North Coast Regional Strategic Pest Animal Management Plan 2024-2028

Local Land Services

NSW GOVERNMENT

Acknowledgement of Country

The North Coast Local Land Services Board, management and staff wish to acknowledge Traditional Owners – the Bundjalung, Yaegl, Githabul, Gumbaynggirr, Dunghutti and Birpai peoples – of the land and waters on which we meet, live and work.

We recognise the significance that Wajaar (Country) holds for the many Aboriginal nations of the North Coast. We recognise the importance of the songlines that travel along the East Coast of Australia and express the many values, beliefs and traditional ways of nurturing Wajaar. We recognise the continuous connection to the land and the waterways of its traditional custodians and acknowledge the Yuludarla (Dreaming) for maintaining this connection.

We pay respects to the Elders of these nations; past, present and emerging. We acknowledge their ongoing traditions, beliefs and lores that have maintained the North Coast for tens of thousands of years. We recognise their continued connection to their Jagun (homeland) and acknowledge the continued practices of ceremony and language.

North Coast Local Land Services is proud to work with the peoples of these nations to nurture, protect, restore and maintain the lands and waters of the region. The North Coast Local Land Services Board, management and staff have a culture of inclusion and diversity, and we continue to build a culture of listening, understanding and supporting the aspirations of Aboriginal peoples.

Kira Duroux
Gumbaynggirr Nyami of the Taylor and Duroux families from Red Rock, Corindi and Grafton.

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Executive summary

The North Coast Regional Strategic Pest Animal Management Plan was developed through consultation with a range of stakeholders. It is imperative that we all work together to manage pest animals.

The North Coast Regional Strategic Pest Animal Management Plan (RSPAMP or the plan) applies equally to all people and land across the North Coast region. This approach is reflected in the plan's vision:

Government agencies, community groups and individual land managers share responsibility and build capacity to prevent, eradicate, contain, and manage the risks and impacts of terrestrial vertebrate pest animals on the North Coast.

Pest animals present a significant risk for and have impact on agricultural production, industry, the environment and communities in the North Coast. Sharing responsibility increases the effectiveness of pest control across the landscape. Without coordinated and combined efforts, the level of effort and cost to achieve the same outcome will significantly increase.

Priorities

The plan considers pest animals to be any terrestrial vertebrate species (other than native species) that present a biosecurity risk to the region. The planning, allocation of resources and delivery of pest species management across the North Coast region will focus on the following regional management objectives and pests:

PREVENTION	
ERADICATION	Feral horse, cane toad
CONTAINMENT	Cane toad, feral deer, feral goat, feral horse, feral pig
ASSET BASED PROTECTION	Feral cat, feral deer, European red fox, indian myna, feral pig, wild rabbit, wild dog, cane toad

The plan includes Lord Howe Island and it adopts the goals, priorities and directions set by the Lord Howe Island Biosecurity Strategy 2022-2024 which was developed by the Lord Howe Island Board.

The plan also draws attention to the need for all to participate in the early detection and reporting of new 'Alert Species' incursions to ensure a rapid management response to (e.g. Cane Toad, Red-Eared Slider Turtle).

Pest management

The North Coast is a region of many vibrant towns, villages and communities. Its natural setting supports much sort after coastal and hinterland lifestyles along with diverse and significant production and natural landscapes and nationally recognised biodiversity. A range of natural resource–based industries underpin the prosperity of the region (e.g. beef, dairy, blueberry, macadamia, intensive horticulture, fishing, tourism). The region's diversity of land use and popularity bring with it the ongoing need to manage potentially new and existing biosecurity risks. There are numerous small rural properties and peri-urban areas, and the region remains popular for those seeking a lifestyle change, with many of these landholders unaware of how to manage their land for biosecurity and other risks.

Implementation

The North Coast Pest and Weed Advisory Committee with the support of the North Coast Pest Technical Working Group will provide strategic oversight and regional guidance on implementation of the plan.

The plan documents the following for each pest species: regional management goal, associated assets and threats to be influenced by management, the expectations of land managers to meet their general biosecurity duty, public land manager responsibilities and community engagement approaches, and area based program control measures with their corresponding timeframes and key performance indicators (KPIs).

The 'priority' with which North Coast Local Land Services (LLS), partners and community can work together to deliver dedicated species specific pest management programs will vary at any point in time and is contingent upon the ever changing suite of conditions, including:

- resourcing levels
- the distribution and extent of pest risks and impacts
- landholder needs and requests for advice and control
- feasibility of control
- partner availability.

It is recognised that stakeholder commitment and capacity to participate in the delivery of the plan will be contingent upon the ever changing availability of resources and other competing priorities.

Regional KPIs have been set for each pest species to allow for regular monitoring and reporting on pest program delivery. Reporting will also facilitate performance evaluation where the focus will be on continuous improvements in the effectiveness and efficiency of program implementation (including both community engagement and pest control activities) and how the plan's goals and outcomes are being achieved.

Annual Pest Species Operation Plans

This plan supports the development of new Annual Pest Species Operations Plans that will guide how the region delivers and measures the performance of pest management. These plans capture the on-ground tactics and actions to be put in place, to achieve the local goals for each pest species, each year. These plans will be a response to the unpredictable need for pest management across the region, which is driven by:

- Pest risks and impacts which vary by species and in space and time.
- Local demand and need from our customers to address those impacts.

The metrics used within Annual Pest Species Operations Plans will reflect:

Landholder need	• Landholder requests for assistance • Landholder reports of pest risks and impacts.
Landholder engagement	• Provision of community consultation, training and capacity building programs • Landholder enquiries being met in an effective and timely manner • Customer satisfaction with our services.
Landholder practice change	• Landholder participation in programs • Adoption of best practice pest management by landholders and area under best practice pest control • Customer satisfaction with our services.
Pest impacts	• Changes in pest risks and impacts • The management of incursions • Changes in production losses.

The plan has been prepared with input from some public land managers, private land managers, other government agencies, North Coast community groups, local pest management groups and industry networks.

1. Introduction

1.1 Overview

The North Coast RSPAMP outlines how government, industry and the community can work together and share responsibility to eradicate, contain and manage pest animals in terrestrial environments across the North Coast region.

Pest animals have a significant impact on agricultural production, industry, the environment and communities in the North Coast. Sharing responsibility increases the effectiveness of pest control across the landscape. Without coordinated and combined efforts, the level of effort and cost to achieve the same outcome will significantly increase.

Under the *NSW Biosecurity Act 2015*, community, land managers, government and industry have a general biosecurity duty to prevent, minimise or eliminate any biosecurity risk. When this duty is combined with the implementation of best practice, effective pest animal management outcomes are achieved.

1.2 Purpose of the plan

The plan's purpose is:

To facilitate the coordination and delivery of strategic engagement, extension services and on ground initiatives that support the sharing of responsibility and adoption of best practice pest management by government agencies, community groups and private and public land managers to meet the general biosecurity duty to prevent, eradicate, contain and manage the risks and impacts of terrestrial vertebrate pest animals on the North Coast.

The plan allows North Cost LLS to meet its pest management obligations. It is a local strategic plan under the *Local Land Services Act 2013*, prepared with the support of the North Coast Pest and Weed Advisory Committee and the North Coast Pest Technical Working Group (See Appendix 2 for membership) and endorsed by the North Coast LLS Board. It takes direction from the *Biosecurity Act 2015* and implements the NSW Biosecurity Strategy and NSW Invasive Species Plan in relation to pests for the North Coast region.

It identifies regionally based species priorities and objectives for pest animal management, based on regional risk and feasibility of control, and explains how the region will work together to identify, minimise, respond to and manage those priority pests.

The plan applies equally to all people and all land across the North Coast. It provides information to enable all landholders and stakeholders to effectively understand and discharge their obligations under the *Biosecurity Act 2015.*

For this reason, the plan does not include overly prescriptive actions and measures for landholders and stakeholders to discharge their biosecurity duties. Rather, it focuses on the outcomes to be achieved, allowing for different measures to achieve the same outcome.

1.3 Audience of the plan

The plan is relevant to all land managers that have a general biosecurity duty on the North Coast, and those that also support those land managers to meet their duty, including:

- Public land managers (e.g. LLS, Crown Lands, National Parks and Wildlife Service, Forestry Corp, Transport NSW, local government)
- Private land managers
- Aboriginal land managers (e.g. Indigenous protected areas, areas under Native Title, Local Aboriginal Land Councils)

- Government agencies (providing extension services, access to funding, onground management – e.g. LLS, NSW Department of Primary Industries)
- LLS coordinated community groups (e.g. bush regenerators) local pest management groups
- Industry (e.g. beef – provide networks that support landholder uptake of best practice).

The roles and responsibilities of these groups are further defined in section 1.7.

1.4 What is considered a pest animal?

Under the *NSW Biosecurity Act 2015*, pest animals are any terrestrial vertebrate species (other than native species) that presents a biosecurity threat – they are not defined by their species identity as such. However, there are some species specific activities that are permitted under the Act's Biosecurity Order (Permitted Activities) that would otherwise be prohibited (such as keeping exotic animals in captivity, e.g. foxes).

Whilst the *NSW Biosecurity Act 2015* does not define pest animals, there are specific activities that are permitted under the Biosecurity Order (Permitted Activities) that would otherwise be prohibited (such as keeping exotic animals in captivity).

It is the responsibility of individuals to ensure they discharge their general biosecurity duty to manage the biosecurity risks posed by pest animals. The *Biosecurity Regulation 2017* outlines mandatory measures for pest animal management in NSW. General control and management of pest animals outlined in this plan can be considered mechanisms for individuals to meet their general biosecurity duty and land managers and community members should work with stakeholders identified for ongoing implementation of pest animal management practices.

This plan for the North Coast region acknowledges that certain pest species won't be included due to a lack of effective, landscape scale control measures. These pest species may include: pest fish and amphibian species (e.g. European carp, red eared slider turtles), pest bird species and pest rodent species. Pest rodent species are considered an incrop issue – for further management information contact your local agronomist. Please refer to section 1.8 for more information on alert species.

1.5 Managing native animals

Native species are protected by law in NSW and are not addressed in this RSPAMP. Issues associated with managing the impacts of native species (such as kangaroos, emus, wombats and possums) should be addressed separately in consultation with the NSW National Parks and Wildlife Service (NPWS) and with regard to the regulatory requirements of the *Biodiversity Conservation Act 2016*. Non-lethal methods may include exclusion netting, fencing, gating and olfactory devices. Where it is necessary to use lethal methods such as shooting to destroy native animals because they are a threat to human safety, damaging property and/or causing economic hardship, the NPWS can issue a biodiversity conservation licence to harm protected native animals under the *Biodiversity Conservation Act 2016*.

For further information visit: https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences

In both the NSW Wild Dog Management Strategy and National Wild Dog Action Plan, the term 'wild dog' refers to all wild-living dogs (Canis familiaris) and includes dingoes, feral domestic dogs and the hybrid descendants of these. There is considerable interest in dingo conservation in Australia, including concerns about their genetic integrity and preserving their ecological roles. Both the NSW Wild Dog Management Strategy and National Wild Dog Action Plan promote a balance between managing wild dogs in areas where they have negative impacts and preserving their ecological roles in designated conservation areas.

For further information visit:

- NSW Wild Dog Management Strategy https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/445234/wild-dog-management-strategy-2022-2027.pdf
- National Wild Dog Action Plan https://wilddogplan.org.au/wp-content/themes/nwdap/docs/NWDAP2020-2030.pdf

1.6 Framework for managing pest animals

Vision and goals

This plan's vision reflects a co-operative and co-ordinated approach to managing regional pest priorities across the North Coast:

Government agencies, community groups and individual land managers sharing responsibility and building capacity to prevent, eradicate, contain, and manage the risks and impacts of terrestrial vertebrate pest animals on the North Coast.

4 goals articulate how the vision will be achieved – giving direction to how government agencies, community groups and individual landholders will work together and build capacity across land tenures to prevent, eradicate, contain and manage the impacts of pests.

The goals of the RSPAMP are consistent with the goals of the *NSW Invasive Species (IS) Plan*.

The IS Plan adopts 4 goals (consistent with the broad objectives of the *NSW Biosecurity Strategy*):

Goal 1:

Exclude – prevent the establishment of new invasive species

Goal 2:

Eradicate or contain – eliminate or prevent the spread of new invasive species

Goal 3:

Effectively manage – reduce the impacts of widespread invasive species

Goal 4:

Build capacity and capability – ensure NSW has the ability and commitment to manage invasive species

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By identifying strategies and key deliverables under these goals, the plan will help guide investment and resource allocation for invasive species prevention and management activities in NSW. All stakeholders – government agencies, industry, land managers and members of the community – play a valuable role in confronting the challenges and achieving the goals and actions outlined in this plan.

Shared outcomes

This plan will facilitate the delivery of landholder pest management extension services and on-ground pest control activities that ultimately manage the risks and impacts from our pests.

As such, it will deliver production, community and natural environment outcomes that include:

- community share responsibility for biosecurity
- human health is maintained
- community safety is maintained
- community lifestyle, recreation and social amenity values are maintained
- aboriginal cultural heritage values are considered
- landscapes and biodiversity condition (wildlife and habitats) are improved
- waterway health is improved
- producer productivity is maintained and improved
- animal welfare is maintained
- market access and trade are maintained.

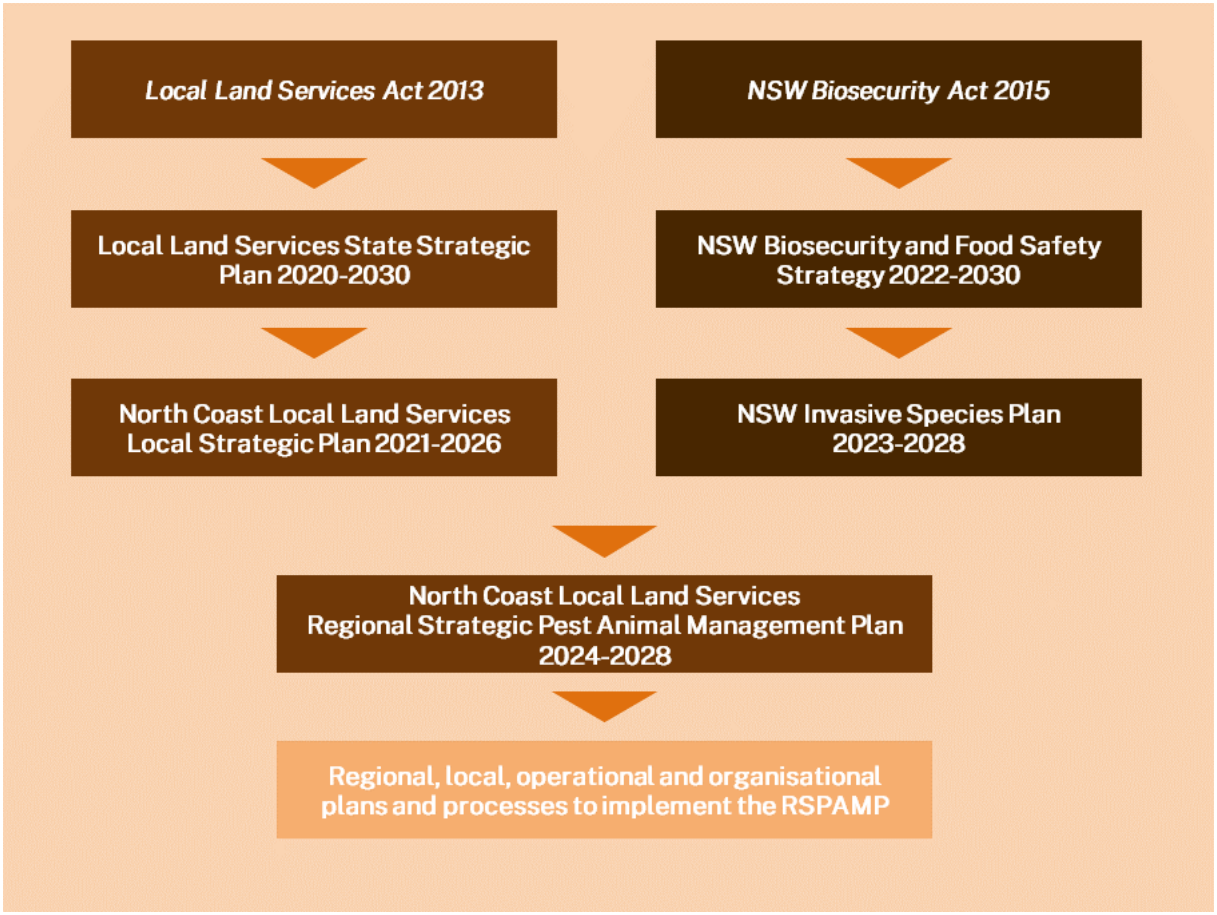
Strategic alignment

The vision, goals and outcomes for this plan align with those of the Local Land Services State Strategic Plan, the North Coast Local Strategic Plan, the NSW Biosecurity Strategy, the Biosecurity and Food Safety Strategy, and the NSW Invasive Species Plan (Figure 1.6.1).

The plan also aligns with the Local Land Services State Strategic Plan vision of *Vibrant communities in productive healthy landscapes* and the Regional NSW state outcome of *productive and sustainable landscapes*.

The plan enables the development of Annual Pest Species Operations Plans for each pest species, which will be agreed to and reviewed by the North Coast Pest and Weed Animal Advisory Committee with the support of the North Coast Pest Technical Working Group to guide future local planning and action, resource allocation, engagement and operations.

Figure 1.6.1: How the RSPAMPs fit in the NSW Biosecurity framework for pest animals



1.7 Roles and responsibilities

Under the *Biosecurity Act 2015* framework, biosecurity is a shared responsibility where the government, industry and the people of NSW work together to protect the economy, environment and community from the impacts of pest animals.

This shared responsibility means:

- Public and private land managers all have a shared and equal responsibility to eliminate and minimise biosecurity risks across land in NSW.
- Engagement and participation are encouraged across all land tenures to enhance the participation and delivery of coordinated pest animal management activities for improved outcomes.
- Government plays a key role in the coordination and regulation for pest animal management under the legislative framework. NSW Department of Primary Industries (NSW DPI) has a lead role in managing terrestrial and freshwater aquatic pest incursions. LLS supports the delivery of pest animal management activities and also has a regulatory role under the *NSW Biosecurity Act 2015.*

The role of Local Land Services

LLS facilitates public and private land manager participation in invasive species management, including education and compliance related to land manager obligations under the *Biosecurity Act 2015 (NSW)* and *Local Land Services Act 2013.* LLS is responsible for planning and coordinating terrestrial vertebrate pest management programs. LLS also provides operational assistance during invasive species incursions and surveillance operations.

