BYRON SHIRE COUNCIL

Pest Animal Management Plan 2018 - 2023

November 2018

In preparation of this document Council acknowledges the Bundjalung of Byron Bay - Arakwal People are the Traditional Custodians of the land in Byron Shire, and form part of the wider Aboriginal nation known as the Bundjalung.

Byron Shire Council and the Traditional Custodians acknowledge the Tweed Byron Local Aboriginal Land Council and the Jali Local Aboriginal Land Council under the Aboriginal Land Rights Act 1983.

Council also acknowledges all Aboriginal and Torres Strait Islander people who now reside within the Shire.

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Document History

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Executive summary

The Byron Shire Council Pest Animal Management Plan 2018-23 provides a framework for the management of pest animals on Council managed land but with opportunities for Council to assist with pest animal management on private land when funds allow.

The Plan enables Council to meet its statutory requirements under the NSW *Biosecurity Act 2015* and *Local Land Services Act 2013*, whilst fostering a collaborative, cross-tenure approach to pest animal management.

Under the *Biosecurity Act 2015* all land managers, regardless of whether on private or public lands have a shared responsibility to manage pests and their impacts.

To meet these legislative requirements, Council will focus efforts on Council owned and managed land. Council will support private land managers to fulfil their obligation to manage pest animals and encourage a collaborative approach by offering technical advice and support and acting as a conduit between relevant stakeholders. Where additional or new financial resources can be secured to allow Council to undertake off-tenure management, the Plan identifies priority target areas on private land where Council may undertake targeted pest animal management. Efforts will be prioritised based on opportunities to complement existing pest control programs, and in areas with high environmental, cultural, social and economic values.

The Plan provides desired outcomes, objectives and actions to address and manage the impacts of pest animals. These actions are based on the principles of pest animal management being, prevention, eradication, containment and asset protection. Objectives include increasing community understanding of the benefits of integrated pest animal management, encouraging community-led, coordinated and integrated pest animal control activities, using safe, effective and humane approaches to pest animal management and promoting research and development.

Priority pest animals were selected based on regional strategies, local impacts and community consultation, and include free-ranging dogs (wild dogs), European red fox, feral cats, European rabbit, Indian myna and cane toads. Aquatic and insect pest are not included in the Plan. The strategic actions and species-specific actions will guide targeted control of priority pest animals as well as emerging and alert species. The Plan also provides an implementation program that outlines measures of success, stakeholders and responsibilities, and incorporates mechanisms for monitoring, evaluation and reporting of the Plan's effectiveness.

The Plan draws on the experience and knowledge of multiple stakeholders including but not limited to private trappers, NSW State Government agencies and local community members who provided advice and input during the development phase.

Acknowledgements

This Plan required significant resources, research and dedication. Still, development would not have been possible if Council did not have the support of many individuals and organisations. Therefore, we would like to extend our sincere gratitude to them.

First of all, we are thankful to NSW Government for their financial support through its Saving our Species Program, which enabled the engagement of Ecosure Pty Ltd, Ph3 Consulting and the University of Technology Sydney to prepare the plan in close collaboration with Council staff.

We express our gratitude towards the Arakwal Bundjalung People and the wider Bundjalung Nation as traditional owners and custodians of the land, in particular Mik Smith CEO of Jali Local Aboriginal Land Council for an Aboriginal perspective on pest animals.

We are also grateful to other public land mangers including the National Parks and Wildlife Service, North Coast Local Land Services, Department of Primary Industries and Tweed Shire Council for provision of expertise, and technical support in the development of the Plan, as well as access to pest animal data for Byron Shire.

We thank Friends of the Koala who provided access to pest animal data in relation to attacks on koalas in Byron Shire. This will allow us the opportunity to prioritise areas for future management on private land.

Importantly, we would like to thank Jim Rogers of JR Trapping and the community members who provided their valuable time and knowledge to inform the Plan through a community workshop and completing an online survey. This input was critical to developing a Plan that will guide a collaborative cross-tenure approach to effectively manage pest animals and their impacts on the community.

It is with provision of expertise, and technical support from many individuals and organisations that we can progress towards shared solutions to help manage pest animals across our landscape.

Definitions, acronyms and abbreviations

Biosecurity Threat	Biosecurity is a critical part of the government's efforts to prevent, respond to and recover from pests and diseases that threaten the economy and environment
DPI	Department of Primary Industries
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
IPM	Integrated Pest Management
LALC	Local Aboriginal Land Council
LLS	Local Land Services
LLS Act	NSW *Local Land Services Act 2013*
NPWS	NSW National Parks and Wildlife Service
NCLLS	North Coast Local Land Services
OEH	Office of Environment and Heritage
Pest animal	Is an introduced (non-native) animal that present a biosecurity threat
Pesticide	An agricultural chemical substance as defined by the *Agricultural and Veterinary Chemicals Code Act 1994.* Definition of pesticides covers, bactericides, baits, fungicides, herbicides, insecticides, lures, rodenticides and repellents. Pesticides are used in commercial, domestic, urban and rural environments (*Pesticides Act 1999*). A pesticide may be natural or synthetically produced. For the purposes of this definition, a pesticide continues to be regarded as a pesticide even when it is mixed with some other substance (whether or not the other substance is a pesticide). Products that are pesticidal in their action but are entirely based on biological agents not harmful to humans are not considered a pesticide for the purposes of this definition.
Private land managers	Individual community members that own or occupy land within Byron Shire
SOP	Standard Operating Procedures

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1 Introduction

1.1 Background

The risk of invasion of non-native organisms is accelerating with human population growth and globalisation (McNelly 2011). Despite quarantine services in Australia, expansion of trade has seen increases in purposeful and accidental introductions, and their negative impacts are regarded as second only to activities associated with human population (Fleming et al, 2017). Pest animals are recognised as a significant threat to biodiversity and agricultural productivity and have the ability to impact with human lifestyle and health e.g. acute and chronic distress, depression and anxiety. Effective management of pests requires a clear and strong commitment from the State Government, Council and the community. The cost to manage pest animals is significant and growing annually (Invasive Animals CRC 2014a). The most cost-effective method of managing pest animals is to prevent further invasions.

The average cost of rabbits, wild dogs, foxes, feral pigs and other vertebrate pests on the Australian agricultural industry is as high as $596 million per year – with free-ranging dog (wild dog) costs nearly double, since the last analysis (Invasive Animals CRC 2014a). In NSW alone, the average cost on the agricultural industry is $151.5 million per year.

The NSW *Biosecurity Act 2015* came into effect on 1 July 2017 and replaces all or part of 14 Acts. The *Biosecurity Act 2015* together with the *Local Land Services Act 2013* (LLS Act) identifies that all land managers, regardless of whether on private or public land, have the same responsibilities to manage pest animals.

Our Pest Animal Management Plan 2018-23 (the Plan) has been prepared to help Council meet its statutory requirement under the NSW *Biosecurity Act 2015* and the LLS Act and to help reduce the impacts of pest animals on biodiversity and agricultural productivity.

The Plan acknowledges the responsibility of not only Council in the management of pests in the Shire, but the responsibilities of Commonwealth and State governments and those of the wider community. This includes the control and effective management of pest species and the protection of environmental, social, economic and cultural values of the Shire.

All land managers, regardless of whether on private or public land, have the same responsibilities to manage pest animals.

1.2 Purpose

Our Plan has been developed to ensure that Council meets its statutory obligations, but also complement cooperative management of pest animals undertaken by public and private land managers across Byron Shire. Priorities for pest management within the Shire are identified, and strategies that address the environmental, social, economic and cultural impacts of pests are established.

The Plan also identifies priority pest animal species to ensure that resources are allocated appropriately and provides detail for the monitoring, evaluation, reporting and improvement of pest animal management activities. The Plan will serve as a framework to provide strategic direction for a consistent and effective approach to pest animal management by Council in the Byron Shire.

The Plan supports the *Biosecurity Act 2015*, LLS Act and the North Coast Regional Strategic Pest Animal Management Plan 2018-23 (North Coast Local Land Services [NCLLS] 2018).

Council's vision is to foster a collaborative, cross-tenure approach to pest animal management to reduce the impacts of pest animals on environmental, economic, social and cultural values in Byron Shire.

1.3 Our strategic framework

Between 2018 and 2023, Council will aim to achieve the desired outcomes and objectives, which are further detailed in Sections 8 and 9.

Desired outcome 1: Negative impacts of pest animals are reduced, with Council meeting its responsibility to manage pest animals on Council-managed land

- Objective 1.1 Increase community understanding of the benefits of pest animal management in Byron Shire.
- Objective 1.2 Proactively manage pest animals to reduce their impacts via a prioritised strategy of prevention, eradication, containment or asset based protection of priority pest animal species.
- Objective 1.3 Use safe, effective and humane approaches to pest animal management.
- Objective 1.4 Promote the availability of technical advice and resources to private land managers in Byron Shire for pest animal management.

Desired outcome 2: Coordination of pest animal management across Byron Shire is strengthened and collaborative

- Objective 2.1 Foster good collaborative and coordinated community relations by acting as a conduit to community led coordinated and integrated pest animal control activities by all land mangers throughout Byron Shire.
- Objective 2.2 Ensure continued input and feedback on Council's pest animal management program from all land managers.

Desired outcome 3: The way pest animals are managed by Council is continually reviewed.

- Objective 3.1 Improve the mechanisms used to carry out, monitor, evaluate and report on pest animal management by Council.
- Objective 3.2 Support pest animal research and development.

1.4 Scope

Under the NSW *Biosecurity Act 2015*, pest animals are not defined by species. The Plan defines a pest animal as introduced (non-native) animals that present a biosecurity threat. All land managers, regardless of whether on private or public land, have a **General Biosecurity Duty** to prevent, minimise or eliminate any biosecurity risk under the Act. The general biosecurity duty is a principle that can be used by all land managers to encourage or in some cases enforce best practice behaviours to achieve effective pest animal management.

This Plan applies to Council managed land, including land owned or controlled by the State Government (e.g. Crown land). It is also intended to guide private land managers, which Council will support in their legislative obligation to manage pest animals.

The Plan does not apply to land owned by the Commonwealth, however all private or public land managers will benefit from Council's approach to pest management activities.

Pest animals targeted in this Plan are shown in Table 1. These are based on known impacts within the Shire, community feedback received in developing the Plan, and priority species identified in the North Coast Regional Strategic Animal Management Plan 2018-23.

The Plan's focus will be on preventing the incursion of new species, eradicating new species, and preventing the spread and reducing the impacts of established species.

Table 1 Target pest species within the scope of this Plan

Established species **Management aims: Contain Spread and Protect Assets (reduce impacts)**	**Emerging species** **Management aim: Eradicate where possible or Contain Spread**	**Alert species** **Management aim: Prevent**
Free-ranging dog (wild dog)	Feral goat	Red-eared slider turtle
European red fox	Feral pig	Red imported fire ant
Feral cat	Feral deer	Big headed ant
Indian myna		Yellow Crazy ant
Cane toad		Indian ring-necked parrot
European rabbit		

Not included in the scope of our Plan are, aquatic pests, native (nuisance) animals, domestic or public health pests (including rodents, mosquitoes, midges and cockroaches), or pathogens of humans, domestic animals and livestock.

Responsibility for the prevention and management of aquatic pests is shared between several State and Commonwealth government agencies. Under the *Biosecurity Act 2015*,

the NSW Department of Primary Industries is responsible for the conservation and management of the fish and marine vegetation including management of aquatic pests and diseases. For example, the NSW Department of Primary Industries is involved in the National System for the Prevention and Management of Marine Pest Incursions.

In some instances, native animals such as Brush turkeys, kangaroos, flying-foxes, corellas or possums can be perceived as pests. For example, an abundant population of kangaroos can compete with native animals or livestock for food. Native animals are not included in the scope of the Plan and are managed separately in accordance with the NSW *National Parks and Wildlife Act 1974* and *Biodiversity Conservation Act 2016*. The grey-headed flying-fox is listed as a threatened species under the *Biodiversity Conservation Act 2016*. Part 2 Division 3 of the *Biodiversity Conservation Act 2016* provides for issuing of Biodiversity Conservation Licences to manage flying-foxes.

The Plan encompasses principles, goals and priorities across the four stages of pest animal management: prevention; eradication; containment; and asset protection.

1.5 Commencement and duration

Our Plan is a five year plan, which is to remain in place until 2023. The Plan will not come into force until it has been formally adopted by resolution of Council.

1.6 Plan structure

The overall structure of the Plan is presented in **Figure 1**.

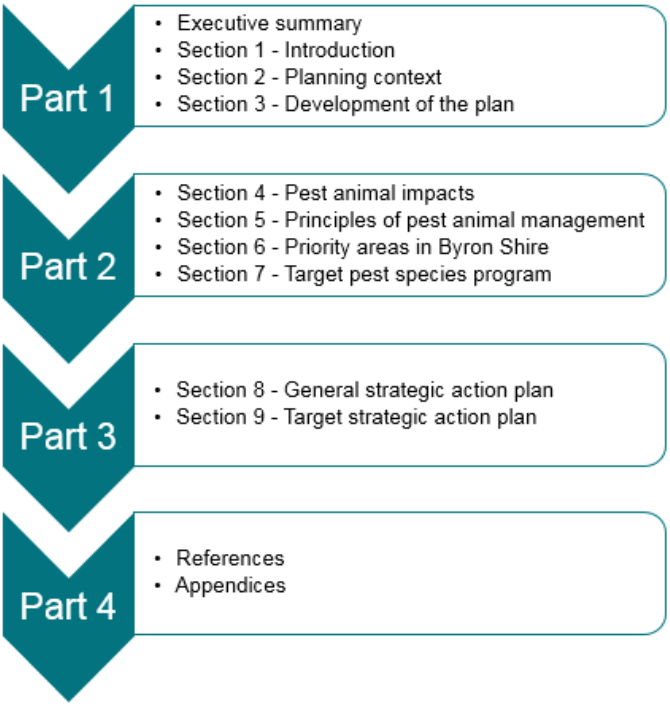

Figure 1 Structure of the plan

2 Planning context

Pest management in Australia occurs at three levels of government. A summary of key pest animal legislation and strategies are provided below and in **Figure 2**. Appendix 1 provides a comprehensive overview of legislation, policies and plans relevant to pest animal management in the Shire.

2.1 Commonwealth

The Australian Government provides national guidance on best practice pest animal management in the Australian Pest Animal Strategy 2017 - 2027 (Invasive Plants and Animals Committee 2016). The strategy sets national priorities and goals, discusses principles of effective pest animal management and encourages a coordinated and strategic approach across a range of stakeholders.

2.2 State and regional

The New South Wales Biosecurity Strategy 2013 – 2021 (Department of Primary Industries 2013) provides the strategic direction for the management of plant and animal pests, weeds and diseases. The strategy focuses on biosecurity risks that impact the environment, community and economy (Department of Primary Industries 2013).

Within the regional context, the North Coast Regional Strategic Pest Animal Management Plan has recently been released (North Coast Local Land Services 2018). This plan assists with the regional implementation of the NSW *Biosecurity Act 2015*. It identifies regional priorities for pest animal management and activities and provides guidance for all land managers to meet their biosecurity duty (North Coast Local Land Services 2018). **Figure 2** illustrates the NSW Biosecurity framework for invasive species in NSW (North Coast Local Land Services 2018) with this Pest Animal Management Plan (local management plan) being guided by the regional strategy.

Everyone is obliged to comply with animal welfare standards in the *Prevention of Cruelty to Animals Act 1979* when undertaking pest animal control. Other key state legislation detailed in Appendix 1 include the *Companion Animals Act 1998* which specifies requirements for responsible pet ownership, and the *Pesticides Act 1999* which governs the use of pesticides.

