchipped (no trace).

**Potential role in future cat management**

Significant progress has been made in reducing cat surrender through initiatives from animal welfare organisations to address situations that lead to surrender; these are of great benefit and need to continue.

Cat abandonment is illegal under animal welfare legislation in all states/territories in Australia and in order to reduce its occurrence the existing legislation would need to be more consistently and stringently enforced. In addition, including an offence under cat management legislation would authorise animal management officers, rather than only inspectors gazetted under animal welfare legislation, to intervene in situations were owned cats have been abandoned.

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**FINDING #15**

Some progress has been made in reducing cat surrender through initiatives from animal welfare organisations.

An important factor in surrender and abandonment of cats is the limited availability of cat friendly rental accommodation.

Cat abandonment continues despite being illegal under animal welfare legislation in all states/territories in Australia.

**RECOMMENDATION #15**

Cat surrender and abandonment could be reduced by promoting the value of cats, enhancing the human-cat bond and increasing access to rental accommodation.

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3.3.2 Responsible cat ownership

The key elements of responsible cat ownership are:

• containment (also termed confinement)
• identification
• desexing
• registration (where required).

**Containment**

Containment of cats does not yet seem to be regarded by owners as an important component of responsible cat ownership in Australia. However, preventing cats from roaming has the potential not only to prevent reproduction (especially of young cats that are sexually mature but not yet desexed) but also to prevent wildlife predation, minimise community nuisance, minimise toxoplasmosis transmission, reduce the risk of the cats contracting diseases and becoming injured
or killed from traffic, fighting, dogs and human cruelty (Lloyd et al. 2012; Toukhsati et al. 2012b). For example, a recent study conducted in South Australia fitted suburban owned cats with individual cameras and found a high frequency of potentially life threatening hazards to these cats (for example, road crossings, encounters with other cats, consumption of potentially toxic substances, and exploration of storm drain systems and crawlspaces of houses) (Loyd et al. 2013). Domestic cats have been found to have larger home ranges at night than during the day (Metsers et al. 2010), this may expose them to more risk during the night if allowed to roam.

The keeping of purely indoor cats (with or without a fully contained outdoor enclosure) is common in the USA and is increasingly recommended in Australia. However, rather than being a requirement, this is often a choice made by cat owners in the interests of keeping their cats safe and secure and/or to prevent wildlife predation.

The community acceptance for cat containment varies between studies with some showing broad support (Lloyd et al. 2012; Toukhsati et al. 2012b) and others a lack of support or even opposition (Sharp et al. 2012). Recent research suggests that campaigns to reduce roaming through containment will be more successful if they concentrate on the welfare benefits to cats rather than wildlife protection (Toukhsati et al. 2012b; Hall et al. 2016). In addition, and that people who perceive higher risk associated with cats being outside have more negative attitudes toward cats being allowed outside (Gramza et al. 2016). Restrictions on roaming will serve the dual purpose of protecting wildlife and cats. Collaborative education programs involving councils, veterinarians, animal welfare groups and other stakeholders are essential to increasing acceptance and implementation of cat containment. Recent evidence suggests that locally relevent and targeted information that can increase the perception of risk associated with cats being outside may prove useful in conservation efforts aimed at promoting adoption of risk-mitigation actions such as cat containment (Gramza et al. 2016).

There are a few areas where cat owners are required to fully confine their cats 24 hours/day (sometimes referred to as a 24-hour cat curfew). In these areas, if allowed outside, cats must be on a leash or in an enclosure. Limited information is available about the implementation of 24-hour containment regulations and their outcomes. Anecdotally, no cat attacks on wildlife have been reported to the RSPCA in areas in the Australian Capital Territory where containment regulations have been put in place (Source: RSPCA ACT). However, this does not account for wildlife killed, or injured animals or birds taken to other facilities. There are no other reports of success, or failure, of 24-hour containment regulations and no reports of formal monitoring.

In addition to 24-hour containment there are other, less strict, limited cat containment regulations implemented by some local governments. These vary significantly in the different locations in which they are introduced, in terms of the times at which cats must be confined and also the extent to which cats must be confined. In some areas, cats may only go outside on a lead or enclosure but in other areas it is only required that the cat must be confined to the owner’s property. Each local council in Australia that has introduced cat containment regulations has slightly different requirements. Overall, councils with cat containment regulations have not been able to demonstrate any measurable reduction in cat complaints or cats wandering at large following the introduction of the regulations. However, in the few existing reports, the assessment of the success or failure of limited cat containment is based on no, minimal or questionable data. Rates or
compliance with such regulations is unknown, and in any case, cats may kill wildlife and mate during the day within the confines of their owner’s property. Consequently, there are limits to the effectiveness of cat containment regulations unless cats are required to be confined 24 hours/day within an enclosure or on a lead when outside, and such regulations are effectively enforced.

There are also potential cat welfare issues associated with cat containment regulations including:

- Methods for containing cats that have the potential for a negative impact on their welfare
- Inadvertent trapping of owned cats that are not contained (or have escaped)
- Increased owned cat surrender or abandonment due to the imposition of an added responsibility to cat ownership.

Enforcement of containment regulations can prove difficult for various reasons including:

- Difficulty of capturing cats in breach of containment regulations
- Unrealistic community expectations in regard to enforcement and management
- The majority of trapped and impounded cats are not owned so there is no possibility of taking any enforcement action
- The expense of proper monitoring and enforcement may be prohibitive and is likely to far exceed the benefit gained from limited cat containment regulations.

Anecdotal information from councils that have introduced cat containment regulations shows that there have been limited numbers of enforcement actions by animal management officers following their introduction. Instead, the public are reportedly taking action by trapping cats through council cat trap programs and loan schemes. As a result, cat trap services have expanded, with the purchase of additional traps and allocation of additional staff resources to manage the delivery and collection of traps and impounding of cats, all at significant cost.

Where owners are unable to confine their cats, promotion of effective methods to reduce predation is of benefit. Bells on collars have been shown to be relatively ineffective in preventing overall predation (Calver et al. 2011). However, other research has shown that a specially designed ‘cat bib’ does reduce predation, with cats easily tolerating this device (Calver et al. 2007). In addition, a study evaluating the impact of a colourful ‘scrunchy’ worn around the neck, also showed reduced predation (Hall et al. 2015).

Where cat containment regulations are proposed, the cat-owning public need to be informed about the benefits of containment and how to provide a suitable and enriched environment for their cats (Lloyd et al. 2012; Toukhsati et al. 2012b). Community education programs promoting the benefits and practical aspects of welfare friendly cat containment involving councils, animal welfare organisations, veterinarians and pet supply businesses would be beneficial. In addition, evaluation of the scheme through a monitoring system with baseline statistics and ongoing measurement of outcomes should be established before implementation. Publishing the results would be very useful as there is currently no information on this reported in the literature.
**Potential role in future cat management**

There is a lack of clear and measurable objectives for the implementation of cat containment regulations. There is also a lack of monitoring or data that can be used to adequately evaluate success.

From the available information it seems that regulations that mandate 24-hour containment of cats (i.e. where cats must be indoors, in an enclosure or on a leash), are more likely to achieve the assumed goals of significantly reducing wildlife predation, breeding of unwanted cats and cat nuisance, than limited containment regulations.

In order to have the most benefit for cat management, containment needs to be combined with mandatory identification (so that cats found outdoors can be identified as owned) and strategies to manage unowned cats.

After a containment regulation is introduced, there may be an increase in admissions, adoptions and euthanasia as cats are trapped if found wandering in breach of the containment regulations, even if they are owned. Strict containment laws may also deter people from owning cats and this could lead to an increase in shelter euthanasia rates. These problems may be mitigated if regulation is preceded by owner education and facilitating behaviour change towards more responsible cat ownership.

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**FINDING #16**

Cat containment regulations need to mandate 24 hours/day containment of cats in order to significantly reduce wildlife predation, breeding of unwanted cats and cat nuisance.

Enforcement of cat containment regulations can prove difficult.

