# Western Regional Strategic Pest Animal Management Plan 2024-2028

Local Land Services

NSW GOVERNMENT

# Acknowledgement of Country

The Western Local Land Services region covers, in whole or in part, the traditional lands of thirty-one nations of Aboriginal Australia. The Western Local Board acknowledges and pays its respects to Elders, past and present and emerging of these nations.

Obligations to care for Country remain integral to Aboriginal and Torres Strait Islander lore, identity, culture and social and emotional wellbeing. The way in which traditional lands are being managed is of great interest to First Nations communities and Local Land Services understands that Aboriginal and Torres Strait Islander peoples have a significant contribution to make in relation to land management in the region.

**Published by Western Local Land Services**

Western Regional Strategic Pest Animal Management Plan June 2024 – June 2028

First published May 2024

**More information**

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www.lls.nsw.gov.au

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# Executive summary

## The Western 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.

This document covers 12 established pest species such as deer, pigs and rabbits. Whilst highlighting 'alert species' which are pests that have been detected elsewhere yet pose a significant risk to our community and industries in the Western region of NSW.

Key outcomes from this plan include:

- the Western community supports this plan
- the Western community shares the responsibility for pest animal management
- the impact of priority pest animals on priority assets is reduced, and their spread contained
- new pest species in the region are detected and incursions are removed.

This plan identifies a number of key stakeholders who greatly assist in the management of pests in the Western Region of NSW. These include (but are not limited to) private and public land managers, the Indigenous community, NSW Department of Primary Industries (NSW DPI), Environment and Heritage (NSW National Parks and Wildlife Service), WaterNSW, Forestry Corporation of NSW, Game Council of NSW, industry, special interest groups and community organisations.

# 1. Introduction

## 1.1 Overview

The Western Regional Strategic Pest Animal Management Plan (RSPAMP or the plan) outlines how government, industry and the community can work together and share the responsibility to remove, contain or manage pest animals in terrestrial and freshwater aquatic environments across the region.

Pest animals have a significant impact on agricultural production, industry, the environment and communities in the Western region. Sharing the responsibility of good biosecurity across the landscape increases the outcomes of effective control (increased effectiveness to reduce costs). Without coordinated and combined efforts, the level of work to achieve the same outcome will significantly increase.

Under the *NSW Biosecurity Act 2015*, all community members have a general biosecurity duty to prevent, minimise or eliminate any biosecurity risk. The general biosecurity duty is a principle that can be used by the community, land managers, government and industry to implement best practice behaviours to achieve effective pest animal management.

## 1.2 Purpose of the plan

**The plan's purpose is:**

The overall purpose of the RSPAMP is to work together to protect the environment, community and economy from the negative impacts of pest animals to support positive outcomes for biosecurity and sustainable landscapes.

The plan supports regional implementation of the *NSW Biosecurity Act 2015*. It presents a clear vision by identifying regional priorities for pest animal management and outlines how government agencies, community groups and individual land managers will share responsibility and work together across land tenures to prevent, eradicate, contain and manage the impacts of pest animals.

RSPAMPs aim is to provide guidance on how both public and private land managers can meet their general biosecurity duty and identify key commitments for pest animal management activities over the life of this plan.

## 1.3 Audience of the plan

This plan is for all people and organisations with a General Biosecurity Duty and vested interest either directly or indirectly with vertebrate pest animals within the Western Region. This includes but is not limited to:

- Public land managers e.g. Local Land Services (LLS), NSW DPI, Crown Lands, National Parks and Wildlife Service (NPWS), Transport for NSW and local governments
- Private land managers e.g., primary producers, non-government conservation lands, mining companies and residential landholders
- Research organisations
- Community groups e.g. western landcare, pest management groups, Landcare groups
- Industry bodies e.g. NSW Farmers Association
- Government agencies e.g. LLS, NSW DPI, NPWS

The Western RSPAMP provides a valuable resource to understand our regional pest animal management priorities and provides information on:

- the roles and responsibilities of all stakeholders including individuals in fulfilling (or discharging) their General Biosecurity Duty, in relation to the management of regional priority pest animals (refer to section 1.7)

- planned activities for the management of priority pest animals (refer section 5).

The Western RSPAMP can be accessed online via:

- https://www.lls.nsw.gov.au/help-and-advice/pest-control/regional-strategic-pest-animal-management

## 1.4 What is considered a pest animal?

Pest animals can be considered as any species (other than native species) that present a biosecurity threat.