Under the NSW Biosecurity Act 2015, Council has a legislative requirement to manage pest animals on Council managed land.

2.3 Byron Shire Council

Pest animal management in the Byron Shire was guided through the existing Feral Animal (wild dog, fox and cat) Management Plan 2013-2015 (Byron Shire Council 2013). This Plan will replace and expand upon the existing management plan. This Plan will also contribute to Council's Biodiversity Conservation Strategy (currently in preparation) to protect and restore Byron Shire's biodiversity and the Integrated Pest Management Strategy (currently in preparation).

The Byron Shire Rural Land Use Strategy 2017 provides a strategic framework to guide future land zoning and use, protection and/or development of rural areas, including the environment, community, economy and infrastructure. The aims of the strategy are to provide a framework to allow Council and the community to deliver improved outcomes in rural areas. The strategy identifies the need to provide information and advice on pest management to the community (Byron Shire Council 2018).

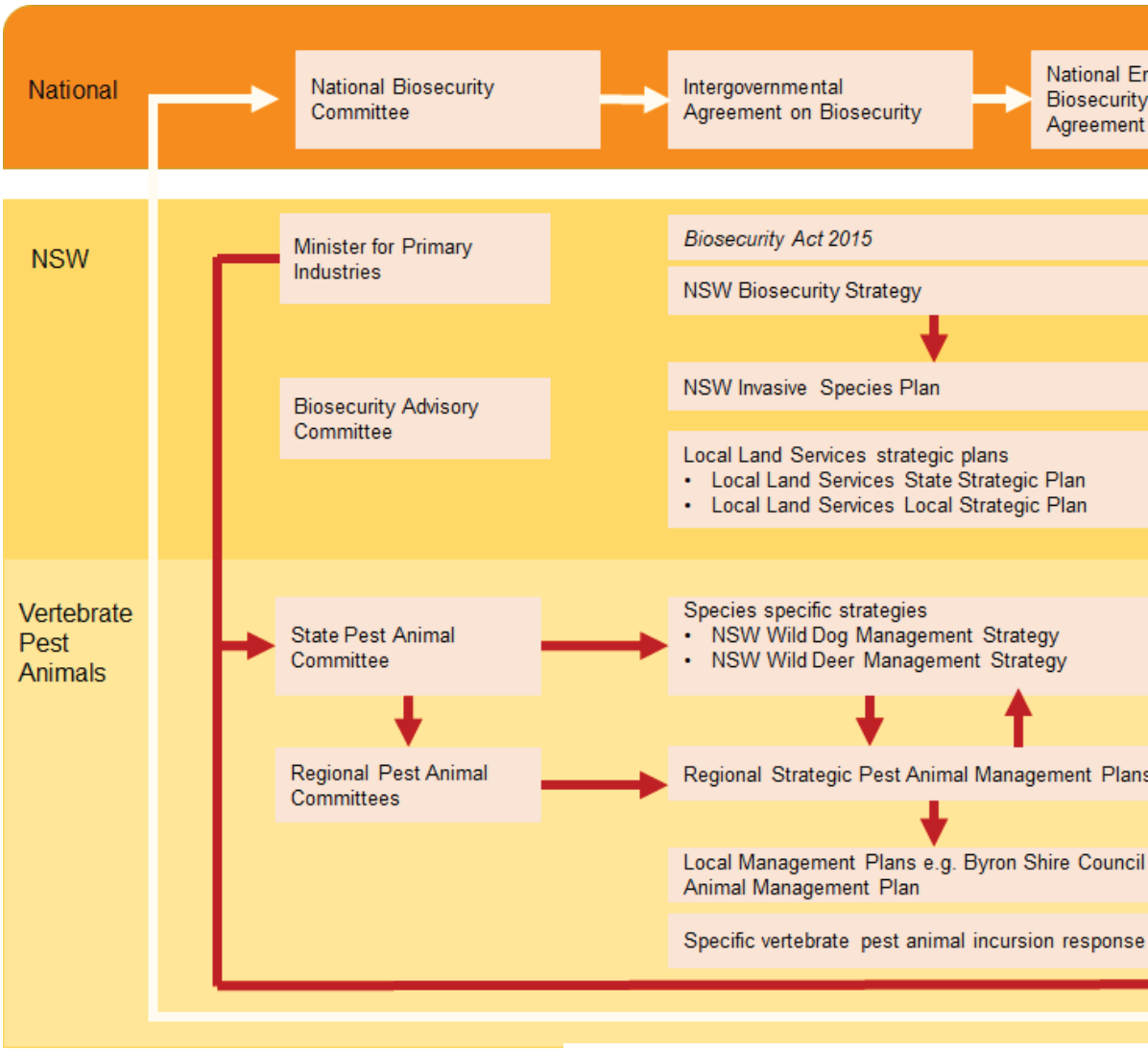

Figure 2 The NSW Biosecurity framework for invasive species in NSW (Adapted from: North Coast Local Land Services 2018)

3 Development of the plan

3.1 Historical and current management plans, programs and issues

In late 2011, Council commenced planning for a pest animal management program targeting free-ranging dogs (wild dogs), European red fox and feral cats on Council managed land and private land, which led to the development of the Feral Animal Management Plan 2013-15. In 2012, the operational actions identified within the Feral Animal Management Plan 2013-15, which included a soft jaw trapping program between autumn and spring each consecutive year was implemented, except in 2017. By 2015, 64% of the actions identified in the Feral Animal Management Plan 2013-15 were fully completed while 14% of the actions were partly completed and 22% of the actions were not completed. Actions that were incomplete related to monitoring and evaluation activities.

Council's management of pest animals has been previously funded by Council with additional financial support from NSW Government funds and private land managers. For example, Council covered the full cost to retain a private trapper on a weekly bases, while a fee per head of carcass for the target pest animal trapped was payable by private land managers. In some cases, multiple private land managers worked in partnership with a private trapper and collectively agreed that regardless of whose property the target pest animal was captured on, the fee per head carcass for each pest animal trapped and euthanized was equally funded by the participating private land managers.

This collaborative approach by private land managers showed to be highly efficient in terms of surveillance to enable timely detection of pest animal incursions. It promoted support and coordinated localised on-ground action, shared responsibility and cost across private land tenure. In addition, the approach also recognised that pest animals move across multiple land tenures. For example, free-ranging dogs (wild dogs), have an average home range or territory of 100 square kilometres, depending on the available resources. Although, in 2016, a free-ranging dog (wild dog), was tracked west of Coffs Harbour before going on a record exploration of some 530 km in six months via the base of the steep escarpment under Dorrigo and up the Bellinger past Thora, eventually reaching Bellbrook on the Macleay via the upper Nambucca, and from there up onto the Tablelands through the Styx River catchment (Dr. Paul Meek, pers. comm. 27 March).

Furthermore, community feedback demonstrates that data communicated regularly can also help motivate participating private land managers to keep going with a program. Sharing positive results through newsletters, meetings and local media helps to boost support from the community and maintains the social license needed to continue pest management (Bernice Sigley, pers. comm. 2 April 2018).

A collaborative approach to pest animal management provides the best outcomes for public and private land managers, the community and the environment.

For a period of time Council funds were complemented by NSW government grants. This presented Council with an opportunity to extend beyond its statutory requirements to manage pest animals on Council managed land and expand the soft jaw trapping program across broader areas of private land. This appears to have promoted localised support and initial coordinated on-ground action, but, over time it may have also falsely raised private land manager expectations that Council has an obligation to fund and or undertake actions to manage pest animals on private land, when it is the landowner's responsibility.

Over time, Council may have falsely raised private land manager expectations that Council has an obligation to fund removal of pest animals on private land.

Similarly, NSW government grants have enabled Council to periodically appoint an Invasive Species Officer to undertake activities with the community to manage other pest animals such as cane toads (*Rhinella marina*, formerly *Bufo marinus*) and Indian mynas (*Acridotheres tristis*). The management of these species also relied heavily on trained community volunteers that were supported by Council technical advice and resources. The programs were well received by the broader community and have partly continued beyond the grant, but associated travel expenses incurred by trained community volunteers places uncertainty over the future of these types of services. Concerns have also been raised relating to animal ethics.

Additionally, uncertainty over whether NSW government grants will continue, together with the commencement of the NSW *Biosecurity Act 2015* means Council must first prioritise pest animal prevention, eradication and management strategies on Council managed land. Given this uncertainty, a triage approach to pest management must be established to make the best use of limited Council capacity and resources.

Council is prioritising pest management activities on Council managed land due to legislative requirements under the Biosecurity Act 2015 and uncertainty around external grant funding.

3.1.1 Monitoring requirements

Monitoring is a crucial part of management but requires a lot of time, financial resources and effort, so it is important to determine the monitoring objectives: what information needs to be collected and why, when, where and how data will be collected and stored. Importantly, it needs to be clear how the information will be used to provide evidence that the desired outcomes are being achieved through management. As such, it is recommended that Council adopt a method for collection and sharing of pest animal sighting, distribution, impact and control information.

FeralScan (www.feralscan.org.au) is a free online resource that allows anyone to record pest animal activity, evidence of pests, pest damage and control actions (**Figure 3**). Data entered

into FeralScan can be used to help coordinate on ground control to address the problems pest animals are causing in a local area. FeralScan can be used by farmers, community groups, pest controllers, local government, catchment groups and individuals managing pest animals and their impacts. FeralScan can assist with planning and implementing a control program. It can also be used to map rabbits, free-ranging dogs (wild dogs), foxes, feral cats, feral pigs, feral fish, feral camels, myna birds, cane toads, feral goats, and starlings, and will soon provide the capacity to map feral deer.

If land mangers choose to use FeralScan as a data recording/sharing medium it needs to be cautioned that users may want to make their entries private. This is particularly relevant to pests such as feral pigs and goats, which may attract illegal hunters who do not necessarily do the right things by land managers. Additionally, FeralScan is not linked to Local Land Services, the lead public land manager and holder of pest animal data. This means that while FeralScan is a resource available to store information, any data captured still needs to be provided directly to Local Land Services. This is important for supporting funding applications for pest animal control at a landscape scale in which all land managers would potentially benefit from.

Figure 3 FeralScan is an online resource to assist in recording pest animal data

3.2 Integrated pest management

Pest animal management is a reality for local government whether for the economy, asset protection, the protection of the environment, or community health and welfare. Pest animal management must therefore aim for the efficient and effective control of pest animals, while avoiding any adverse effects on the economy, public assets, ecosystems and people.

With increasing knowledge and understanding of the potential negative consequences of pesticides, safer and more environmentally friendly pest and disease control methods are

becoming increasingly popular on public and private land. Integrated Pest Management (IPM) is one such approach that aims to reduce the use of pesticides through a series of pest management evaluations and decisions that progressively improve the competitive ability of desirable plants and animals, coupled with the application of alternative pest control methods. These control methods include but are not limited to biological control, fire, steam, slashing and manual methods (for plants), and biological control, trapping and shooting (for animals).

Thus, integrated pest management is not a single pest control method, but rather a holistic approach that integrates ecological factors with a range of control methods to manage and ideally reduce pest species. This concept has subsequently been widely accepted as a mainstream approach in the management of production and amenity landscapes around the world.

There have been many definitions for integrated pest management but it has been defined by the Food and Agriculture Organization of the United Nations Code of Conduct on the Distribution and Use of Pesticides as "*the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment*."

3.2.1 Integrated pest management policy

On 24 August 2018, Council resolved (18-565) to adopt an Integrated Pest Management Policy. The Policy aims to provide a policy framework for the effective and efficient control of pests on Council managed land through an Integrated Pest Management approach that uses a range of appropriate prevention and control methods while minimising the use of pesticides on a continuous improvement basis. As such the Policy seeks to support a transition from a reliance on pesticides.

Council recognise there are a variety of different lethal and non-lethal control methods available to control pest animals. These include but not limited to poison baits (sodium fluoroacetate (or '1080') or para-aminopropiophenone (PAPP)), traps, shooting, fencing, guard animals and aversion techniques (such as lights, alarms, and flagging) and biological control (rabbit haemorrhagic disease virus (RHDV)). Not all tools are useful for a given area; each tool varies in its effectiveness, depending on a range of factors specific to the local situation. The use of many control tools is also subject to various laws and regulations.

In most pest animal management situations, a combination of management options is generally proven to be the most efficient, effective and cost-effective approach to managing the target pest animal species. However, in supporting the Policy as well as the general small areas of Council managed land (≤120ha), the use of pesticides such as 1080 may not be the preferred or most efficient method and therefore other options to manage pests such as free-ranging dogs (wild dogs), foxes and feral cat will need to be employed (refer to Section 7).

3.3 Consultation

There are a range of stakeholders who are directly or indirectly affected by pest animals or who are interested in pest animal management, all of whom were invited to share their thoughts and provide advice and input in the development of the Plan (Table 2). Extensive effort was made to engage with the community and other stakeholders in development of the Plan. Methods included a number of workshops for public land managers, Traditional Owners, private land managers and the broader Byron Shire community, as well as an online survey. This Plan will also be placed on public exhibition and submissions will be considered in finalising the Plan.

Further detail on engagement methods is provided in Appendix 2.

Table 2 Stakeholders invited to assist in development of the Plan

Stakeholders	
Bangalow Koala	Northern Rivers Regional Organisation of Councils
Byron Bird Buddies	Byron Shire Council including Councillors and staff
Landcare and Dunecare	Biodiversity Advisory Committee
WIRES – Northern Rivers	Arakwal MOU Advisory Committee
Northern Rivers Wildlife Carers	Tweed Shire Council
Friends of Koala	Ballina Shire Council
Private and volunteer trappers	Lismore City Council
NSW Farmers Association	North Coast Local Land Services
Australian Macadamia Society	Department of Primary Industries
Bundjalung of Byron Bay Aboriginal Corporation	National Parks & Wildlife Service
Jali Local Aboriginal Land Council	Office of Environment & Heritage
Tweed-Byron Local Aboriginal Land Council	Private land managers
Ngulingah Local Aboriginal Land Council	Community members

3.3.1 Community feedback

A summary of the feedback from the online survey is as follows:

- A total of 24 valid submissions were received to inform the development of the draft.
- Based on the cumulative preference totals of the top six ranked pest animals of concern by users, free-ranging dogs (wild dogs), feral cat, European red fox, European rabbit, Indian Myna and feral pig ranked the highest as the priority pest animals.
- Free-ranging dogs (wild dogs), were reported to have the greatest impact on biodiversity, especially wallabies, followed by impacts on agricultural productivity with loss of livestock and suspicion of transferring a reproductive disease, neosporosis, to cattle. Neosporosis is a reproductive disease that causes abortions, low conception rates, decreased calving rates and milk production, and weaner and calf loss, and is estimated to cost the Australian beef and dairy industries in excess of AUD $110 million annually (Invasive Animals CRC, 2014). Hydatid disease (also known as hydatidosis or echinococcosis) is caused by a tapeworm which infects dogs, dingoes and foxes. Hydatid disease also causes losses in livestock with the downgrading of edible meat by-products because of the presence of the hydatid cysts (NSW DPI primefact 2007).
- The use of 1080, while acknowledged to be an effective management tool for the management of free-ranging dogs (wild dogs) and European red fox (NSW DPI primefact 2018), was the least preferred management option. Ten respondents were concerned about the risks to native wildlife and nine respondents concerned about the risks to domestic animals. However, seven respondents expressed no concern about the use of 1080 or other pesticide use to control pest animals. The most preferred management option was trapping and shooting, equally followed by exclusion fencing and ‘do nothing’.
- Eight respondents stated they undertook control of pest animals on their land.
- Eleven respondents acknowledged knowing that under legislation, pest animal management is a shared responsibility between all land managers, regardless of whether on private or public land.
- Fourteen survey respondents were willing to participate in coordinated community efforts to control pest animals.
- Questions with open answer options provided extremely polarised views that reflected concerns by some for the welfare of pest animals, while others supported the view that pest animals should be eradicated.
- The overall feedback from the community received via the online survey and workshops favoured pest animal management measures that:
    - meet statutory requirements
    - are cost-effective
    - provided a coordinated and sustainable long-term solution
    - reduced the impact of pest animals on biodiversity, agricultural productivity, cultural values and social wellbeing.