Implementation of cat containment should be preceded by programs to educate owners and facilitate behaviour change towards more responsible cat ownership.

Data are needed on the impact of cat containment on prevention of wildlife predation, health and welfare of confined pet cats and risks associated with cat trapping.

The greatest benefit from cat containment would come from combining these regulations with mandatory desexing and identification (so that cats found outdoors can be identified as owned), and strategies to manage unowned cats.

**RECOMMENDATION #16**

Education programs are needed to increase the acceptance and uptake of 24-hour cat containment, with subsequent regulation especially in areas of high conservation value.

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**Mandatory identification**

In general, mandatory identification refers to a requirement to have cats microchipped from a specific age or if the cat is being transferred from one owner to another. Identification of a cat is generally considered as a mark of ownership and is an indication that the ‘owner’ cares enough about the cat to claim it as theirs. Identification is a fundamental tool of animal management at a
community level with microchipping being the preferred method because microchips are the only permanent and unalterable form of identification currently available for cats.

The presence of a microchip helps welfare agencies, pounds, veterinarians and concerned community members to make appropriate decisions about the future of a cat that is found. There are many benefits of microchipping including the following.

- If a cat is lost, the owner can be identified and contacted so the cat can be reclaimed
- If an owned cat is injured the owner can be contacted so that prompt and appropriate decisions can be made about their treatment
- If a cat is straying and causing a nuisance the owner can be identified and educated about their responsibilities, warned or penalised (depending on the local legislation and policies)
- If a cat does not have a microchip the cat may be assumed to be unowned. This means that appropriate decisions can be made according to the relevant legislation if the cat is lost, injured, or straying.

Microchipping is a reliable means of lifetime identification, but it is not visible, requires access to a ‘reader’ and relies on the information linked with the microchip being accurate. Solely relying on microchipping as the only form of identification may limit the capacity to locate owners efficiently. It is common for the microchip data for owned cats entering shelters to be inaccurate, making reuniting cats with their owners difficult (Alberthsen et al. 2013; Alberthsen 2014). A study showed that 37% of stray but microchipped cats entering RSPCA Qld had inaccurate data (Lancaster et al. 2015). Nearly half were registered to a previous owner and nearly one third had either incorrect or disconnected contact phone details.

The addition of a collar and tag for owned cats is of great benefit as these give a visual indication of a cat’s ownership status and help to reunite lost cats with their owners prior to, or following, shelter admission (Lord et al. 2010; Alberthsen et al. 2013).

Positive documented outcomes of mandatory identification include:

- Mandatory cat identification, in combination with registration, and annual licensing, has been associated with an increase in the reclaim rates of cats (Lord et al. 2007). Theoretically, mandatory identification alone (either microchip &/or collar and identification tag) should also increase reclaim rates.
- Providing cats with breakaway collars and a visible identification tag has been successful in reuniting cats with their owner (Lord et al. 2007).
- After mandatory identification of cats was introduced in the ACT the number of cats returned to their owners after they entered the RSPCA ACT shelter increased (Source: RSPCA ACT).

Where mandatory identification has been introduced there is some variability in the age at which cats are required to be microchipped and whether a previously un-microchipped adult cat is required to be microchipped. In addition, some localities also require external identification (usually a council registration tag if cats must also be registered in that locality).
There are issues that need careful consideration when contemplating the introduction of mandatory identification including:

- The (usually unintended) effect of an increase in impoundment and euthanasia of semi-owned cats, unowned cats and cats who have owners who do not want to comply with the law.

- The tendency for these laws to be worded in a way which makes it illegal for someone to care for an unowned cat without taking full ownership (for example, by registering and microchipping the cat). This discourages people from caring for homeless cats and, if the person knows that the cat is likely to be killed if taken to a shelter, they opt instead to do nothing (Zito 2015).

- The use of quick-release collars to avoid potential harm to cats wearing them. Public education about this issue would need to accompany any introduction of mandatory identification that includes a recommendation or requirement for cats to wear collars.

**Potential role in future cat management**

Mandatory identification has the potential to be a very useful tool to help humanely manage cat populations, especially to increase reclaiming rates. However, the legislation needs to be enacted and implemented in a way that minimises the potential negative aspects.

An additional requirement for cats to display a collar and tag would overcome some of the potential limitations of microchipping as a form of identification. To safeguard cat welfare, quick-release collars must be used.

The best way to analyse the success of mandatory identification laws would be to monitor the percentages of cats reunited with their owners after being lost but comprehensive data would be very hard to obtain. The most reliable data available are from the reclaim rate of cats from shelters and pounds which could be compared pre- and post- the introduction of mandatory identification.

**FINDING #17**

Microchipping is an extremely valuable tool for cat identification and data collection.

Microchipping has some limitations in terms of accuracy of owner details and requires a scanner to identify cats, which can delay cats being reunited with their owner.

There are benefits to requiring owned cats who are microchipped to also wear a collar and identification tag.

**RECOMMENDATION #17**

Cat management plans should aim to increase the number of cats who are identified through mandatory microchipping and physical identification.

**Mandatory desexing**

Reports of mandatory desexing legislation implementation come predominantly from the USA and Australia. Mandatory desexing is intended to reduce the number of unwanted cats in the
community and promote responsible ownership of cats. Most commonly, local government authorities are given the power to administer and enforce the legislation and the requirements differ in the various localities where they are introduced. Some localities require that all domestic cats over a certain age be desexed (this ranges from 3-6 months). However, there is usually no enforcement of mandatory desexing requirements as enforcement is difficult and expensive.

Some localities in the USA require that any rehoming agency (e.g. pound, shelter) desex cats and kittens prior to release to their new home, and this may be in addition to mandatory desexing for owned cats or a stand-alone requirement.

A review of the available information reveals that only occasionally are mandatory desexing requirements monitored. Most frequently this involves comparing data pre- and post-mandatory desexing introduction in the following areas:

- shelter/pound cat admissions
- shelter/pound cat euthanasias
- cat adoptions
- cat registrations (where this is mandatory)
- cat return to their owners from shelters
- animal management costs.

Some data were collected in 2007 in an effort to assess the impact of mandatory desexing when it was introduced in 2001 in the ACT. There is only one shelter for cats in the ACT and a handful of rescue organisations that deal with relatively small numbers of animals (Australian Veterinary Association Centre for Companion Animals in the Community, 2007). The key findings were:

- Cat intake to shelters increased to 1998 then decreased to 2001. There was no further improvement to 2007.
- Cat return to their owners from shelters decreased from 1997 to 2001. It then increased to peak in 2006 but then dropped significantly in 2008.
- Cat adoption rates varied over the 6-year assessment period but no overall improvement was noted.
- Cat euthanasia increased to 1998, then decreased to 2001 but there was no further improvement to 2007.

Overall no positive impact associated with the introduction of the legislation was demonstrated using these measures. Trends in cat intake and euthanasia in the RSPCA ACT shelter paralleled those in NSW (which has no mandatory desexing legislation) and Australia as a whole. A lack of enforcement and education/community support initiatives are considered to be the major factors contributing to ineffectiveness of this legislation.

One key approach to significantly decrease intake and euthanasia rates for cats in shelters/pounds in most areas is to manage the unowned and semi-owned cat populations. Mandatory desexing will not be helpful in this situation. In areas where the majority of cats and kittens entering shelters are unowned, funding may be better spent on other strategies that can address the major source of unwanted (unowned) cats.
In those areas where a high number of cats entering shelters/pounds are unwanted kittens from owned cats or owned adult cats surrendered as a result of unwanted breeding, then mandatory desexing legislation would be of significant use.

The available evidence and analysis of the situation relating to mandatory desexing legislation indicates that the apparent ineffectiveness of this strategy may also stem from the fact that responsible cat owners who can afford desexing already desex their cats (although some only after the cat has already had a litter of kittens) and those owners who either cannot afford to do so or are not motivated to do so do not desex their cats because the legislation is not enforced. The resources and commitment to actively enforce mandatory desexing legislation are generally lacking and so implementation is not as effective as it could be.