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* will outline 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 Western 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 the following 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 in crop 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 covered 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 NPWS and having 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

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*):**

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**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 Western. 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.

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

## 1.7 Roles and responsibilities

Under the new *Biosecurity Act 2015* framework, biosecurity is a shared responsibility where 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, private and Aboriginal land managers all have a shared and equal responsibility to eliminate and minimise biosecurity risks across land in NSW.
- A key focus of the RSPAMP is to encourage engagement and participation 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 DPI have 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

The role of LLS is to be the interface between land managers and government across invasive species management. LLS is responsible for the operational aspects, including planning and coordination, of established terrestrial vertebrate pest management. LLS builds the capacity of land manager groups to start pest animal management, including education and compliance related to land manager obligations under the *Biosecurity Act 2015 (NSW)* and *Local Land Services Act 2013*. LLS also provides operational assistance during invasive species incursions and surveillance operations.

Key roles of LLS in relation to invasive species include:

- providing capacity building and technical advice
- facilitating the planning, implementation and review processes of Regional Pest Animal Committees (RPACs) as a method of stakeholder consultation for strategic planning
- distributing restricted pesticides and providing associated training for land managers
- coordinating largescale across tenure pest animal control programs with associated land manager communication and compliance activities as necessary
- supporting applied research and extension of latest research results.

The role of the NSW DPI, Regional Pest Animal Committee, State Pest Animal Committee, public land mangers 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 to support the work of the State Pest Animal Committee to ensure a consistent approach to planning, operations and enforcement across the state.

## State Pest Animal Committee

The State Pest Animal Committee (SPAC) oversee key policy and strategy documents to guide pest animal management outcomes across the state.

## Public land managers

All Federal, State and local government 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; and 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 land and in aquatic environments used for production
- 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
- reporting anything unusual, including alert species and other pests or diseases that seem out of place.

For more information on key roles and responsibilities in pest animal management, please refer to the 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 the community remain vigilant and report any unusual sightings to ensure a rapid management response.

The *NSW Biosecurity Act 2015* outlines species that are prohibited from being kept in NSW.

Land managers and community members play a major role in reporting any unusual sightings of pest animals in the region.

The table below provides examples of some key alert species for the NSW Western Region.

List of alert species know to be found in the Western Region:

| 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* |  |
| Chital deer | *Axix axis* |  |
| Rusa deer | *Cervus timorensis* |  |
| Hog Deer | *Axis porcinus* |  |
| Red deer | *Cervus elaphus* |  |

| Species common name | Scientific name | Species illustrative image |
|---|---|---|
| Sambar deer | *Cervus unicolor* |  |
| Sika deer | *Cervus nippon* |  |

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 Environment and Heritage. Where species are widely established in NSW but have spread into a new region, LLS and the RPAC will consider whether local removal 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.**