Other key roles of North Coast Local Land Services in relation to invasive species management and the implementation of this plan (see Appendix 2) include:

- supporting the advisory processes of the North Coast Pest and Weed Advisory Committee and North Coast Pest Technical Working Group
- providing capacity building and technical advisory services to public and private land managers that support best practice land management
- distributing the vertebrate pesticide baits and providing associated training for land managers to use baits
- coordinating large-scale cross-tenure pest animal control programs with associated land manager communication and compliance activities
- working with key stakeholders to identify options and opportunities for implementing the plan
- supporting applied research and its inclusion into extension activities.

North Coast Local Land Services also provides information and contact points for our customers. For further information, go to https://www.lls.nsw.gov.au/regions/north-coast or contact your nearest LLS office by telephone at 1300 795 299.

Land managers can contribute to the management of all pests by reporting any pest activity (sightings, signs of presence, impacts) to their local LLS Biosecurity Officer on phone: 1300 795 29 or via FeralScan.

The role of the NSW Department of Primary Industries (NSW DPI), State Pest Animal Committee and private land managers in the delivery of the RSPAMP is outlined below:

NSW Department of Primary Industries

The NSW DPI is the lead agency for invasive species policy in NSW. It also takes a lead role in managing new terrestrial and aquatic invasive species incursions and for managing established aquatic pests. The NSW DPI supports the implementation of regional key deliverables by:

- representing the NSW Government at national forums where invasive species management is discussed and coordinated
- managing updates and amendments to the *NSW Biosecurity Act 2015*
- administering the NSW Marine Pest Surveillance Plan (2022-2026)
- administering the NSW Freshwater Pest Surveillance Plan (2022-2026)
- managing Vertebrate Pest Research Units that collaborate nationally and internationally to develop improved invasive species control techniques and management approaches
- administering licensing systems for recreational hunting of certain game and pest animals and for the keeping of certain permitted non-indigenous animals
- facilitating delivery of accredited invasive species management training to promote best practice community engagement, planning and management
- developing policies and guidelines that support a consistent approach to planning, operations and enforcement across the state.

State Pest Animal Committee

Agencies that manage land have an important role in the management of invasive species in NSW. These areas include:

- land reserved for its biodiversity, history or scenic value
- land that has a commercial value containing harvestable resources
- land used for the State's infrastructure or transport corridors
- land that has not been claimed for any specific purpose.

Private land managers

Key roles of private land managers in invasive species management include:

- managing invasive species on all lands
- managing risks when trading in potential or known invasive species used for, or held by, nurseries, zoos and collectors, agriculture, horticulture, aquaculture and biofuel developments
- managing vectors or pathways for invasive species to prevent the establishment of invasive species, through movement of goods, produce and equipment or related activities such as the disposal of ships' ballast.

For more information on key roles and responsibilities in pest animal management, please refer to the NSW Invasive Species Plan 2023-2028.

1.8 Incursion management and alert species

We need to work together to ensure early detection and awareness of incursions and alert species can be managed swiftly and effectively. It is important that the community are aware of alert species and remain vigilant and reports any unusual sightings to ensure a rapid management response. Land managers and community members can play a major role in incursion response by reporting any unusual sightings of pest animals in the region.

The *NSW Biosecurity Act 2015* outlines species that are prohibited from being kept in NSW. The table below provides examples of some key alert species for the NSW North Coast region. Eradication is the management goal for each of these species. NSW DPI has responsibility for managing new incursions for all vertebrate and invertebrate species (e.g. Red Imported Fire Ants).

List of alert species known to be found in the North Coast region:

*Note that cane toads are present in parts of the region but managed for prevention under Biosecurity Zone conditions.

Species common name	Scientific name	Species illustrative image
American corn snake	*Pantherophis guttatus* / *Elaphe guttata*	
Cane toad*	*Rhinella marina*	
Red-eared slider turtle	*Trachemys scripta elegans*	

To report an unusual sighting or alert species, please use the following methods:

- Complete the report an unusual animal sighting form
- Phoning the NSW DPI Invasive Plants and Animals Enquiry line at: 1800 680 244
- Email: invasive.species@dpi.nsw.gov.au

For species that are yet to become widely established in NSW, the initial response to incursion reports is managed through consultation between NSW DPI, LLS and the NSW Department of Climate Change, Energy, the Environment and Water.

Where species are widely established in NSW but have spread into a new region, LLS and the North Coast Pest and Weed Advisory Committee with the support of the North Coast Pest Technical Working Group will consider whether local eradication or containment should be attempted.

2. Your role in pest management

Community participation is essential to reduce the impacts of pest animals in your area:

Working together and sharing responsibility is critical to the successful implementation of this Plan. The four principles below will guide the participation of the community, industry, land managers and other stakeholders in pest animal management on the North Coast.

Be alert and report

Monitor and report sightings of any species you have not seen before in your area. Prevention and early intervention to avoid the establishment of new pest animal species is an important part of this pest animal plan and relies on good information from the community.

Participate and work together

Pest animal management is a shared responsibility between land managers, community, industry and government and requires a coordinated approach across all scales and land tenures including public and private lands.

Be committed

Effective pest animal management requires ongoing commitment by land managers, community, government and industry. Those that create the risks associated with pest species and those that benefit from the pest animal management outcomes should help to minimise impacts and contribute to the costs associated with management.

Stay up-to-date

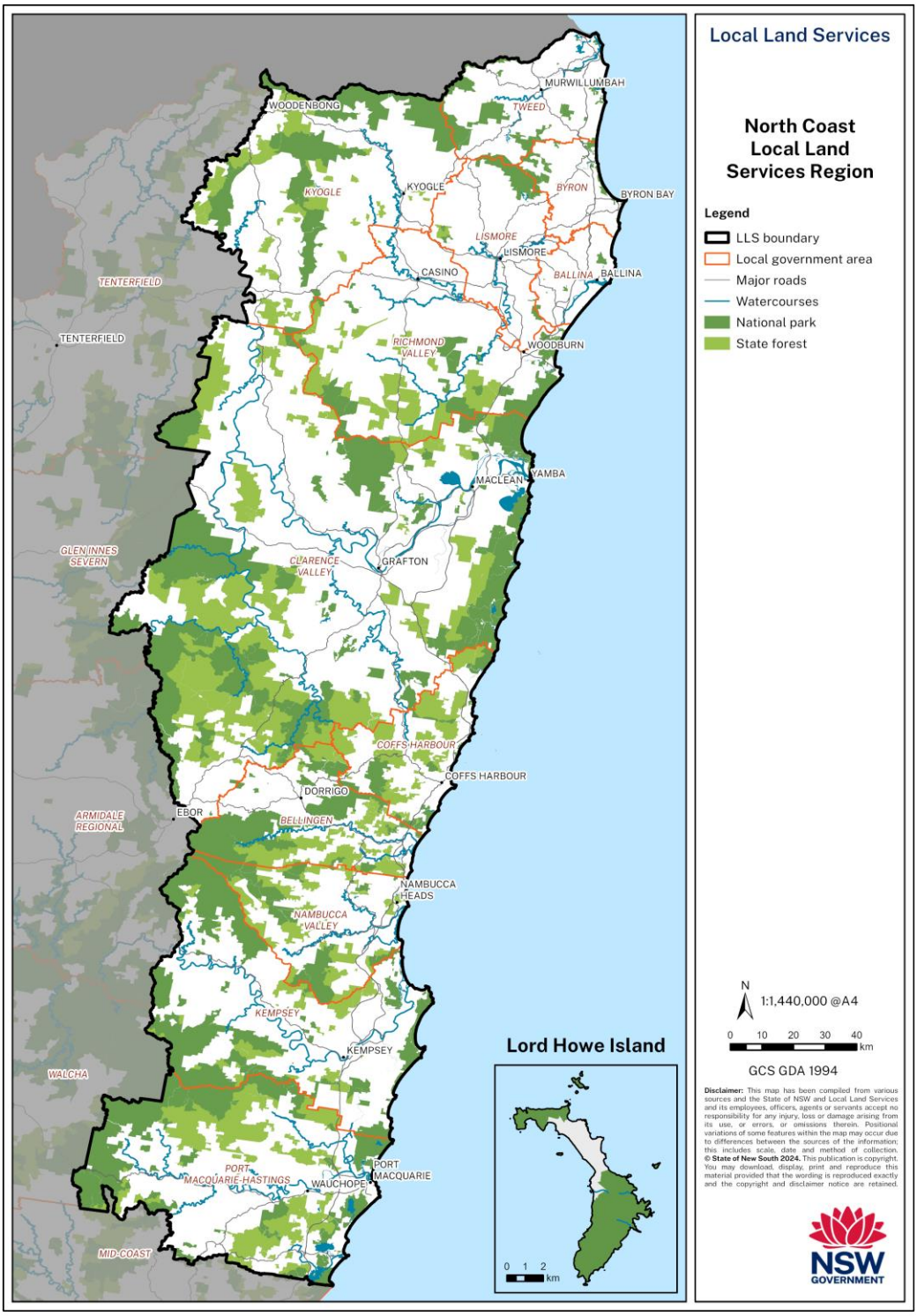
Community, industry, government and land managers should stay up-to-date with new information to ensure that contemporary best practice pest animal management activities are employed to reduce pest animal impacts in a way that is as safe, effective, targeted and humane as possible.

3. Our region

Our population

Approximately 533,000 people reside in the many vibrant towns, villages and communities of the North Coast. The region covers an area of 32,030 square kilometres and its natural setting supports diverse coastal and hinterland lifestyles. An iconic and densely populated coastline provides a focus for recreational pursuits and much sought-after sea change and tree change lifestyles. The major population centres are located on or near the coast and are connected primarily by coastal transport routes. They include Tweed Heads, Lismore, Murwillumbah, Ballina, Byron Bay, Grafton, Coffs Harbour, Macksville, Nambucca Heads, Kempsey, Wauchope and Port Macquarie (Figure 3.1).

Figure 3.1: North Coast Local Land Services Region

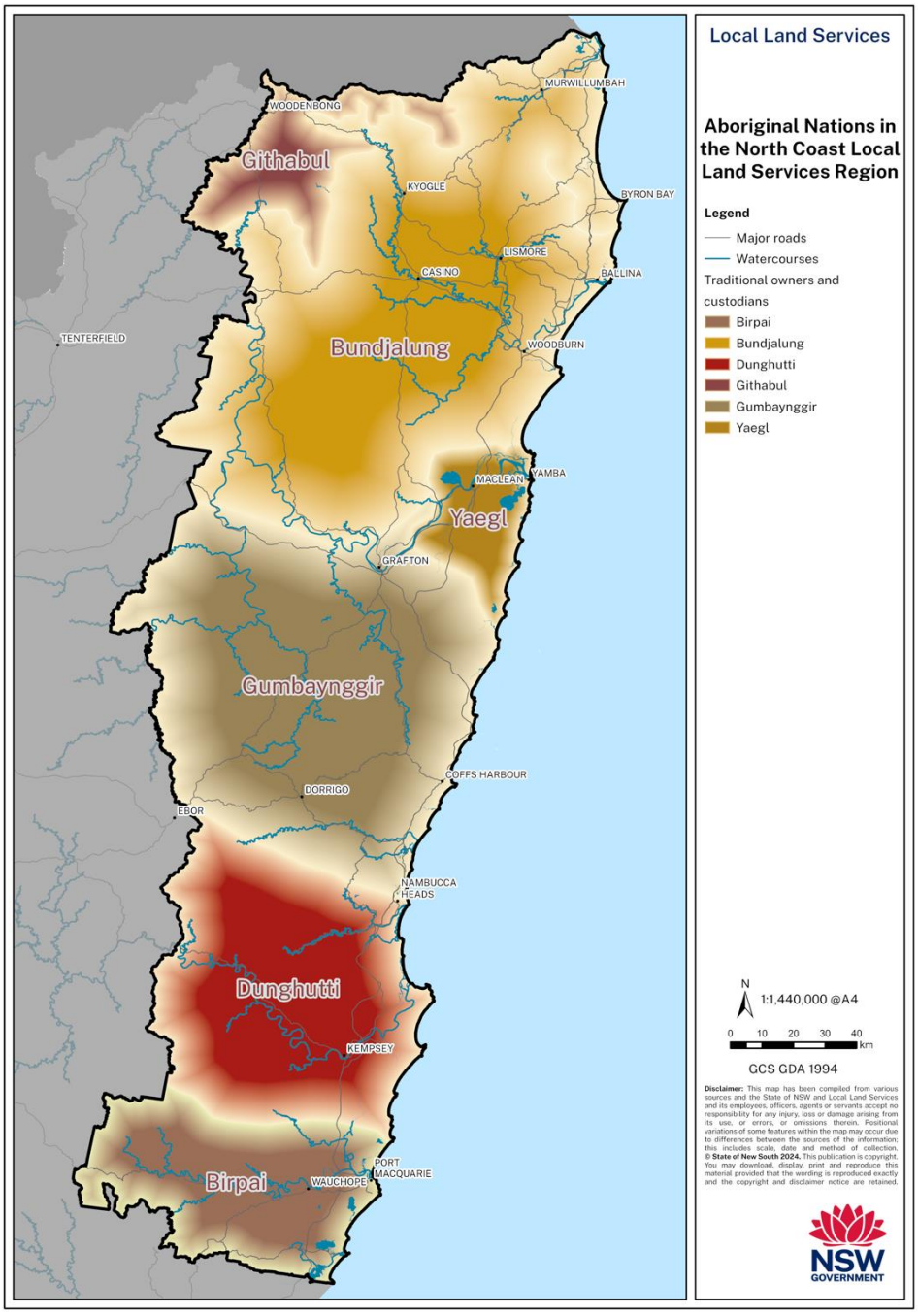


There are 12 local government areas in the region – Tweed Shire, Byron Shire, Lismore City, Ballina Shire, Kyogle Shire, Richmond Valley, Clarence Valley, Coffs Harbour City, Bellingen Shire, Nambucca Shire, Kempsey Shire, Port Macquarie-Hastings, along with the area governed by the Lord Howe Island Board.

Cultural connections

The North Coast region is the traditional home to 6 Aboriginal nations – Bundjalung, Githabul, Yaegl, Gumbaynggirr, Dhungutti and Birpai (Figure 3.2). There are currently approximately 30,000 Aboriginal people on the North Coast which is 6% of the region's population. Our Aboriginal communities have a diverse and complex living culture. Connection to land and waterways is defined through language and song lines, ceremonies, values and beliefs, practices and traditional ways of nurturing country and the plants and animals it contains. Throughout the region there are cultural sites, special places and physical evidence of traditional land use.

Figure 3.2: Aboriginal Nations in the North Coast Local Land Services Region

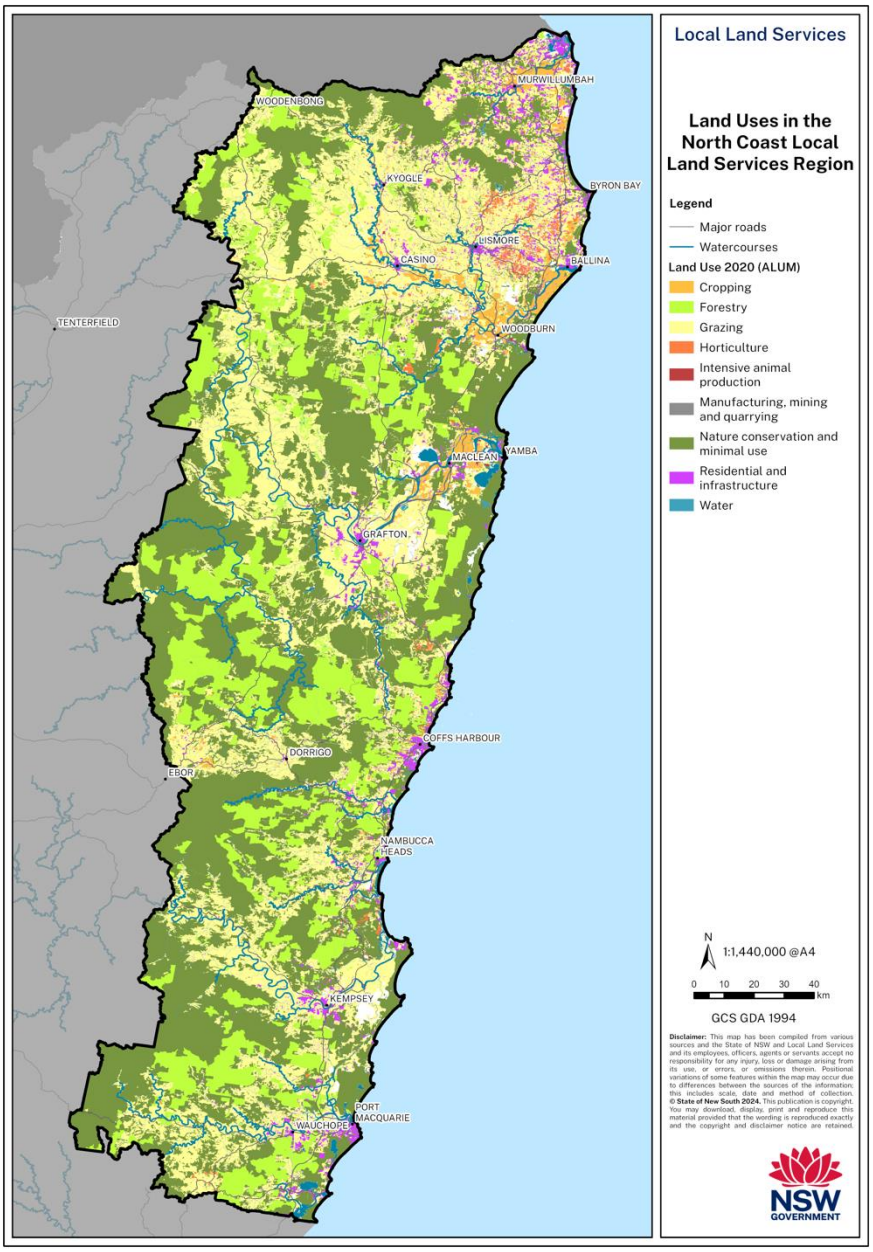


There are eight Registered Native Title Bodies Corporate, 23 Local Aboriginal Land Councils and numerous other organisations representing Traditional Owners, reflecting the diversity of the region's communities. Five Indigenous protected areas contain biodiversity and cultural resource values and almost 6% of the region is subject to determined (non-exclusive) Native Title.

Landscapes

A diversity of natural landscapes, soil systems, vegetation formations and corridors, and the mix of temperate and subtropical climates support the region's nationally recognised biodiversity, wilderness and wetland areas (Figure 3.3).

Figure 3.3: Land Uses in the North Coast Local Land Services Region



The escarpment ranges and midland hills to the west support the headwaters of the 9 large river systems that drain onto extensive coastal alluvial floodplains, which have intricate connections to headland, beach, estuarine and marine environments along the region's 568 km of coastline. North Coast region is home to 50% of NSW's marine parks – Cape Byron, Solitary Islands and Lord Howe Island.