One way to address this is to mandate desexing and identification of cats at point of sale or transfer of ownership or release from impoundment. This strategy has the potential to provide many of the benefits theoretically associated with mandatory desexing but which have been lacking in practice, likely due to compliance and implementation issues. There would still be a need for monitoring for compliance but this would be more achievable and would involve considerably less resources than needing to monitor a blanket mandatory desexing policy.

In areas where the cat population dynamics are appropriate for this strategy, mandatory desexing legislation would be most effective if:

- The legislation is adequately promoted so people selling, buying and impounding cats know it is a requirement that the cats/kittens are desexed.
- Cats are desexed before the onset of sexual maturity (less than 4 months of age) – this requires support from veterinarians.
- Measures are put into place to facilitate desexing of cats whose owners cannot afford general desexing costs.
- Mandatory identification requirements are also introduced.
- The legislation is adequately enforced.

It is likely that not all those selling cats would comply with such legislation (retail outlets, breeders and rescue organisations are probably most likely to comply and private vendors probably least likely to comply) and certain groups would be easier to monitor than others (retail outlets, breeders and rescue organisations would be easiest to monitor and private vendors most difficult). However, even an imperfect uptake would still be a considerable step forward in ensuring that many more cats were desexed. In addition, mandatory desexing prior to sale/transfer would likely increase the cost to obtain a cat. This may result in reduced cat ownership but also potential cat owners may be more likely to give serious thought and a commitment to be responsible prior to obtaining a cat or kitten.

It should be noted that under Queensland legislation, it is a mandatory requirement for veterinarians to tattoo all cats that have been desexed. This is of great benefit, especially for females, where rapid assessment of desexing status, especially for cats entering a shelter, can avoid the need for surgical intervention.
Potential role in future cat management

From the available data it seems that mandatory desexing legislation has not been successful at reducing shelter/animal control cat intake and euthanasia rates. It is thought that the most significant contributing factors to this lack of success are lack of enforcement of the legislation and unowned cats generally being the major source of cats entering shelters and pounds.

However, where owned cats are considered to be a significant source contributing to high shelter intakes, mandatory desexing (with limited exemptions) prior to sale/transfer or on release from impoundment may be a useful strategy to help reduce the number of first litters born. In addition, where mandatory desexing is successfully implemented and enforced, it should reduce the number of unowned cats that originate as unwanted kittens of owned cats.

Targeted and affordable desexing

An alternative or supplementary strategy to mandatory desexing is the provision and promotion of affordable desexing services (which may be free or low-cost) for those who need it. This includes not just cat owners but also semi-owners/cat colony carers. This strategy represents a paradigm shift from punishment of non-compliant owners and censure of non-owner cat carers, to incentives to encourage responsible cat caretaking for both groups, and is becoming increasingly common overseas.

One of the main contributing factors to the continued high cat intakes into shelters is likely to be the failure to increase the desexing rate of pets living in low-income households (Marsh 2010) and semi-owned and unowned cats (Toukhasti et al. 2007; Zito 2015, Zito et al. 2015a). A 2007 study in the USA found that only 51.4% of cats living in low income households were desexed compared to more than 90% of cats living in households with higher incomes (Marsh 2012). This situation is likely to be similar in Australia as cat surrender is associated with a lower socio-economic status (Zito et al. 2016a) and a number of Australian studies have identified lower desexing rates among owner-surrendered cats (12% (Marston et al. 2009) and 47% (Alberthsen et al. 2013)) compared to over 90% of owned cats in Australia (Toukhasti et al. 2007). These high reported rates of desexing of owned cats are likely to only be representative of responsible cat owners who have adequate resources to pay for desexing.

There are few data evaluating these programs but there are many anecdotal success stories reported for targeted and affordable desexing programs (see Table 6 for examples).

Characteristics common to successful desexing initiatives are:

- Programs help only those caretakers who genuinely need help to get their pets desexed. Several criteria that can be used to decide who can access low-cost or free desexing programs include: income targeting, geographic targeting, and programs for senior citizens. Income targeting has proven to be the most cost-effective approach and eligibility for a public-assistance program can be used as the basis for this.
- Programs are affordable for caretakers with poverty-level incomes and poverty-stricken caretakers. The affordable price would need to be determined based on the relevant statistics for Australia.
• Programs are accessible to indigent caretakers. These people usually also need help to transport their pets to the place where the surgery is performed and back home again. Options to address this issue include: providing services through a network of private veterinary clinics if enough clinics participate, a mobile surgical unit or organise to transport pets to a fixed-site clinic. Ancillary services such as transportation for pets to and from surgery appointments are crucial in assisting low-income pet owners (Target Zero, 2016)

• Programs have enough funding to desex large numbers of animals from indigent households every year for several years. It has been reported that desexing 5 pets from indigent households every year for every 1,000 residents will significantly reduce local shelter intake and euthanasia rates. However, if the program cannot sustain that volume over the long term, the progress it has made can quickly be reversed (Marsh 2012)

• Time-limited desexing programs that are available to all cat owners, broad scale high profile promotion and incentives are likely to increase uptake (pers comm Mandy Paterson).

Potential role in future cat management

Targeted and affordable desexing programs have been shown to have significant potential to reduce animal shelter/pound cat admissions and euthanasia and also generally receive strong community support. Therefore, these programs are a fundamental component of any effort to reduce the number of unwanted cats in a community. Desexing programs may be combined with mandatory desexing legislation but are also very successful without any supporting legislation.

Pre-pubertal desexing

It has been reported that at least 30% of owned cats in the Australian community are not desexed before 6 months of age, allowing for unplanned litters from young, sexually mature queens prior to desexing (Toukhsati 2005). A high number of well-socialised kittens from owned litters are surrendered to shelters (New et al. 2000; Marston et al. 2009; Animal Welfare League of Queensland 2010) and although many are likely to be from semi-owned cats, a proportion are likely to be from owned cats producing kittens before they are desexed (Marston et al. 2009).

The ‘traditional’ age of desexing is 6 months of age; this unfortunately allows cats to reach reproductive maturity before they are desexed (Joyce et al. 2011; Clark et al. 2012; Zanowski 2012); cats may reach reproductive maturity as early as 3.5 months of age (Little 2001; Farnworth et al. 2013). Delayed desexing of owned cats is reported to often result in the production of unwanted litters of kittens (Alberthsen et al. 2013), but can be addressed through the introduction of pre-pubertal or ‘early-age’) desexing (Manning et al. 1992; Fournier 2004; Alberthsen et al. 2013; Johnson et al. 2014). Therefore, it would be of great benefit to revise current recommendations so that owned cats are desexed before 4 months. In addition, any initiatives to desex semi-owned and unowned cats should also aim to desex these cats before 4 months of age to prevent reproduction prior to desexing.
### Table 6: Examples of targeted and affordable desexing programs.

#### Examples from Australia

<table>
<thead>
<tr>
<th><strong>AWL National Desexing Network</strong></th>
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<tbody>
<tr>
<td>The Animal Welfare League Queensland expanded an existing program in 2005 to establish a nationwide network of more than 160 participating veterinary clinics that has helped to desex around 200,000 cats and dogs across Australia. The website provides easy access to contact details of the closest vet(s) in all capital cities and some regional centres. Potential users of the service must apply and be eligible, i.e. hold concession card etc. Costs are 40-60% lower than standard desexing rates, depending on individual veterinary charges. In addition, AWL promote a national desexing month every July to help increase the number of cats desexed prior to the spring breeding season. This provides for an extra emphasis on the need to desex cats, especially by four months of age.</td>
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<tr>
<th><strong>RSPCA Queensland Operation Wanted</strong></th>
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<tr>
<td>The ‘Operation; Wanted’ campaign, which is coordinated by RSPCA Qld is in its third year and runs from June to August. 1186 vets were involved in 2016, who reduce their desexing fees for dogs and cats by 20%. An estimated 10,000 ‘extra animals’ were desexed in 2015. In 2016, 26 council areas are contributing to the campaign’s promotion. Some individual veterinary practitioners are also doing their own local promotions. Incentives in the form of prizes are offered to pet owners for participation.</td>
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<tr>
<th><strong>Gold Coast City Council subsidised desexing scheme</strong></th>
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<tr>
<td>The Gold Coast City Council cat desexing scheme commenced in 2010 as part of the Queensland Animal Welfare League G2Z (Getting to Zero) initiative (see Section 2.4.2 Other initiatives) and has seen a reduction of the cat euthanasia rate to 25-30% in 10 years. This is a significant achievement as in general, euthanasia rates for surrendered or impounded cats are 60-90%. Calculations on the costs to manage stray and surrendered cats by the Gold Coast City Council demonstrated that an investment to subsidise a desexing program would reduce impounding costs substantially. The scheme requires a contribution from all stakeholders, namely the owner, the council, animal welfare group (by desexing at reduced cost) and veterinary practitioner (must agree to desex at reduced cost). Gold Coast City Council provides $40-$60 towards the cost through an established Council Subsidy Fund, with owners making a similar contribution. Cat owners who have a concession card, can demonstrate financial hardship or are a multi-cat household are eligible.</td>
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#### Examples from the USA