## 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.

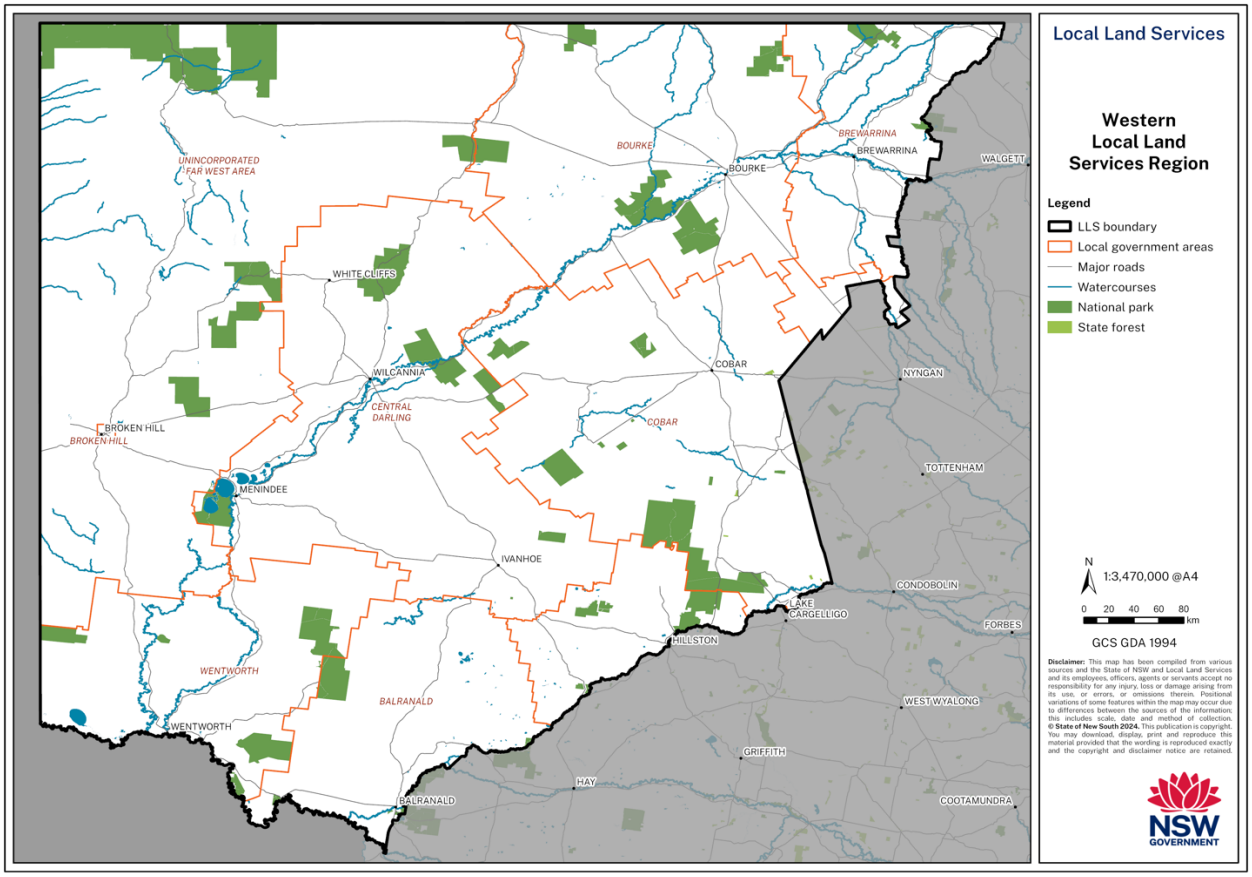
# 3. Our region

## Location and communities

The Western region is the largest LLS region in NSW, covering 314,500 km$^2$, or 40 per cent of the state and covers an area larger than Victoria and Tasmania combined. It is bounded to the east by the North-West, Central West, Riverina and Murray LLS regions and shares a border with three states (Queensland, South Australia and Victoria). The region is sparsely populated with a total population of approximately 43,000, and only the mining communities of Broken Hill and Cobar have urban populations greater than 3,000. This makes the early detection and management of most pest animal species in the region very difficult. The importance of cooperative, cross-regional approaches to pest animal management is therefore higher in the Western region than most other LLS regions.

| | |
|---|---|
| $1.28b | Is the value of agricultural commodities produced in the region. |
| 51% | of land is used for growing sheep for wool, followed closely by growing hseep for meat at 49%. |
| 14,257ha | Is the average property size with 1314 farmers or farm managers. |
| 95% | Of the region has native vegetation remaining intact. |

**Figure 3.1: Western Local Land Services Region**



### Climate

The climate of the Western region is characterised by its low and unpredictable rainfall, hot to very hot summers and very low minimum temperatures during mid-winter. Annual rainfall is highest in the northeastern parts of the region and lowest in the west. Annual average rainfall totals range from 411 mm at Brewarrina, to 323 mm at Balranald, to 260 mm at Broken Hill. Drought is a common part of the climatic cycle in the Western region. This can result in dramatic variations in the number and distribution of many of the pest animal species present from year to year and season to season. This both complicates and provides opportunities for effective pest animal control.