A summary of the feedback from other engagement activities is as follows:

- 1,172 total visits to Facebook
- 27 total Facebook postings
- 6,280 informed individuals including email subscriptions
- 98 total visits to Council's website
- 24 completed an online survey
- 7 participants at a community workshop
- 11 participants in public agency and Traditional Owner workshop.
- 11 submissions on the draft Plan with 3 submissions from other public agencies
- 9 submissions received on draft Plan (refer to Submissions report to the BSC Biodiversity Advisory Committee 11 February 2019)

Community feedback has shown that wild dogs are the number one concern to the community at present. Feral cat, European red fox, European rabbit, Indian myna and feral pig were the next top six animals of concern.

There was some confusion as to what were pest animals compared to what are native (nuisance) animals (e.g. native species of wildlife that some people see as pest species such as Australian magpie (Gymnorhina tibicen), Australian brush turkey (Alectura lathami) and grey-headed flying fox (Pteropus poliocephalus). Over 82% of survey respondents were willing to participate in community efforts to control pest animals. The survey showed strong support for humane control methods, trapping and shooting.

In terms of priorities for management measures, Council's need to meet statutory requirements was ranked the highest with cost-effectiveness, coordinated and sustainable long-term solutions to reduce the impact of pest animals on biodiversity, agricultural productivity, cultural values and social wellbeing ranked equally.

3.3.2 Development and approval process

The process for the Plan's development and approval was as follows:

1. NSW Government Saving our Species funding announced and secured
2. Project Team established to provide advice on preparation of draft Plan
3. Internal and external stakeholder analysis for preparation of desired outcomes and species prioritisation
4. Stakeholder and Community Engagement Plan completed and implemented

5. Draft plan provided to NCLLS and DPI for comment
6. Draft plan released for public exhibition (9 August to 20 September 2018)
7. Submissions reviewed, draft plan amended as required and seek Council endorsement for adoption of the Plan (early 2019)
8. Approved and adopted plan implemented by Council.

3.3.3 Implementation and review of the plan

Our Plan remains in place for a five year period and during that time will be implemented by Council to the fullest extent practicable. The Plan has been developed to demonstrate the annual actions to be implemented during its five year lifespan.

Minor reviews of the implementation and effectiveness are to occur annually, and where required, minor amendments can be made without the need for re-exhibition and adoption of the amended document. Any changes in pest distribution and population dynamics are able to be incorporated through these reviews. It is imperative that the Plan and the suite of actions are adaptable to these changing conditions.

A full review of the Plan will be undertaken nearing the end of the five year period.

Council intends to complete the annual review of the implementation plan a minimum of six months before the end of each financial year to align with the operational budget process.

The implementation plan will be evaluated through analysis of the Plan's success measures against the annual action plans.

4 Pest animal impacts

Pest animals have major environmental economic, social and cultural impacts, and most Australian states have legislation requiring land managers to manage pests on the land they own or occupy to reduce impacts (Thompson et al 2013). In the majority of scenarios, there is an inter-relationship between the environmental, economic, social and cultural impacts. Table 3 provides a summary of the range of impacts selected pest animals have in Australia.

4.1 Environmental

Environmental impacts occur through a range of mechanisms. These include competition or direct predation on native animals, displacement of natives from niche roles, spread of diseases into and within native animal populations, overgrazing of native plants, soil degradation and loss of organic matter and soil structure leading to increased soil erosion, habitat destruction, and fouling of waterways with commensurate degradation of water quality. Environmental impacts can be variously quantitatively and qualitatively assessed.

4.2 Economic

Economic impacts are traditionally qualitatively assessed. Economically, pest animal impacts include damage to infrastructure such as machinery, fences and watering points, predation on livestock, diminished livestock production due to either harassment of livestock or loss of primary productivity due to grazing pressure, and the overall cost burden of pest animal control and damage mitigation. This latter is borne by the community as a whole.

4.3 Social

Social impacts can best be defined as affecting mental health and interactions between individuals and groups. As such, social impacts include increased fear and apprehension of pest animal attacks, distress associated with witnessing injury or death of pets, wildlife and livestock, distress at methods used to control pest animals, stress associated with loss of income or increased costs, social conflicts over responsibility for control, and community divisions over animal welfare issues. The issues surrounding animal rights are becoming an increasing source of social contention, and sometimes arise when pest animal control activities are proposed.

4.4 Cultural

A study of attitudes to pest animal management (Rose, 2007) indicated that some Australian indigenous cultures have a view that there is not necessarily any incompatibility between native and introduced animals using the land together, and that any physical damage caused by pest animals was regarded as one of the nuisances that comes from sharing the land with animals. Even when the presence of large numbers of pest animals is recognised as negatively impacting on the country, the study by Rose (2007) indicated that some

indigenous people did not see a need to carry out special forms of management. In contrast, some Aboriginal people see pest animals as an important resource for food, employment and recreation (Aslin and Bennet 2000). Pest animals have become an important component for subsistence, especially in Aurukun Cape York, far north Queensland, where many native prey have become scarce or extinct and feral pigs have become a major source of protein, replacing native prey in the local diet (Bomford and Caughley 1996).

The Bundjalung people are the custodians of the northern coastal areas of New South Wales. Bundjalung country extends from Grafton on the Clarence River in northern New South Wales, to the town of Toowoomba in southern Queensland, and down around the other side of the Great Dividing Range. From an Aboriginal perspective, the impact of pest animals continues across Country including Bundjalung Country (this includes land that is referred to by Council as Byron Shire). As well as damaging the natural environment, pest animals can impact on totems and degrade sites of cultural significance such as Aboriginal rock art sites, burial places, caves, middens and other historically significant structures (Mik Smith, pers. comm. 27 March 2018).

Aboriginal spirituality is totemic. A totem is a natural object, plant or animal that is inherited or given by members of a clan or family as their spiritual emblem. Totems define peoples' roles and responsibilities, and their relationships with each other and creation. By being connected to totems and what they represent Aboriginal people, individually and collectively, share responsibility for each other and Country. For example, the primary totems for the Bundjalung people are the three provenance species of goanna including coastal sand goanna (*Varanus gouldii*) and snakes (any species) (Mik Smith, pers. comm. 27 March). Whereas for the Arakwal people of Byron Bay there are totems such as the Miwing, the sea-eagle, is the men's totem, and the clan totem is *Kabul*, the carpet snake (Arakwal of Byron Bay, 2018).

Cane toads have an array of highly toxic chemical defences available to them at almost all stages of their lives. The toxins occur in their skin and organs and can be secreted by large glands at the back of the animal's head when it is threatened. As a result, cane toads will poison many predators that attempt to eat them, and this includes important totems for the Bundjalung people (Mik Smith, pers. comm. 27 March 2018). This may include the coastal sand goanna which inhabit most of mainland Australia, except a narrow coastal strip beginning in northern NSW and following the coastline to approximately the Yorke Peninsula in South Australia. Free-ranging dogs (wild dogs), red foxes and feral cats are also responsible for consuming traditional food sources, especially herpetofauna. They can exert significant downward pressure on varanids, turtles and other prey with cultural significance.

Table 3 Summary of impacts of selected pest animals

Pest species	Economic impacts	Environmental impacts	Social impacts
Free-ranging dogs (wild dogs),	· Affect domestic livestock industries such as sheep, cattle, goats and poultry · Attack small stock animals, particularly sheep and goats · Reduced flock size and dispersed flocks leading to loss and stress · Lambs are particularly vulnerable · Reduced wool and meat yield · Reduced breeding stock · Increased management costs (baits, fencing, trapping) · Enterprise change as a result of free-ranging dogs (wild dogs), impacts can lead to adverse impacts on rural economies · The combined cost of free-ranging dogs (wild dogs), impacts and associated control is estimated to be in excess of $80 million annually across Australia, and around $20 million in NSW alone (McLeod, 2016)	· Possible predatory impacts on native species such as small marsupials and rodents · Significant impact on remnant and isolated koala populations in urban and peri-urban environments (Department of Transport and Main Roads, 2017; Allen et al 2016) · Possible predatory impacts on non-native animals (e.g. feral cats, rabbits, foxes) · Non-target impacts from baiting and trapping · Spread of disease or parasites to native animals · Scientific debate exists about the role free-ranging dogs (wild dogs), play as an apex predator in controlling other predatory pest animals such as feral cat and foxes (Allen et al 2011)	· Individual and family stress fro free-ranging dogs (wild dogs), impacts on livestock · Financial stress · Possible enterprise change as result of free-ranging dogs (wil dogs), impacts can change the social landscape of rural communities · Dangers posed to domestic pe including domestic dogs, horse and free ranging chickens · People can be fearful of enjoyi the natural environment due to concerns with encountering fre ranging dogs (wild dogs), Soci disharmony due to community attitudes to management methods, particularly in heterogeneous communities

Wild dogs can have positive and negative impacts on livestock and threatened species. Thes environmental or social. If wild dogs are killing livestock or koalas, they are likely to be conside killing foxes, feral cats or rabbits, they are likely to be considered more favourably. Wild dogs ca situations, but may present negative impacts when the situation changes. Management of wild and negative impacts is an important challenge for public and private land

Pest species	Economic impacts	Environmental impacts	Social impacts
European red fox	· $28 million in sheep production losses in Australia · $12 million in sheep production losses in NSW · NSW annual cost of fox control is estimated to be $15 million and is almost equally shared between landholders and NSW State Government (McLeod, 2016)	· Most significant contributing pest animal species associated with the decline and extinction of native species in Australia · Legitimate dispersers of weeds via seeds they consume and defecate. A seed takes 4 to 48 hours to pass through a fox's digestive system, allowing time for viable seeds to be distributed over wide distances. It is also likely that seeds are dispersed by attaching to fox fur	· Significant distress and hardsh when they kill livestock such a poultry and lambs · Carry diseases and parasites t are transmissible to domestic pets or humans such as sarco mange, hydatids, distemper ar leptospirosis · Urban foxes harass domestic animals, eating pet food, raidir rubbish bins, defecating or digging in gardens, and chewi infrastructure such as garden hoses and irrigation systems · May prey upon domestic anim including unprotected poultry, rabbits, guinea pigs and aviary birds
Feral cat	· Transmission of infectious diseases which lead to abortions in livestock reducing productivity, and create scar tissue in livestock meat which reduces agricultural incomes (Bomford and Hart, 2002) · Expenditure on management and research of feral cats has been estimated at $2 million per year (PestSmart, Invasive Animal Cooperative Research Council, 2011)	· Significant impact on native animal populations for example, feral cats kill 61 reptiles km^2 yr^{-1}, and an individual feral cat kills 225 reptiles yr^{-1} (Woinarski et al., 2018) · Caused the extinction of some ground-dwelling birds and small to medium-sized mammals (DEWHA, 2008) · Approximately 80 threatened native species are at risk from feral cat predation in Australia (DEWHA, 2008) · Compete with native species for food or cause displacement from traditional habitats · Carry infectious diseases which can be transmitted to native animals, domestic livestock and humans (Fancourt et al, 2014)	· Night time noise · Smell caused by urination/marking around buildings, and the presence of faecal deposits in gardens · Diminishing of human interactions/sightings with bird and the presence of semi-consumed wildlife carcasses is distressing to many in the community · Conversely, cats are highly valued as domestic companion by many in the community. Ca control programs are almost certainly a source of conflict between different sectors of th community

Pest species	Economic impacts	Environmental impacts	Social impacts
Indian myna	· Economic impact is unquantified, although Common mynas can cause serious damage to ripening fruit, such as grapes and blueberries (Invasive Animals CRC, 2014)	· Directly competes with native birds for breeding sites, living space and available food sources · In Australia, their presence has been attributed to a decline in at least nine species of native birds	· Their aggressive nature results the disappearance of a range native birds in backyards and surrounding bushland, thus impacting people's enjoyment the natural environment · Roosting and nesting near residential areas often results noise and health and safety concerns · Known to carry diseases, such avian influenza and salmonellosis, and parasites s as mites, which can cause dermatitis in humans (Invasive Animals CRC, 2014)
Cane toad	· Unlikely to have a negative impact on the general economy, although subsequent local control activities are likely to be a direct cost to natural resource management · May impact tourism industries due to the propensity for high numbers of toads to congregate around campsites and amenities	· If *eaten,* their toxin can kill most native animals that normally eat frogs · The range of the cane toad in New South Wales extends along the coast from the Queensland border to the Iluka/Yamba area. It would be expected that any populations of spotted-tail quoll in the area are likely to be adversely impacted. The cane toad front moves at about 40-60km per year (Storm 2016) · Outcompetes native species as cane toads breed quickly allowing them to rapidly colonise and dominate an area	· If *eaten*, dangers posed to children and domestic pets · Blocking of drains · Fouling of swimming pools · Visual impacts (unattractive ar in large numbers) · Night time noise

Pest species	Economic impacts	Environmental impacts	Social impacts
European rabbit	· Directly compete with livestock for pastures, resulting in lower quality and quantity of production · Estimated to cost the livestock industry approximately $2 per rabbit per year in lost production alone. This cost rises dramatically to approximately $5 per rabbit per hectare per year for horticultural industries · Cost of damage to forestry plantations is approximately $800 per hectare of the life of the plantation (PestSmart Invasive Animal Cooperative Research Council 2012) · Additional cost of controlling invasive weeds which occur due to habitat modification by rabbits and ongoing rabbit control	· Competition and land degradation by overgrazing of native pastures lead to loss of plant biodiversity and deprive native animals of food and shelter · Warren building and overgrazing causes land degradation and erosion and increases the spread of invasive weeds · Grazing pressures inhibit the regeneration of many native trees and shrubs · Fox occurrence is very strongly correlated with rabbit distribution. The presence of rabbits is likely to encourage high numbers of foxes which, during times of rabbit control, will prey-switch to available native species with commensurate negative impacts	· Damage to recreational activiti such as horse riding and sport activities due to presence of rabbit warrens · Activity in cemeteries is also distressing for relatives who fi evidence of rabbits tunnelling a grave sites. · Disturbance to backyard garde normally used as a source of enjoyment for family members

5 Principles of pest animal management

The principles of pest animal management can be broadly divided into core and supplementary categories depending on what stage of the invasive timeline each species is, and how to best manage those species and impacts. The generalised invasive species curve is used to determine what resources are required and what actions are achievable (**Figure 4**). There are four phases from 'prevention' through 'quarantine' and other biosecurity measures to 'asset-based protection' for established and widespread biological invaders (Braysher 2017). These management principles are summarised below.