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<tr>
<th><strong>New Hampshire Animal Population Control Program</strong></th>
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<tr>
<td>After the introduction of New Hampshire’s Animal Population Control Program with low-cost desexing state-wide every one of the eight open admission shelters in the state saw a drop in euthanasia of between 15% and 58% in 1995 compared to the year before the introduction (Target Zero 2016).</td>
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<tr>
<th><strong>First Coast No More Homeless Pets</strong></th>
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<tr>
<td>The largest spay/neuter clinic in the USA is First Coast No More Homeless Pets in Jacksonville, Florida. Since this high volume high quality low-cost spay/neuter clinic was started there has been a decrease in the intake at Jacksonville Animal Care and Control and the Jacksonville Humane Society from over 33,000 in 2002 to just over 17,000 in 2015 (this includes both dogs and cats) (Target Zero 2016).</td>
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</table>
It is a routine procedure for animal shelters to desex kittens at approximately 8 weeks of age (and/or 1 kg or more in body weight), and multiple benefits from pre-pubertal desexing have been demonstrated for the individual cat as well as benefits in terms of cat population control (Spain et al. 2004; Joyce et al. 2011; Farnworth et al. 2013; Yates et al. 2013; Porters et al. 2014). However, this procedure is not yet universally accepted among the veterinary community, as there are divided opinions on pre-pubertal desexing (Farnworth et al. 2013; Yates et al. 2013) and a lack of veterinarians who have relevant training and are willing to offer this service to the community. Veterinarians are a vital link in communicating with cat owners and ensuring that owned kittens are desexed before reproductive maturity (New et al. 2000; Fournier 2004; Stavisky 2014; Welsh et al. 2014). Therefore, encouragement of veterinarians to accept this procedure and training to ensure that they can deliver this service is crucial (Farnworth et al. 2013; Yates et al. 2013). In 2013, seven UK-based animal welfare organisations, including the RSPCA and the British Veterinary Association, joined together to form The Cat Group to help reduce reproduction rates in owned cats. A website was established dedicated to promoting pre-pubertal desexing, providing a resource to veterinarians and the community. Information includes a register of veterinary schools that teach pre-pubertal desexing, a register of veterinary practitioners who offer pre-pubertal desexing, as well as training videos for veterinarians. A report produced by the RSPCA UK concluded that ‘The promotion and practice of pre-pubertal neutering (at four months) by vets – as the norm for owned cats – is vital to tackling the cat population crisis.’ (RSPCA UK 2014).

**Potential role in future cat management**

The implementation of large scale pre-pubertal desexing is very likely to have a positive impact on cat management in terms of reducing unwanted cat numbers. This should result in a decrease in cat predation on wildlife and also a decrease in animal shelter/control cat intake and euthanasia. However, there are no reports in the literature or media about the impact of such a scheme as it has never been introduced or reported on a large scale. If such a program is implemented then formal assessment would be a very beneficial addition to the literature in the field of cat management.

**FINDING #18**

Mandatory desexing legislation has not been successful at reducing shelter/animal control cat intake and euthanasia rates. The apparent ineffectiveness of mandatory desexing legislation may be due to the legislation not being actively enforced or lack of public knowledge of its requirements.

Targeted and affordable desexing programs have significant potential to reduce cat overpopulation and also generally receive strong community support.

Cats need to be desexed prior to four months of age to prevent first litters. Pre-pubertal desexing has benefits for the welfare of individual cats as well as assisting cat management in terms of reducing unwanted cat numbers.
RECOMMENDATION #18

Three key strategies are needed to reduce cat overpopulation through desexing:

- mandating the desexing (and microchipping) of cats and kittens prior to sale, transfer or return from impoundment.
- increasing access to targeted and affordable desexing initiatives
- increasing the uptake of pre-pubertal desexing.

Mandatory registration

Registration establishes ownership of a cat and allows the local government to monitor and enforce other animal specific laws such as limits on cat numbers, breeding regulation, mandatory identification and desexing. It also provides a source of funding to help resource cat management activities, particularly education programs but also subsidised desexing programs. Annual registration can assist owners to ensure that microchip details are also current.

Mandatory registration of cats is uncommon worldwide but is required in some parts of Australia, Canada and the USA. It is more common in the areas that have laws to try and control rabies; registration (licensing) is often driven by the rabies control laws in these areas.

Mandatory cat registration is a requirement in several Australian states:

- In Victoria, registration fees are used to fund animal management staff attendance to nuisance complaints, collect and return stray animals to owners, coordinate events such as pet expos and discount microchipping days and to develop and distribute responsible pet ownership publications, as well as maintenance of websites, and online courses.

- In Queensland, state-wide mandatory registration legislation was repealed two years after its introduction. Councils were granted authority to retain cat registration programs if desired but according to the Queensland Department of Agriculture and Fisheries, many local governments now oppose statewide mandatory cat registration. Compliance with registration legislation was low, even among more responsible cat owners. For example, it has been reported that over 90% of owned cats are desexed but during the mandatory registration period less than 30% of cats were registered. However, there seem to have been no efforts to engage the community prior to introduction of registration.

- In South Australia, the Mitcham City Council in Adelaide requires cat registration; to encourage registration the cost for cats is lower than for dogs ($30 or if discounted $10-15 for cats versus $80 for dogs). Compliance is reasonable with 3,000 currently registered cats but a recent survey prompted an additional 400 owners to register their cat (pers comm Roger Brown).

Although some councils have introduced mandatory registration, there are no reports of its successful implementation, but the objectives are not clearly apparent which makes assessment of the outcomes difficult.
Cat owners generally do not see the benefits of registration and view it as an extra cost and layer of bureaucracy. Also, some councils do not see benefit in imposing mandatory registration with mandatory identification being implemented.

The draft Tasmanian Cat Management Plan also proposes council income from cat registration and cat registration numbers could be monitored and would be the only measure specific to mandatory registration. Where councils allocate funds from registration to support community initiatives such as desexing and microchipping, then these parameters would be useful measures to assess the impact of registration.

There is a lack of uniformity regarding mandatory legislation at the state and local government level with some jurisdictions removing mandatory registration as it has not been widely supported. However, the NSW Pest Animal Review supports mandatory registration and the ACT is considering introducing registration.

**Potential role in future cat management**

Mandatory registration is unlikely to have any significant impact on the cat overpopulation problem. Its implementation and administration is expensive and the cost of enforcement and monitoring is likely to be prohibitive. However, some councils have used the funds to employ a part-time cat management officer and allocate funds to support low-cost desexing for low-income families.

**Limiting the numbers of cats allowed to be owned**

Limiting the number of cats that can be kept by an individual owner attempts to reconcile the sometimes conflicting interests of pet owners with property owners and cat nuisance issues and is sometimes also discussed as a measure to manage overall cat numbers. An increasing number of jurisdictions are enacting regulations on the number and type of animals a person can keep on their property. Restricting cat numbers is likely to benefit cat welfare provided that cats are still able to benefit from living with conspecifics, and may act as an incentive for desexing. Most councils impose a standard maximum limit of two cats per household but also allow for additional cats to be allowed upon request and under permit. There are a number of households who successfully care for up to five or six cats and if councils increased the standard limit from two cats to four cats (under specific conditions – for example where the cats are desexed, microchipped, contained and well cared for) this may improve prospects for more cats to be adopted.