### Landscapes and vegetation

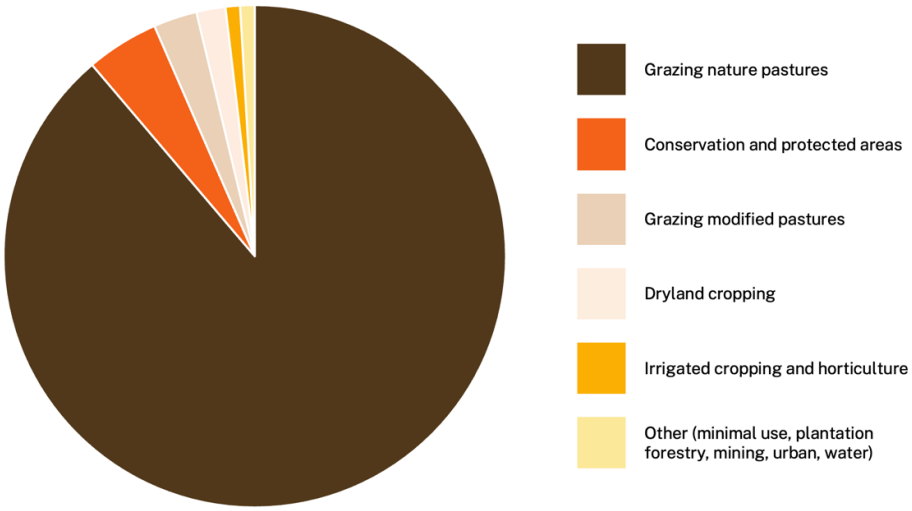
Arid and semi-arid rangelands dominate the region. It is a predominantly flat landscape, with small areas of low, stony ranges in its westernmost and easternmost parts. The region is bisected by the Barwon-Darling River system, which runs for approximately 1,400 km north-east to south-west via a mostly confined series of channels and wetlands. The region is also bounded by the Murray and Murrumbidgee rivers to the south and the Lachlan River to the southeast. There are numerous other smaller, mostly ephemeral, rivers and creeks across the region. A diversity of vegetation communities are present, varying from the mulga woodlands and chenopod shrublands of the west, the mallee and Murray pine woodlands of the south, the brigalow-gidgee woodlands of the north and riparian vegetation associated with the river systems and floodplains. This diversity of landscapes and vegetation has a strong influence on which areas certain pest animal species are normally found in, and therefore which areas are greater impacted upon. For example, feral pigs are strongly associated with certain vegetation types in riverine/floodplain country.

The pest animal distribution maps in this plan are based on statewide data compiled in 2023 from expert industry opinion. The maps are at a coarse scale (5km X 5km grids) and provide general guidance only about pest animal distribution and abundance. A key priority for future implementation of this plan will be to improve the reporting of pest animals to refine regional information collected on pest animal distribution and relative abundance. Improved information on distribution and abundance will better guide management and investment and assess effectiveness.

### Land tenure and land use

The vast majority of the region is used for extensive grazing of domestic livestock (sheep, cattle and goats) on native pastures where the size of these pastoral properties varies considerably. Some properties in the far west of the region can be more than 200,000 hectares (2,000 km$^2$) in size. In recent decades, the region has seen an increase in more intensive forms of agriculture, with dryland farming and irrigated agriculture being significant, particularly along the eastern and southern margins. A significant proportion of the region is under some form of protection for conservation and/or cultural purposes. The region contains many important Aboriginal cultural assets. A growing tourism industry is strongly associated with these areas and is an important part of the regional economy. This diversity of land use and the large property sizes in the region pose some real challenges for the effective management of many pest animal species. A species that may pose a threat to one land use may be of minimal importance to an adjoining land use. Cost and logistical considerations mean that it is often not realistic to expect land managers to implement control programs for certain pest animal species across their properties.