The North Coast region includes one of Australia's 15 biodiversity hotspots – the Border Ranges Hotspot – considered to be the most biodiverse area in NSW. The North Coast region also includes two World Heritage Areas – the Gondwana Rainforests and the Lord Howe Island Group.

While a significant proportion of the region is within terrestrial and marine protected areas, and much of the region's native vegetation remains (Figure 3.3), there are many state and nationally listed threatened species and endangered ecological communities. Private land conservation is critical to the management of these threatened entities.

22,500	Approx. number of rateable holdings 10 hectares or above.
82%	% of landholders that have 100 hectares or less
75%	% of region covered by native woody vegetation
20%	% of region under National Park and Reserved State Forest
12%	Area of region as Unreserved State Forest
64%	% of region as Crown land, urban and other private land
1.1%	% owned Aboriginal land
28%	% of the region's production land under beef cattle grazing (18% of the region's overall land use)
$2.5b	Contribution of North Coast agribusiness to NSW economy

The region has a diverse economy that reflects the provision of services to an ageing population, agricultural production, those who chose to live here for lifestyle reasons and the popularity of the North Coast as a tourist destination.

The North Coast supports a range of natural resource-based industries that underpin the prosperity of the region. These include the beef, dairy, blueberry, macadamia, sugar, bananas, intensive horticulture, fishing and aquaculture, timber production and tourism industries (Figure 3.3).

Lord Howe Island

The region includes the World Heritage listed Lord Howe Island Group located 585 km east of Port Macquarie (Figure 3.1). The main island is 1,455 hectares in area with outstanding natural landscapes and rich biodiversity. This plan adopts the goals, priorities and directions set by the Lord Howe Island Biosecurity Strategy 2022-2024 and the Lord Howe Island Biosecurity Plan (as well as all subplans, including the Lord Howe Island Quarantine Plan, Surveillance Plan and Incursion Response Plan) which were developed by the Lord Howe Island Board. The outcomes and actions detailed in these plans have been communicated to the Island's community (Lord Howe Island Board 2022).

The key aim of the Strategy and plans is to reduce the likelihood of invasive species introduction to the island, conserve its pest-free status, and create a guardianship culture within the Lord Howe Island Board and the community to ensure the highest quality biosecurity for Lord Howe Island.

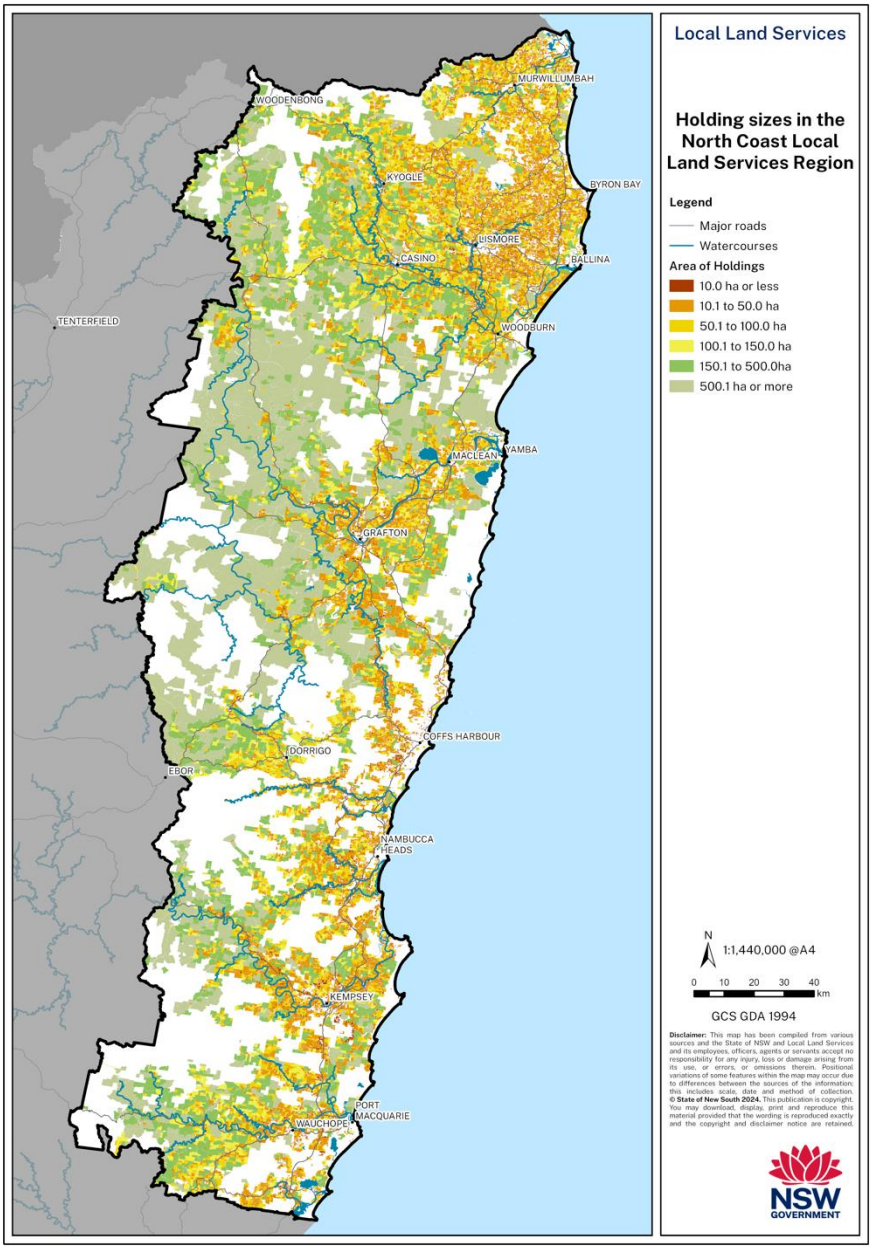
The Lord Howe Island Board is the key agency responsible for implementing the Strategy's pest animal management plans and programs. Successful projects have seen the eradication of feral pigs, feral cats, feral goats, African Big-headed Ant and more recently the Black Rat and House Mouse and Myrtle Rust (Puccinia psidii). Eradication projects are also currently in place for the Masked Owl (Tyto novaehollandiae), re-incursion of the African Big-headed Ant (Pheidole megacephaly), and the containment of the root rot fungus Phytophthora cinnamomi.

Key risks to the region

This Plan recognises the many threats to the North Coast, including habitat loss caused by growing population and expanding production activities; changing land use; the need to offset carbon emissions; new and existing biosecurity risks including the secondary risks posed by some of our pests (e.g. the spread of foot and mouth disease by feral pigs, feral deer and feral goats); diffuse source water and sediment pollutants; altered fire regimes; production decline, the cumulative impacts of recent drought, fire, flood, biodiversity decline, and the increasing frequency and severity of natural disasters.

There are numerous small rural properties and peri-urban areas (Figure 3.4). Many beef, dairy and horticulture (e.g. blueberries which have expanded across the region) properties are relatively small and often supported by off-farm income. The region remains popular for those seeking a lifestyle change with many of these landholders unaware of how to manage their land for biosecurity and other risks.

Figure 3.4: Holding sizes in the North Coast Local Land Services Region



An involved North Coast community

For this plan to succeed it is essential that all pest programs continue to be based on partnerships, participation and collaboration with a wide range of landholders, community members and government stakeholders.

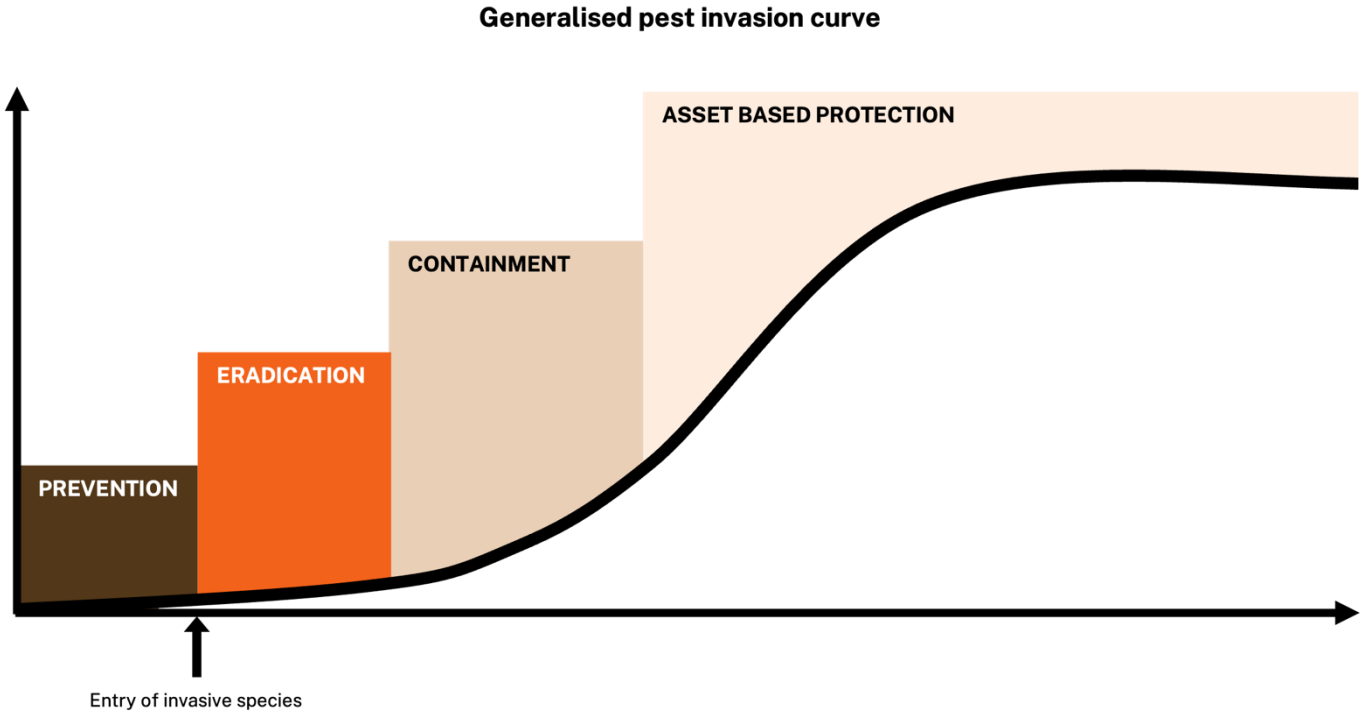
The North Coast pest management community are informed and engaged via a wide range of networks, programs and events and have an active involvement in the management of pests across the region, including:

- The North Coast Pest and Weed Advisory Committee facilitates planning and prioritisation, collaboration and partnerships, and program coordination and review (Appendix 2).
- The North Coast Pest Technical Working Group identifies technical and operational issues and makes recommendations on solutions to the North Coast Pest and Weed Advisory Committee (Appendix 2).
- The North Coast LLS Agriculture Advisory Group brings stakeholders together to discuss local issues and share industry perspectives on best practice including pest management.
- The community is encouraged to report new and notifiable pest incursions via pest alerts, social media, media releases and other platforms.
- Face-to-face community field days, workshops and focus groups are delivered by pest professionals across the region.
- Formal and informal local pest management groups come together to plan and implement pest management at a local level where issues arise.
- Landholders participate in face to face or online LLS Vertebrate Pest Training courses.
- Government and industry organisations develop community partnerships to combat pest issues.
- Rural industry groups provide a forum for biosecurity issues to be discussed and opportunities for pest education and information to be provided to members.
- Landholders actively manage pests and implement pest management practices on privately owned land.

4. Managing pest animals

The following section details the management categories that should be used to minimise and mitigate the impact pest animals have on the community, environment and primary industries.

Figure 4.1: The 'Invasion curve' showing the importance of allocating resources to prevent the establishment of new pests. (Agriculture Victoria)



Economic returns (indicative only)

1:100 PREVENTION	1:25 ERADICATION	1:5-10 CONTAINMENT	<1:1-5 ASSET BASED PROTECTION

Definitions and responsibilities (indicative only)

PREVENTION	ERADICATION	CONTAINMENT	ASSET BASED PROTECTION
DEFINITION: to prevent the pest animal species arriving and establishing in the region causing adverse impacts on the environment, society and the economy. ALL LAND MANAGERS RESPONSIBILITIES: To understand report any sightings of alert species.	DEFINITION: To permanently remove the species from the state or region and to develop actions to prevent its re-establishment. ALL LAND MANAGERS RESPONSIBILITIES: To participate in coordinate programs and stay up-to-date with current information on pest animals in the region.	DEFINITION: To prevent the spread of pest animal species onto other parts of the state or region. ALL LAND MANAGERS RESPONSIBILITIES: To participate in coordinated programs, stay up-to-date and apply best practice pest animal management practices.	DEFINITION: To reduce the impact of widespread pest animals on key assets with high economic, environmental, and social value. ALL LAND MANAGERS RESPONSIBILITIES: To participate in coordinate programs, stay up-to-date and apply best practice pest animal management practices. Ensure practices are coordinate with the wide community.

Table 4.1: List of priority species mapped against their category in the 'Invasion curve'

Icon	Common name	Management category	Section in plan
N/A	Alert species	**PREVENTION**	1.8
	Cane toad	**ERADICATION**	5.1
	Feral horse	**ERADICATION**	5.2
	Cane toad	**CONTAINMENT**	5.1
	Feral deer	**CONTAINMENT**	5.3
	Feral goat	**CONTAINMENT**	5.4
	Feral horse	**CONTAINMENT**	5.2
	Feral pig	**CONTAINMENT**	5.5
	Cane toad	**ASSET BASED PROTECTION**	5.1
	Pest bird (Indian myna)	**ASSET BASED PROTECTION**	5.6
	Feral cat	**ASSET BASED PROTECTION**	5.7
	Feral deer	**ASSET BASED PROTECTION**	5.4
	Wild dog	**ASSET BASED PROTECTION**	5.8
	European red fox	**ASSET BASED PROTECTION**	5.9
	Feral pig	**ASSET BASED PROTECTION**	5.5
	Wild rabbit	**ASSET BASED PROTECTION**	5.10

4.1 Identifying the region's pests

A review was undertaken of the appropriateness of the list of pests managed under the current pest plan (North Coast LLS 2017) and whether there was a need to include or remove other species that do, or have the potential to, impact the North Coast region.

4.2 Identifying pest management goals

Pests are regulated under the NSW *Biosecurity Act 2015* according to the risk they pose to the environment, community and economy. The pest management goals and strategies captured in this Plan vary for each of the ten pest species, reflecting:

- the level of risk and the feasibility of control
- what is required to mitigate the degree of risk posed
- what is reasonably practicable
- the need to deliver flexible and non-prescriptive responses.

The generalised 'pest invasion curve' (Figure 4.1) illustrates the invasion stages of pests from arrival to widespread establishment while showing that the effort and resources required to control a pest rise with time and area occupied. The curve demonstrates the principle that:

> *Managing new pests earlier rather than later is the most efficient and cost-effective way to protect local communities, environments and industries from the impacts of pests in the long term.*

Identifying where the region's pests fit on the invasion curve was determined by the assessment of level of pest risk (by scoring invasiveness, impacts, and potential distribution) and feasibility of pest control (by scoring control costs, persistence, and current distribution) using modified methods drawn from the South Australian Pest Animal Risk Management Guide (Biosecurity South Australia, 2010).

This approach provided a standardised, transparent, accepted, repeatable and evidence-based approach to defining pest management goals on the North Coast.

The alignment of North Coast's ten pest species to the Regional Management Categories (i.e. Prevention, Eradication, Containment, Asset Based Protection) of the 'pest invasion curve' is shown in Table 4.1. Note that section 5 details the programs that will be delivered to manage these pests.

5. Priority pest species

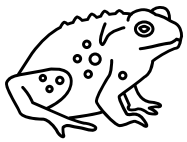
Pest animals for the North Coast have been prioritised based on level or risk and feasibility of control assessed through prioritised guidelines using the South Australian Pest Animal Risk Management Guide and prioritisation tool (see Appendix 1). Priority species listed below have been sorted into management categories and further strategies and actions are detailed.

Pest animal management is most effective when it employs an integrated program of different tools and techniques. In this plan:

- **Primary control** refers to activities that can achieve rapid pest population knockdown over large areas in a cost-effective way.
- **Supplementary control** refers to activities that are generally only effective in helping to maintain pest population suppression once densities have already been reduced to low levels.