Restrictions on the number of cats allowed per household may also assist in resolving cases of animal hoarding and help prevent the establishment of kitten farms. When implemented alongside ownership regulations, breeding regulations can also limit the number of breeding cats owned and require breeders to meet minimum standards of care and containment (see below). Where there are no strict cat containment regulations, having fewer cats should also result in lower predation. There are no reports of assessment of specific outcomes for the restriction on the number of cats that can be kept.
**Potential role in future cat management**

Limiting the number of cats that can be kept is suited to managing the sometimes conflicting interests of cat owners and property owners, helping to prevent kitten farms and may assist in addressing cases of animal hoarding. This may also help to reduce wildlife predation or nuisance cats but this will partly depend on the level of cat containment. This approach may assist in reducing overall cat numbers when used in combination with other responsible pet ownership strategies.

### FINDING #19

Limiting the number of cats that can be kept may assist in reducing public nuisance from cats, preventing kitten farms and resolving cases of animal hoarding.

Most councils have a standard maximum limit of two cats per household, however, many households successfully care for more than two cats.

### RECOMMENDATION #19

A limit should be set on the number of cats per household, however, where cats are desexed, microchipped, contained and well cared for, this limit may be increased to encourage more cat adoptions.

### Breeding regulation

Cat breeding regulation allows for the mandatory registration of breeders and the need for breeders to comply with a breeder welfare code. Regulations of this type are recent developments and have been introduced to address the problem of kitten farming and other poor practices that compromise cat welfare and health, rather than as a cat management tool relating to responsible ownership, cat overpopulation and cat predation on wildlife but it may have indirect benefits. Where breeding regulation is effectively enforced and includes breeder traceability and requirements for microchipping and desexing of kittens prior to sale or transfer, these benefits may be significant.

There are no clearly defined goals relating to breeding regulation and no reports yet of assessment of specific outcomes of the breeding regulation schemes that have been put in place.

**Potential role in future cat management**

Breeding regulation is likely to be of use in trying to combat kitten farms and other poor practices that compromise cat welfare and health, but many of these regulations are new and further evaluation is required to understand the overall impact on cat management.

3.3.3 Cat owner education

Responsible cat ownership comprises two different elements – firstly and preferably, owners voluntarily doing the right thing and, secondly, mandating requirements through legislation. If cat
owners understood responsible cat ownership requirements, were committed and had appropriate resources to be responsible, there would be very little need for legislative requirements. Awareness, education and opportunity are fundamental to widespread commitment of responsible cat ownership in which the responsible cat owner ensures their cat is safe, happy and healthy, does not disturb the environment or neighbours and does not contribute to feral cat populations (through production of unwanted kittens or straying). All messaging needs to be clear, concise, consistent and accessible.

Increasing public understanding of the importance of responsible cat ownership

Increasing public understanding of the importance and benefits of responsible cat ownership will involve consistent public messages including legal requirements from government and animal welfare organisations, education programs in schools and social marketing campaigns. These kinds of initiatives have been widely used to improve public understanding of human public health and welfare issues such as drink driving, cigarette smoking, skin cancer, obesity and many others.

Some progress has been made in increasing public understanding of the importance and benefits of responsible cat ownership, particularly in relationship to the impact of cats and cat caretaking practices on wildlife (Department of Sustainability and Environment 1999; Perry 1999; Chaseling 2001). This is demonstrated by a recent online survey on the attitudes of Australians (N=868) to wildlife (RSPCA QLD, 2016 unpublished data). The vast majority of respondents believed that wildlife is in danger of extinction and that predation by cats and dogs pose a major risk to wildlife (97%). There was a high level of personal concern about the level of extinction. Interestingly the highest level of agreement (99%) was with the statement that human encroachment and development pose a major risk, 95% of respondents also thought that motor vehicle collisions pose a major risk and 97% believed that predation by dogs and cats was a major factor. So, there appears to be an increasing level of community concern about wildlife and the risk that cats, dogs and humans pose. Respondents’ opinions on control methods for feral dogs and cats showed high levels of acceptance for reproductive control (47%) and trapping followed by euthanasia (46%). Respondents felt that poisoning (40%) and introducing lethal diseases (41%) and new predators (54%) were strongly unacceptable. Respondents’ opinions on control methods for domestic dogs and cats showed high levels of importance placed on mandatory desexing (85%), containment of cats to the owner’s property (75%) or inside the house/an enclosure (58%) and compulsory registration of cats (63%).

Potential role in future cat management

The coordination of ongoing, consistent public messages delivered by government and animal welfare organisations, education programs in schools and social marketing campaigns is essential in maintaining progress for effective cat management.

Facilitation of behaviour change

Broadly, behaviour change towards more responsible cat ownership is facilitated by changing community attitudes and beliefs relating to cats. The Theory of Planned Behaviour (Ajzen 1985; Ajzen 1991) has been shown to predict a number of volitional human behaviours, including behaviours towards animals (Coleman et al. 1998; Rohlf et al. 2012; Toukhsati et al. 2012a).
Modification of elements of the Theory of Planned Behaviour relates to behaviours of interest (for example, attitudes, social norms, and beliefs) that might be expected to have the potential to alter the behaviours of interest (Coleman et al. 1998; Hsu et al. 2003). A 2012 study about community attitudes towards cat containment and cat impacts on wildlife found agreement of only approximately 63% (owners and non-owners) that wandering cats endanger or kill native wildlife (Toukhsati et al. 2012b). It was found that 80% of cat owners contained their cat to a property at night but only 41.2% contained their cat to a property during the day. This study is a good example of the relationship between beliefs and related behaviour as people who believed that cat containment was important (to protect their cats and wildlife) were most likely to contain their own cats.

Traditional methods used by government to change community behaviours are legislation, regulation, penalties, taxes, and subsidies, but these may not be as successful as other methods that improve cooperative community behaviour change (Head 2008), such as education and community awareness programs (Toukhsati et al. 2012a). This approach is a paradigm shift from the more punitive and negative measures to change behaviour to a more collaborative and encouraging approach to engage stakeholders.

There are a number of areas related to cat management in which there is a great need for change in community attitudes and beliefs and subsequently behaviour modification. These include:

- Increasing the value placed on cats
- The impact of cats and cat caretaking practices on wildlife
- Acceptance of certain responsible ownership and care measures such as:
  - cat containment
  - pre-pubertal desexing
  - desexing of cats being cared for by a non-owner (semi-owned cats or unowned cats)
  - cat identification
- Awareness of the benefits to cats of the responsible ownership and care measures outlined above and other behaviours with positive impacts on cat welfare such as enrichment for cats, especially confined cats (Lloyd et al. 2012; Toukhsati et al. 2012b)
- Acceptance and implementation of pre-pubertal desexing by veterinarians on a large scale.

**Potential role in future cat management**

Regulation is an important tool as it clearly defines what is acceptable regarding legal requirements. However, legislation alone is not an effective instrument for addressing cat population, nuisance and predatory issues. Much more emphasis needs to be placed on education and community support programs to encourage responsible cat ownership. It is also critical to have consistent laws across jurisdictions as cats do not observe council boundaries and people move residence relatively frequently and possibly to an area where laws may be different. There may also be a perception that if some legal requirements are not imposed in some areas, then they may be unimportant.
Given that domestic and feral cat issues are universal across Australia, it is time to consider national leadership to achieve greater consistency and collaboration with problem definition, solution development, resource sharing and impact evaluation to encompass all cat meta-populations.

**FINDING #20**

A combination of consistent public messages including legal requirements from government and animal welfare organisations, education programs in schools and social marketing campaigns can result in positive progress for cat management. Legislation alone is not an effective instrument for addressing cat population, nuisance and predatory issues.