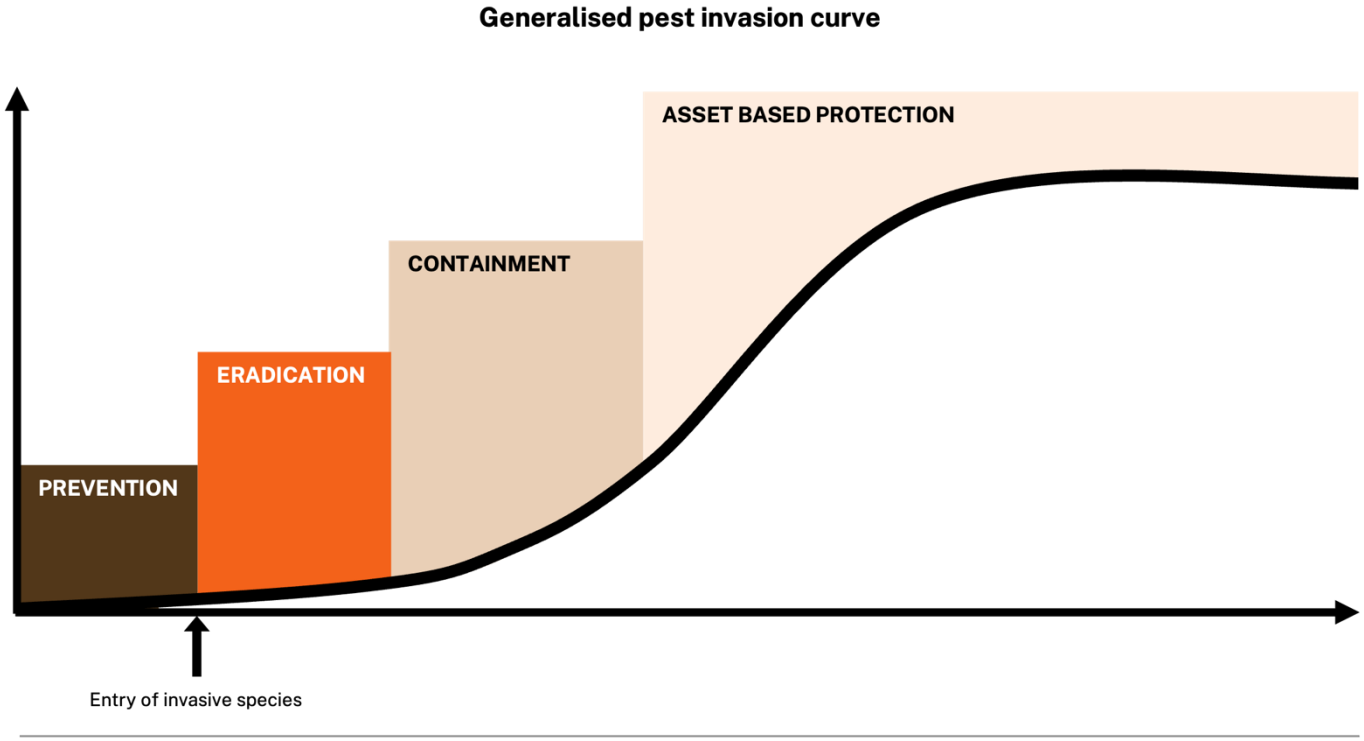
**Figure 3.2: Western Local Land Services Major Land Use**



# 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<br>PREVENTION | 1:25<br>ERADICATION | 1:5-10<br>CONTAINMENT | <1:1-5<br>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.<br><br>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.<br><br>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.<br><br>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.<br><br>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 |
|  | Feral deer (Hog, Rusa, Sambar, Sika) | **PREVENTION** | 5.1 |
|  | Feral camel | **CONTAINMENT** | 5.2 |
|  | Feral deer (Chital, Fallow, Red) | **CONTAINMENT** | 5.1 |
|  | Feral donkey | **CONTAINMENT** | 5.3 |
|  | Feral horse | **CONTAINMENT** | 5.4 |
|  | Feral cat | **ASSET BASED PROTECTION** | 5.5 |
|  | Wild dog | **ASSET BASED PROTECTION** | 5.6 |
|  | European red fox | **ASSET BASED PROTECTION** | 5.7 |
|  | Feral goat | **ASSET BASED PROTECTION** | 5.8 |
|  | Feral pig | **ASSET BASED PROTECTION** | 5.9 |
|  | Wild rabbit | **ASSET BASED PROTECTION** | 5.10 |

# 5. Priority pest species

Pest animals for the Western region 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 Feral deer

**PREVENTION**
(Hog, Rusa, Sambar, Sika)

**CONTAINMENT**
(Chital, Fallow, Red)

| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Provide support and advice to land managers<br>• Assist land managers with planning/implementing control programs<br>• Coordinate control programs across landscapes<br>• Working with consenting land managers, conduct control programs |
| **Pest management groups and general public** | • Report sightings and locations of feral deer to Western LLS and/or Feral Scan |
| **Public and private land managers** | • Report sightings and locations to Western LLS and/or Feral Scan<br>• Using best practice controls actively control, and keep controlled all species of feral deer on property<br>• Participate in coordinated control programs for feral deer |