5.1 Cane toad

ERADICATION | **CONTAINMENT** | **ASSET BASED PROTECTION**



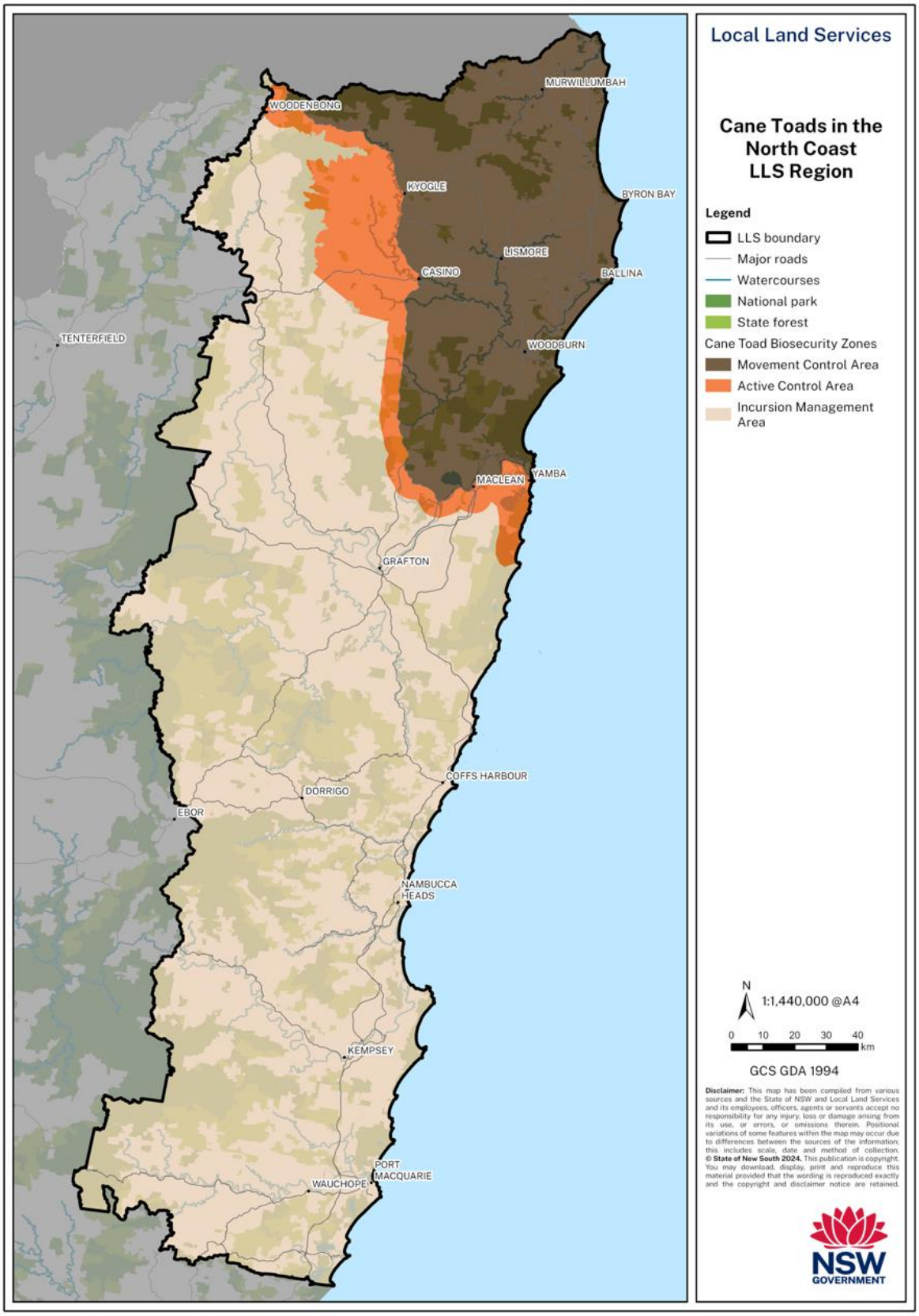
Key stakeholders	Responsibilities
LLS	• Develop a Regional Annual Cane Toad Operations Plan • Assist NSW DPI with cane toad incursions into the incursion management area of the North Coast LLS region
Private landholders	• Report any cane toad sightings, undertake cane toad control and prevent the spread of cane toads from the land within the active control area and incursion management area onground control in the movement control area where there is a risk of cane toad impacts to priority cultural, ecological and community assets • Prevent the spread of cane toads into the NSW cane toad biosecurity zone
NSW DPI	• Provide a NSW cane toad management strategy to guide investment and effort by the NSW government and non-government organisations in abating the impacts of cane toads across their known and anticipated range in NSW • Increase awareness and community capacity to effectively manage cane toads, minimise their impacts and prevent their further spread in NSW • Coordinate cane toad incursion responses in the cane toad incursion management area • Report on the outcomes of the NSW Cane Toad Management Strategy and provide recommendations for strategy modifications where necessary
Public land managers	To fulfil general biosecurity duty: • Reporting any cane toad sightings and undertaking control within the active management area and incursion management area • On ground control to protect environmental assets in movement control area.
Community engagement	
North Coast LLS **NSW DPI** **Public land managers** **DCCEEW/ NPWS** **Landcare**	• Run education and awareness programs including land manager obligations under the *Biosecurity Act 2015*.

Distribution

Cane toads (Rhinella marina) are considered a serious non-native invasive pest in NSW. The species can cause devastating impacts on our communities, native wildlife and ecosystems due to their ability to spread to new areas, use limited natural resources and to poison animals that try to eat them. The invasion and establishment of the cane toad in NSW has been identified as a 'key threatening process' under the *Biodiversity Conservation Act 2016*. Cane toad populations are considered endemic in far north-east coast of NSW. Although there is currently no broadscale method of controlling cane toads, high-value assets can be protected through localised

cane toad control efforts. The NSW cane toad biosecurity zone was established under the *NSW Biosecurity Act 2015* to prevent the otherwise inevitable further spread of cane toads into NSW and to provide protection from cane toads for vulnerable cultural, ecological and community assets across the vast majority of NSW that has escaped the impact of cane toads to date (Figure 5.1.1).

Figure 5.1.1: Cane toads in the North Coast LLS Region distribution map



Assets and threats

Assets and threats that will be managed include:

- **Social:** Minor impact on unaware humans, threat to domestic and working pets, Aboriginal cultural and environmental heritage
- **Environmental:** Priority conservation areas (e.g. Bundjalung NP, Nightcap NP, Border Ranges NP); ecological values of Ramsar Wetlands, Gondwana Rainforests, Littoral Rainforest and coastal vine thickets; potential sites of spread (e.g. Lake Innes NR, Yuragir NP, Hat Head NP); lethal toxic ingestion by threatened species (e.g. Spotted-tailed Quoll, Pale-headed Snake, Stephens' Banded Snake, frog species)
- **Economic:** Impact on apiary industry, horticulture, livestock and eco-tourism.

Management goal

The management goals for the cane toad are determined by the Biosecurity Zone criteria established under the Biosecurity Regulation. The Biosecurity Zone has been mapped by the NSW DPI and consists of 3 management areas (Figure 5.1.1). The NSW DPI are currently working with stakeholders to revise the Zone boundaries. An updated map is expected in mid-2024.

The Movement Control Area defines the area of NSW where cane toads have either been introduced or are now significant in density that an asset protection approach is considered the most cost-effective option of control. This area is defined by the Clarence River in the south, the QLD/NSW border to the north and by Toonumbar, Mallanganee and Richmond Range National Parks.

The Cane Toad Biosecurity Zone is comprised of two areas:

- The Active Control Area which aims to focus available management resources at the frontline of the cane toad invasion to prevent the further spread of cane toads into NSW due to the invasive nature of the species
- The Incursion Management Area covers the rest of NSW. The management goal for this area is complete eradication of incursions.

Regional management focus

The location of the Cane Toad Biosecurity Zone requires North Coast LLS to maintain an active role in cane toad management. In the absence of biological or other controls to achieve eradication or significant reduction, the focus of regional management is to:

- minimise cane toad impacts on priority cultural, ecological and community assets vulnerable to cane toads in the Movement Control Area
- coordinate available cane toad management resources at the frontline of the cane toad invasion – Active Control Area to prevent the further spread of cane toads into NSW.
- build community capacity to identify, report and strategically control cane toads on the North Coast.

Expectations of land managers

Land managers as well as community members and visitors to the North Coast LLS area can reduce the biosecurity risks of cane toads by undertaking the following activities:

- In the Movement Control Area:
    - Control cane toads where there is a risk of impacts to priority cultural, ecological and community assets, prevent the spread of cane toads into the Cane Toad Biosecurity Zone.
- In the Active Control:
    - Report the presence of cane toads
    - Prevent the spread of cane toads from the land
    - Participate in individual or coordinated control programs to continually suppress and destroy cane toads.
- In the Incursion Management Area:
    - Prepare for a cane toad incursion – ensure identifications, capture and reporting skills are in place
    - Report the presence of cane toad incursions through appropriate reporting mechanisms
    - Prevent the spread of cane toads from the land.

Examples of activities a land manager could undertake to achieve to these outcomes are:

- participating in coordinated pest animal surveillance and control programs, training workshops and community awareness campaigns
- undertaking proactive management activities that incorporate both initial and follow up pest animal control
- reporting any cane toad activity (sightings, signs of presence, impacts) to neighbours in the Biosecurity Zone (Active Control Area and Incursion Management Area), and to their local LLS Biosecurity Officer, and/or the NSW DPI Invasive Plants and Animals Enquiry Line, ph: 1800 680 244, and/or using the FeralScan app/website: www.feralscan.org.au.

Cane toad management Programs

Management category	Program area	Controls and timeframes
Asset Based Protection	• Movement Control Area (Established Population Area)	• Tadpole trapping (Oct – Mar) • Hand collection (Oct – Mar) • Cane toad Trapping (Oct – Mar) • Exclusion Fencing
Containment	• Active Control Area	• Tadpole trapping (Oct – Mar) • Hand collection (Oct – Mar) • Cane toad Trapping (Oct – Mar)
Prevention / Eradication	• Incursion Management Area	• Tadpole trapping (Oct – Mar) • Hand collection (Oct – Mar) • Cane toad Trapping (Oct – Mar

5.2 Feral horse

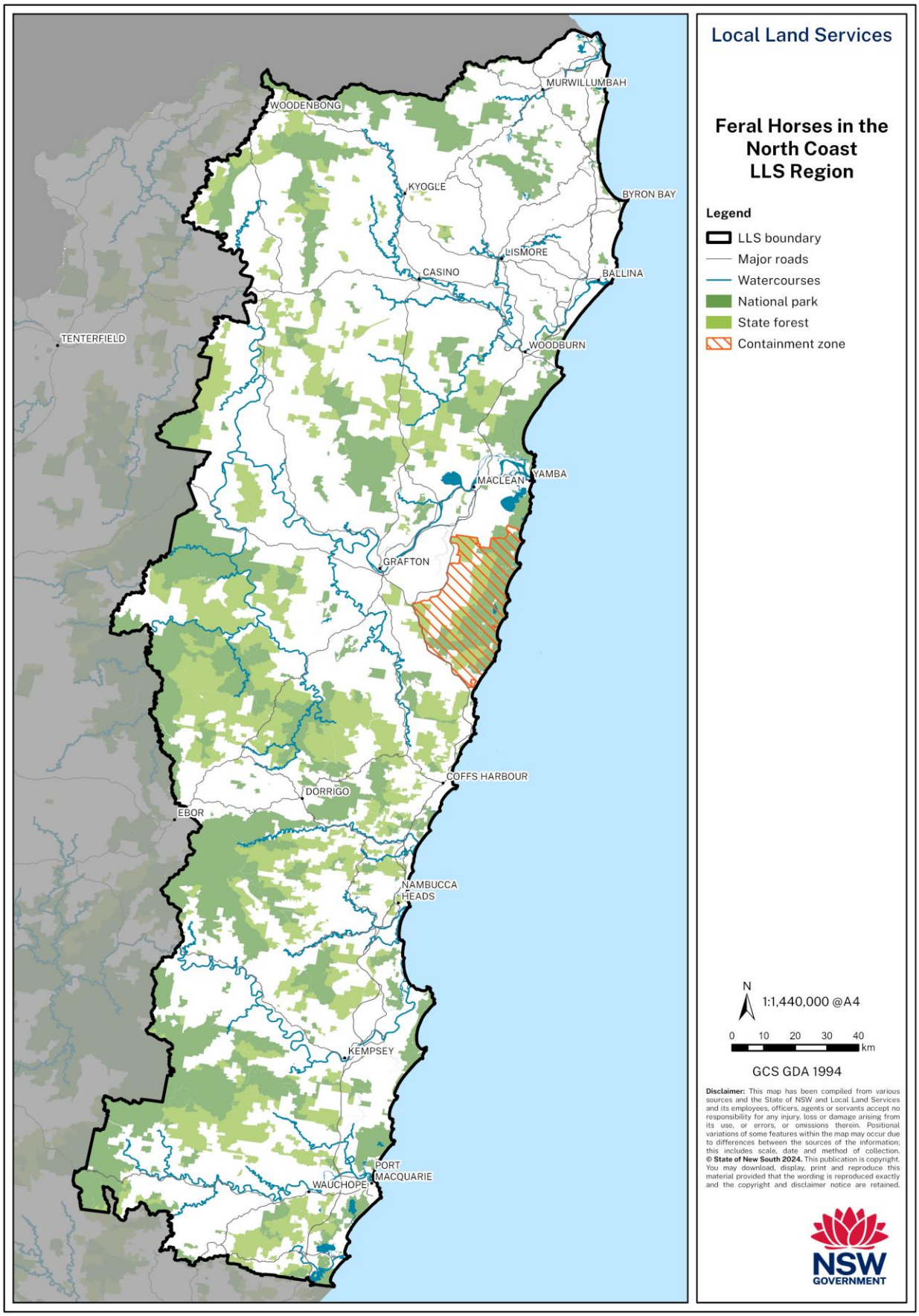
ERADICATION | **CONTAINMENT**

Key stakeholders	Responsibilities and expectations
LLS	• Manage the feral horse general biosecurity direction and implementation of the Feral Horse General Biosecurity Direction Plan. • Educate landholders on the risks feral horses pose and training landholders in feral horse control. • Provide assistance to landholders who don't have the capacity to remove feral horses within the Clarence / Coffs Wild Horse Control Area.
Private landholders	• Notify LLS on the presence of feral horses and complete the feral horse general biosecurity direction schedule 3 if located within the Clarence / Coffs Wild Horse Control Area.
NPWS	• Undertake control on NPWS lands to minimise the risk of impacts and fulfil their general biosecurity duty. • Comply with the general biosecurity direction within the Clarence / Coffs Feral Horse Control Area.
Public land managers	To fulfil general biosecurity duty: • Notify LLS of the presence of feral horses when sighted on public land. • Comply with the general biosecurity direction within the Clarence / Coffs Feral Horse Control Area.
Community engagement	
North Coast LLS **DPI** **DCCEEW/NPWS** **Public land managers** **RSPCA**	• Develop communications that are sensitive to community views on feral horses. • Run public awareness/notification campaigns for the General Biosecurity Duty area.

Distribution

Within the North Coast region, there is a feral horse population in the Clarence / Coffs area and the Guy Fawkes population has reportedly grown to approximately 1,600 horses (Figure 5.2.1).

Figure 5.2.1: Feral horses in the North Coast LLS Region distribution map



Assets and threats

Assets and threats that will be managed include:

- **Social:** Human safety; traffic safety (e.g. Pacific Highway); polarised community views on feral horse control (e.g. local heritage value of the Guy Fawkes population), impacts to domestic horses.
- **Environmental:** Trampling, erosion, soil compaction and seed spread; changes to composition, structure and function of biodiversity, wetlands; competition with native herbivores.
- **Economic:** Damage to fencing; trampling and erosion of rural lands, damage to production of crops and horticulture.

Management goal

The goal of feral horse management at the regional scale is Containment in the Guy Fawkes area and Eradication in the Clarence Coffs region.

Regional management focus

Feral horses can be a threat to humans and road safety. They can also have serious impacts on vegetation, wetlands, streams and native animals and landscapes, especially in sensitive environments. Community perspectives on feral horses in the environment vary considerably and there is a low tolerance for anything but the most humane management methods.

The focus of regional feral horse management will be to:

- support development, trial, implementation, and awareness of humane control practices
- increase public safety and reduce traffic impacts of feral horses
- manage the impacts of the two existing feral horse populations
- execute the requirements of the Feral Horse General Biosecurity Direction.

Expectations of land managers

All land managers can reduce risks from feral horse populations on land under their care and control, by undertaking primary control activities:

- Where the management goal is eradication:
    - Alert LLS to the presence of feral horses
    - Complete the Feral Horse General Biosecurity Direction Schedule 3 if located within the Clarence / Coffs Feral Horse Control Area
    - Undertake eradication control on lands to remove the risk of impacts.
- Where the management goal is containment:
    - Reduce the risk of feral horses breeding on or being introduced to their land
    - Reduce the risk of feral horses being released into the environment
    - Reduce the negative impacts of feral horses on priority assets on their land and neighbouring lands.

Examples of activities a land manager could undertake to achieve to these outcomes are:

- participating in coordinated pest animal control programs
- undertaking management activities that incorporate both initial and follow up pest animal control.
- reporting any feral horse sightings or activity outside the mapped distribution to their local LLS Biosecurity Officer on ph: 1300 795 299, and any road related incidents or near misses to local police.

Feral horse management framework

Management goal	Program area	Controls and timeframes
Eradication	• Clarence / Coffs Feral Horse Management Plan 2023-2025	• Trapping and removal for rehoming • Trapping and euthanasia • Ground shooting
Containment	• Guy Fawkes area	• Develop and implement pest management plan to meet General Biosecurity Duty

5.3 Feral deer

CONTAINMENT

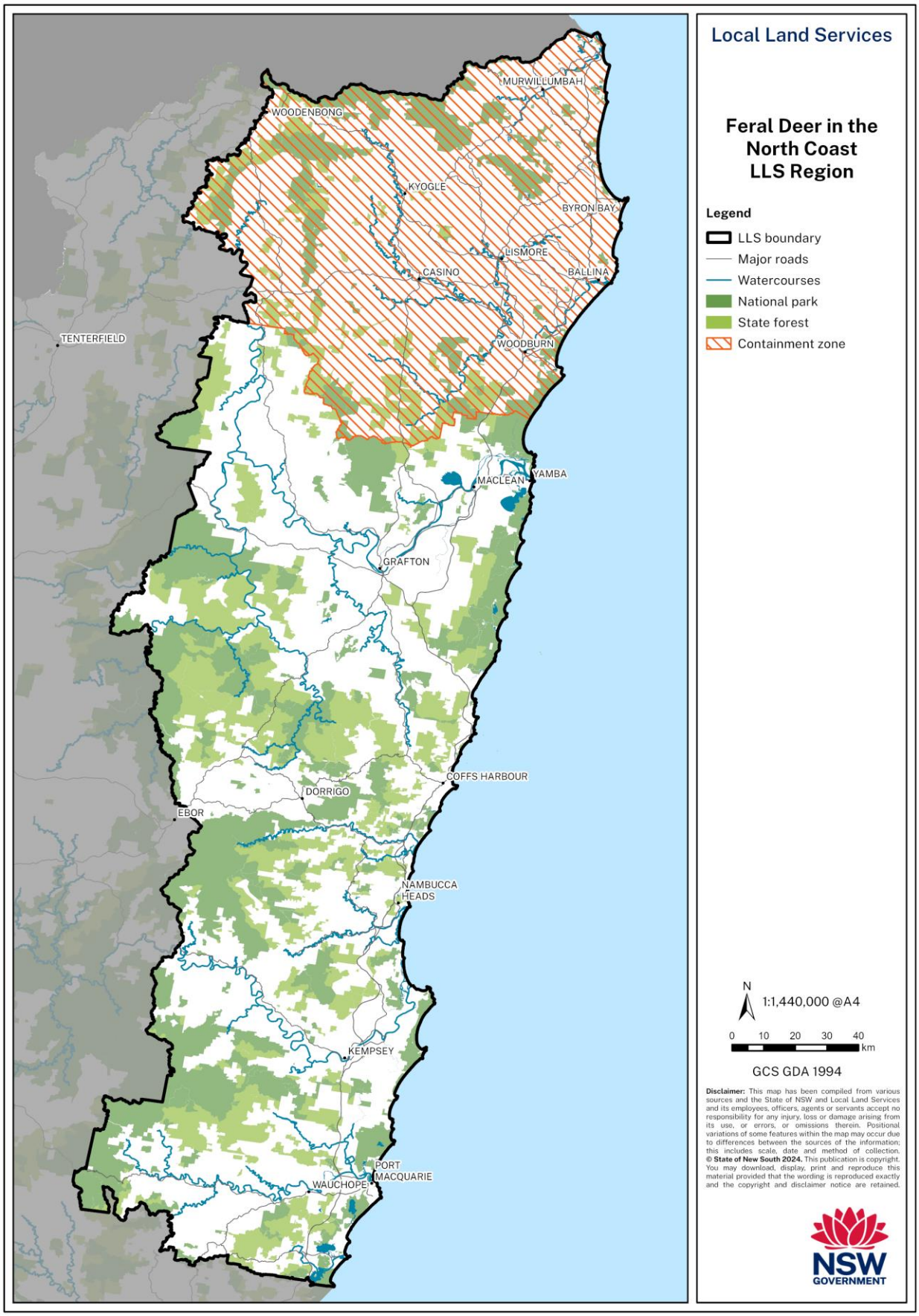
Key stakeholders	Responsibilities and expectations
LLS	• Develop an annual Regional Feral Deer Operations Plan which guides local control programs • Provide assistance to landholders who have limited capacity to control feral deer • Lead control programs being implemented in urban settings • Educate landholders on feral deer risks and training landholders in deer control
Private landholders	To fulfil general biosecurity duty: • Report feral deer presence to LLS • Undertake control on private lands to minimise the risk of impacts and fulfil general biosecurity duty
Public land managers	To fulfil general biosecurity duty: • Report feral deer presence to LLS • Undertake control on public lands to minimise the risk of impacts and fulfil general biosecurity duty
Community engagement	
North Coast LLS **NSW DPI** **Local Government** **Hunting and shooters clubs** **Public land managers** **Rural industries**	• Establish feral deer management groups • Run education and awareness programs (e.g. land manager obligations under the *Biosecurity Act 2015*, reporting all sightings, risks of spread by 'seeding' areas with feral deer, pest vs desirable or game animal issues)

Distribution

Feral deer are present across most of the North Coast LLS region apart from the far north where there are currently no known established populations (Figure 5.3.1). 5 feral deer species occur in the region including rusa deer, chital deer, fallow deer, sambar deer and red deer. Hog Deer are currently not established in the North Coast region.