**RECOMMENDATION #20**

Changing community attitudes, beliefs and behaviours should be a component of every strategy to manage cat populations. Education programs should focus on increasing cat owner understanding of the need for cat management, especially regarding the threat to biodiversity and acceptance of critical cat management measures such as containment and desexing.
4. **An overall plan to manage domestic cats**

4.1 **Introduction**

Managing domestic cats, as with their feral counterparts, is a complex issue with many contributing factors. It seems that the only viable route to effective cat management in Australia is to work with all stakeholders involved to identify ethically acceptable solutions that have a realistic prospect of reducing cat numbers and mitigating the negative impacts of cats on wildlife.

An integrated approach is vital to ensure that strategies are complementary, not opposing, and that no vital aspects in terms of responsibilities, laws and initiatives are overlooked. Scientific rigour is needed to define the problems and impacts, determine causes and then identify solutions before designing an action plan. Each stakeholder group needs to know their responsibilities as well as the responsibilities of others. Stakeholders also need to know what others are doing in order to achieve a consistent, coordinated and effective action plan with the same evidence-based principles applied throughout.

An understanding of the distinction between owned cats, semi-owned cats and unowned cats that are receiving indirect support from humans and social factors affecting human behaviour towards cats is needed in designing an effective action plan. Different strategies to reduce the number of cats admitted to shelters are required for each cat population. Legislation requiring desexing, identification, and cat containment will only impact the owned cat population, and then only with the compliance of owners. Strategies such as trap and cull programs may be ineffective for semi-owned cats as the success of these programs is dependent on community support (Levy and Crawford 2004) and cat semi-owners are likely to be opposed to such programs (Zasloff and Hart 1998; Toukhsati, Bennett and Coleman 2007). However, they may be responsive to education, social marketing messages, or other programs aimed at reducing this population of cats through non-lethal means. Public responses to feral cat control methods will be influenced by their understanding of the negative impacts of cats on wildlife, their views on the value of domestic cats, and their acceptance of the need to manage cats in all populations and settings.

4.2 **The need for legislative reform**

Legislative provisions and requirements for feral and domestic cat management vary considerably between States and Territories, making a consistent, best practice approach to cat management extremely challenging. Many programs and strategies have been employed to try to improve responsible cat ownership and reduce the number of unwanted domestic cats, however, there are no existing programs that comprise a holistic, collaborative and coordinated approach to manage owned, semi-owned, unowned and feral cats at a local, state or national level.

Feral cats are recognised under federal legislation as a key threatening process, with the *Threat Abatement Plan for Predation by Feral Cats* providing a blueprint for control activities (Denny and Dickman 2010), but it is State and Territory government agencies that must implement this plan, and their motivation to do so is intrinsically linked to the status of feral cats in legislation.
Declaring feral cats as a pest species under State biosecurity or natural resource management legislation is a key step in recognising that urgent action to address the impacts of feral cats is required. Other potential benefits of this approach include clarifying the roles and responsibilities of stakeholders, requiring landowners to control feral cats on their property or to notify authorities about their presence, placing restrictions on the movement, keeping, sale and release of feral cats, as well as attracting resourcing for control programs. As of August 2016, only three jurisdictions (the NT, Qld, SA) have taken this step with Tasmania declaring feral cats an invasive animal under the *Cat Management Act 2009*.

At the same time as recognising their serious adverse impacts on wildlife, and to a lesser extent, on agricultural productivity, it is also important to acknowledge that feral cats are sentient animals capable of experiencing pain, suffering and distress. Many control techniques, including trapping and poisoning, cause suffering to affected cats, so it is crucial that provisions to minimise suffering and encourage a humane best practice approach are linked to any increase in control activities.

A number of ways have been identified to improve the humaneness of pest animal control. Practitioners need to have an understanding of the animal welfare impacts of available control methods, and know how to carry them out in the best possible way. This can be achieved through the assessment of the relative humaneness of all available control techniques, the use of up-to-date welfare codes of practice (COPs) and standard operating procedures (SOPs), and by ensuring all practitioners are trained and competent in feral cat control methods. This can be done through regulation, by incorporating COPs and SOPs into state-based animal welfare legislation, or by making compliance with SOPs a requirement of government funding for cat management activities. Best practice control requires access to up-to-date SOPs for all methods: there is also a need to review all existing SOPs and develop additional SOPs for new methods as they emerge.

Domestic cat management is legislated at both the State/Territory and local government level. Existing legislation is at different stages of review and there are significant inconsistencies between states and at the local government level in their approach and the level of commitment to cat management. In most cases legislation does not take account of the different approaches required for the management of semi-owned cats versus owned cats and unowned cats. These are all issues that need to be addressed.

Legal requirements of state-based cat management legislation cover a range of issues, from identification, desexing, cat registration, breeder registration, cat curfews, and the capture of roaming cats. Many of these requirements have benefits for the ongoing welfare of cats, but they may also have the potential for adverse outcomes. So, just as with feral cat management, there is a need for best practice advice for methods used for domestic cat management.

### 4.3 Key roles

#### 4.3.1 Australian government

The Australian government has taken significant steps to address the feral cat issue. It is now timely to develop a similar approach for domestic cat management by creating opportunities for national consultative groups on feral cat control and domestic cat management to discuss common issues.
thereby encouraging greater integration and collaboration of initiatives. This is vitally important and will help focus attention and resources to achieve greater success. As with the Threatened Species Strategy, the same core areas should be applied to domestic cat management – science, action and partnership. The Australian Government also has a role in facilitating collaborative research in areas specifically relating to domestic cat management but also research which integrates the feral and domestic cat realms. This will only occur with national leadership.

4.3.2 State and local government

It is recognised that legislation relating to cat (domestic and feral) management is complex, inconsistent across jurisdictions, and can be confusing. State governments play an important role in reviewing and rationalising legislation to reflect best practice and community expectations to achieve consistent and effective change. This involves undertaking meaningful evaluation and public consultation.

Examples of state initiatives to support councils to implement cat management legislation, facilitate stakeholder communication and coordinate research, are the South Australian Dog and Cat Management Board and the draft Tasmanian Cat Management Plan.

The SA Dog and Cat Management Board has produced excellent resource materials promoting responsible cat ownership which can be used by all councils and other groups including veterinarians and animal welfare organisations. They have also developed guidelines to assist councils to establish cat bylaws. It is recognised that other States have also developed good quality materials on various aspects including cat containment.

In preparing the draft Tasmanian Cat Management Plan, the Tasmanian government has recognised that the coordination of cat management at the State level is an important priority. One factor which may have assisted in this process is that the Department of Primary Industries, Parks, Water and Environment is responsible for all relevant policy and legislation including conservation, environment, agriculture, companion animal management and animal welfare. This may not be the case in other states where responsibility for these areas is under different government departments.

Given that local government enforces domestic cat legislation and they act at the community level, they have a pivotal role to play in working with key community stakeholders including cat owners, breeders, sellers, animal welfare organisations, veterinarians and conservation groups. Councils can play an important facilitating and coordinating role in relation to community based activities including subsidised desexing schemes, promotion of responsible cat ownership, encourage pet friendly rental accommodation and supporting cat adoption drives. Enforcement is also important but is considered secondary to the other educative and support roles the council can pursue. The Gold Coast City Council provides a good example of an effective subsidised desexing scheme. Other councils have also appointed Cat Management Officers who promote responsible cat ownership in their community. Another critical role for council is to liaise and collaborate with community conservation groups such as natural resource management groups to support and coordinate cat management activities.
### 4.3.3 Other stakeholders

An understanding of the different stakeholders and their relationships with cats is essential to achieve their engagement in initiatives to address cat overpopulation, which is in turn vital to the success of cat management programs. Communication with the local community and other stakeholders, involvement of stakeholders in decision making and solutions, and education have all been identified as key components of effective issues management (Cartwright 2006; Lohr 2012). Non-government stakeholders with a direct interest in cat management include:

- Conservation organisations
- Animal welfare organisations
- Veterinarians
- Pet supply retailers and manufacturers
- Cat breeders
- Cat owners and semi-owners
- Non-owners of cats

It is important that all stakeholders involved with cat management, work collaboratively towards the goal of effectively and humanely reducing and controlling cat numbers. Cooperation between stakeholders with differing viewpoints, such as wildlife conservationists and cat caretakers, will be crucial to effective community management of cat populations (Peterson et al. 2012; Palmer 2014). Collaboration between social scientists and ecologists to manage wildlife-related conflict issues is also needed, as knowledge and application of concepts from social science are important in understanding and addressing problems with human dimensions like cat overpopulation (Mascia et al. 2003; Dayer et al. 2004; Wallace et al. 2006). It is essential that all frontline responders (e.g. animal management officers, veterinary practice staff, animal welfare and rescue organisation staff) are fully aware of legal aspects of cat management as well as best practice cat management approaches as they are an important information resource for the community. In general, councils and some animal welfare organisations provide some information on their websites but this could be more comprehensive and consistent.