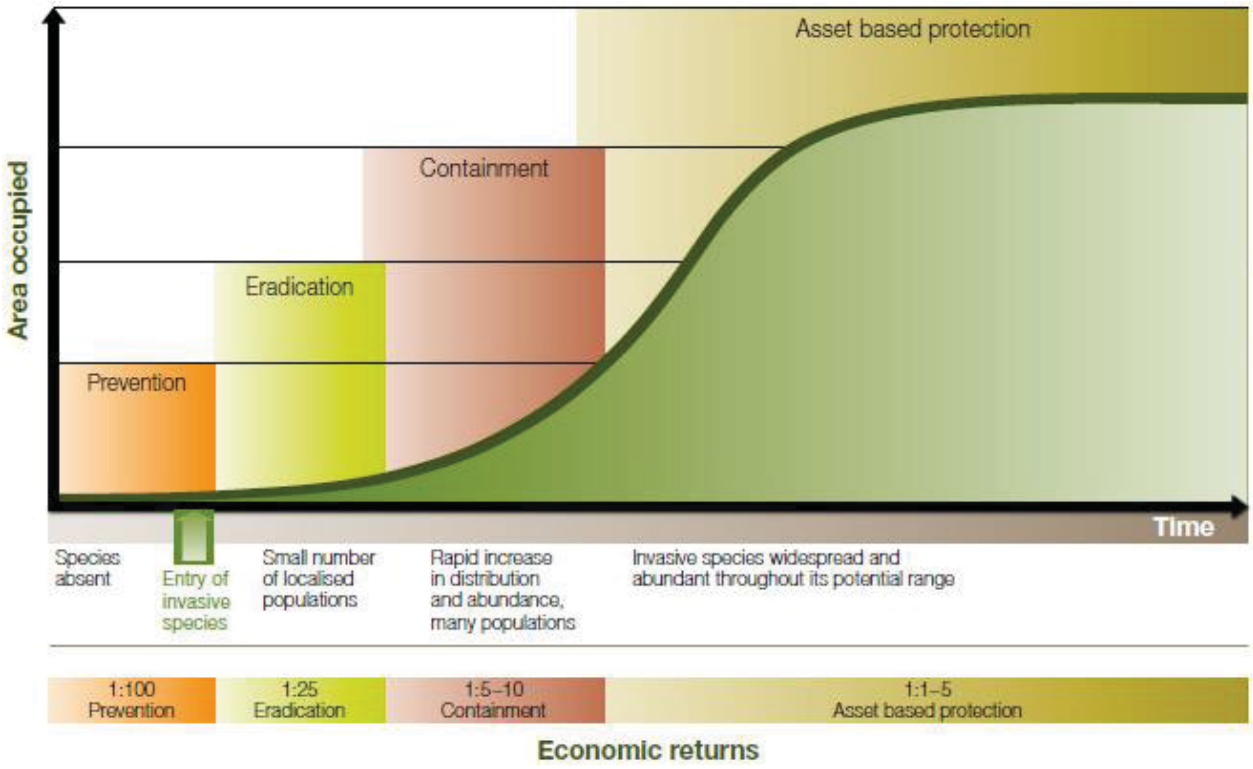

Figure 4 Generalised invasion curve (Source: Victorian Government 2010)

Prevention

Perusal of the generalised invasion curve reiterates the importance of prevention and eliminating small invasions early before establishment. This is when such actions are more likely to be logistically feasible and cost-effective. Border protection, good biosecurity processes, and sound monitoring, along with community vigilance and clear reporting mechanisms are instrumental to effective prevention.

Eradication

Once a pest is detected inside the area of interest, eradication is vital to stop that species becoming established and being the subject of ongoing control. By its very nature, eradication is potentially the most expensive and disruptive in the short term, but the most cost-effective strategy in the long term.

However, because the requirements for eradication are rarely met except for pests detected early on during an incursion, most pests are here to stay. Therefore, management to remove or reduce the impacts of pests will be ongoing.

Containment

If the pest, having escaped biosecurity measures, becomes established, focus can be shifted to containment in regions of establishment to limit the impacts to only those areas. In many ways, this is similar to the initial strategy of prevention on a smaller scale with the aim of preventing it spreading into non-infected areas. Sometimes a strategy of initial containment can be part of a longer-term eradication strategy.

Asset based protection

Once a pest has become established, investment should be wound back to target the protection of high-value assets - whether they are economic, cultural or environmental. Often, the impacts of the established pest are such that investment must be continuous to protect the assets (Fleming et al. 2001; Braysher 2017). Cost-Benefit Analysis is also useful, particularly when looking at economic asset protection.

An example of Asset Protection is targeted European fox control to protect threatened shorebirds, a cost which can be shared with programs such as the NSW state-funded Saving Our Species program. This can be highly effective, for example the fledgling rate of the endangered little tern (Sternula albifrons) was 36% higher in some areas with fox control compared to sites without (OEH 2016).

5.1 Supplementary management principles

When deciding the best way to manage a pest problem, it is useful to focus on the following principles that are likely to result in the most effective management.

Nil tenure

Pest animals do not recognise boundaries. They have home ranges and are likely to occur across multiple land tenures. For example, European fox territories range from 2 to 5 km^2 and vary with type of habitat, population density of foxes and availability of food.

An effective management strategy is a shared responsibility between all land managers, regardless of whether on private or public land, as all land managers have the same responsibilities to manage pest animals.

Coordination

A coordinated approach ensures that all individuals of a pest species are placed at risk, without allowing any to seek refuge on unmanaged land. Additionally, it is important to ensure that coordination takes into account inter-species interactions - will controlling one species cause another species to increase its impacts.

Focus on the impact

It's important to not lose sight of the problem. The reason pest animals are managed is to reduce impacts. Managing pest animals with no resultant reduction in impacts is not a wise allocation of limited resources.

Best practice

Best practice management integrates the techniques acquired over time that are proven to have the best outcomes in terms of mitigating impacts. Factors that go into making up best practice include the availability of multiple control techniques, animal welfare concerns, timing of actions, and species interactions.

6 Priority areas in Byron Shire

6.1 Council managed land

Council will focus on Council managed land as a first priority (**Figures 5 and 6**). This will enable Council to meet its General Biosecurity Duty and contribute to reducing pest animal impacts across the Shire.

6.2 Privately managed land

Council may assist private land managers to target free-ranging dogs (wild dog), European red foxes and feral cats on land owned or occupied by private land managers, if resources are available and private land managers enter into a proposed Pest Animal Control Agreement. In supporting Council's Rural Land Use Strategy, including policy directions for our rural environment and rural economy, Council will prioritise and support on-ground pest control programs on private land when resources permit and on land identified as having one or more of the following criteria:

- Mapped areas of high environmental values (e.g. threatened species, wildlife corridors)
- Significant Farmland as identified on the NSW Far North Coast under Section 9.1 Directions (previously s117) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act)
- Cultural value
- in-situ and/or adjoining existing pest animal control management programs (e.g. NPWS, LLS and/or known private land managers actively managing target species)

The areas of private land within the Shire having all of the above criteria have been mapped (**Figure 7**). These 3 areas will be priority areas when considering private landholder support for pest control activities if resources are available.

These areas include (in no specific or prioritised order):

- Area 1 - Upper Wilsons Creek, Huonbrock, Wanganui and Goonengerry (adjoined by Mount Jerusalem National Park, Nightcap National Park, Whian Whian State Conservation Area, Snows Gully Nature Reserve and Goonengerry National Park)
- Area 2 - Broken Head and Suffolk Park (adjoined by Broken Head Nature Reserve, Ti Tree Lake Aboriginal Area and Ti Tree (Taylors) Lake Aboriginal Place)
- Area 3 - Tyagarah and Brunswick Heads (adjoined by Tyagarah Nature Reserve and Brunswick Nature Reserve).

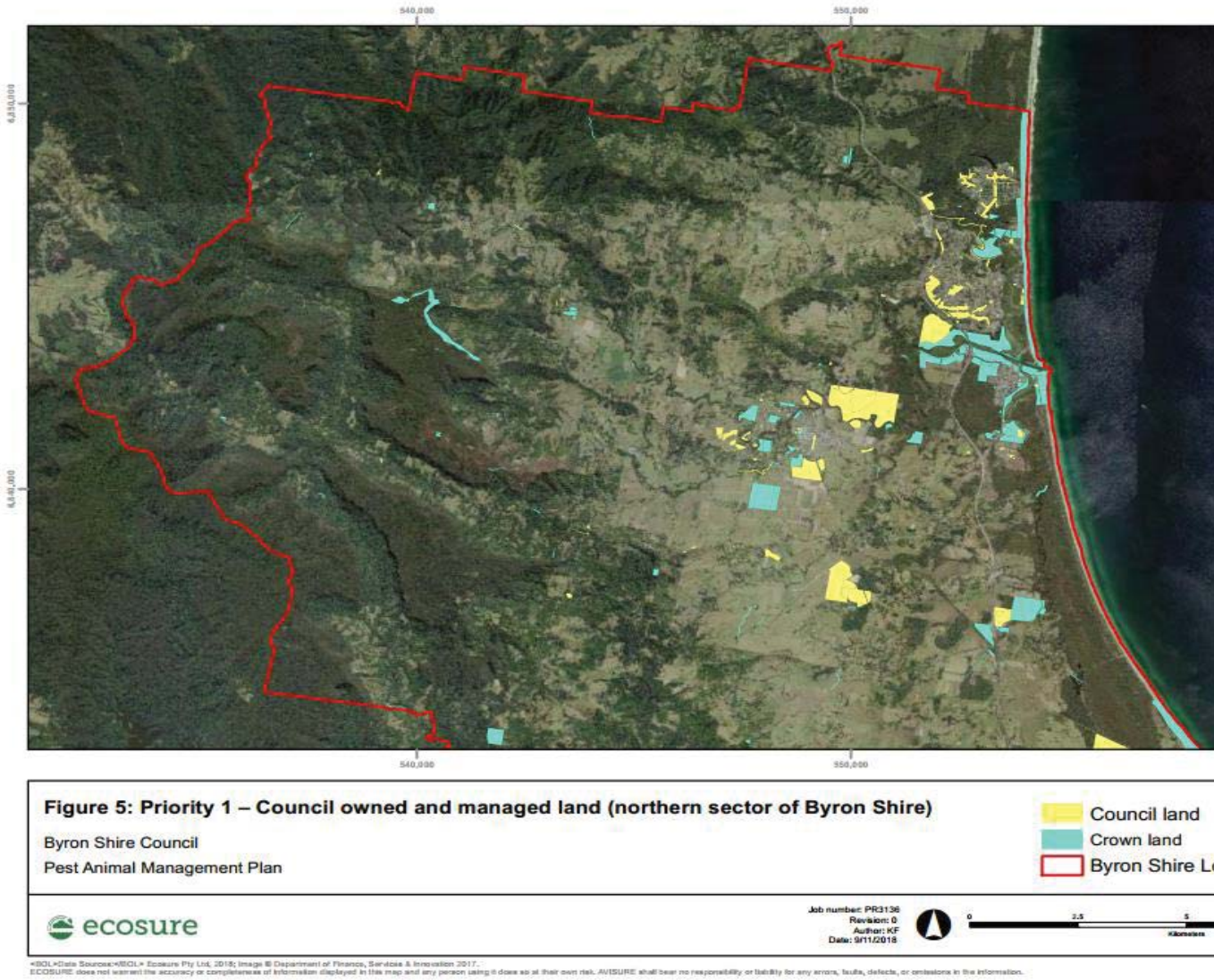

Figure 5 Priority 1 - Council owned and managed land (northern sector of Byron Shire)

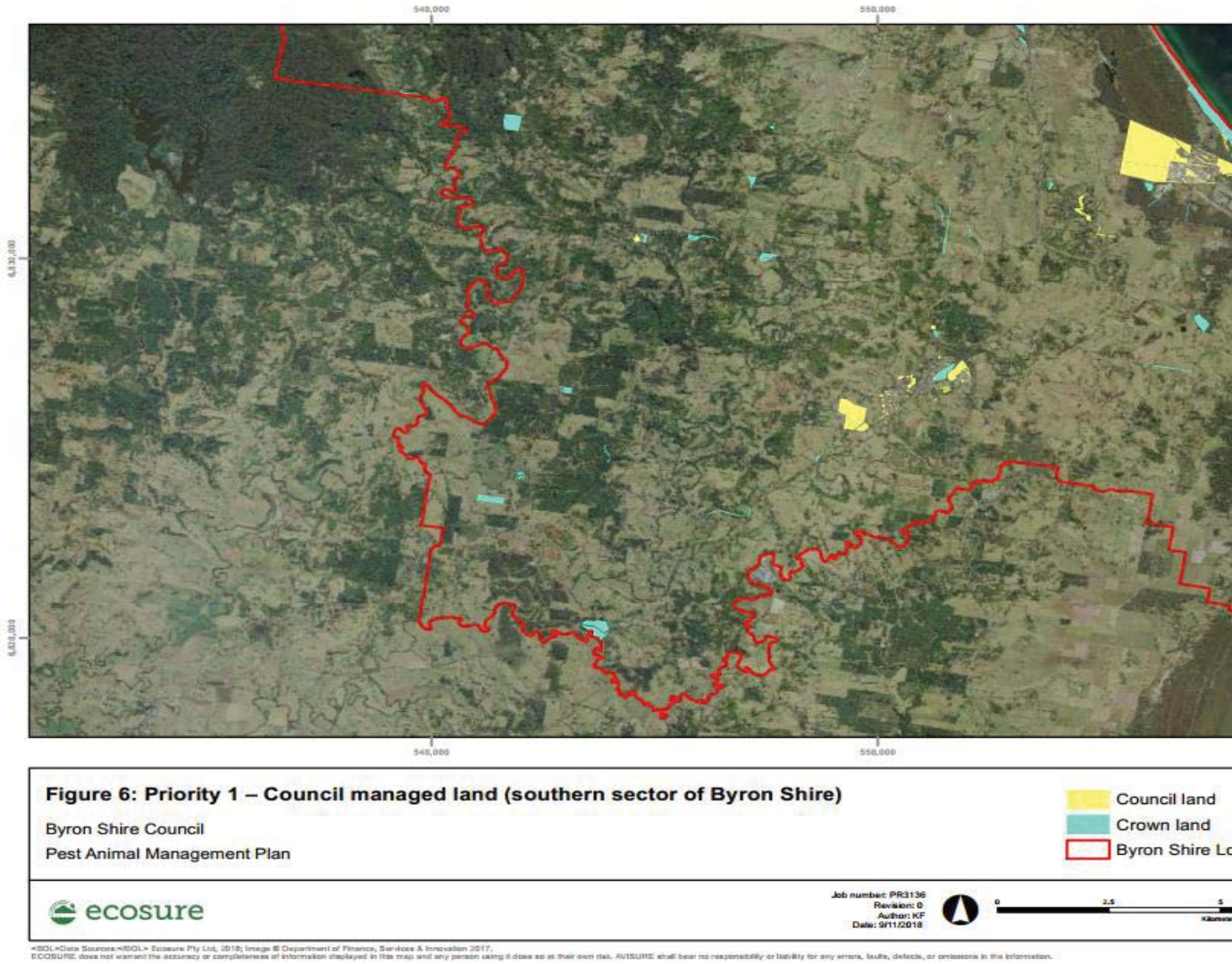

Figure 6 Priority 1 - Council managed land (southern sector of Byron Shire)