While there are some differences in habitat preferences, behaviours and distributions, there are some overlaps in distributions and the control techniques are the same for all deer species, and so North Coast treats all species as equal, adopting the same management approach for all species. There are significant Feral Deer populations around Port Macquarie with populations in the Upper Macleay Valley, Nambucca and Nana Glen – Bucca – Woolgoolga area, and a chital deer population near Coffs Harbour. National Parks and Wildlife Service have reports of isolated sightings in other areas (Guy Fawkes River, Cathedral Rocks, Bellinger River, and New England National Parks).

Figure 5.3.1: Feral deer in the North Coast LLS Region distribution map



Assets and threats

Assets and threats that will be managed include:

- **Social:** Traffic hazards and accidents, trampling gardens, aggressive behaviour to people and pets
- **Environmental:** Grazing and trampling modifies the composition, structure and function of native vegetation, threatened species and communities and habitats, waterways
- **Economic:** Damage to horticulture, vineyards, commercial gardens, crops, fences, aggressive to livestock; spread of disease (including the risk of foot and mouth disease).

Management goal

The goal of feral deer management at the regional scale is asset based protection (manage pest animal populations) and containment for local non-established feral deer population areas.

Regional management focus

Feral deer herbivory and environmental degradation are recognised as a key threatening process in NSW (NSW Scientific Committee 2005). Feral deer management is a high priority due to their impacts on human safety, native environments, threatened species and ecological communities, and rural and horticulture production systems.

Managing their numbers and impacts is hindered by the limited number of effective controls available and a range of community perceptions about their status as a pest versus valuable resource. Many land managers do not have the ability or suitable firearms to undertake shooting successfully. In the absence of alternate control methods, government is currently required to play a large role in coordinating on ground deer control.

The main aims of North Coast feral Deer management are to:

- increase the effectiveness of control methods available, especially around urban and peri-urban areas
- implement the priority actions of the Hastings Feral Deer Management Plan (North Coast LLS 2020)
- support research for the approval of a humane toxin which will provide an additional control tool
- manage other high priority populations of feral deer in the region
- raise public awareness of the negative impacts of these pest animals
- better understand the biosecurity threat posed by feral deer, and the nature of their impacts on agriculture.

Expectations of land managers

All land managers can reduce risks from feral deer populations on land under their care and control, by undertaking primary control activities:

- Where the management goal is containment:
  - Minimise or eliminate the impacts of feral deer on their land
  - aim to destroy local feral deer populations where that is feasible
  - prevent the spread of feral deer onto other parts of the region.
- Where the management goal is asset protection:
  - Reduce the risk of feral deer being released into the environment
  - reduce the risk of feral deer accessing easy food and shelter on their land
  - reduce the negative impacts of feral deer on priority assets on their land and neighbouring lands.

Feral deer management framework

Management goal	Program area	Controls and timeframes
Asset based protection	• Peri Urban Feral Deer Trapping Programs	• Trapping (corral and clover traps) • Ground shooting • Aerial shooting
Asset based protection	• North Coast Feral Deer Control	• Ground shooting • Aerial shooting • Trapping (corral and clover traps)
Containment	• Non-Established Feral Deer Population Control	• Ground shooting • Aerial shooting • Trapping

5.4 Feral goat

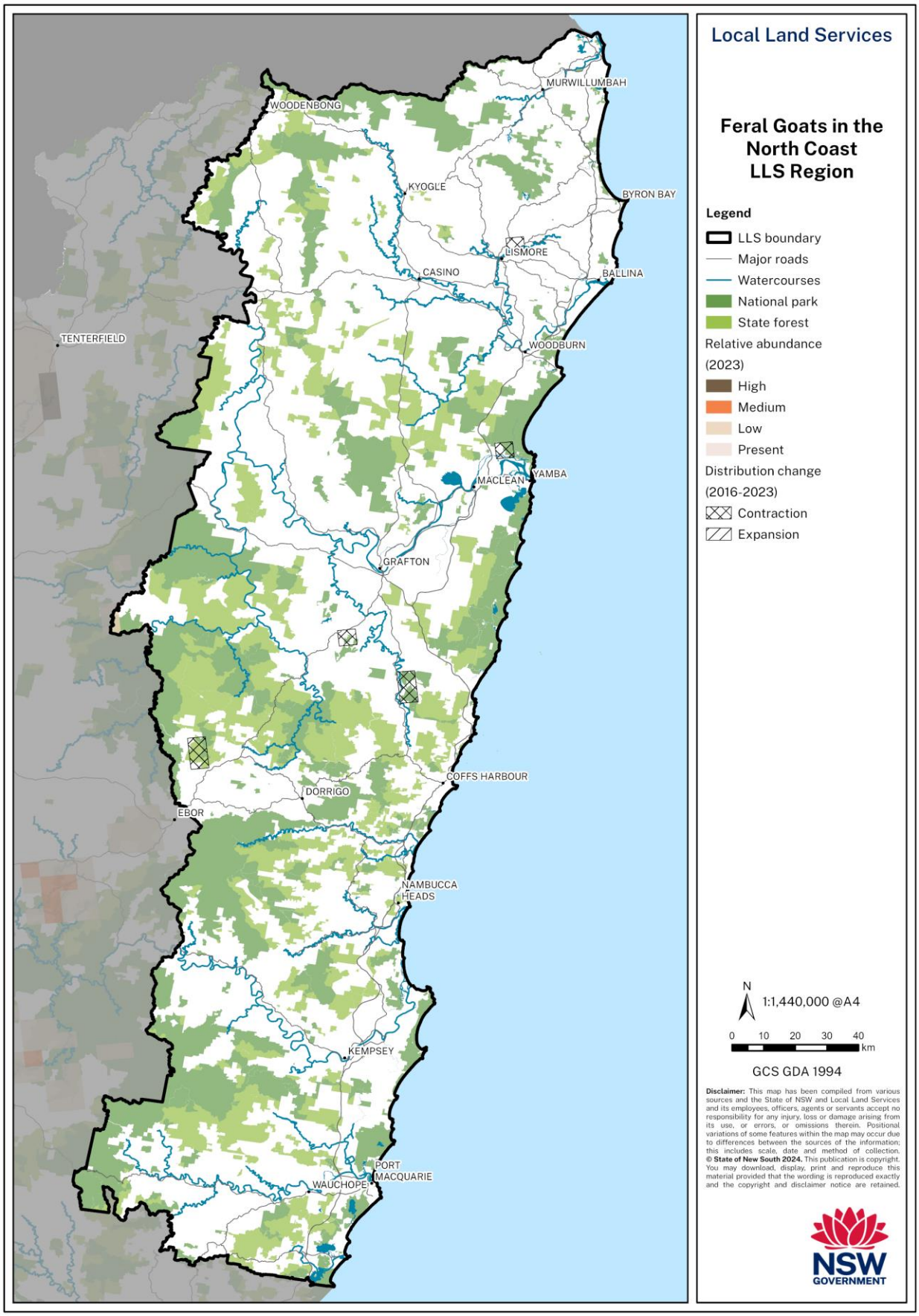
CONTAINMENT

Key stakeholders	Responsibilities and expectations
LLS	• Develop a Regional Annual Feral goat Operations Plan which guides local control programs. • Educate landholders on the risks feral goats pose and training landholders in feral goat control
Private landholders	To fulfil general biosecurity duty: • Report feral goat presence to LLS • Undertake control on private lands to minimise the risk of impacts and fulfil general biosecurity duty
Public land managers	To fulfil general biosecurity duty: • Report feral goat presence to LLS • Undertake control on public lands to minimise the risk of impacts and fulfil general biosecurity duty
Community engagement	
North Coast LLS **Public land managers**	• Run education and awareness programs (including land manager obligations under the *Biosecurity Act 2015*, advice on goat-proof fencing, and risks of using goats as an 'indicator' for wild dog activity around sheep herds)

Distribution

There are unconfirmed isolated populations of feral goats in the North Coast LLS region and those populations are likely to be at relatively low densities (Figure 5.4.1). National Parks and Wildlife Service has reported recent sightings in areas outside the NSW DPI mapping. These sites are Clarence estuary islands (not National Park), and Mt Neville Nature Reserve – Banyabba area. Most of the region is free of goats. Feral goat competition and habitat degradation are recognised as a key threatening process in NSW (NSW Scientific Committee 2004).

Figure 5.4.1: Feral Goats in the North Coast LLS Region distribution map



Assets and threats

Assets and threats that will be managed include:

- **Environmental:** Grazing and trampling modifies the composition, structure and function of threatened ecological communities, threatened species and habitats; competition with rock wallaby populations
- **Economic:** Damage to fencing, disease in beef and dairy herds (including the risk of foot and mouth disease).

Management goal

The goal of feral goat management at the regional scale is containment.

Regional management focus

Feral goats are a potentially significant agricultural and environmental pest, compete with livestock for pasture, contribute to land degradation through grazing and browsing, and impact on biodiversity. Due to their isolated occurrence in the region, the emphasis of regional feral goat management is to:

- prevent the spread of the existing isolated populations into other parts of the region
- develop cooperative arrangements to prevent entry of feral goat into the region from adjoining regions, and
- reduce impacts on environmental assets by supporting the reduction and removal of existing populations from conservation areas.

Expectations of land managers

All land managers can reduce risks from feral goat populations on land under their care and control, by undertaking primary control activities that:

- minimise or eliminate the impacts of feral goat on their land
- aim to destroy local feral goat populations where that is feasible
- reduce the risk of feral goats breeding on or being introduced to their land
- prevent the spread of feral goat onto other parts of the region.

Examples of activities a land manager could undertake to achieve to these outcomes are:

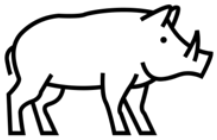
- participating in coordinated pest animal control programs
- undertaking management activities that incorporate both initial and follow up pest animal control
- reporting any feral goat activity (sightings, signs of presence, impacts) outside the mapped distribution to their local LLS Biosecurity Officer on ph: 1300 795 299, and/or FeralScan.

Feral goat management programs

Management goal	Program area	Controls and timeframes
Containment	• North Coast Feral Goat Control	• Aerial shooting • Mustering • Trapping at Water • Ground shooting • Use of judas goats

5.5 Feral pig

CONTAINMENT | **ASSET BASED PROTECTION**

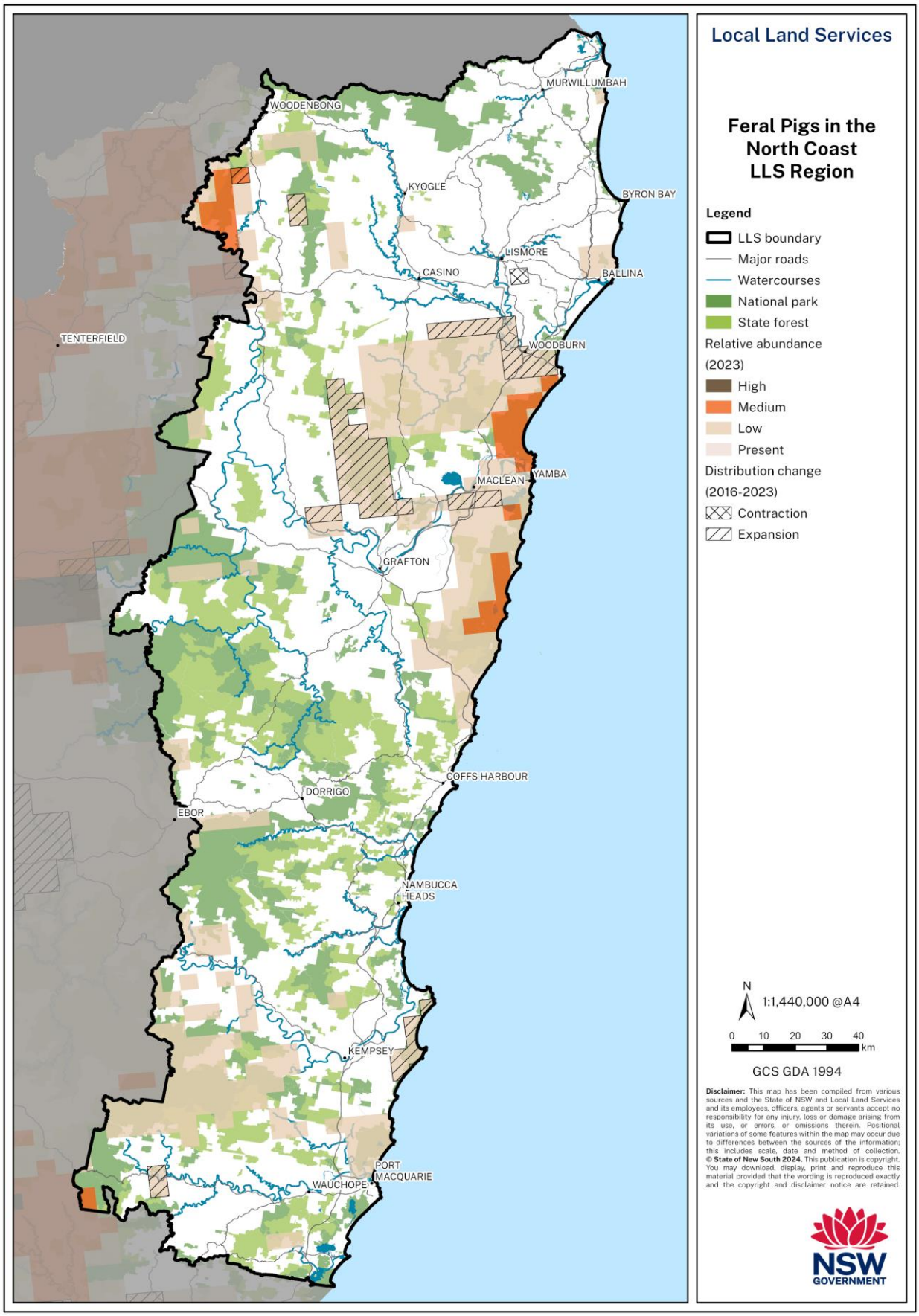


Key stakeholders	Responsibilities and expectations
LLS	• Facilitate feral pig control programs • Develop a Regional Annual Feral Pig Operations Plan which guides local control programs • Educate landholders on the risks feral pigs pose and training landholders in feral pig control • Assist landholders that don't have the capacity to undertake control when needed
Private landholders	To fulfil general biosecurity duty: • Report the presence of feral pigs to North Coast LLS • Undertake control on private lands to minimise the risk of impacts and fulfil general biosecurity duty
Public land managers	To fulfil general biosecurity duty: • Report feral pig presence to Local Land Services • Undertake control on public lands to minimise the risk of impacts and
Community engagement	
North Coast LLS **NSW DPI** **Public land managers** **Private land managers**	• Run education and awareness programs (including land manager obligations under the *Biosecurity Act 2015*, promoting importance of reporting sightings

Distribution

Distribution of feral pigs is shown in Figure 5.5.1. The main populations are coastal National Parks and State Forest areas east of Grafton, in the Bungawalbin – Bundjalung area, and reported sightings are increasing around Limeburners Creek and Hastings area. There is also a report of an unmapped population around Tweed (Tumbulgum). Northern Tablelands populations represent a threat to the North Coast region. Large areas of the region are free of feral pigs. Feral pig competition, habitat degradation and disease transmission are recognised as a key threatening process in NSW (NSW Scientific Committee 2004).

Figure 5.5.1: Feral pigs in the North Coast LLS Region distribution map



Assets and threats

Assets and threats that will be managed include:

- **Social:** Aboriginal cultural sites, built assets, community safety
- **Environmental:** Freshwater wetlands, wildlife, high conservation value sites (e.g. Indigenous protected areas, Newrybar and Everlasting Swamps, Iluka NR World Heritage Area); threatened species (e.g. coastal emu)
- **Economic:** Rural production (e.g. macadamias, blueberries, pasture, cropping, cane, and tea tree) and the risk of disease spread, including the risk of foot and mouth disease.

Management goal

The goal of feral pig management at the regional scale is containment and asset based protection (manage sites and manage pest animal populations). However, this varies slightly for each of the local populations / management areas identified.

Regional management focus

Feral pig distribution within the North Coast is in general restricted to areas of suitable habitat including swamps/wetlands or river systems. Many areas of the region could potentially provide feral pig habitat but are currently free of feral pigs. Control in many instances is made difficult due to problems in gaining access to the areas that feral pigs inhabit and engagement of land managers.

North Coast management will focus on:

- Identifying high risk areas and their management requirements
- Managing isolated sites with a view to containment (and eradication where possible)
- Assisting land managers with control.

Expectations of land managers

All land managers can reduce risks from feral pig populations on land under their care and control, by undertaking primary control activities:

- Where the management goal is containment:
    - Minimise or eliminate the impacts of feral pigs on their land
    - Prevent the spread of feral pigs onto other parts of the region.
- Where the management goal is asset protection,:
    - Reduce the risk of feral pigs being released into the environment
    - Reduce the risk of feral pigs accessing easy food and shelter on their land
    - Reduce the negative impacts of feral pigs on priority assets on their land and neighbouring lands.