### 4.4 Designing effective cat management strategies

This discussion paper has reviewed the existing literature on domestic cat management strategies. A summary of potential strategies in terms of their effectiveness and potential for evaluation is provided in Table 7.

In terms of the management of unowned and semi-owned cats, two key points emerge. Firstly, the evidence indicates that current low-level trap and kill programs aimed at controlling unowned cats are not effective at achieving the main objectives of cat management. Given the lack of public appetite for lethal control programs in an urban or peri-urban context, resources may be better spent on more effective alternative strategies. These include education and community engagement campaigns to encourage desexing of semi-owned cats, combined with subsidised and facilitated desexing programs.
### Table 7: Comparison of potential strategies for domestic cat management

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Measurable?</th>
<th>Effective at reducing cat overpopulation?*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unowned and semi-owned cats</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adoption</td>
<td>Yes</td>
<td>Yes – but only in combination with other approaches</td>
</tr>
<tr>
<td>Trap and kill</td>
<td>Yes</td>
<td>Unlikely – unless consistently high removal rates are achieved for long periods</td>
</tr>
<tr>
<td>Trap, neuter and return</td>
<td>Yes</td>
<td>Potentially – strict conditions would need to apply to assess potential and is not a long-term solution</td>
</tr>
<tr>
<td>Targeted desexing</td>
<td>Yes</td>
<td>Potentially – for semi-owned cats</td>
</tr>
<tr>
<td>Educational strategies</td>
<td>Difficult</td>
<td>Potentially – if targeted at semi-owners</td>
</tr>
<tr>
<td><strong>Owned cats</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increasing access to cat friendly rental accommodation</td>
<td>Yes</td>
<td>Yes – with collaboration with real estate organisations and agents</td>
</tr>
<tr>
<td>Containment</td>
<td>Yes</td>
<td>Potentially – if strict 24-hour containment in combination with mandatory identification and strategies to control unowned cats</td>
</tr>
<tr>
<td>Mandatory identification</td>
<td>Yes</td>
<td>Yes – especially if used with collar and tag requirements</td>
</tr>
<tr>
<td>Mandatory desexing</td>
<td>Yes</td>
<td>Potentially – if pre-pubertal desexing and aimed at desexing prior to sale/transfer/return and if adequately enforced</td>
</tr>
<tr>
<td>Targeted and affordable desexing</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pre-pubertal desexing</td>
<td>Yes</td>
<td>Potentially – theoretically effective but not yet adequately assessed</td>
</tr>
<tr>
<td>Registration</td>
<td>Yes</td>
<td>No – but may assist indirectly where funds are directed to cat management activities</td>
</tr>
<tr>
<td>Limiting cat ownership</td>
<td>Yes</td>
<td>No – but may assist in reducing public nuisance, kitten farms and resolving animal hoarding cases</td>
</tr>
<tr>
<td>Breeding regulation</td>
<td>Difficult</td>
<td>Potentially – where mandatory desexing is implemented and to reduce kitten farms</td>
</tr>
<tr>
<td>Educational strategies</td>
<td>Difficult</td>
<td>Yes – if applied to specific areas of need</td>
</tr>
<tr>
<td>Facilitation of behaviour change</td>
<td>Difficult</td>
<td>Potentially - if encouraged and resourced at the national level</td>
</tr>
</tbody>
</table>

*NOTE: all these strategies require further research to obtain more data*
Secondly, in order to address the contributions of semi-owned cats to the unwanted cat problem and the associated wildlife predation, it is likely that new strategies will be needed to engage semi-owners in solutions that allow them to continue to care for their cats. This will necessitate a change in the way that the community, animal welfare groups and policy/law makers approach cat caretakers or semi-owners. Currently, in many localities, cat caretakers will not engage with animal welfare organisations and authorities for fear that their cats will be euthanased. A consistent classification system that allows for management of semi-owned cats as a distinct group needing specific approaches is required. Distinguishing between cats that are directly or indirectly dependent on humans and those that are not dependent on humans (feral cats) has been proposed in New Zealand (Farnworth et al. 2010a). A legislative climate that allows cat caretakers to continue caring for their cats if those cats are desexed would be the starting point (Zito 2015).

In terms of the management of owned cats, many existing strategies have the potential to be effective in achieving the objective of cat management, if an integrated, consistent approach is taken. Methods that have the most potential to effect change are: making affordable desexing initiatives widely available and accessible, increasing the uptake of pre-pubertal desexing, and encouraging the containment of owned cats, alongside public education programs and social marketing campaigns to increase community acceptance of the need for cat management. Changing community attitudes, beliefs and behaviours must be a component of every strategy to manage cat populations. Traditional methods used by government to change community behaviours are legislation, regulation, penalties, taxes, and subsidies, but these should be supplemented with other methods that improve cooperative community behaviour change (Head 2008), such as education and community awareness programs (Toukhsati et al. 2012a; Toukhsati et al. 2012b). Changing community attitudes and beliefs relating to cats is an important first step in increasing positive associated behaviours and moving towards a consistent, effective approach to cat management in Australia.

4.4.3 Evaluation and assessment

The body of evidence related to cat management is increasing but there is a lot of information that is still needed in order to inform best practice cat management. Many of the strategies that are theorised to be effective in controlling cat populations have not been implemented and formally assessed. This data is vital in ensuring successful long-term cat management. Agreement on parameters and study design are needed to enable valid comparisons of strategies under different circumstances and locations.

There are currently few, if any, formal assessments of the impact of specific cat management strategies on wildlife predation by cats, unwanted cat numbers, shelter intakes, shelter euthanasia numbers, and nuisance complaints. The few existing assessments relate to the impact of desexing initiatives (and TNR programs in overseas countries) on animal shelter cat intake and euthanasia numbers and the increase in reclaim rates associated with identification of cats. In the limited reports in the literature and media the assessment of the success or failure of cat containment is seemingly based on no, minimal or questionable data. This highlights the need for setting clear and measureable objectives for initiatives and formal assessment based on the objectives.
Table 8 sets out a series of measures that could be used to evaluate the overall success of cat management strategies, as well as a number of measures specific to individual strategies. Evaluation of the success of cat management programs should include pre- and post-implementation monitoring using these specific measures.

Two different strategies, TDAR and targeted desexing of semi-owned cats, have been identified in this report as requiring evaluation under Australian conditions in non-ecologically sensitive urban and peri-urban environments. In addition, the following areas have been identified for further investigation:

- The impact of TDAR and targeted desexing, on the number of roaming unwanted cats, cat submissions to shelters/pounds and cat euthanasia including identification of key aspects for effective management of unowned cats
- The effect that desexing has on cat behaviour and how this might influence cat population dynamics including analysis of typical dispersal rates, dispersal rates under different conditions, and the survival rates of dispersing cats (Miller et al. 2014b)
- Quantifying typical abandonment rates under different conditions and the socio-economic and attitudinal factors that contribute to higher abandonment rates and prevention of abandonment (Miller et al. 2014b)
- Determining if intensely managing cats within a small part of the metapopulation, or to managing a larger part of the metapopulation at lower intensity is more effective at controlling the cat population (Miller et al. 2014b)
- Identifying the barriers to desexing semi-owned cats
- Establishing a centralised database of key information including cat euthanasia, trapping statistics, TNR, shelter intake and killing methods. The RSPCA Shelter Mate database could also potentially provide some useful information.