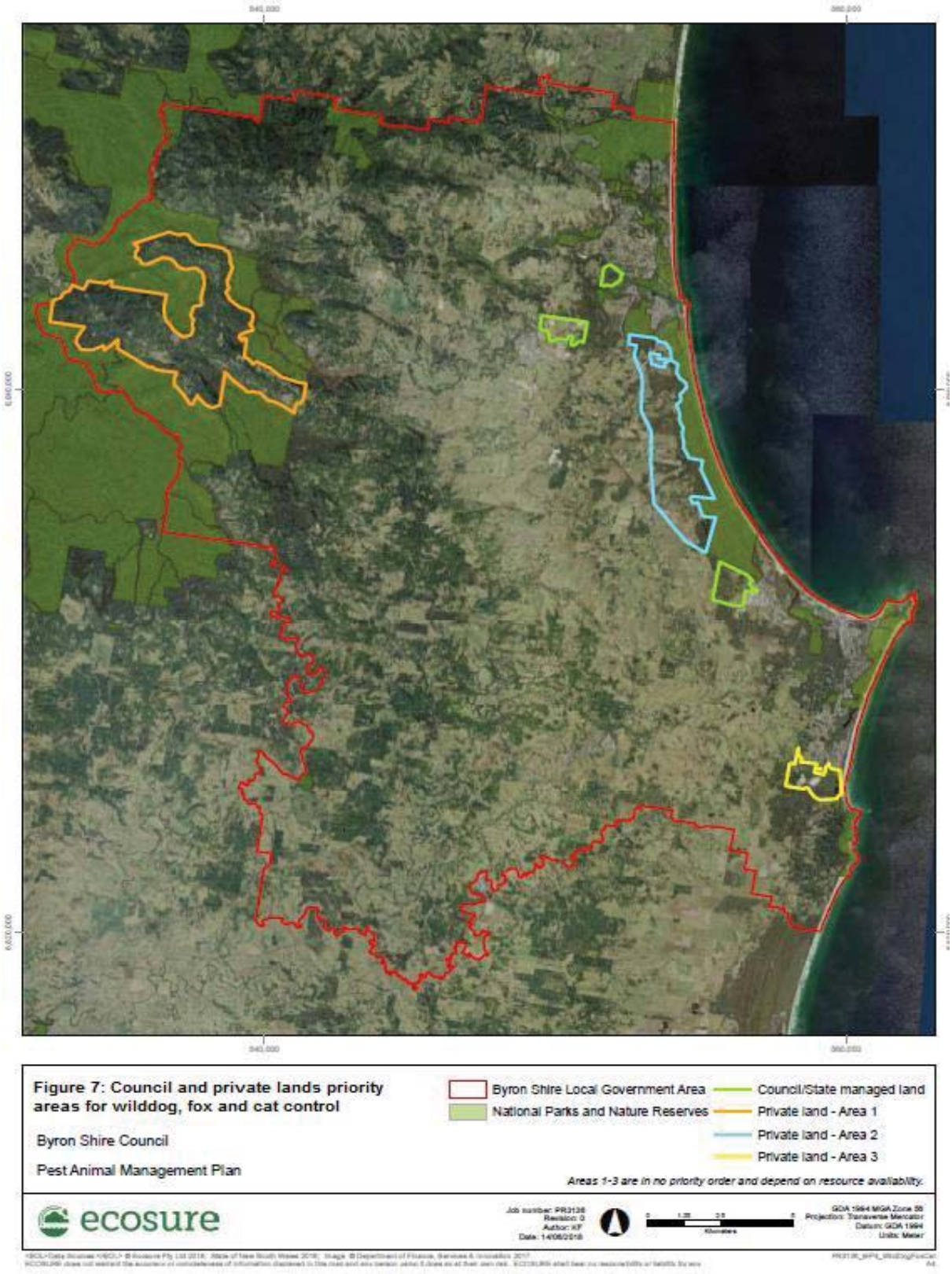

Figure 7 Council and private lands priority areas for wild dog, fox and cat control.

7 Target pest species program

Within the Shire, the Plan targets the pest animal species free-ranging dogs (wild dogs), European red fox, feral cat, European rabbit, cane toads and Indian myna. These species were assessed as having the greatest impacts within the North Coast Local Land Service Region which includes Byron Shire (North Coast Local Land Services 2018). Through Council's community consultation process these pest animal species were also identified to be of most concern.

Additionally, emerging and alert species have been identified and management responses will be directed to these or other new pest species incursions as required.

As a priority, Council will focus on carrying out pest animal management on Council owned land. If resources become available, Council may consider pest animal management activities on land owned or occupied by private land managers.

7.1.1 Free-ranging Dogs (wild dog)

People were responsible for the introduction of dingoes (*Canis lupis dingo*). Dingoes evolved from an ancient breed of dog *Canis lupis familiaris* which were introduced from South-East Asia ~4500 years before present (Jackson et al. 2017), that subsequently became a pest (Fleming et al. 2014) and invaded most Australian environments (Johnson and Letnic 2014).

A wild dog is any dog living in the wild, including feral dogs (*Canis lupus familiaris*), dingoes (*Canis lupus dingo*) and their hybrids (NSW OEH 2018).

The colour of a wild dog's pelt is not a very useful indicator of genetic purity. Pure free-ranging dogs are not always the typical yellow colour most people associate them with, and hybrids can often have this typical yellow colouring. Characteristics besides coat colour are needed to determine whether or not a free-ranging dog is a pure bred or a hybrid.

DNA testing can be used to determine the purity level of a free-ranging dog. By taking a piece of ear tissue, a cheek swab or some hair from a free-ranging dog, geneticists can analyse a number of specific 'markers' (small pieces of the animal's total DNA) that are known to be different in free-ranging dogs. A free-ranging dog might have all dingo-like DNA or a mixture of dingo and domestic dog DNA. Very few domestic dogs (such as escaped pets or working dogs) are found in the wild on the mainland. You cannot distinguish between a dingo and other wild dogs simply by looks alone. Only DNA testing will verify the genetic makeup of a free-ranging dog. In 2012, results from 27 free-ranging dog DNA samples from across Byron Shire have shown that the percentage of hybrids in the wild is generally higher in areas with larger human populations. More remote areas of the Byron Shire (typically to the west of the Byron Shire) have higher levels of free-ranging dog purity, with up to 81% *Canis lupus dingo* purity whereas samples from areas with higher human population have 51% *Canis lupus dingo* purity.

Economic and environmental protection of key assets – especially remnant koala populations – will be the focus of Council's activities for all free-ranging dogs, regardless of breed under Australian legislation and policy (Jackson et al., 2017).

Autumn may provide a welcome break from the heat of summer, but it also signals the time when free-ranging dogs (wild dogs) activity increases as they go in search of a breeding partner and establish territories. These territories can be defended aggressively, often to the detriment of domestic dogs that are seen as a threat or encroach on the their territory. Most mating takes place between March and June with the majority of births (between 1-10 pups but on average, 5 pups) occurring between May and August, though there is some variation to this timing due to location and drought (Catling et al. 1992), and with the increase in hybridisation, breeding may occur over a longer period of the year.

Management of wild dogs in peri-urban environments can create issues due to the large number of properties involved and close proximity to residences. There are a variety of lethal and non-lethal tools available for controlling wild dogs that include poison baiting using 1080 or PAPP (para-aminoproiophenone), canid pest ejectors and trapping. 1080 poison baits have been conventionally used across a number of jurisdictions, with an advantage being that native animals display a high resistance to 1080 given its occurrence in parts of the natural environment (NSW DPI *primefact* 2018). However, Council will not seek to include 1080 as a means of control, particularly due to its restricted use in peri-urban areas (to comply with the *Pesticides Act 1999*). Council's preferred control method using soft-jaw trapping is in support of Council's IPM Policy and use within the generally smaller land parcels being targeted in this plan.

7.1.2 European red fox

Economic and environmental asset protection is the priority focus for managing the established nature of the European red fox (*Vulpes vulpes*). Aligning fox control to key livestock events e.g. birthing, is key to asset protection.

Attention should be paid to aligning fox control with rabbit control events, to reduce the likelihood of prey switching to native animals. Overall population reduction is a secondary priority and required fox control needs to be an integral part of overall canid control program.

A variety of methods exist for controlling foxes including poison baiting, canid pest ejectors, shooting, trapping and non-lethal means such as exclusion fencing and habitat modification. Ground baiting using 1080 is the most commonly employed method, with aerial baiting being undertaken in more remote regions. Shooting and trapping are considered too labour intensive for broad-scale control; however both methods can be employed in specific instances such as small areas. Exclusion fencing and habitat modification have their limitations in terms of effectiveness and economics.

Council will not use 1080 baits to control the European red fox due to its restricted use within peri-urban areas (to comply with the *Pesticides Act 1999*). Council's preferred control method of soft-jaw trapping aligns with Council's IPM policy as Council managed land is generally made up of relatively small land parcels across the Shire.

7.1.3 Feral cat

Wildlife protection is the key driver for any feral cat (*Felis catus*) related activities. This will require key biodiversity assets to be adequately identified and protection strategies sourced and implemented. Feral cats are responsible for the extinction of a number of ground-dwelling birds and mammals and are the major cause of decline for animals such as the bilby, bandicoot and numbat. Currently, the survival of over 100 native species is threatened by feral cat predation. Feral cats also carry the disease toxoplasmosis which can infect and kill a range of native animals.

Currently, there are a range of feral cat baits being trialled for use with the key challenge to eliminate harm to non-target species. Detector dogs have also been trialled in various locations in order to identify feral cat locations so that trapping and culling can be undertaken. Other control methods include ground shooting, and use of baited cage traps, and soft-jaw or soft-net traps. While cage traps can be effective in peri-urban areas, difficulties can be faced due to the cautious nature of feral cats not entering the trap, particularly if food resources are readily available elsewhere.

Feral cats should be included as an integral part of ongoing pest animal control programs but are unlikely to be effective in the absence of strong measures to prevent recruitment from the pet and stray population. Programs to improve cat ownership and behaviour should be strengthened to support and increase responsible pet ownership.

7.1.4 Indian myna

The strategy for Indian myna (*Acridotheres tristis*) control will focus on key asset protection and alleviation of social impacts. Updated information on the Byron Shire Council web site will enable community members to be informed of the potential impacts of Indian myna, as well as showcase best practice management tools and techniques for reducing the impacts of Indian mynas.

The Indian myna is an introduced pest covered in this Plan. The noisy miner (Manorina melanocephala) is a native species, and while it may be perceived as a nuisance, it is not the subject of control or covered by this Plan. Appendix 3 provides a guide to distinguishing these two species.

Methods of controlling pest bird populations can include lethal and non-lethal techniques. Non-lethal methods work as deterrents, and lethal methods include shooting, trapping and poisoning. Trapping and euthanizing Indian mynas is most effective when undertaken just prior to the breeding season, resulting in a greater density reduction over the long term.

Loaning of traps to the public for Indian mynas is addressed in the General Strategic Action Plan (Section 8). Objectives include a review of Council's 'on-loan' system to ensure correct use by lessee's and compliance with WHS standards. Council will also investigate incentive opportunities with veterinary clinics to assist with discounting humane control of trapped pest species.

7.1.5 Cane toad

At a regional level, the focus for cane toad (*Rhinella marina*) is to eradicate the species within a Cane Toad Biosecurity Zone. This includes all NSW local government areas except Tweed, Byron, Lismore and Ballina LGAs, and portions of Richmond Valley, Kyogle and Clarence Valley LGA (NCLLS 2017). Within these LGA areas, a Core Infestation Area is proposed aimed to contain cane toads, to prevent incursion and establishment in the Cane Toad Biosecurity Zone and to undertake asset based protection e.g. environmental assets.

Currently there is no effective tool for broad-scale control of cane toad populations. Short-term management relies on surveys and hand removal of toads followed by euthanasia. Collected cane toads are usually held in closed, ventilated containers until euthanised via a recommended technique such as gassing with carbon dioxide for greater than four hours or spraying with Hopstop®.

Key assets are to be identified and strategies developed for asset protection including areas of high conservation value (e.g. littoral rainforest and coastal vine thicket) or threatened entities at high risk of threat. Cane toads are reported to occupy the settlement ponds at the Byron Bay Resource Recovery Centre, where they are connected to the Belongil Catchment.

7.1.6 European rabbit

The priority for European rabbit (*Oryctolagus cuniculus*) management is containment, potentially local eradication, and key asset protection. The aim is to reduce impacts on Council owned infrastructure and reduce degradation on Council controlled land, especially in Byron Bay, Mullumbimby and Clunes Cemeteries. Council will continue to play a role in participating in coordinated rabbit control activities and promote best practice feral rabbit control.

Control options for European rabbits include baiting using 1080 or Pindone, fumigation of warrens and ground shooting or mechanical methods such as warren destruction through ripping or explosives. Trapping is generally not an effective means of control as it is labour intensive and can inflict a substantial amount of stress on captured animals.

Rabbit Haemorrhagic Disease Virus known as RHDV1 K5 (a type of calicivirus) is a biocontrol that has been released at over 600 sites across Australia. It is a new strain of a virus already widespread across the country that is expected to boost the effects of the existing variant. Council intends to further investigate and consider this biocontrol when developing an operations plan.

7.2 Emerging species

7.2.1 Feral goat

The low density and isolated feral goat (*Capra hircus*) populations in the region make containment and possible eradication feasible. Effort spent over the next five years to achieve this will have long-term economic and environmental benefits for the region. Such actions will require firm community support, and efforts in community engagement should be seen as essential and high-priority.

7.2.2 Feral pig

Feral pig (*Sus scrofa*) was identified as an emerging pest species in the Shire. It should be determined whether eradication is feasible at current population levels. If this is not feasible, all efforts should be made to contain spread. Concurrent asset protection is required for key livestock industries and sensitive areas (e.g. wetlands).

7.2.3 Feral deer

Of the six species of deer that have established feral populations in NSW, five are known to occur in the North Coast Region: Sambar (*Cervus unicolor*), Rusa (*Cervus timorensis*), Red (*Cervus elaphus*), Fallow (*Dama dama*) and Chital (*Axis axis*). Many of these are small, isolated populations to the west and south of Byron Shire, and there are currently no recorded populations of feral deer within Byron Shire. However, during community consultation feral deer sightings were reported (unknown species). As an emerging pest in the Shire, the initial priority should be to identify the population(s) and eradicate feral deer from the Shire while this may still be feasible.

Raising public awareness of the pest status of deer is an important component of a deer management strategy. Containment and eradication should be considered for isolated low density deer populations. Coordination of broad scale control of high density deer populations is considered desirable.

7.3 Alert species

In the North Coast region, the following pest animals are classified as alert species which require immediate reporting to enable action to eradicate any confirmed sightings. Appendix 3 provides an identification guide for these alert species:

- Red-eared slider turtle (*Trachemys scripta elegans*)
- Red imported fire ant (*Solenopsis invicta*)
- Big headed ant (*Pheidole megacephala*)
- Yellow crazy ant (*Anoplolepis gracilipes*)
- Indian ring-necked parrot (*Psittacula krameri*).

Alert species should be reported to the Invasive Plants and Animals Enquiry Line, telephone: 1800 680 244.