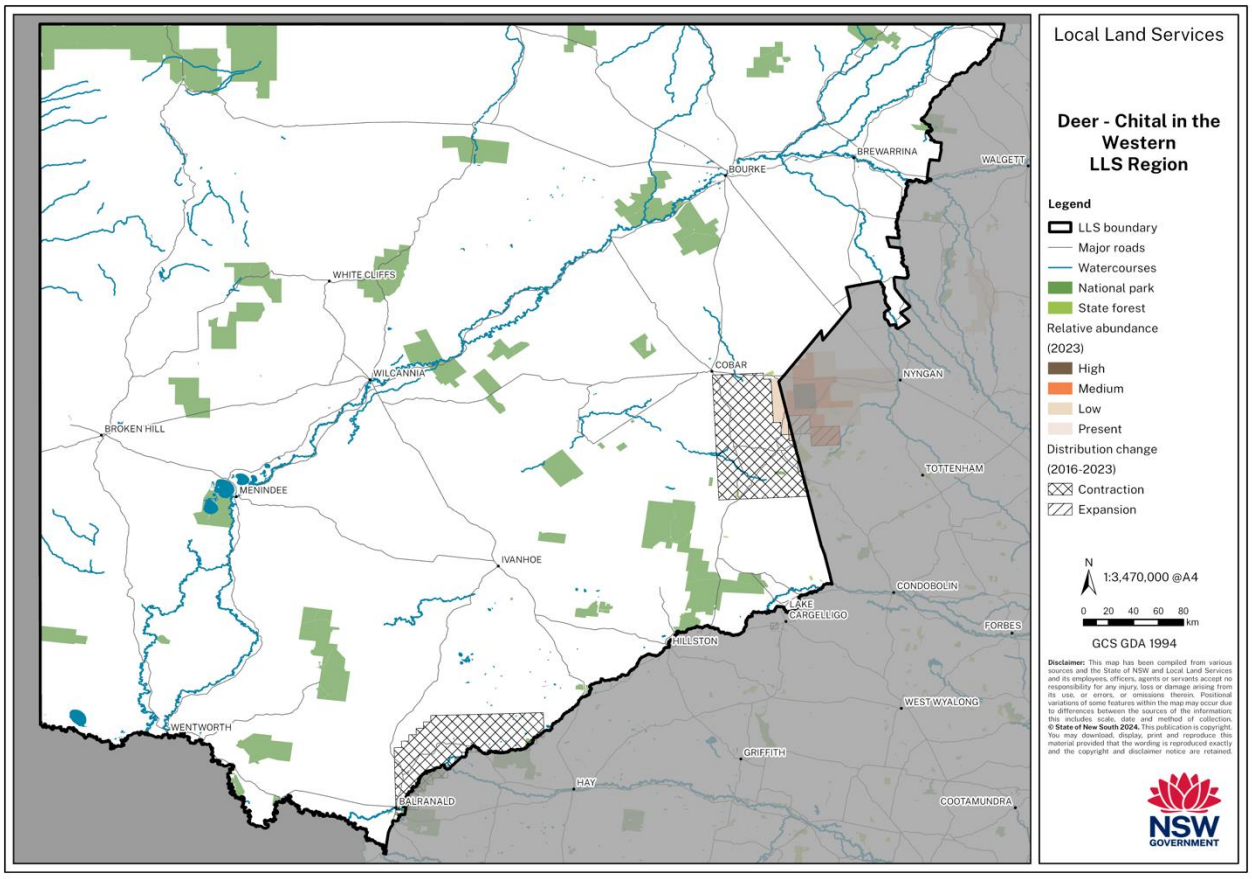
### Distribution

6 deer species have established feral populations in NSW. 5 of these species are widespread: fallow (*Dama dama*), red (*Cervus elaphus*), sambar (*Cervus unicolor*), chital (*Axis axis*) and rusa (*Cervus timorensis*) deer. Currently, 3 species are found within the Western LLS region, these are; chital, fallow and red deer. Each species of feral deer occupies a different environment within our region, with their density and distribution outlined below.

### Distribution of chital deer

In the Western region a number of feral chital deer populations have established in areas to the south and east of Cobar bordering the Central West LLS region, most likely from a deliberate release in both regions. Any strategy to control and contain these populations will require a joint LLS approach.