**FINDING #21**

Evaluation of cat management strategies is essential in order to determine their effectiveness. Key evaluation measures and processes for data collection need to be agreed by all stakeholders and applied to all new and existing initiatives.

Evaluation of different management strategies and programs is either not undertaken, reported or not easily accessible.

**RECOMMENDATION #21**

Key stakeholders should agree on measures to be used to enable comparative evaluation of cat management strategies and programs. Evaluation outcomes should be reported and incorporated into the development of cat management plans at the national, state and local level.
Research related to cat management is generally undertaken in an ad hoc manner focusing on a specific area rather than as part of an integrated and coordinated approach. Several areas for further investigation have already been identified but there is a lack of adequate research funding in this area.

**RECOMMENDATION #22**

Further research is also needed to inform future cat management strategies and will require allocation of resources, coordination and priority setting at a national level.

### 4.4.3 Integration of feral and domestic cat management

Effective management of unowned, semi-owned and owned cats requires an integrated, consistent and long-term approach. The flow between the different cat categories is fluid, thus it is important to address all sources of unwanted cats in a coordinated and multifaceted initiative. As owned, semi-owned and unowned cats contribute to the feral cat population, initiatives to improve the management of these cat populations will help to meet feral cat management targets under the Australian Government’s Threatened Species Strategy. Assessment of the effect on feral cat numbers and their impacts on wildlife from management strategies which address owned, semi-owned and unowned cats is needed to provide data supporting this approach.

Several recommendations have emerged that encourage integration, including ensuring effective and ongoing communication at the national, state, local government and community level. This can be done through cross-reporting of advisory committees and incorporation of relevant details in action plans at all levels. Where possible, opportunities should be created for key stakeholders involved in feral cat management and domestic cat management to discuss common goals and options to integrate and coordinate activities to achieve successful outcomes. It is hoped that this discussion paper will facilitate further acknowledgement of, and commitment for, the integration of feral and domestic cat management.
## Table 8: Potential evaluation measures for strategies to manage domestic cats

<table>
<thead>
<tr>
<th>General measures</th>
<th>Specific measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced:</td>
<td>trap, neuter and return</td>
</tr>
<tr>
<td>- Overall numbers of unowned and semi-owned cats</td>
<td>Reduced size of discrete unowned cat population</td>
</tr>
<tr>
<td>- Size of individual cat colonies</td>
<td>Increased number and proportion of desexed unowned cats</td>
</tr>
<tr>
<td>- Shelter/pound admissions of owned, unowned and semi-owned cats</td>
<td>Increased number of semi-owned cats desexed</td>
</tr>
<tr>
<td>- Shelter/pound euthanasia of owned, unowned and semi-owned cats</td>
<td>Increased number of semi-owned cats adopted</td>
</tr>
<tr>
<td>- Nuisance complaints about cats</td>
<td>Decreased number of owned cats surrendered to animal shelters</td>
</tr>
<tr>
<td>- Documented wildlife injuries, deaths and impact on populations</td>
<td>Increased number of cat abandonment complaints received by RSPCA inspectorate</td>
</tr>
<tr>
<td>- Animal management costs</td>
<td></td>
</tr>
<tr>
<td>Increased:</td>
<td></td>
</tr>
<tr>
<td>- Retention of owned cats</td>
<td></td>
</tr>
<tr>
<td>- Proportion of owned and semi-owned cats desexed</td>
<td></td>
</tr>
<tr>
<td>- Community satisfaction and support for cat management</td>
<td></td>
</tr>
<tr>
<td>- Wildlife prey abundance</td>
<td></td>
</tr>
</tbody>
</table>

### Specific measures

- **Trap, neuter and return**
  - Reduced size of discrete unowned cat population
  - Increased number and proportion of desexed unowned cats

- **Education of semi-owners**
  - Increased number of semi-owned cats desexed
  - Increased number of semi-owned cats adopted

- **Reducing abandonment and surrender**
  - Decreased number of owned cats surrendered to animal shelters
  - Increased number of cat abandonment complaints received by RSPCA inspectorate

- **Cat containment**
  - Increased uptake of cat containment
  - Increased use of outdoor cat enclosures
  - Increased use of environmental enrichment for contained cats

- **Mandatory identification**
  - Increased reclaim rates recorded by shelters, pounds and veterinarians

- **Mandatory registration**
  - Increased reclaim rates recorded by shelters and veterinarians
  - Cat registration numbers
  - Council income from cat registration (and application towards cat management initiatives)

- **Mandatory desexing**
  - Increased number of owned cats desexed by minimum age
  - Reduction in shelter/pound admissions of kittens
  - Reduction in shelter/pound euthanasias of kittens

- **Targeted/affordable desexing**
  - Increased number of desexed cats from low income areas

- **Peri-pubertal desexing**
  - Increased number of cats desexed prior to sexual maturity
  - Increased retention of adult cats desexed prior to sexual maturity
  - Age of mother cat when kittens surrendered to shelters and pounds
  - Increased number of veterinarians undertaking pre-pubertal desexing

- **Limiting the number of cats owned**
  - Reduction in number of hoarding complaints received by RSPCA inspectorate

- **Breeder regulation**
  - Reduction in number of breeding complaints received by RSPCA inspectorate

- **Education and behaviour change**
  - Increased support for cat management strategies
References


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## Appendix: People consulted on legislation and other aspects

<table>
<thead>
<tr>
<th>Contact</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dene Lawrence</td>
<td>Coordinator Ranger Services, South Perth City Council</td>
</tr>
<tr>
<td>Colin Hyde</td>
<td>Ranger Team Leader, City of Albany, WA</td>
</tr>
<tr>
<td>Mark Stuart</td>
<td>Senior Policy Officer, Department of Agriculture &amp; Food, Western Australia</td>
</tr>
<tr>
<td>Sharleen Jordan</td>
<td>Executive Committee, Australian Institute of Animal Management</td>
</tr>
<tr>
<td>Joy Verrinder</td>
<td>Animal Welfare League Qld</td>
</tr>
<tr>
<td>Mandy Paterson</td>
<td>Principal Scientific Officer, RSPCA Qld</td>
</tr>
<tr>
<td>Jane Gregor</td>
<td>RSPCA ACT</td>
</tr>
<tr>
<td>Amanda Swift</td>
<td>Chief Inspector, RSPCA WA</td>
</tr>
<tr>
<td>Pam Whetnall</td>
<td>SA Dog and Cat Management Board</td>
</tr>
<tr>
<td>A/Program Manager</td>
<td></td>
</tr>
<tr>
<td>Scott Thompson</td>
<td>Partner &amp; Principal Zoologist, Terrestrial ecosystems</td>
</tr>
<tr>
<td>Andrew Coulson</td>
<td>Team Leader – Community Engagement Projects, Natural Resources SA</td>
</tr>
<tr>
<td>Pat Hodgens</td>
<td>Environmental Consultant, Kangaroo Island Feral Cat Eradication Plan</td>
</tr>
<tr>
<td>Roger Brown</td>
<td>Cat Management Officer, City of Mitcham SA</td>
</tr>
<tr>
<td>John Madigan</td>
<td>Acting Coordinator, Animal Management, City of Gold Coast Qld</td>
</tr>
<tr>
<td>Julia Nicholls</td>
<td>Director, Feline Health Research Fund, Australasian Society of Feline Medicine</td>
</tr>
<tr>
<td>Craig Elliot</td>
<td>Manager, Invasive Species, Biosecurity Tasmania, Department of Primary Industries, Parks, Water and the Environment</td>
</tr>
<tr>
<td>Andrew Byrne</td>
<td>Chief Veterinarian/Animal Care Manager, RSPCA Tasmania</td>
</tr>
</tbody>
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