Examples of activities a land manager could undertake to achieve to these outcomes are:

- participating in coordinated pest animal control programs
- undertaking management activities that incorporate both initial and follow up pest animal control
- reporting any feral pig activity (sightings, signs of presence, impacts) to neighbours and their local LLS Biosecurity Officer on ph: 1300 795 299, and/or via FeralScan
- ensuring potential food sources such as carcasses, offal and food scraps are properly disposed of
- reporting any deliberate release of feral pigs (or other suspicious activity) to the NSW DPI Invasive Plants and Animals Enquiry Line.

Feral pig management framework

Management goal	Program area	Controls and timeframes
Asset based protection	• Coastal National Park, State Forest and Bungawalbin areas • Upper Clarence region • Upper and Lower Hastings	• Sodium nitrite baiting • Aerial shooting • Trapping • Ground shooting
Containment	• The remaining areas of the North Coast where feral pig populations are absent or small and isolated.	• Sodium nitrite baiting • Trapping • Ground shooting

5.6 Indian myna

ASSET BASED PROTECTION

Key stakeholders	Responsibilities and expectations
LLS	• Educate landholders on the risks Indian mynas pose • Develop a Regional Annual Indian myna Operations Plan which guides local control programs
Private landholders	To fulfil general biosecurity duty: • Undertake control on private lands to minimise the risk of impacts and fulfil their general biosecurity duty
Public land managers	To fulfil general biosecurity duty: • Report Indian myna presence to LLS • Undertake control on public lands to minimise the risk of impacts and fulfil general biosecurity duty
Community engagement	
North Coast LLS **NSW DPI** **Landcare** **Public and private land managers**	• Encourage collaboration between agencies, Councils, Landcare and land managers • Promote effective and best practice control methods to land managers • Run education and awareness programs including land manager obligations under the *Biosecurity Act 2015* (e.g. general biosecurity duty obligations, mandatory measures).

Distribution

Indian myna are mainly found in urban, peri urban and adjoining open areas and are considered to widespread in those environments in the North Coast Region They can cause damage to the environment through selective feeding and competition for resources (such as hollows and food), damage and contaminate horticultural crops, occupy buildings and damage infrastructure (through nest building, defecation etc.) in urban environments. Indian myna can be very aggressive towards native bird species.

Assets and threats

Assets and threats that will be managed include:

- **Social:** Human health (nesting in houses, spreading lice)
- **Environmental:** Displace hollow nesting native birds; harass other wildlife
- **Economic:** Destroy soft fruit crops; damage infrastructure and buildings.

Management goal

The goal of Indian myna management at the regional scale is asset based protection (manage pest animal populations).

Regional management focus

Although relatively widespread, characteristics of the Indian myna suggest they have the potential to be managed by supported community programs. Populations are usually close to human settlements, disperse slowly to new areas, concentrate in large communal roosts, and exhibit raucous aggressive behaviour resulting in community dissatisfaction with their presence (Hanke 2013). A number of programs in the North Coast have developed very good information products, supported community trapping, and achieved some success but continued funding and support has been an issue. North Coast management will:

- identify and utilise best communication and trapping programs from recent regional programs
- support land manager / community Indian myna programs in vicinity of priority rural, environmental and social assets.

Expectations of land management

All land managers can reduce risks from Indian myna populations on land under their care and control, by undertaking primary control activities that:

- reduce the negative local impacts of Indian mynas on priority assets on their land.

Examples of activities a land manager could undertake to achieve to these outcomes are:

- undertaking property level management activities that incorporate both initial and follow up pest animal control
- reporting any indian myna sightings (sightings, signs of presence, impacts) outside the mapped distribution to their local LLS Biosecurity Officer on ph: 1300 795 299, and/or FeralScan.

Indian myna management framework

Management goal	Program area	Controls and timeframes
Asset Based Protection	• North Coast Indian Myna Program	• Scaring • Ground shooting • Cage trapping • Net trapping

5.7 Feral cat

ASSET BASED PROTECTION

Key stakeholders	Responsibilities and expectations
LLS	• Develop a Regional Annual Feral Cat Operations Plan which guides local control programs • Educate landholders on the risks feral cats pose and training landholders in feral cat control.
NSW DPI	• Provide research into improved monitoring and control techniques
Private landholders	To fulfil general biosecurity duty: • Undertake control on private lands to minimise the risk of impacts and fulfil general biosecurity duty
Public land managers	To fulfil general biosecurity duty: • Report feral cat presence to LLS • Undertake control on public lands to minimise the risk of impacts and fulfil general biosecurity duty
Community engagement	
North Coast LLS **NSW DPI** **Public land managers** **Urban and peri-urban communities**	• Increase community awareness of feral cat impacts • Ensure land managers understand their obligations under the *Biosecurity Act 2015* to manage feral cats. • Promote Integrated Pest Management programs to land managers

Distribution

Feral cats are a common and elusive predator that colonise a wide range of habitats, eat a wide range of prey, and can survive with limited access to water. Feral cat predation is recognised as a key threatening process in NSW (NSW Scientific Committee 2000). Feral cats are free-living, have limited or no reliance on humans for their survival, survive and reproduce in self-perpetuating populations, and occur in virtually all terrestrial habitats in Australia (NSW Scientific Committee 2000). They impact threatened and other native fauna across a wide range of natural and modified environments including regional towns and urban areas.

Their distribution is not easily or accurately mapped but pest animal practitioners in the North Coast region consider them to be widespread.

Assets and threats

Assets and threats that will be managed include:

- **Social:** Human health; domestic pet attacks
- **Environmental:** Predation on threatened species (e.g. shorebirds and rufous scrub bird), vulnerable species (e.g. rodents and ground-nesting birds)
- **Economic:** Livestock disease transmission.

Management goal

The goal of feral cat management at the regional scale is asset-based protection (manage pest animal populations). Asset based protection may need to be supported by cross-tenure landscape-scale strategies and some assets (e.g. native fauna, livestock) are widespread. At present control options for cats are limited and this means that controls are both expensive and limited in effectiveness. A range of strategies and improved control methods are needed for meaningful management of cats in the region.

On the North Coast there is recognition that predators can have multiple, interactive, cumulative impacts on an asset. This plan supports the use of integrated pest management approaches where a range of strategies is used to manage a suite of pests (such as feral cats, wild dogs and foxes) in an effort to achieve complete asset protection.

Regional management focus

The lack of effective control methods for feral cats presents a significant obstacle to their management. Regional management strategies are therefore focussed on:

- supporting the development of effective control methods
- promoting best management practice for feral cat control
- supporting integrated approaches to predator management (i.e., strategies that manage a range of pests such as feral cats, wild dogs and foxes).

Expectations of land managers

All land managers can reduce risks from feral cat populations on land under their care and control, by undertaking primary control activities that reduce the risk of feral cats being released into the environment.

Examples of activities a land manager could undertake to achieve to these outcomes are:

- participating in coordinated pest animal control programs
- reporting any feral cat activity (sightings, signs of presence, impacts) to their local LLS Biosecurity Officer on ph: 1300 795 299, and/or via FeralScan.

Feral cat management framework

Management goal	Program area	Controls and timeframes
Asset Based Protection	North Coast Feral Cat Control	• Trapping (cage and padded jaw traps) • Ground shooting

5.8 Wild dog

ASSET BASED PROTECTION

Key stakeholders	Responsibilities and expectations
LLS	• Facilitate wild dog baiting groups and encouraging proactive management • Develop a Regional Annual Wild Dog Operations Plan which guides local control programs • Educate landholders on the risks wild dogs pose and training landholders in wild dog control • Implement an annual landscape aerial control program in conjunction with FCNSW
Private landholders	To fulfil general biosecurity duty: • Implement proactive control programs to mitigate wild dog impacts on their properties • Notify the community of wild dog impacts in their areas • Report wild dog presence to North Coast LLS
Public land managers	To fulfil general biosecurity duty: • Report wild dog presence to North Coast LLS • Define dingo conservation areas and how they will mitigate the risk of impacts to neighbouring properties • Conduct proactive control where there is a risk of impacts on neighbouring properties to fulfil general biosecurity duty
Community engagement	
North Coast LLS **NSW DPI** **Public land managers** **Rural industries and producer groups** **Private land managers**	• Promote greater land manager participation in wild dog management through awareness, and assess the need for compliance programs • Support the formation of wild dog management associations / groups • Increase / improve reporting of stock losses and sightings

Distribution

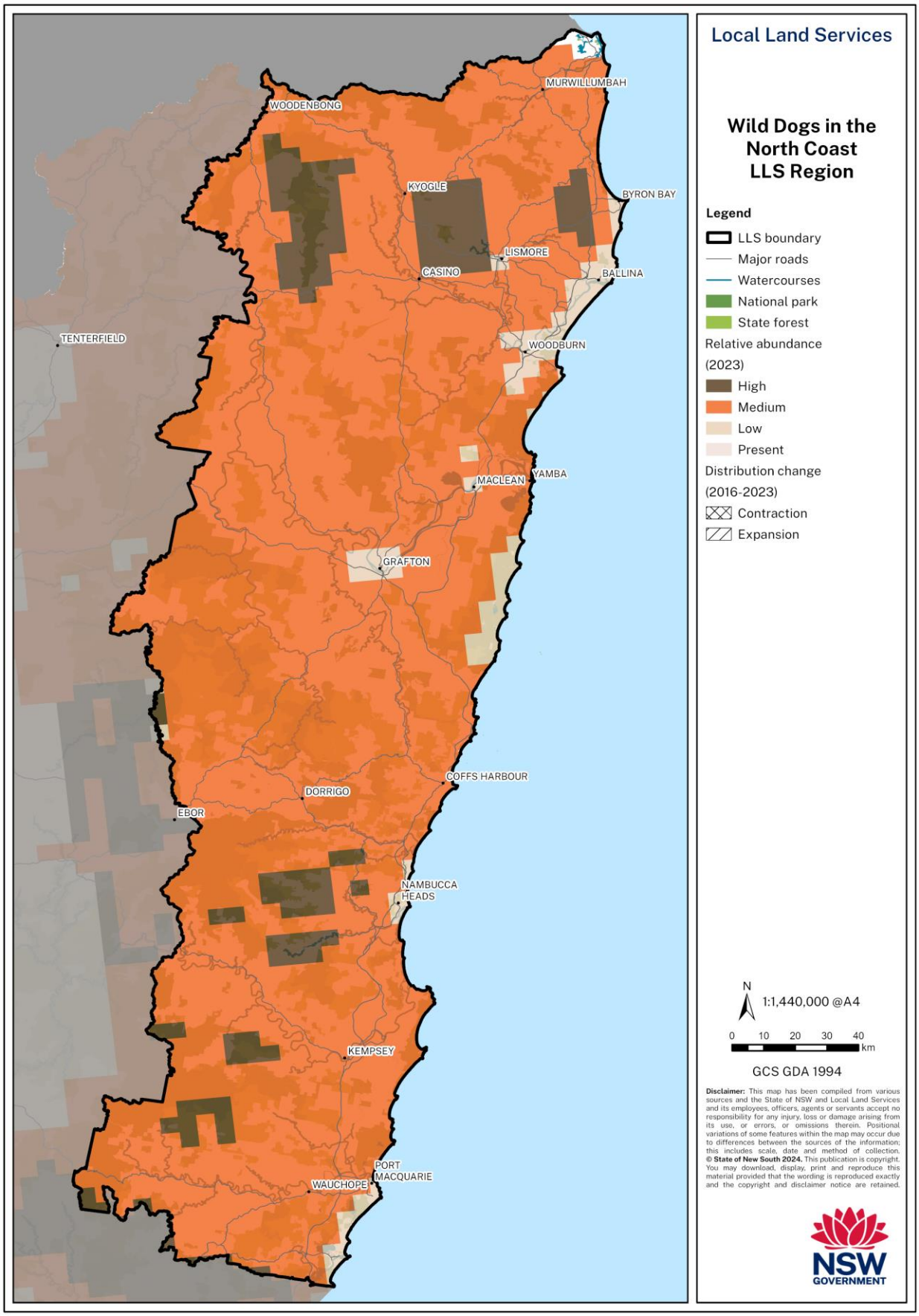
Wild dogs are present throughout the North Coast region, usually at medium densities (Figure 5.8.1). They are found in residential and peri urban areas, on small private blocks, on neighbouring agricultural lands (including leased and licensed land), in livestock production areas, crown lands, public estates, parks and reserves. Predation and hybridisation by wild dogs are recognised as a key threatening process in NSW (NSW Scientific Committee 2009).

Assets and threats

Assets and threats that will be managed include:

- **Social:** threats to humans, stress and depression, public conflict– stalking and attacks, disease, domestic pet attacks, and tourism
- **Economic:** livestock predation and reduced reproduction rates (via Neospora and Hydatid tapeworms); loss of producer certification; damaged infrastructure and fences
- **Environmental:** native wildlife (including threatened species and ecological communities); ecosystem function.

Figure 5.8.1: Wild dogs in the North Coast LLS Region distribution map



Management goal

The goal of wild dog management at the regional scale is Asset based protection (manage pest animal populations).

The balance between wild dog management and dingo conservation is an important consideration in the region. The outcomes of wild dog control on the North Coast are confounded by virtue of their status as a pest, a species with conservation significance, and a species with cultural significance. Australian dingoes are a cultural totem for some Aboriginal nations of the North Coast region. And while they have been in Australia for around 5,000 years, they are not an unequivocally defined species or sub-species, and so dingoes of any kind do not meet the criteria for listing and protection as a threatened species (Allen et al. 2017). This means that they can be controlled where they are considered to be a pest.

LLS meets its wild dog pest management commitments by proactively assisting land managers to meet their general biosecurity obligation. This includes responding to customer requests to reduce the risk of negative impacts of wild dogs on livestock domestic pets and general amenity across the region. In doing so, finding a balance between managing wild dogs in areas where they have negative impacts and conserving dingoes is important.

Management strategies focus on asset protection. However as both wild dogs and the assets (e.g. people, livestock, domestic pets, native fauna) are widespread throughout the region and wild dogs have the ability to repopulate management areas in a short time period, there is a need for tenure neutral, partnership based, landscape scale strategies that address both current and future impacts.

Regional management focus

A North Coast LLS Annual Wild Dog Operations Plan will be prepared that is consistent with the national and state plans, guides regional management, and is the main tool to implement annual wild dog management under this Plan.

The NSW Wild Dog Management Strategy 2022-2027 (DPI 2022) promotes a balance between managing wild dogs in areas where they have negative impacts and preserving the ecological role of dingoes. The NSW Wild Dog Management Strategy requires that this Plan and regional Wild Dog Management Plans focus control on areas where the risk of negative impacts are greatest, and not undertake control in parts of the landscape where the risk of negative impacts from wild dogs is low, which allows wild dogs to fulfil their natural ecological role.

Involvement of local stakeholders in the development of a regional plan that focuses on groups of landholders working together to implement landscape control of Wild Dogs will be important to achieving balanced social, economic and environmental outcomes.

The focus in this plan is:

- to develop an Annual Wild Dog Operations Plan that facilitates local action
- to raise land manager awareness of their obligations of undertaking Wild Dog control in key areas
- to promote effective cross tenure, cooperative asset protection strategies and landscape scale management programs that address impacts.

Expectations of land management

All land managers can reduce risks from wild dog populations on land under their care and control, by undertaking primary control activities that:

- reduce the risk of wild dogs accessing easy food sources and shelter on their land
- reduce the negative impacts of wild dogs on priority assets on their land and neighbouring lands.

Examples of activities a land manager could undertake to achieve to these outcomes are:

- participating in coordinated pest animal control programs
- undertaking management activities that incorporate both initial and follow up pest animal control
- reporting any wild dog activity (sightings, signs of presence, impacts, attacks) to neighbours and their local LLS Biosecurity Officer on phone: 1300 795 299, and/or via FeralScan
- ensuring potential food sources such as carcasses, offal and food scraps are properly disposed of.

Wild dog management framework

Management goal	Program area	Controls and timeframes
Asset Based Protection	• North Coast Proactive Wild Dog Control	• Annual 1080 aerial baiting program (May-Jun) • Annual proactive 1080 ground baiting (Autumn and Spring) • Proactive trapping
Asset Based Protection	• North Coast Reactive Wild Dog Control	• Reactive 1080 ground baiting • Reactive trapping

5.9 European red fox

ASSET BASED PROTECTION

Key stakeholders	Responsibilities and expectations
LLS	• Facilitate control groups. • Educate landholders on the risks foxes pose and training landholders in fox control • Develop a Regional Annual European Red Fox Operations Plan for priority areas
Private landholders	To fulfil general biosecurity duty: • Undertake control on their lands to minimise the risk of impacts and fulfil general biosecurity duty
Public land managers	• Report fox presence to LLS • Undertake control on public lands to minimise the risk of impacts and fulfil general biosecurity duty
Community engagement	
North Coast LLS **NSW DPI** **Public land managers** **Private land managers** **Conservation groups**	To fulfil general biosecurity duty: • Promote current best-practice fox management and monitoring • Run education and awareness programs including land manager obligations under the *Biosecurity Act 2015* (e.g. general biosecurity duty obligations, mandatory measures)

Distribution

The European red fox is an adaptive and elusive predator. It is common in rural and urban areas, preys opportunistically on a wide range of species and its distribution is influenced by natural habitat disturbance and availability of food and shelter (NSW Scientific Committee 1998).

Foxes are widespread throughout the region, with variations in density influenced by how well their food and habitat needs are met. Their densities can be higher in urban areas than rural settings due to the increased food availability. There is only limited data relating to fox activity and distribution as they are managed as a secondary target through programs that focus on wild dogs.

Actions that guide fox management are guided by the Deptartment of Planning and Environment Saving our Species (SOS) Program.

Assets and threats

Assets and threats that will be managed include:

- **Social:** Human health (rabies, carrier), mental health; pet and stock attacks and transmission of disease
- **Environmental:** Threatened species (e.g. Beach Stone curlew, Little Tern, Pied Oystercatcher, Long-nosed Potoroo); span key areas of private and public land throughout the region
- **Economic:** cattle pregnancy termination; predation on calves, poultry, lambs; spread hydatids to livestock.

Management goal

The goal of European red fox management at the regional scale is Asset based protection (manage pest animal populations).

Expectations of land managers

All land managers can reduce risks from fox populations on land under their care and control, by undertaking primary control activities that:

- reduce the risk of foxes being released into the environment
- reduce the risk of foxes accessing easy food sources and shelter on their land
- reduce the negative impacts of foxes on priority assets on their land and neighbouring lands.

Examples of activities a land manager could undertake to achieve to these outcomes are:

- participating in coordinated pest animal control programs
- undertaking management activities that incorporate both initial and follow up pest animal control
- reporting any fox activity (sightings, signs of presence, impacts) to neighbours and their local LLS Biosecurity Officer on phone: 1300 795 299, and/or via FeralScan
- ensuring potential food sources such as carcasses, offal and food scraps are properly disposed of.