8 General strategic action plan

General strategic actions are detailed in Table 4, including intent, success measures and responsibilities. T
meeting our desired outcomes (Section 1.3) and considered high priority and ongoing for the life of the Plan

Table 4 Strategic actions (SAs) linked to objectives of the Plan

Action	Intent	Principle	Success measure	Fi fu so
Objective 1.1 Increase community understanding of the benefits of pest animal management in Byron Shire				
SA1.1.1 Develop and implement a Pest Management Education and Awareness Plan for target pest species in Byron Shire.	Education and awareness are critical components of increasing the understanding of pest management. Council may deploy resources to respond to negative issues raised by a few in the community or media. Conversely, elements of the community and media can overlook key positive messages. Through communication and engagement activities, willingness of private land managers to manage pests can be increased. In line with the Community Engagement Policy, Council will: • implement a respectful communication and engagement pest management plan partners • identify and incorporate key messages e.g. private land manager General Biosecurity Duty • articulate Council's service in pest management • promote the benefits of effective and collaborative pest management, along with the range of best practise control techniques and training opportunities for council staff and private land managers • promote and encourage responsible pet ownership • report on program activity and outcomes.	Prevention	Plan developed and implemented with identified success measures e.g. reduction in domestic pet impoundment, number of targeted workshops, increased community cohesion, increased skills and capacity to lead community action and relevant Council staff proficient in the identification of alert species.	In h dev $2, ann imp Cou Ext

Action	Intent	Principle	Success measure	Fi fu so
SA1.1.2 Develop targeted pest species scripts for Council staff responding to public enquiries that relate to target pest species impacts and management.	Consistent information and messaging will help to ensure that Council's commitment to pest animal management and resources and services available for private land managers is clear, and enquiries are appropriately directed or re-directed.	Prevention	Scripts and training provided to key Council staff.	In h
Objective 1.2 Proactively manage pest animals to reduce their impacts via a prioritised strategy of prevention, eradication, of priority pest animal species				
SA 1.2.1 Council will develop simple but comprehensive Operational Plans for target species using the Operational Plan template (Appendix 5).	Planning is essential for effective pest management, as it ensures resources are used in the most productive and efficient manner. The Operational Plan template will be used by Council to prepare a working plan to manage target species for any purpose. Operational Plans for emerging or alert species will be created for Council managed land where required by Council and/or other public or private land managers where applicable.	Asset based protection, containment, eradication	Operational plans for target species developed.	In h
SA1.2.2 Council to investigate incentive opportunities with veterinary clinics to encourage private land managers to support pest animal management activities and promote responsible pet ownership.	To encourage private land managers to actively undertake pest animal control Council will investigate opportunities for veterinary clinics to assist with discounting: • de-sexing and vaccination of domestic pets such as domestic dogs, cats and rabbits • humane control of feral cats and Indian myna. Vaccination of domestic pets, especially European rabbits will be important should Council consider the release of a biological control targeting the European rabbit such as the K5 strain of calicivirus (more commonly known as RHDV1 K5). RHDV1K5 is a variant of rabbit haemorrhagic disease virus (RHDV1) that causes a fatal haemorrhagic disease in the European rabbit. It is specific to the European	Prevention	Council has approached three veterinary clinics seeking their capacity to assist private land managers with discounts for de-sexing and vaccination of domestic pets and / or humane control of feral cats and Indian myna by 2023.	In h

Action	Intent	Principle	Success measure	Fi fu so
	rabbit, and once a rabbit shows symptoms, death is rapid. There is no treatment or cure for rabbit haemorrhagic disease (RHD); however, a vaccine for domestic and production rabbits is available.			
SA1.2.3 Investigate opportunities for strengthening pest animal control to be undertaken in accordance with Development Consent conditions.	Conditions of consent provide an opportunity to play an important role in pest animal management. Under conditions of consent, pest animal management is at times included in association with Biodiversity or Vegetation Management Plan requirements but under the Act such conditions could be strengthened through standardisation for each target pest animal.	Asset based protection	Investigations to strengthen standard Development Applications, for specific pest animal are complete.	In h
Objective 1.3 Use safe, effective and humane approaches to pest animal management				
SA1.3.1 Council to ensure its operators and contractors follow best practice approaches for target pest animal control.	Control of targeted pest species can often occur in remote and isolated areas, which presents two key challenges. The first challenge is to ensure a safe work environment for Council operators and contractors. Further, this workforce needs to follow standard operating procedures, collect data and comply with appropriate legislation. The second challenge is to collect information (data) in a manner that is compatible across all levels of government in NSW but especially for NCLLS and that informs strategic management decisions. Council will: • ensure Council operators and contractors have the appropriate training, licenses, tools and technology to ensure work place safety and appropriate data management • provide a safe workplace for operators and contractors.	Asset based protection	Pest animal control is undertaken safely, humanely and in accordance with best practice.	In h
SA1.3.2 Investigate the development for a Pest Animal Control Agreement	It is the intent and purpose of Council and private land managers (the Parties) that an Agreement constitutes an implementation of the provisions of	Asset based protection	Investigations to strengthen amicable understanding between	In h

Action	Intent	Principle	Success measure	Fi fu so
	pest animal management on private land consistent with the legislative requirements, standard operating procedures and responsible pet ownership It is imperative that private land managers give permission for Council contractors to undertake pest animal management and with domestic pets on the land upon which pest animal control activities are taking place ensure the safety of their domestic pets. For example, unrestrained domestic dogs can influence the success of a trapping program by affecting 'lures' or be accidentally trapped and harmed. This has a negative impact on the cost and effectiveness of a pest animal control program, as well as cause distress to the domestic dog owners. In the event Council undertakes pest animal control activities on private land, written Agreements will provide Council and private land managers with a document stating the expectations of both parties and how negative situations relating to pest animal management on the land owned or occupied by the private land manager will be resolved.		Council and private land managers regards Council supported pest animal control activities on private land.	
Objective 1.4 Promote the availability of technical advice and resources to private land managers in Byron Shire for pest a				
SA1.4.1 Review Council's existing pest animal trapping resources to ensure it is administratively efficient and complies with WHS standards	Trapping of pest animals may be the preferred or more effective management option for private land managers. Council currently have traps available for targeting Indian mynas and feral cat. A review of Council's current resources and 'on-loan' system will consider Councils liability in loaning such traps, loan effectiveness, when resources are misused by lessee and who is responsible for humane trapping of target pest species.	Asset based protection	Review complete and Council consider the merit of pest animal trapping resources for loan to private land managers	In h

Action	Intent	Principle	Success measure	Fi fu so
SA1.4.2 Council to continue actively promoting the availability of LLS technical advice, support and resources to private land managers.	LLS help private land mangers by providing advice and assistance in the control of pest animals. At a local level, through Council's website and customer services Council will promote the LLS services	Asset based protection	Up-to-date information on LLS pest animal management services are promoted via Council's website and available to key Council staff including Customer Services	In h
Objective 2.1 Foster good collaborative and coordinated community relations by acting as a conduit to community led coo control activities by all land mangers throughout Byron Shire				
SA2.1.1 Act as a conduit for NCLLS to promote private land manager participation as a critical factor for pest animal management.	Council will focus on relationship-building, sharing information and re-direct public enquiries to NCLLS to promote private land manager participation in pest animal management. By working together and using the right control tools for the situation effectively, public and private land managers can achieve a sustainable future for agricultural industry that supports biodiversity outcomes. It is intended that NCLLS report an increase in the formation of private land manager groups collaborating in partnership with public land managers to implement pest animal control on land that they own or occupy.	Asset based protection	Private land manger groups in Byron Shire increased to three active groups by 2023	In h

Action	Intent	Principle	Success measure	Fi fu so
Objective 2.2 Ensure continued input and feedback on Council's pest animal management program from all land managers				
SA2.2.1 Council to continue to liaise with public and private land managers to ensure Council's targeted pest animal program is implemented in a strategic and proactive manner.	Pest animals often require ongoing and enduring control. Management actions need clear, long term objectives. All land managers should focus on preventive, proactive approaches that seek to minimise impact where it is most likely to occur, rather than reacting to impacts after an incident. Council will: • work with all land managers that buffer public land to protect biodiversity and agriculture • liaise with public land managers to aid a coordinated, proactive approach across land tenures. Private land managers are encouraged to: • support proactive approaches to minimise impacts • engage and undertake in cost-effective and integrated approaches to pest control on the land that they own or occupy.	Asset based protection	The impacts of pest animals are being effectively managed through a collaborative and coordinated approach.	In h
Objective 3.1 Improve the mechanisms used to carry out, monitor, evaluate and report on pest animal management by Cou				
SA3.1.1 Council to use FeralScan as the preferred method to record and share sightings, damage and control excluding records of feral deer, pig and goats.	Pest animal activity, evidence of pests, pest damage, and control actions are entered into FeralScan and used by all land managers to help coordinate on ground control in a local area. To avoid potential illegal hunting (refer 3.1.1) Council will: • report records of feral deer, pig and goats direct to NCLLS.	Prevention	Council enters all available Council records in FeralScan to inform decisions and evaluate the program.	In h

Action	Intent	Principle	Success measure	Fi fu so
SA3.1.2 Council to encourage private land managers to use FeralScan and report pest animal records direct to LLS.	FeralScan is a free online resource that allows anyone to record pest animal activity, evidence of pests, pest damage, and control actions. The purpose of hosting workshops will be to: • introduce and up skill private land managers in FeralScan • help identify areas for FeralScan improvement. Council will: • seek support and participation from DPI & NCLLS in Council hosted workshops.	Prevention	Council to host two workshops to strengthen efforts in pest animal management by 2023.	$1,
SA3.1.3 Council to seek direction on what details and how best to report Council target pest animal records to LLS.	Council acknowledges that LLS are considered to be the holder of pest animal data in NSW and therefore may be called upon to verify pest animal issues. However, until a single point of reporting to monitor, evaluate and report to inform and improve pest animal management is established by LLS, Council will require guidance on what details and how best to report to LLS. This is important as pest animal data may assist in attracting funding for pest animal control on a landscape scale in which all land managers would potentially benefit from.	Prevention	Council liaise with LLS on the preferred pathway and resources for reporting pest animal records to LLS in an effective and efficient manner.	In h

Action	Intent	Principle	Success measure	Fi fu so
SA3.1.4 Council will continually improve its pest animal program and evaluate its impact, effectiveness, value and efficiency.	Council will measure the success of its targeted pest animal program against its stated primary objective: to reduce the negative impacts of pest animals. Council will: • monitor, evaluate and report on program outcomes annually by January each financial year to align with the operational budget process • seek feedback from public and private land managers on the relative success of the program and how to enhance the program • keep abreast of advancements in pest animal management technologies for consideration • use evaluation findings to identify gaps in the program design and inform future design • communicate the program's achievements and challenges to public and private land managers • undertake a full review of the Plan nearing the end of the five (5) year period.	Asset based protection	The Council program efficiently and effectively contributes to reduced pest animal impacts, remains current and aligned with best practice.	In h
Objective 3.2 Support pest animal research and development				
SA3.2.1 Investigate opportunities to partner and/or support research and development that identifies more effective and efficient pest animal control methods.	Support opportunities to trial new technologies that seek to eradicate or minimise the impacts of pest animals. For example, under the Cane Toad Challenge program, the University of Queensland is investigating the effectiveness of trapping cane toad tadpoles using the pheromone extracted from adult toads. DPI Vertebrate Pest Research Unit is scoping a major large scale research and management project on free-ranging dogs (wild dogs), fox and feral cat in the North East of NSW.	Eradication, asset based protection	Pest animal management is continually improved by current research and development.	In h

9 Target strategic action plan

This section outlines the actions that will be undertaken by Council during the life of the Plan. It also outlines roles and responsibilities of various stakeholders, and partners in Council-led actions.

9.1 Stakeholder roles and responsibilities

Stakeholders include government, industry, community groups and individuals. Whether on private or public land, all land managers in NSW must comply with requirements outlined in the NSW *Biosecurity Act 2015* to control pest species on their land.

9.2 Target species action plan

Table 5 provides species specific actions for priority, emerging and alert pest animal species. These actions align with activities identified in the North Coast Regional Strategic Pest Animal Management Plan (North Coast Local Land Services 2018).

Table 5 Target Species Action Plan

Desired outcomes	Target action	Success criteria	Partners	Lead	Timeframe
Free-ranging dogs (wild dogs), European red fox, feral cat					
1	Implement free-ranging dogs (wild dogs), Fox and Feral Cat Operational Plan (Appendix 4).	Management strategies targeting multiple adopted, where appropriate. No increase in free-ranging dogs (wild dogs), fox or feral cat impacts on subject land. Increase abundance of threatened species on adjoining lands e.g. national parks and reserves	DPI OEH NPWS NCLLS LALCs	Council	Autumn & s
1	When resources permit, Council to seek permission from private land managers to undertake free-ranging dogs (wild dogs), fox and feral cat control on their land prior to implementation.	Pest Animal Control Agreement signed by private land managers	-	Council	Ongoing
1	Council to engage experienced and qualified trapper to undertake trapping of free-ranging dogs (wild dogs), fox and feral cat.	Through appropriate procurement process an experienced trapper engaged to undertake trapping work.	-	Council	12 month c
1	Provide Council control data to public land managers to help contribute to existing monitoring programs e.g. Saving our Species.	Changes in native and pest species populations recorded. Number of threatened species in control areas maintained or increased.	NCLLS NPWS	Council	November e year

Desired outcomes	Target action	Success criteria	Partners	Lead	Timeframe
2	Act as a conduit for NCLLS to promote private land holder participation as a critical factor for managing free-ranging dogs (wild dogs), fox and feral cat by focusing on relationship-building, sharing information and providing technical advice and support.	Increased community cohesion, skills and capacity to lead community action that leads to the formation of private land manager groups collaborating in partnership with public land managers to implement free-ranging dogs (wild dogs), fox and feral cat control on land that they own or occupy increased to four groups by 2023.	DPI OEH NPWS NCLLS Private land managers	Council	Ongoing
Indian myna					
1, 3	Review and evaluate existing Indian myna Management Program.	Indian myna Management Program reviewed and evaluated with key recommendations for improvement provided.	NCLLS Brunswick Valley Landcare	Council	June 2019
1, 2, 3	Develop and implement Indian myna Operational Plan for Council managed land using Operational Plan template (Appendix 5).	Best practice control methods identified. Operational Plan developed and implemented	NCLLS Brunswick Valley Landcare	Council	June 2020
1, 3	Investigate financial support options and incentives to ensure volunteer Indian myna trapping services are available for Council managed land and private land managers.	Volunteer Indian myna trapping services to assist Council and private land mangers is available.	Brunswick Valley Landcare	Council	Ongoing
Cane toad					

Desired outcomes	Target action	Success criteria	Partners	Lead	Timeframe
1, 2, 3	Develop and implement Cane Toad Operational Plan for Council managed land using Operational Plan template (Appendix 5).	Best practice control methods identified. Operational Plan developed and implemented.	NCLLS LALCs	Council	June 2019
3	With support from the University of Queensland, scope opportunity to participate in the Cane Toad Challenge program.	Active participant in the Cane Toad Challenge program with at least one site on Council managed land.	University of Queensland	Council	December 2
European rabbit					
1, 2, 3	Develop European Rabbit Operational Plan for Council managed land especially in areas of Mullumbimby, Byron Bay and Clunes cemetery using Operational Plan template (Appendix 5).	Best practice control methods identified. Operational Plan developed and implemented.	NCLLS NPWS Private land managers LALCs	Council	June 2021
1, 2, 3	Implement European Rabbit Operational Plan for Council managed land especially in areas of Mullumbimby and Byron Bay using Operational Plan template (Appendix 5).	Best practice control methods identified. Operational Plan developed and implemented.	NCLLS NPWS Private land managers LALCs	Council	2021-2023
Emerging species					
2	Raise community awareness of impacts of feral goats, pigs and deer and appropriate mechanisms for reporting.	Number of community education programs. Number of community sightings reported to NCLLS and FeralScan.	Community DPI NCLLS NPWS Private land managers	Council	Ongoing

Desired outcomes	Target action	Success criteria	Partners	Lead	Timeframe
2	Act as conduit to implement management actions across priority areas in response to feral goats, pigs or deer sightings.	No increase in feral goat, pig or deer impacts.	NCLLS NPWS DPI Private land managers	Council	Ongoing
1, 2, 3	Develop and implement Emerging Species Operational Plan for Council managed land using Operational Plan template (Appendix 5).	Best practice control methods identified. Operational Plan developed and implemented.	NCLLS DPI	Council	Ongoing
Alert species					
3	Monitor for and report sightings of all Alert Species through NCLLS, DPI, FeralScan and reports to Council.	Any incursions are promptly identified and managed with in partnership with appropriate public land manager.	NCLLS DPI NPWS Private land managers	Council DPI, NCLLS	Ongoing
2	When required, liaise with and assist relevant public land managers to respond to alert species reported on Council managed land.	Eradication	NCLLS DPI	Council	Ongoing

9.3 Funding sources

9.3.1 Council

On 30 October 2017, Council resolved (Res 17-500):

1. That Council reinstates the Feral Animal Management Program by allocating $10,000 to assist meeting the costs of a trapper from January to June 2018 and a further $20,000 be allocated in the 2018-19FY and subsequent financial years.
2. That the program commences after consultation between Council and landholders, Landcare, Local Land Services, NPWS and other relevant agencies to quantify the numbers and areas of feral animals and free-ranging dogs (wild dogs), to develop a targeted approach to controls; and that this consultation be completed prior to March 2018.