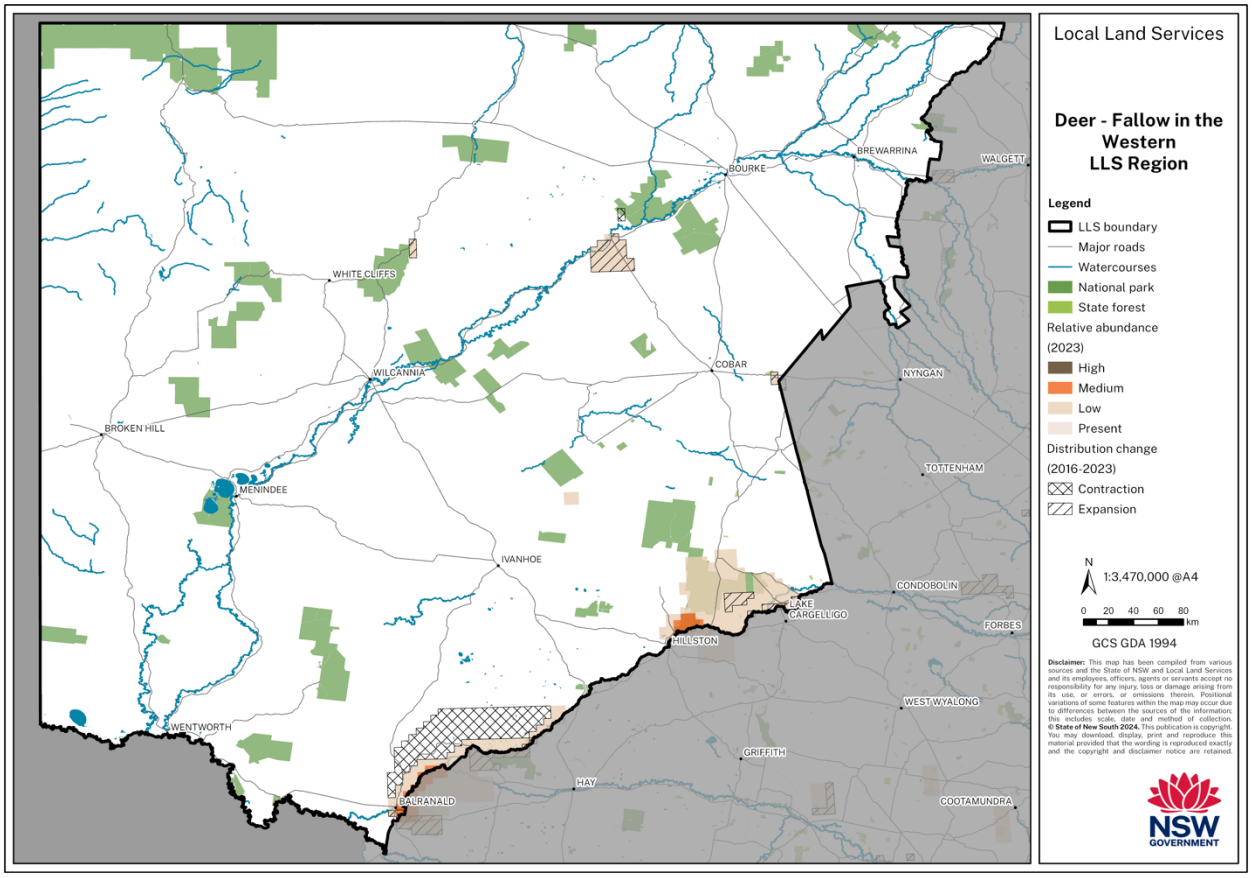
**Figure 5.1.1: Chital deer in the Western LLS Region distribution map**



### Distribution of fallow deer

In the Western region, feral fallow deer are the most widespread of the deer species and feral populations have resulted from either deliberate introductions or escapes from unprofitable commercial deer farms. Feral fallow deer populations found in the Western region have considerable scope for expansion if no management strategies are applied. Populations are found centrally in the region, and along the eastern and southern boundaries of the region.