5.10 Wild rabbit

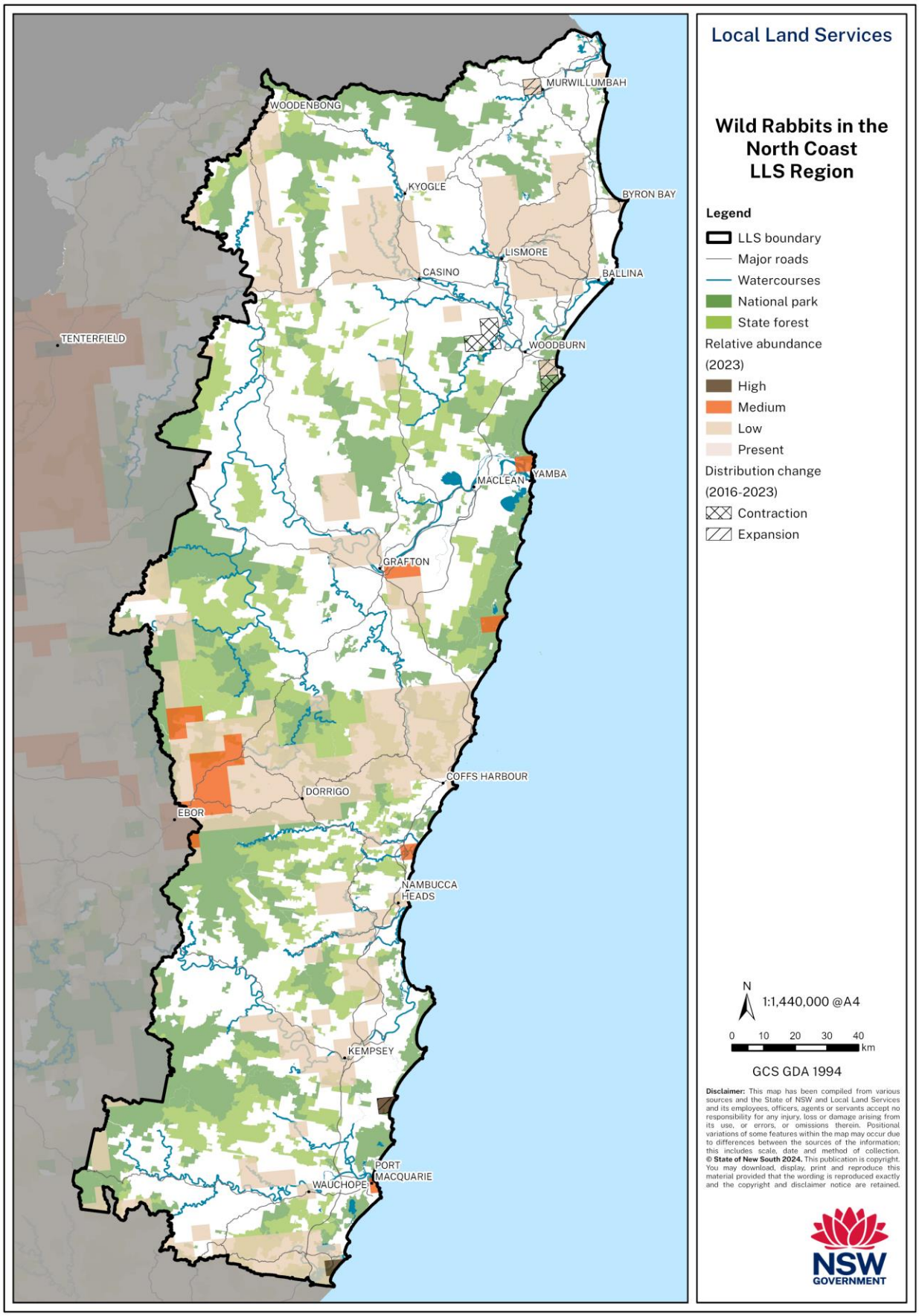
ASSET BASED PROTECTION

Key stakeholders	Responsibilities and expectations
LLS	• Facilitate wild rabbit control programs • Develop a Regional Annual Wild Rabbit Operations Plan which guides local control programs • Educate landholders on the risks wild rabbits pose and training landholders in wild rabbit control
Private landholders	To fulfil general biosecurity duty: • Report wild rabbit presence to North Coast LLS • Undertake control on their lands to minimise the risk of impacts and fulfil their general biosecurity duty
Public land managers	To fulfil general biosecurity duty: • Report wild rabbit presence to LLS • Undertake control on public lands to minimise the risk of impacts and fulfil general biosecurity duty
Community engagement	
North Coast LLS **NSW DPI** **Rural industries** **Private land managers**	• Promote best practice wild rabbit control to private and public land managers • Community awareness programs to increase understanding of impacts, and appropriate domestic rabbit care • Run education and awareness programs including land manager obligations under the *Biosecurity Act 2015* (e.g. general biosecurity duty obligations, mandatory measures, restrictions on pet sales)

Distribution

Wild rabbits occupy a wide range of habitats, including native and modified grasslands, woodland, heath and forest; can achieve high densities in some agricultural and suburban areas; and exhibit minimal or no dependence on humans to meet their ecological requirements (NSW Scientific Committee 2002). Rabbit distribution in the North Coast region is widespread but there are areas of absence, e.g. heavily vegetated escarpment and gorges (Figure 5.10.1). Wild rabbit competition and grazing are recognised as a key threatening process in NSW (NSW Scientific Committee 2002).

Figure 5.10.1: Wild rabbits in the North Coast LLS Region distribution map



Assets and threats

Assets and threats that will be managed include:

- **Social:** Heritage sites (e.g. Byron lighthouse, infrastructure)
- **Environmental** Competition and grazing impacts threatened species and vegetation communities (e.g. Mount Hyland, New England, Iluka WHA, Cudgen NP/NR; support other predator (e.g. Red Fox) populations
- **Economic** Erosion and topsoil loss due to removal of vegetation (e.g. Cudgen prime rural land); damage horticulture, nursery products, crops; damage urban and rural infrastructure, e.g. bridges, farm buildings).

Management goal

The goal of Wild rabbit management at the regional scale is Asset based protection (manage sites).

Regional management focus

Wild rabbits are generally widespread throughout the North Coast but in low numbers that cause minimal impacts. Their impacts are generally associated with infrastructure such as farm buildings where control in most instances is on an individual property level, and urban infrastructure such as buildings, termite barriers, stormwater systems where control and repair are expensive.

Environmental impacts include dietary competition with threatened species, grazing that may reduce survival of threatened plants, and dietary switching between wild rabbits and native species by introduced predators (fox and feral cats) in response to changes in rabbit populations. Recent releases of rabbit haemorrhagic disease virus have had variable success with some areas reporting effective control and others no noticeable change.

Wild rabbit management on the North Coast will focus on:

- assisting land managers to comply with control requirements
- coordinating release of Rabbit haemorrhagic disease virus to provide landscape management.

Expectations of land managers

All land managers can reduce risks from wild rabbit populations on land under their care and control, by undertaking primary control activities that:

- reduce the risk of rabbits breeding on or being introduced to their land
- reduce the risk of rabbits being released into the environment
- reduce the negative impacts of rabbits on priority assets on their land and neighbouring lands.

Examples of activities a land manager could undertake to achieve to these outcomes are:

- participating in coordinated pest animal control programs
- undertaking management activities that incorporate both initial and follow up pest animal control
- reporting rabbit activity (sightings, signs of presence, impacts) to their local LLS Biosecurity Officer on ph: 1300 795 299, and/or via FeralScan.

Wild rabbit management framework

Management goal	Program area	Controls and timeframes
Asset Based Protection	• North Coast Wild Rabbit Control Program	• Pindone baiting • Biological control with RHDV1 K5 • Removal of warrens

6. Measuring success and continuous improvement

Monitoring the implementation performance of this plan using key performance indicators (KPIs) provides the evidence and information needed to:

- Assess whether the plan's goals and outcomes are being achieved
- Evaluate the effectiveness and efficiency of previous and current program implementation (including both community engagement and pest control activities)
- Continuously improve pest programs
- Identify priorities for immediate and future planning, delivery and engagement
- Improve understanding and knowledge about pest animal distribution and abundance and current and potential impacts
- Demonstrate to community, investors and stakeholders that the plan's strategies are sound and effective
- Raise community awareness of current and potential problems and opportunities for prevention and control.

Objectives and performance indicators are set for each of the pests and programs outlined in sexction 6.1 below.

6.1 Key performance indicators (KPIs)

Regional KPIs have been set to allow for the monitoring and improvement of the pest programs captured in this plan – captured below (see also section 5).

A standardised set of KPIs will be used across all LLS regions. This ensures consistency in the interpretation and application of reporting at both the regional and state scales. Options will be considered that facilitate the participation of regional public land managers in monitoring and reporting.

Annual Pest Species Operations Plans (APSOP)

This plan provides a framework for the development of annual operational plans that detail the on-ground tactics and actions to be put in place to achieve the local goals for each pest species for that year. These plans present a significant advancement on how the region delivers pest management.

APSOPs will identify the full complement of metrics along with other data required to assess whether pest management goals and outcomes are being achieved every 12 months – note that the tables below in 'Species KPIs' section below only contain the top 3 KPIs for simplicity's sake.

To guide meaningful planning, the APSOP will need to reflect and be a response to the variable and unpredictable nature of pest management across the region, which will be driven by a suite of factors, including:

- Pest risks and impacts which vary by species and in space and time
- Local demand and need from our customers to address those impacts.

Predicting KPIs in advance of unpredictable pest impacts becomes increasingly more challenging as the length of that prediction increases. The metrics used to give a picture of the APSOP's performance will be measured annually and will fit into the following broad categories:

- **Landholder need** – where emphasis is on local demand from our customers to address pest risks and impacts and metrics relate to:
    - Landholder requests for assistance
    - Landholder reports of pest risks and impacts.
- **Landholder engagement –** where emphasis is on our response to landholder needs and metrics relate to:
    - Provision of community consultation, training and capacity building programs
    - Landholder enquiries being met in an effective and timely manner
    - Customer satisfaction with our services.
- **Landholder practice change** – where emphasis is on changes in landholder behaviour in response to our customer service and metrics relate to:
    - Landholders participation in programs
    - Adoption of best practice pest management by landholders and area under best practice pest control
    - Customer satisfaction with our services.
- **Pest impacts** – where emphasis is on changes in the pest and asset base and metrics relate to:

- Changes in pest risks and impacts
- The management of incursions
- Changes in production losses.

These KPIs will ultimately direct our resources and focus for pest species management every 12 months.

6.1.1 Statewide KPIs

Providing a coherent story about the impact of the RSPAMPs across the state will require a coordinated Monitoring, Evaluation, Reporting and Improvement (MERI) framework. This will focus regional MERI programs on targeted evaluations on important outcomes which will be able to be aggregated to a State level to provide information on progress to reduce pest animal density and distribution, and the impact on economic, social and environmental issues.

Goal	Indicator	Rationale
Goal 1: Exclude – prevent the establishment of new invasive species	Number of incursions identified in the North Coast region.	This KPI focuses on early detection, aiming to keep the number of new detections as low as possible through effective surveillance and biosecurity measures.
Goal 2: Eradicate or contain – eliminate, or prevent the spread of new invasive species	Number of successful eradications of incursions of identified alert species outbreaks out of number of eradication programs rolled out within the North Coast region. Number of successful containments of incursions of identified alert species outbreaks out of number of containment programs rolled out within the North Coast region.	Eradication efforts are quantified by counting successful cases where new invasions were eliminated, demonstrating effective response capabilities. Where eradication efforts are not considered feasible, a containment approach should be considered.
Goal 3: Effectively manage – reduce the impacts of widespread invasive species	Reduction in the distribution, relative abundance and/or impacts of selected widespread invasive species within targeted areas over a set timeframe.	This KPI measures management effectiveness through the observable decrease in the distribution, relative abundance and/or impacts of widespread invasive species in critical ecosystems or regions.
Goal 4: Build capacity and capability – ensure NSW has the ability and commitment to manage invasive species	Number of training programs completed focused on management each year. Number of active coordinated pest animal control groups focused on management each year.	This KPI tracks the enhancement of organisational and community capacity to manage invasive species through education, training, and collaborative efforts.

6.1.2 Species KPIs

This section provides further information about the KPIs for each pest species. For simplicity and achievability, the most important KPIs are listed per species Program.

Cane toad:

Management goal	Program area	Indicator	Timeframe
Asset Based Protection	• Cane toad established population area	• 1 targeted community education program and products	• Annual
Containment	• Active control area	• 5 targeted community education programs and products delivered • 1 Regional Annual Cane Toad Operations Plan developed and implemented for the cane toad active control area	• Annual • Dec 2024
Prevention / Eradication	• Cane toad exclusion area	• 1 targeted community education program and products delivered • 1 Regional Annual Cane Toad Operations Plan developed and implemented for cane toad incursions	• Annual • Dec 2025

Feral horse:

Management goal	Program area	Indicator	Timeframe
Eradication	• Clarence / Coffs Feral Horse management plan 2023-2025	• 1 Feral Horse General Biosecurity Direction Plan implemented for priority areas impacted by feral horses • 1 targeted community education program and products delivered annually • 50% decrease in feral horse density • 100% decrease in pest distribution	• Annual • Annual • Over 1 year • Over 3 years
Asset Based Protection	• Guy Fawkes area	• 1 Regional Annual Feral Horse Operations Plan developed and implemented for the feral horse active control area	• Annual

Feral deer:

Management goal	Program area	Indicator	Timeframe
Asset Based Protection	• Peri Urban Feral Deer Trapping Programs	• 1 targeted community education programs and products delivered	• Annual
Asset Based Protection	• North Coast Feral Deer Control	• 1 targeted community education program and products delivered annually • 1 Regional Annual Feral Deer Operations Plan developed and implemented for priority areas impacted by Feral Deer	• Annual • Annual
Containment	• Non-Established Feral Deer Population Control	• 1 targeted community education program and products delivered annually	• Annual

Feral goat:

Management goal	Program area	Indicator	Timeframe
Containment	• North Coast Feral Goat Control	• 1 targeted community education program and products delivered annually • North Coast Pest and Weed Advisory Committee review of the status of feral goat management across the region completed • 1 Regional Annual Feral Goat Operations Plan developed and implemented for the feral goat active control area	• Annual • Annual • Annual

Feral pig:

Management goal	Program area	Indicator	Timeframe
Asset Based Protection	• Coastal National Park, State Forest and Bungawalbin areas • Upper Clarence region • Upper and Lower Hastings	• 1 targeted community education program and products delivered annually • 1 Regional Annual Feral Pig Operations Plan developed and implemented for priority areas impacted by feral pigs	• Annual • Dec 2025
Containment	• The remaining areas of the North Coast where feral pig populations are absent or small and isolated	• N/A	• N/A

Indian myna:

Management goal	Program area	Indicator	Timeframe
Asset Based Protection	• North Coast Indian Myna Program	• 1 targeted community education programs and products delivered • 1 Regional Annual Indian Myna Operations Plan developed and implemented for the indian myna active control area	• Annual • Annual

Feral cat:

Management goal	Program area	Indicator	Timeframe
Asset Based Protection	• North Coast Feral Cat Control	• 1 targeted community education program and products delivered annually • 1 Annual Feral Cat Operations Plan developed and implemented for priority areas impacted by feral cats	• Annual • Dec 2025

Wild dog:

Management goal	Program area	Indicator	Timeframe
Asset Based Protection	• North Coast Proactive Wild Dog Control	• 1 targeted community education program and products delivered annually • 1 Regional Annual Wild Dog Operations Plan developed and implemented for priority areas impacted by wild dogs	• Annual • End of 2024

European red fox:

Management goal	Program area	Indicator	Timeframe
Asset Based Protection	• North Coast Proactive European Red Fox Control	• 1 targeted community education program and products delivered annually • 1 Regional Annual Red Fox Operations Plan developed and implemented for priority areas impacted by red fox	• Annual • Dec 2025

Wild rabbit:

Management goal	Program area	Indicator	Timeframe
Asset Based Protection	• North Coast Wild Rabbit Control Program	• 1 targeted community education program and products delivered annually • 1 Regional Annual Wild Rabbit Operations Plan developed and implemented for priority areas impacted by wild rabbits	• Annual • End of 2025

6.2 Measuring performance

The KPIs in this plan will be monitored and reported on quarterly at the regional scale. This will allow for aggregated half yearly, yearly and longer time frame reporting at both the regional and state scales.

Structured and formal monitoring, reporting, evaluation and improvement processes will be followed to ensure the plan is being implemented in an *effective*, *efficient* and *adequate* manner.

The KPIs from this plan and the Annual Pest Species Operations Plans will together provide clear signals regarding the impact that the plan is having with respect to collaboration, landholder engagement, change in landholder practice and mitigation of pest impacts.

6.3 Plan review and improvement

Together, the North Coast LLS Board and North Coast Pest and Weed Advisory Committee will foster adaptative management and continual improvement in pest animal management strategies set by this plan.

A mid-term review of this plan will be undertaken in year 3 (2026) and a full review will be undertaken nearing the end of the plan's 5-year term (2028).

Pest animal risk assessments will be updated as required and a full evaluation of the appropriateness of the pest animals listed in this plan will be undertaken as part of the mid-term review.

NSW Government agencies including LLS and DPI have important roles in ensuring that everyone meets their obligations in pest management. Compliance actions are based on risks. Updated compliance frameworks are being developed that will guide pest animal and weed enforcement. LLS will develop Annual Operations Plans over the first two years of the plan.

The Annual Operations Plans will detail pest control programs based on specific local risks. Assets requiring greater protection, biodiversity and cultural heritage will be considered when prioritising control programs. Pest population monitoring will be used to evaluate program effectiveness.

7. The Biosecurity Act

The *NSW Biosecurity Act 2015* is a new piece of legislation that allows improved management of biosecurity risks in NSW to help land managers, the community, industry and government effectively manage and respond to biosecurity incursions and risks.

A fundamental principle of the *NSW Biosecurity Act 2015* is that biosecurity is everyone's responsibility. All land managers, regardless of whether on private or public land, have the same responsibilities. Likewise, the general community has a role to play in reducing risks through their activities and as 'eyes and ears' on the lookout for any potential new risks. A general biosecurity duty under the *Act* requires that anyone who knows or ought to reasonably know about a biosecurity risk has a duty to prevent, eliminate or minimise that risk as far as reasonably practicable.

The *NSW Biosecurity Act 2015* includes a number of mechanisms (regulatory tools) that can be used to manage biosecurity risks such as pest animals in NSW. Land managers, industry and the community should be familiar with these tools and what they require of them in their daily practices.