Additionally, Infrastructure Services – Utilities provide additional funding to engage a trapper to control pest animals on Council managed land at Byron Bay, Bangalow, Brunswick Valley (Mullumbimby) and Ocean Shores Treatment Plants. These funds were already allocated for a trapper but will consolidate and streamline the Pest Animal Program targeting free-ranging dogs (wild dogs), foxes and feral cats on Council managed land.

Funding for subsequent financial years will be considered annually as part of Councils budget process.

Funding will enable Council to meet its statutory requirements for managing free-ranging dogs (wild dogs), foxes, feral cats, European rabbit, Indian myna and cane toads on Council managed land but may limit Council's capacity to continue undertaking free-ranging dogs (wild dogs), foxes and feral cats on private land.

9.3.2 State

Alternative, sources of external funding and / or support and assistance are outlined below.

Environmental Trust

Environmental Restoration and Rehabilitation Grants – Pest animal management is an eligible activity under the program which includes the strategic long-term control of pest species through physical intervention to facilitate the recovery of native animal and plant species.

Individual grants of up to $100,000 (1:1) with a total of $2,000,000 for community organisations and $2,000,000 for government entities are available.

Council and/or private land managers should be interested in making an application to better understand how predators interact with the landscape and reduce the impacts of pest animals, especially where there is community-led action by the formation of community-based pest animal groups which has been identified as a key strategy for industry and government efforts to implement coordinated pest animal control in Australia (Howard et al., 2017).

Department of Primary Industries Vertebrate Pest Research Unit

The research unit is currently planning to undertake a major landscape scale research and management project on free-ranging dogs (wild dogs), fox and feral cat in the North East of NSW. Partners include NCLLS, National Parks and Wildlife Service, NSW Forestry Corporation, University of New England and University of Southern Queensland.

Council and private land managers should be interested in participating in this research program to better understand how predators interact with the landscape and reduce the impacts of pest animals. It is understood that the program is well funded and extends over a long time frame.

North Coast Local Land Services

LLS assist public and private land managers by

- providing technical advice with eradicating declared pest species
- coordinating management plans to control vertebrate pests
- inspecting properties for declared pests and helping develop a plan to control pest populations
- providing advice on controlling nuisance animals – either through group baiting programs or individual control methods
- short training courses on the use of 1080 and Pindone baits
- advising on purchasing baits such as meat, carrots, grain, pellets, depending on individual needs.

9.3.3 Commonwealth

Centre for Invasive Species Solutions

A national collaborative research, development and extension organization that brings together government, industry and research partners to create a coordinated, collaborative and innovative set of research and extension projects.

There may be opportunities to collaborate with the Centre on more research based projects in the LGA.

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Appendix 1 Overview of relevant legislation, policies and plans

Jurisdiction	Category	Instrument	Pest animal context
Commonwealth	Legislation and policy	*Environment Protection and Biodiversity Conservation Act 1999*	Lists key threatening processes and identifies threatened species at risk fro and guides the development of Threat Abatement Plans. Pest animal Thr include those for: • Predation by European red fox • Predation by feral cats • Predation, habitat degradation, competition and disease transmissio • Competition and land degradation by unmanaged goats • Competition and land degradation by rabbits.
		Biosecurity Act 2015	The Australian *Biosecurity Act 2015* governs the shared responsibility in ma Commonwealth government, stakeholders, clients, state and territory governr
		Model Codes of Practice and Standard Operating Procedures	Codes of Practice and Standard Operating Procedures have been develo priority pest animal species to provide information on best practice manag and humaneness of control and safety aspects.
	Strategies and plans	Australia's Biodiversity Strategy 2010-2030	A guiding framework for conserving Australia's biodiversity for government, I overarching policy framework for the more detailed Australian Pest Animal St
		Australian Pest Animal Strategy 2017-2027	Provides national guidance on best practice and humane vertebrate pest biodiversity, agricultural assess and social values. It details agreed nationa national goals and priorities. A key aim is to encourage coordination ar community groups, and the community reaffirming that effective pest animal shared responsibility.
		National Wild Dog Action Plan	Promotes and supports community drive action for landscape-scale wild dog
State	Legislation and policy	*Biosecurity Act 2015 and Regulation 2017*	The *NSW Biosecurity Act 2015* is a new piece of legislation that allows impro NSW to enable landholders, community, industry and Government effectively incursions and risks. A fundamental principle of the *NSW Biosecurity Act 2015* is that biosecurity is managers, regardless of whether on private or public land, have the same res

Jurisdiction	Category	Instrument	Pest animal context
		Local Land Services Act 2013	Under the Act all land managers in NSW, whether on public or private land, species on their land. The Act established Local Land Services, a pu biosecurity, natural resources management and agricultural advisor ser managing pest animals. LLS lead regional plan delivery and provide on grour
		National Parks and Wildlife Act 1974	Guides pest species management programs on state land reserved under different tenures.
		Biodiversity Conservation Act 2016	Lists key threatening process and identifies threatened species at risk processes are managed under the Biodiversity Conservation Program or wit Our Species program.
		Game and Feral Animal Control Act 2002 and Game and Feral Animal Control Regulation 2012	Provides for the effective management of introduced species of game ani orderly hunting of game animals on public and private land and of certain pes
		Pesticides Act 1999	Regulates the use of pesticides in NSW. Use of sodium monofluoroacetate order under this Act.
		Prevention of Cruelty to Animals Act 1979	Regulates the humane handling and destruction of pest animals.
		Firearms Act 1996 and Regulation 1997	Regulates the ownership and use of firearms in NSW.
		Workplace Health and Safety Act 2011	Governs the requirements to ensure and safe and healthy workplace.
		Companion Animals Act 1998	Councils have the responsibility under this Act to provide for effective a companion animals.
		Local Government Act 1993	Defines a Council's charter to include: properly manage, develop, pro environment of the area for which it is responsible, in a manner that is con ecologically sustainable development.
	Strategies	NSW Biosecurity	The strategy establishes a clear vision for how biosecurity threats, including

Jurisdiction	Category	Instrument	Pest animal context
	and plans	Strategy 2013-2021	important goal of the strategy that biosecurity is recognised as a shared respo
		NSW Invasive Species Plan 2008-2015	The Plan aims to prevent new pest incursions, contain existing populations a through a cooperative culture where all relevant parties contribute to minimise
		NSW Wild Dog Management Strategy 2017-2021	The Strategy guides specific actions to more effectively reduce the negativ roles and responsibility of government, public and private land managers, and
Regional	Strategies and plans	Draft North Coast Regional Strategic Pest Animal Management Plan 2018-2023	Identifies 10 priority pest animals for the region, prioritises and ranks pest a maximise land manager participation.
		North Coast Region Wild Dog Management Plan 2015-2020	Provides a framework for cooperative management of wild dogs between key managers, the community and government) within the North Coast Local Lan
		North Coast Regional Plan 2036	A 20-year blueprint for the future of the North Coast guiding state and local g Direction 11 identifies the need to protect and enhance productive agricultura
Local	Strategies and plans	Biodiversity Conservation Strategy (in prep)	It is envisioned that the revised Strategy, with a 10-year time frame, will be a will aim to build on current national, state, regional and local government and and restore Byron's biodiversity that is being shaped by population growth, co
		Rural Land Use Strategy	Provides a 20 year strategic framework to guide future land zoning and use, p rural environment, economy, community and infrastructure. It is informed by t (Commonwealth, state and regional), Council's adopted 'Site Suitability Criter Directions Paper' and early community feedback. The strategy identifies the r pest management to community.
		Byron Pest Animal Management Plan 2018 (this Plan)	This Plan, developed within the above national, state and regional frame stakeholders, provides a strategic approach to pest animal management with

Appendix 2 Engagement methods

Extensive effort was made to engage with other public land managers, Traditional Owners and private land managers regarding the pest animals within Byron Shire to:

- understand the issues directly and indirectly affecting all land managers regardless of whether on private or public land
- learn more about pest animal concerns and impacts
- identify any misinformation about pest animal management
- share information and invite feedback about management responses to date
- seek ideas and feedback about priority pest animals and possible future management options.

The types of engagement that have been undertaken include:

- promotion of contact details of responsible officers (through social media, media releases, workshops and Council's website)
- telephone conversations to record concerns, issues and complaints. Since 2016, a record of each telephone conversation is kept and followed up until the matter is resolved
- informal face-to-face meetings, emails and telephone calls with private land managers
- media (radio, print, social media)
- website pages and links (www.byron.nsw.gov.au/Services/Environment) regularly reviewed on a monthly basis and updated accordingly (if required)
- online survey: an online stakeholder engagement survey was used as a mechanism for stakeholders to report pest animals and rank how they were affected by pest animals, identify what control options land managers were undertaking, and who should be responsible for control programs. The results were then analysed which allows land managers to make informed decisions with consideration of stakeholder concerns and preferences. This online survey was open from 5 March until 9 April 2018.
- public land managers and Traditional Owner workshop: one (1) public land managers and Traditional Owner workshops were presented by Byron Shire Council staff and Ecosure ecologist and wildlife biologists on Tuesday 27 March 2018:
- private land manager workshops: two (2) private land manager workshops were presented by Byron Shire Council staff and Ecosure ecologist and wildlife biologists on Wednesday 28 March 2018.
- attend meetings with Council's Biodiversity Advisory Committee 12 March 2018 and 14 June 2018 (yet to take place) and Arakwal MOU Advisory Committee on 31 May 2018 (yet to take place)

- attend meeting with Councillors on 7 June 2018.

Methods of engaging with all land managers regardless of whether on private or public land during Plan implementation will be similar to those for Plan preparation and will include:

- promotion of contact details of responsible officers (through social media, media releases, public meetings and Council's website)
- telephone conversations to record issues and complaints.
- informal face-to-face meetings, emails and telephone calls
- media (radio, print, social media)
- website pages and links (www.byron.nsw.gov.au/Services/Environment) reviewed monthly and updated accordingly (if required)
- land manager meetings (if required).

The process used was consultative, with representatives for key stakeholders involved at all stages of the development of the Plan. Prior to adoption, the Plan was placed on public exhibition for a period of six weeks to gain maximum feedback.

Appendix 3 Identifying pest animals

The introduced Indian myna is commonly confused with the native noisy miner, and so identification is detailed below.

A guide to identifying alert species is also provided to ensure the community is able to rapidly report sightings of these high priority pest species to the NSW Department of Primary Industries.

Indian myna and noisy miner

The introduced Indian (common) myna (*Sturnus tristiscan*) can be confused with the native noisy miner (*Manorina melanocephala*). Provided below is information to assist in the correct identification of these species.

Indian (common) myna are native to southern Asia and India and have[1]:

- a glossy black head, upper breast and neck
- a brown body
- bright yellow bill, legs, feet and eye skin
- whilst in flight, distinctive white patches are visible on their wings.

Noisy miners are native to Australia and have:

- a pale grey body with a white belly
- a yellow eye patch and beak
- yellow/orange to flesh coloured legs and feet.

Figure 1 Introduced Indian (common) myna

Figure 2 Native noisy miner

[1] PestSmart Centre for Invasive Species Solutions 2014, *Common (Indian) Myna (Acridotheres tristis or* Sturnus tristis*) Factsheet.* Centre for Invasive Species Solutions.

Alert species

If any of the follow species are observed, please call the NSW Department of Primary Industries Invasive plants and Animals Enquiry Line on 1800 680 244.

Red-eared slider turtle

The red-eared slider turtle (*Trachemys scripta elegans*) originates from the USA and Mexico. This species has a distinctive red or orange stripe behind the eyes and a carapace length for an adult of 12.5 to 28 cm[2].

Figure 3 Red-eared slider turtle

Red imported fire ant

The red imported fire ant (*Solenopsis invicta*) are native to South America and are 2-6 mm in length with a coppery-brown head and body with a darker abdomen[3].

Figure 4 Introduced red imported fire ant

[2] NSW Department of Primary Industries undated, Red-eared slider turtle. Available at: https://www.dpi.nsw.gov.au

[3] Qld Department of Agriculture and Fisheries 2017, Fire ant identification. Available at: https://www.daf.qld.gov.au

Big-headed ant

The big-headed ant or coastal brown ant (*Pheidole megacephala*) is of African origin and is ginger or light yellow to a dark reddish brown in colour. They generally come in two sizes depending on their function as worker ants, being 2 – 3 mm or 3 – 4 mm in length[4].

Figure 5 Big-headed ant or coastal brown ant

Yellow crazy ant

Yellow crazy ant (*Anoplolepis gracilipes*) is recognised by their pale yellow body colour, unusually long legs and antennae. The name 'crazy ant' is derived from their frantic movements and frequent changes in direction, especially when disturbed.

The abdomen is dark brown with length of body typically around 5mm.

Yellow crazy ants form super colonies with several queens and once a super colony is established, it can expand rapidly, in some cases doubling in size in 12 months[5].

Figure 6 Yellow crazy ant

[4] WA Department of Primary Industries and Regional Development 2018, Coastal brown ants, big-headed ants. Available at: https://www.agric.wa.gov.au/pest-insects/coastal-brown-ants-big-headed-ants.

[5] NSW DPI Department of Primary Industries 2018, Yellow crazy ant. Available at: http://www.dpi.nsw.gov.au/biosecurity/insect-pests/yellow-crazy-ant

Indian ring-necked parrot

The exotic Indian ring-necked parrot (*Psittacula krameri*) is long-tailed, usually grass-green in colour with a red beak. The males have a narrow pink and black collar which is lacking in immature and female birds[6].

Figure 7 Indian ring-necked parrot

[6] WA Department of Primary Industries and Regional Development 2018, Indian ringneck parakeet: animal pest alert. Available at: https://www.agric.wa.gov.au/birds/indian-ringneck-parakeet-animal-pest-alert?page=0%2C0.

Appendix 4 Draft Wild Dog, Fox and Feral Cat Operational Plan

Target Species	Wild Dog, Fox and Feral Cat 18-19FY	**Date for review**	January each year
Objective	1. Minimise wild dogs, foxes and feral cats to strengthen key asset based protection in autumn and spring, the period of time most critical for the survival of offspring of livestock or threatened species. 2. Reduce the impacts of wild dogs, foxes and feral cats on adjoining land owned or occupied by public and private managers.		
Justification	On Council managed land • *Biosecurity Act 2015* General Biosecurity Duty • *Local Land Services Act 2013* • North Coast Regional Strategic Pest Animal Management Plan On private land and/or Jali Aboriginal land • An overlay of high biodiversity including threatened species e.g. koala (*Phascolarctos cinereus*), threatened shorebirds, long nosed potoroo (*Potorous tridactylus*), economic (Significant Farmland) and/or cultural values. • Adjacent to existing programs (e.g. Fox TAP priority sites and site specific wild dog management within national parks and reserves)		
Constraints	1. Financial resources. 2. Availability and level of experience of private operators. 3. Site access maybe limited by slippery, rough and steep road conditions and tree fall 4. Adjoin highly-populated and visited areas with Brunswick Heads to the north and Byron Bay to the south of Tyagarah Nature Reserve. Adjoin highly-populated and visited areas of Suffolk Park. 5. Presence of neighbouring domestic pets from adjoining properties may affect program operations.		
Target Location (s)	First Priority 1. Council managed land targeting Byron Bay, Bangalow, Brunswick Valley (Mullumbimby) and Ocean Shores Treatment Plants (Figure 1). Secondary Priority and resources pending 1. Private land managers in areas of Upper Wilsons Creek, Huonbrock, Wanganui and Goonengerry adjoined by Mount Jerusalem National Park, Nightcap National Park, Whian Whian State Conservation Area, Snows Gully Nature Reserve and Goonengerry National Park (Figure 1). 2. Private land managers between Tyagarah and Brunswick Heads Nature Reserve and Pacific Highway (Figure 1). 3. Private land managers and Jali Aboriginal land between Broken Head Nature Reserve, Ti Tree Lake Aboriginal Area and Ti Tree (Taylors) Lake Aboriginal Place) and Suffolk Park (Figure 1).		
Council Preferred Control			
Trapping	Trapping is best conducted by experienced or trained operators. Only soft-jawed or padded jawed spring traps may be used for the control of wild dogs in NSW.		
Shooting	Shooting is only to be conducted by experienced and trained operators in rural areas. Shooting may be in conjunction with trapping or may provide a viable alternative in areas where baiting is not feasible or not a preferred option. A shooter may "howl up" wild dogs for example or dispatch an animal that has established a regular pattern of visiting a particular location. Most shooting however is opportunistic. Shooting can play an important role in controlling wild dogs, but usually does not have as significant an impact on a regional basis as poisoning. Shooting will not occur to adjoined highly-populated and visited areas.		
Ground & aerial baiting	In support of Council's IPM Policy, ground or aerial baiting with 1080 **will not be undertaken** by Council staff or Council engaged operators.		
Barrier fencing	Barrier fencing for the purpose of wild dog or fox control **will not be undertaken** by Council staff or Council engaged operators.		
Den fumigation	In support of Council's IPM Policy, den fumigation for the purpose of fox control **will not be undertaken** by Council staff or Council engaged operators.		
Other relevant management considerations			

Domestic dog	Areas of high to medium registered dog densities are known across the Shire including areas adjoining Council managed land. Potential domestic dog interactions will be mitigated by: • Trapping signs will be placed at the entrance to all Council managed land and, when resources allow, at the entrance of all participating private land managers, indicating the dates of trapping and contact information • Information will be provided at least 1-week prior to commencement to the community via media release, updates on Council website and Facebook and through various community group newsletters.		
Domestic cat	While the density of domestic cats is unknown across the Shire, the above management actions will be taken into consideration.		
Monitoring			
Camera	The use of motion-triggered cameras to detect target species may be trialled subject to camera availability. Funds would be available for one-off purchase upon commencement.		
Data			
Recording format	Control data are recorded manually using Council's Trapping Datasheet each fortnight of the trapping program by the operator.		
Collation and storage	Council staff will coordinate data collation from the operator under Council's pest animal program. Data will be transferred into FeralScan and ArcGIS. Electronic data will be provided to NCLLS and NPWS to help inform their respective pest management objectives as identified under the North Coast Strategic Pest Animal Management Plan, FOX TAP Site Plan and/or Site Specific Wild Dog Management Plan.		
Analysis	Council staff will compile a report and summary of outcomes and costs to Council and partners. This report will be made publicly available via Council minutes. Council will also provide electronic data to NCLLS and NPWS to be used at their discretion in their analysis of their own programs.		
Internal Liaison			
	Council staff will liaise with relevant partners to discuss the progress of the program and discuss any issues that may arise.		
Public Liaison			
	• Trapping signs will be placed at the entrance to all Council managed land and participating private land managers indicating the dates of trapping and contact information • Information on the program will be provided at least 1-week prior to commencement to the community via media release, updates on Council website and Facebook and through community group newsletters.		
Responsible Parties			
Lead	**Role**	**Partner**	**Role**
Council	• Liaise with public and private land managers as required to progress plan implementation • Coordinate operational plan implementation with public and private land managers, as required • Domestic dog compliance • Coordinate public notification (advertisement) • Site plan reporting • Prepare and issue media campaign • Initial data storage and handling • Provide data to relevant public land managers to contribute to analysis of data	**NCLLS**	• Liaise with Council staff to guide program planning • Opt to analyse data from private land tenure • Share key outcomes of existing program in relation to Areas 1-3
		NPWS	• Liaise with Council staff to guide program planning • Opt to analyse data from the program adjacent to NPWS tenure • Share key outcomes of existing program in relation to Areas 1-3
		DPI	• Liaise with Council staff on future large scale and collaborative programs as required
		Jali Aboriginal Land Council	• Liaise with Council staff to guide program planning • Provide safe access to private land

		Operator	• Liaise with Council staff to guide program planning • Carry out wild dogs, foxes and feral cats trapping program, collect data and report to Council staff
		Private land managers	• Signed Pest Animal Control Agreement • Provide safe access to private land • Secure all domestic pets safely

Timetable (based on FY)												
Task	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**
Program & budget planning	✓							✓	✓			
Contractual management									✓	✓		
Engage trapper	✓	✓		✓	✓					✓	✓	✓
Public liaison – private land managers						✓	✓	✓	✓			
Public liaison – community wide									✓			✓
Monitoring (pre-trapping)	✓								✓	✓		
Trapping	✓	✓		✓	✓					✓	✓	✓
Collate data and regular FeralScan data upload			✓			✓				✓		✓
Provide data to other public land managers										✓		
Council report (based on previous year)							✓			✓		

Estimated Resources Required (Commercial in Confidence)				
Activity	**Description**	**Sub-total**	**Total**	**Funding Source**
Program & budget planning	Review ops plan and budget		**$**	
Contractual management	Process of managing contract creation, execution and analysis to maximize operational and financial performance		**$**	
Public liaison – private land mangers	Liaise with private landholder prior to commencement of program on private land to encourage participation and allow preparations for supported control to occur on private land to complement Council, NPWS and LLS programs		**$**	

Public liaison – community wide	1 x advert for all of program placed in Byron News - 4 x 3 Facebook Advert Media release and Council web update		**$**	
Monitoring (pre-trapping)	Fast trigger speed camera for wildlife monitoring (e.g. Reconyx HC500)		**$**	
Trapping	Soft jaw trapping		**$**	
Collate data and regular FeralScan data upload	Enter Council data onto the free online resource that allows anyone to record pest animal activity, evidence of pests, pest damage, and control actions		**$**	
Provide data to other public land managers	Provide raw data direct to NCLLS & NPWS		**$**	
Council report	Annual report to Council of program progresses, challenges and recommendations		**$**	
Contingency	Provision for a possible event or circumstance		**$**	
In-Kind Sub Total			**$**	
Cash Sub Total			**$**	
TOTAL			**$**	

Disclaimer	The actions above describe the works that may be necessary to achieve the objective. Implementation of this site plan is subject to resource availability.		
Signature			
	Council Manager Environmental and Economic Planning	**OEH (NPWS) Byron Coast Area Manager**	**NC LLS Senior Biosecurity Officer**

1. Staff costs calculated @ $300 /day

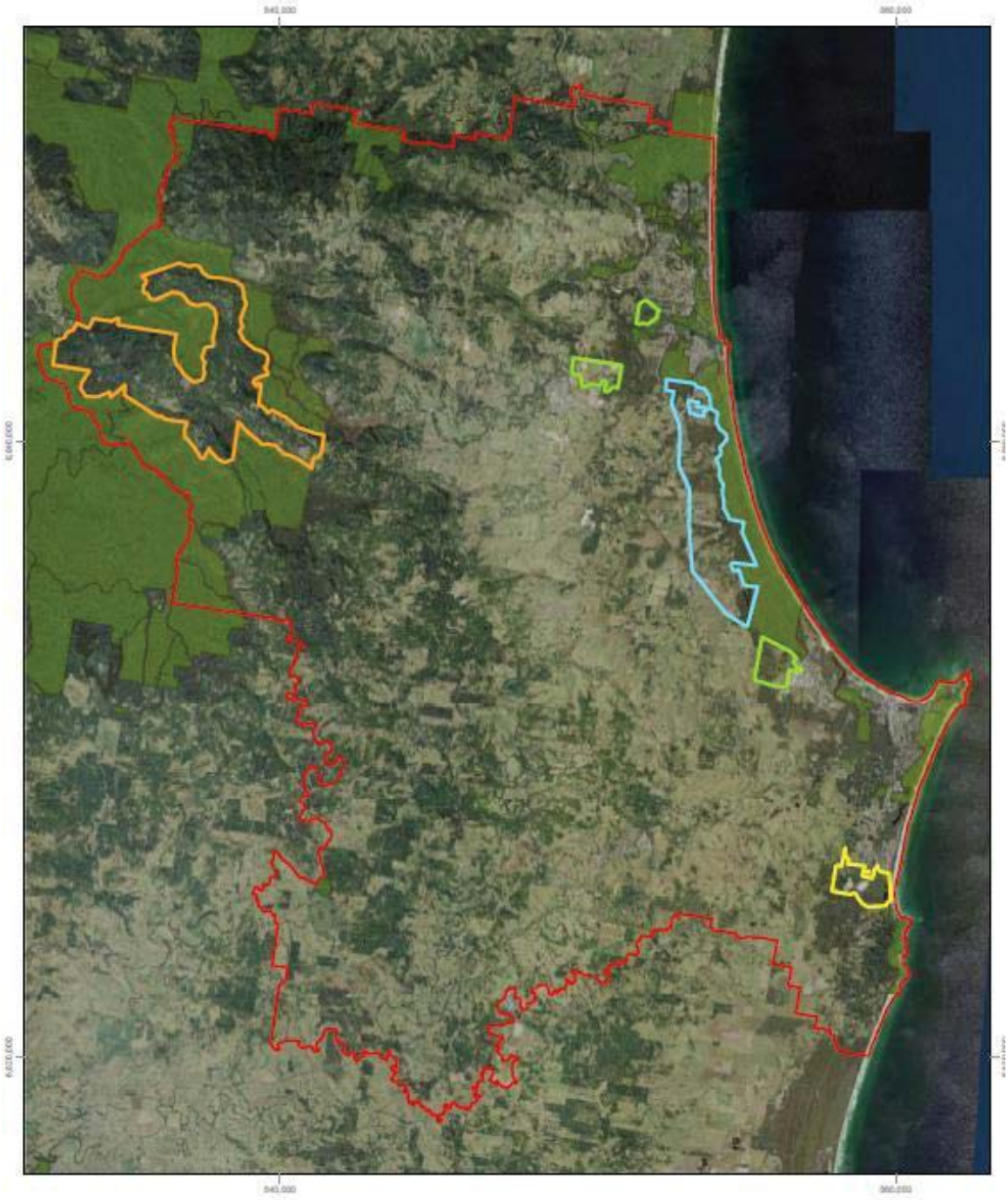

Figure 1: Council and private lands priority areas for wilddog, fox and cat control

Byron Shire Council

Pest Animal Management Plan

Byron Shire Local Government Area
National Parks and Nature Reserves
Council/State managed land
Private land - Area 1
Private land - Area 2
Private land - Area 3

Areas 1-3 are in no priority order and depend on resource availability.

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Appendix 5 Operational Plan template

Target Species	Identify the target species this plan relates too	**Date for review**	January each year
Objective	Identify the aims or goal		
Constraints	Identify the limitation or restrictions place on implementing this plan		
Target Location (s)	Identify where the plans apply to		
Council Preferred Control			
	Identify the desired control method(s)		
	If required, identify methods that will not be adopted.		
Other relevant management considerations			
	Consider and identify other issues that need to be considered in order for the plan to be successfully implemented e.g. land tenure, domestic pets, high population		
Monitoring			
	Identify what methods will be used to confirm present / absence of target species at the target location		
Data			
Recording format	How will data be recorded		
Collation and storage	How will data be collated and captured		
Analysis	How will the data be analysed		
Internal Liaison			
Public Notification/Liaison			
Responsible Parties			
Lead	**Role**	**Partner**	**Role**
Identify who is the lead agency responsible for ensuring implementation	Identify the key responsibilities of the lead agency responsible for ensuring implementation		
		Identify who is the supporting agencies are responsible for assisting with ensuring implementation	Identify the key responsibilities of the supporting agency responsible for assisting with ensuring implementation

Timetable												
Task	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**

Estimated Resources Required per annum (Commercial in Confidence)			

Disclaimer	The actions above describe the works that may be necessary to achieve the objective. Implementation of this site plan is subject to resource availability.		
Signature			
	Council Manager Environmental and Economic Planning	**OEH (NPWS) Byron Coast Area Manager**	**NC LLS Senior Biosecurity Officer**

Revision History

Revision No.	Revision date	Details	Prepared by	Reviewed and Approved by
0	21/05/2018	Pest Animal Management Plan 2018 – 2023 Draft report	Julie Whelan, Senior Environmental Scientist, Ecosure Jess Bracks, Principal Wildlife Biologist, Ecosure Clare Manning, Biodiversity Officer, Byron Shire Council Peter Cremasco, Ph3 Consulting	Nigel Cotsell, Manager – Coffs Harbour, Ecosure
1	15/06/2018	Pest Animal Management Plan 2018 – 2023 Revised Draft report	Julie Whelan, Senior Environmental Scientist, Ecosure Clare Manning, Biodiversity Officer, Byron Shire Council	Nigel Cotsell, Manager – Coffs Harbour, Ecosure
Final	09/11/2018	Final Pest Animal Management Plan 2018 – 2023	Vanessa Cain, Scientist Clare Manning, Biodiversity Officer, Byron Shire Council	Nigel Cotsell, Manager – Coffs Harbour, Ecosure

Distribution List

Copy #	Date	Type	Issued to	Name
1	09/11/2018	Electronic	Byron Shire Council	Peter Boyd
2	09/11/2018	Electronic	Ecosure	Administration

Report compiled by Ecosure Pty Ltd in collaboration with Byron Shire Council

ABN: 63 106 067 976

admin@ecosure.com.au www.ecosure.com.au

PR3136-RE. Final Pest Animal Management Plan

Adelaide
PO Box 145
Pooraka SA 5095
P 1300 112 021
M 0407 295 766

Brisbane
PO Box 675
Fortitude Valley QLD 4006
P 07 3606 1030

Coffs Harbour
PO Box 4370
Coffs Harbour Jetty NSW 2450
P 02 5621 8103

Gladstone
PO Box 5420
Gladstone QLD 4720
P 07 4994 1000

Gold Coast
PO Box 404
West Burleigh QLD 4219
P 07 5508 2046
F 07 5508 2544

Rockhampton
PO Box 235
Rockhampton QLD 4700
P 07 4994 1000

Sunshine Coast
PO Box 1457
Noosaville QLD 4566
P 07 5357 6019

Sydney
PO Box 880
Surry Hills NSW 2010
P 1300 112 021

Ecosure gratefully acknowledges contribution to the plan by Peter Cremasco (Ph3 Consulting).