Further information on the NSW Biosecurity legislation can be found on the NSW DPI website:

- https://www.dpi.nsw.gov.au/dpi/bfs/aquatic-biosecurity/aquatic-biosecurity-legislation

Biosecurity management tools

Table 7.1: Tools available to authorised officers under the *NSW Biosecurity Act 2015* and the *NSW Biosecurity Regulation 2017* to manage the impact and spread of pest animals.

Prohibited matter

Listed in Schedule 2 of the *Act*. It is an offence to deal with prohibited matter. If a person becomes aware of, or suspects the presence of prohibited matter they have a duty to prevent, eliminate or minimise the risk or potential risk it may cause. For example Hendra virus, foot and mouth disease and avian Influenza.

Control order

Can be made by the Minister or a delegate to establish a control zone or establish measures in connection with a control zone to prevent, eliminate, minimise and manage a biosecurity impact. For example disposal of contaminated stock to prevent entering the food chain.

Prohibited dealing

A dealing with biosecurity matter described in Schedule 3 of the Act. For example non indigenous animals such as the African Pgymy Hedgehog.

Biosecurity zones

A zone established to a premises, specified area or part of the state to prevent, eliminate, minimise or manage a biosecurity risk or impact. Generally used where longer term management is required. For example phylloxera exclusion zone in Riverina.

Biosecurity directions: individual

Issued to a single person by an authorised officer, either orally (followed up in writing within 7 days) or by notice in writing. For example a direction to a land manager to implement foot rot program.

Biosecurity undertaking

A negotiated set of actions agreed to by an individual and accepted by an authorised officer. Both parties are signatories.

8. Further information

Plan to manage biosecurity risks

This plan can be used by land managers and community members to understand, manage and mitigate risks associated pest animal management in the region. Organisations may choose to apply for funding/allocate resources to support strategic pest animal projects.

The activities outlined in this plan can be used by land managers and community members in the area as guidelines for discharging their general biosecurity duty to improve pest animal management.

Biosecurity Order Permitted Activities

These are updated from time to time, should also be considered by land managers and the general community.

Use this plan as a guide to mitigate your risks in your on farm biosecurity plan to ensure you are managing pest animals in the most effective and efficient manner.

Educate yourself

While this plan sets a benchmark for integrated pest animal management across the region, there are a number of alternative mechanisms that can be used to meet your general biosecurity duty and you are encouraged to utilise the following resources as well as contact your LLS office for further information.

Resources

- Local Land Services
  https://www.lls.nsw.gov.au/help-and-advice/pest-control
- Department of Primary Industries
  https://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests/pest-animals-in-nsw
- Environment and Heritage (NSW National Parks and Wildlife)
  https://www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas
- Centre for Invasive Species Solutions
  https://invasives.com.au/
- PestSmart Connect
  https://pestsmart.org.au/
- FeralScan
  http://www.feralscan.org.au/

Monitor your environment

- Be aware of changes in the landscape around you.
- Report anything unusual. If you become aware of unusual animals in the wrong place or illegal activities such as the movement, keeping, breeding and sale of controlled category nonindigenous animals, report it as soon as possible.
- Discuss ongoing monitoring programs and techniques with LLS.
- Ensure you keep up to date with any government and industry changes.

Comply

- Ensure you meet the requirements set out in both your on farm biosecurity plan and any other on farm biosecurity plans for properties you deal with.
- Ensure you are aware of and comply with specific legislation for pest animals.

For further information go to https://www.lls.nsw.gov.au/regions/north-coast or contact your nearest LLS office by telephoning 1300 795 299.

Appendices

Appendix 1: Prioritisation process

Public and private land managers have limited resources to manage pest animals and it is important to prioritise activities. Important considerations for prioritisation are:

- It is generally more cost-effective to prevent the establishment of pest animals into new areas through prevention and early intervention (eradication or containment of small isolated populations) than to have to fund ongoing management of established species.
- For established species, resources should focus on managing the pest animals and areas where there is the greatest impact on a valued 'asset' (e.g. protecting an endangered native animal from fox predation or a sheep production area from wild dogs) – this is known as 'Asset Based Protection'.
- The feasibility of management needs to be considered and this will depend on the availability of approved cost-effective control techniques and any biogeographic limitations (e.g. difficult terrain or potential impact of control techniques on nontarget species).

In developing lists of priority pest animals and management areas, RPAMPs have considered the South Australian Pest Animal Risk Management Guide and prioritisation tool:

http://pir.sa.gov.au/__data/assets/pdf_file/0017/254222/SA_pest_animal_risk_assessment_guide_Sept2010.pdf

The South Australian prioritisation tool accounts for pest animal impacts and the feasibility of effectively reducing those impacts and allocates management of particular pest animals in particular areas into one of 4 categories: Limited Action, Asset-based Protection, Containment or Eradication.

'Limited Action' will be the likely management approach for introduced species that aren't considered to have a significant impact in a particular area and/or for which there is currently a lack of effective management options. There are 64 terrestrial and freshwater aquatic exotic vertebrates that have established wild populations in NSW. Many of these will fall into the 'Limited Action' category and the focus of RPAMPs will be on a much smaller list of high priority pest impacts.

'Eradication' or 'Containment' are generally only realistic management options for new incursions and small isolated populations of species where this is a good selection of control techniques available.

Appendix 2: Advisory and technical support

North Coast Pest and Weed Advisory Committee members

Public Land Managers
North Coast LLS
NSW National Parks and Wildlife Service
Crown Lands
Forest Corporation NSW
Local Government (3 representatives)
Transport for NSW
Invited Stakeholders
NSW Farmers representative
Community / Environmental representative - Landcare
Pest Management expertise
NSW Dept of Primary Industries – Invasive Species

North Coast Pest Technical Working Group members

Public Land Managers
North Coast LLS
NSW National Parks and Wildlife Service
Crown Lands
Forest Corporation NSW
Local Government (All of the region's Local Governments can participate on this Working Group)
Transport for NSW
Pest Management expertise
NSW Dept of Primary Industries – Invasive Species

Appendix 3: Implementing this plan

The North Coast Pest and Weed Advisory Committee

The North Coast Pest and Weed Advisory Committee will provide strategic oversight and regional guidance on implementation of the Plan, driving a multi-stakeholder, tenure neutral and co-operative approach to pest management, according to the roles identified in Table 3.1.

Table 3.1. North Coast Pest and Weed Advisory Committee roles.

North Coast Pest and Weed Advisory Committee roles	
Function	**Role**
Strategic oversight	1. Drive the development and implementation of the North Coast Regional Strategic Pest Animal Management Plan.
Resourcing	2. Identify and recommend the resources that allow stakeholders to meet their pest management responsibilities and obligations.
Capacity building	3. Identify and support mechanisms for additional funding, resources, education and training to meet regional pest management responsibilities.
Raise awareness	4. Engage with land managers to raise awareness of their obligations under the *Biosecurity Act 2015* and how they can participate effectively in local pest management.
Local delivery	5. Support local groups in the implementation of coordinated, landscape focussed pest animal control programs.
Collaboration	6. Work collaboratively and engage with all sectors to identify synergies, options for sharing resources and information, partnership and funding opportunities, and cooperative pest program delivery.
Neighbour liaison	7. Liaise with neighbouring regional pest committees to promote effective co-ordination of pest management across regions, agencies and tenure, and resource and information sharing.
Share information	8. Share information and approaches to deliver improved management of pest and priority weed impacts
Monitoring and reporting	9. Support the use of sound evidence, monitoring and evaluation approaches to underpin management decisions and measures of success.
Evaluation and improvement	10. Support evaluation of pest control activities to inform management actions and planning.
Review	11. Carry out mid-term and final reviews of this plan.
Technical support	12. Guide, support and endorse the work of the North Coast Pest Technical Working Group.

The North Coast Pest Technical Working Group

The North Coast Pest Technical Working Group provides a forum for stakeholders to share information, solve problems and discuss operational pest management approaches, risks, issues and opportunities according to the roles identified in Table 3.2. The Group will work closely with the North Coast Pest and Weed Advisory Committee. Pest animal operational and delivery staff from a range of stakeholders are the core members of this Group.

Table 3.2. North Coast Pest Technical Working Group roles.

North Coast Pest Technical Working Group roles	
Function	**Role**
Technical support	1. Follow the guidance of and provide advice to the North Coast Pest and Weed Advisory Committee.
Regional planning	2. Provide advice on the development of the North Coast Regional Strategic Pest Animal Management Plan.
Local delivery	3. Identify measures to improve land manager involvement in local pest planning.
Collaboration	4. Invite guest speakers who can provide updates on pest management research.
Share information	5. Enable members to update the group on control program actions and outcomes
Community participation	6. Identify mechanisms for community to participate in detecting and reporting sightings of new or 'unusual' animals in the local area as well as how they can meet their General Biosecurity Duty obligations.
Landholder engagement	7. Identify communication opportunities that improve land manager understanding of General Biosecurity Duty.
Emerging risks	8. Identify emerging invasive pest risks across the North Coast region.
Partnerships	9. Facilitate partnership development.
Neighbour liaison	10. Work with neighbouring Local Land Service regions to improve pest at broader scales.

Pest animal best management practice

North Coast LLS will provide extension and onground pest management services that support community and stakeholders in the strategic implementation of this Plan. We have experience working with landholders to deliver pest management under a suite of ever changing financial, organisational capacity, community capacity and environmental conditions.

North Coast LLS also delivers local services that support land managers to prepare for, respond to, and recover from natural disasters and other forms of change.

The plan supports local engagement and on-ground delivery of best practice management tailored to suit local needs and conditions. Well established best management practice is only documented for some pest species, for others, it is still unknown, or is in the early stages of development, and this Plan seeks to address those knowledge and practice gaps.

This plan seeks to facilitate the following aspects of best practice management:

- Brings people together to collectively meet their general biosecurity obligations, using a range of integrated best practice control techniques (including commercial use where appropriate)
- Provides the best return on investment
- Provides balanced social, economic and environmental outcomes (by having all relevant stakeholders involved in the decision making that underpins local on-ground pest management)
- Meets community perceptions, including emergency needs
- Varies according to location, asset under threat, and pest species
- Considers interactions amongst pest species and accounts for local conditions.

Resourcing and stakeholder participation

This plan embraces the need for new directions in pest control, and so presents priorities that will be addressed within existing funding, and priorities that provide much needed direction to the sourcing of alternate funding.

The plan will be resourced from within existing budgets, where allocation will initially be guided by priorities that:

- Meet stakeholder needs
- Provide the best return on investment
- Balance environmental, economic and social considerations
- Are best supported by the capacity and effectiveness of partners involved.

The programs and actions in this plan will be implemented using a staged approach. The North Coast Pest and Weed Advisory Committee will prioritise which of the plan's actions need to be implemented immediately (i.e., those that address legislative requirements, and deliver existing plans), and which actions can be implemented at later stages (e.g. development of better control techniques).

Key stakeholders have an interest in delivery of priority programs and actions. This interest spans from being involved in refining priority actions, to further developing processes to address actions, through to participating in the on-ground delivery of the plan.

Resourcing of pest management is unpredictable and will fluctuate, and stakeholders will also differ in their capacity to provide pest management resources. It is recognised that partner commitments and capacity to participate may be contingent upon the availability of resources.

Appendix 4: Lord Howe Island pest animal management status

Common Name	Lord Howe Island Management Status
Mammals	
Asian House Rat	Prevention - Key sites include LHI
Black rat	Prevention – Black rats were eradicated in 2023 from the LHI Group area
Bush Rat	High priority for prevention of incursion to LHI
Brown Rat	Prevention - Key sites include LHI
Feral Cat	High priority for prevention of incursion to LHI. Eradicated from LHI 1980s
Feral Goat	Eradicated from LHI in 2013
Feral Pig	Eradicated from LHI 1980s
House Mouse	Prevention – House Mouse was eradicated in 2021 from the LHI Group area
Wild Rabbit	A priority for prevention on LHI
Black Flying Fox	High priority for prevention of incursion to LHI
Common Blossom-bat	High priority for prevention of incursion to LH
Eastern Horseshoe-bat	High priority for prevention of incursion to LHI
Yellow-bellied Sheathtail-bat	High priority for prevention of incursion to LHI
White-striped Freetail-bat	High priority for prevention of incursion to LHI
Eastern Coastal Free-tailed Bat	High priority for prevention of incursion to LHI
Large-eared Pied Bat	High priority for prevention of incursion to LHI
Gould's Wattled Bat	High priority for prevention of incursion to LHI
Chocolate Wattled Bat	High priority for prevention of incursion to LHI
Hoary Wattled Bat	High priority for prevention of incursion to LHI
Squirrel Glider	High priority for prevention of incursion to LHI
Feathertail Glider	High priority for prevention of incursion to LHI
Common Brushtail Possum	High priority for prevention of incursion to LHI
Birds	
Common Blackbird	Present in high numbers on LHI
European Goldfinch	Vagrant on LHI, very low risk
European Starling	Present on LHI. Similar impacts and management to Indian Myna but currently represents a lower risk
European Greenfinch	Vagrant on LHI, very low risk
Indian Myna	A priority for prevention on LHI
Mallard	Present on LHI, ongoing control
Masked Owl	High priority for eradication from LHI
Rock Dove / Feral Pidgeon	Present on LHI, ongoing control or potential to eradicate, but likely to reinvade
Song Thrush	Present on LHI at low numbers
Amphibians	
Cane Toad	High priority for prevention of incursion to LHI
Green Tree Frog	High priority for prevention of incursion to LHI
Red-eyed Tree Frog	High priority for prevention of incursion to LHI
Bleating Tree Frog	Present on LHI, high priority for control/containment on LHI

Common Name	Lord Howe Island Management Status
Eastern Dwarf Tree Frog	High priority for prevention of incursion to LHI
Peron's Tree Frog	High priority for prevention of incursion to LHI
Leaf-green Tree Frog	High priority for prevention of incursion to LHI
Revealed Frog	High priority for prevention of incursion to LHI
Tyler's Tree Frog	High priority for prevention of incursion to LHI
Verreaux's Tree Frog	High priority for prevention of incursion to LHI
Reptiles	
Asian House Gecko	High priority for prevention of incursion to LHI
Bearded Dragon	High priority for prevention of incursion to LHI
Brown Tree Snake	High priority for prevention of incursion to LHI
Common Tree Snake	High priority for prevention of incursion to LHI
Cream-striped Shining-skink	High priority for prevention of incursion to LHI
Delicate Grass Skink	Present on LHI
Dark-flecked Garden Sunskink	Present on LHI
Diamond Python	High priority for prevention of incursion to LHI
Eastern Carpet Python	High priority for prevention of incursion to LHI
Eastern Water-skink	High priority for prevention of incursion to LHI
Eastern Snake-necked Turtle	Present at very low density on LHI
Eastern Water Dragon	High priority for prevention of incursion to LHI
Lace Monitor	High priority for prevention of incursion to LHI
Pale-flecked Garden Sunskink	High priority for prevention of incursion to LHI
Yellow-faced Whip Snake	High priority for prevention of incursion to LHI

Appendix 5: Acronyms

APSOP	Annual Pest Species Operations Plans
DCCEEW	Department of Climate Change, Energy, the Environment and Water (NSW)
DPE	Department of Planning and Environment
GBD	General Biosecurity Duty
LHI	Lord Howe Island
LLS	Local Land Services
North Coast LLS	North Coast Local Land Services
NP	National Park
NPWS	National Parks and Wildlife Service
NSW DPI	NSW Department of Primary Industries
PIRSA	Primary Industries and Regions South Australia
PTWG	North Coast Pest Technical Working Group
PACWAC	North Coast Pest and Weed Advisory Committee
RSPAMP	Regional Strategic Pest Animal Management Plan
SOS	Saving Our Species
TfNSW	Transport for New South Wales
VPIT	Vertebrate Pesticide Induction Training

Appendix 6: References

Allen, B.L., Allen, L.R., Ballard, G., Jackson, S.M. and Fleming, P.J.S. (2017), A roadmap to meaningful dingo conservation. Canid Biology & Conservation 20(11):45-56.

Australian Government (2013), Threat abatement plan for predation by the European Red Fox – Five year review. Department of the Environment.

Hanke, Bill (2013), Response Strategies for the Common (Indian) Myna. Canberra Indian Myna Action Group.

Lord Howe Island Board (LHIB 2016), Lord Howe Island Biosecurity Strategy 2016. Prepared for the Lord Howe Island Board by AECPM Pty LTD, Townsville, Australia.

North Coast Local Land Services (2015), North Coast Regional Wild Dog Management Plan 2015-2020, North Coast Local Land Services, Grafton.

North Coast Local Land Services (2017), North Coast Regional Strategic Pest Animal Management Plan, North Coast Local Land Services, Grafton.

North Coast Local Land Services (2020), Hastings Feral Deer Management Plan 2020-2024, North Coast Local Land Services, Grafton.

North Coast Local Land Services (2021), North Coast LLS Local Strategic Plan 2021-2026, North Coast Local Land Services, Grafton.

North Coast Local Land Services (2022), North Coast Local Land Services Natural Resource Management Plan 2022–2026, North Coast Local Land Services, Grafton.

NSW Department of Primary Industries (2022), NSW Biosecurity and Food Safety Strategy 2022-2030, Dept of Primary Industries, Orange NSW

NSW Department of Primary Industries (2022), NSW Wild Dog Management Strategy 2022 -2027 Dept of Primary Industries, Orange NSW

NSW Department of Primary Industries (2023), NSW Invasive Species Plan 2023-2028, Dept of Primary Industries, Orange NSW

NSW National Parks and Wildlife Service (2006), Guy Fawkes River National Park: Horse Management Plan. Department of Environment and Conservation NSW, Sydney South

NSW Scientific Committee (1998), Predation by the European Red Fox – key threatening process. Final determination.

NSW Scientific Committee (2000), Predation by feral cats – key threatening process. Final determination.

NSW Scientific Committee (2002), Competition and grazing by the feral Wild Rabbit – key threatening process. Final determination.

NSW Scientific Committee (2004), Competition and habitat degradation by the Feral Goat – key threatening process. Final determination.

NSW Scientific Committee (2004), Competition, habitat degradation and disease transmission by the Feral Pig – key threatening process. Final determination.

NSW Scientific Committee (2004), Herbivory and environmental degradation caused by Feral Deer – Key threatening process. Final determination.

NSW Scientific Committee (2006), Invasion and establishment of the Cane Toad – key threatening process. Final determination.

NSW Scientific Committee (2009), Predation and hybridisation caused by Wild Dogs – Key threatening process. Final determination.

NSW Scientific Committee (2018), Habitat degradation and loss by feral horses (Equus callus) – Key threatening process. Final determination.

Primary Industries & Regions South Australia (2010), South Australian Pest Animal Risk Management Guide, Biosecurity SA

Regional NSW (2022), NSW Wild Dog Management Strategy 2022-2027. NSW Government.