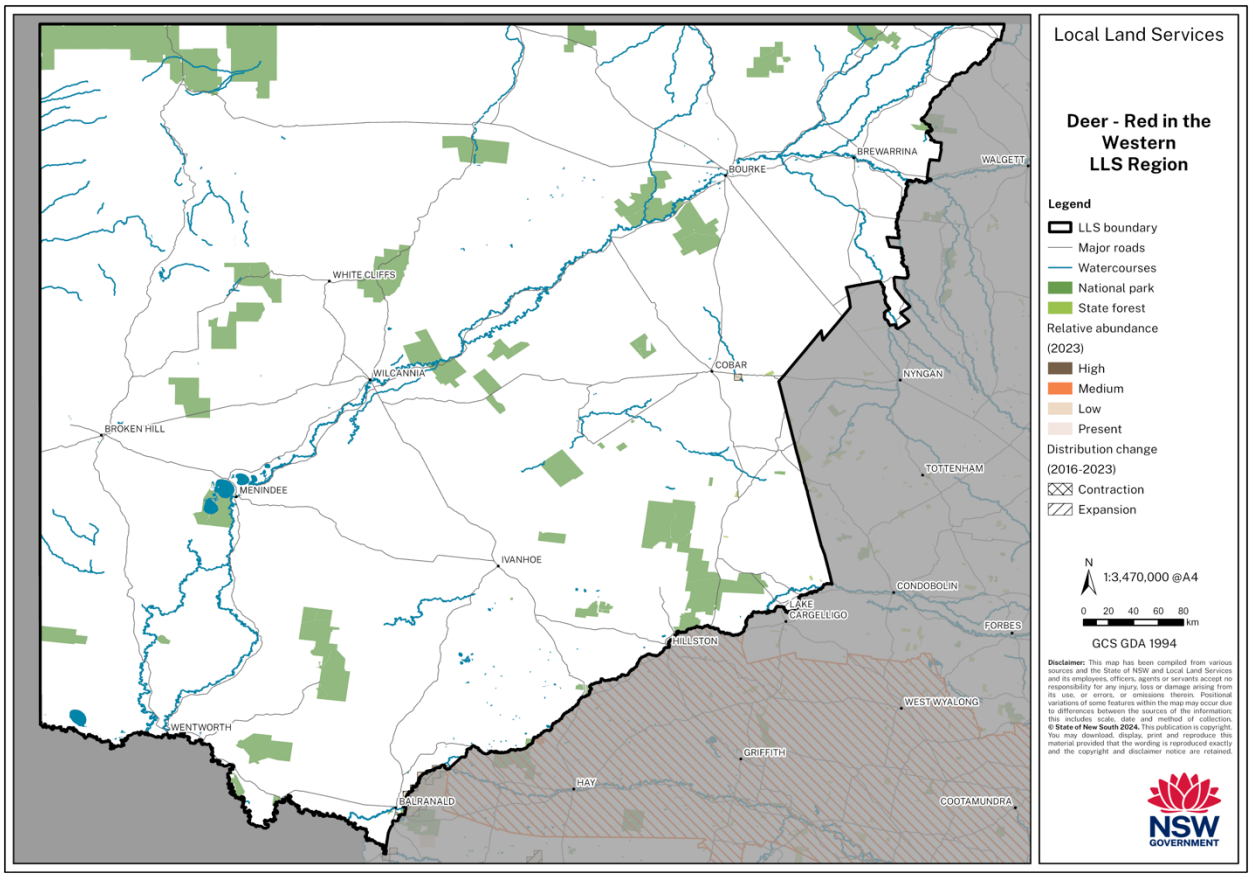
**Figure 5.1.2: Fallow deer in the Western LLS Region distribution map**



### Distribution of red deer

Populations of feral red deer have been confirmed to the east and north-east of Balranald with these populations likely the result of deliberate releases, or escapes from deer farms located in adjoining regions. Of the three *Cervus* species, feral red deer has the largest geographical distribution across Australia and is best suited climatically to the Western region; based on climatic modelling carried out by CSIRO. Feral red deer have the potential to expand from their current locations and pose increased threats to both biosecurity and biodiversity of the region.

**Figure 5.1.3: Red deer in the Western LLS Region distribution map**



### Distribution of rusa and sambar deer

There have been unconfirmed reports of both feral rusa and sambar deer in the east and northeast of Balranald and a lone male Sambar on monitoring camera in the southeast of the region. Feral sambar deer are suited climatically to the Western region; based on climatic modelling carried out by CSIRO. Though in discrete and unconfirmed density, land managers in the Western LLS region need to be alert to the potential spread of these species.

Information on the distribution and abundance of feral deer in the Western region is improving every year with land managers and members of the wider community reporting sightings of the species. Continued work with landholders and other land management agencies to undertake regular ground and aerial surveillance is critical to understanding the full extent of distribution and to inform coordinated control programs into the future.

**Figure 5.1.4: Rusa deer in the Western LLS Region distribution map**

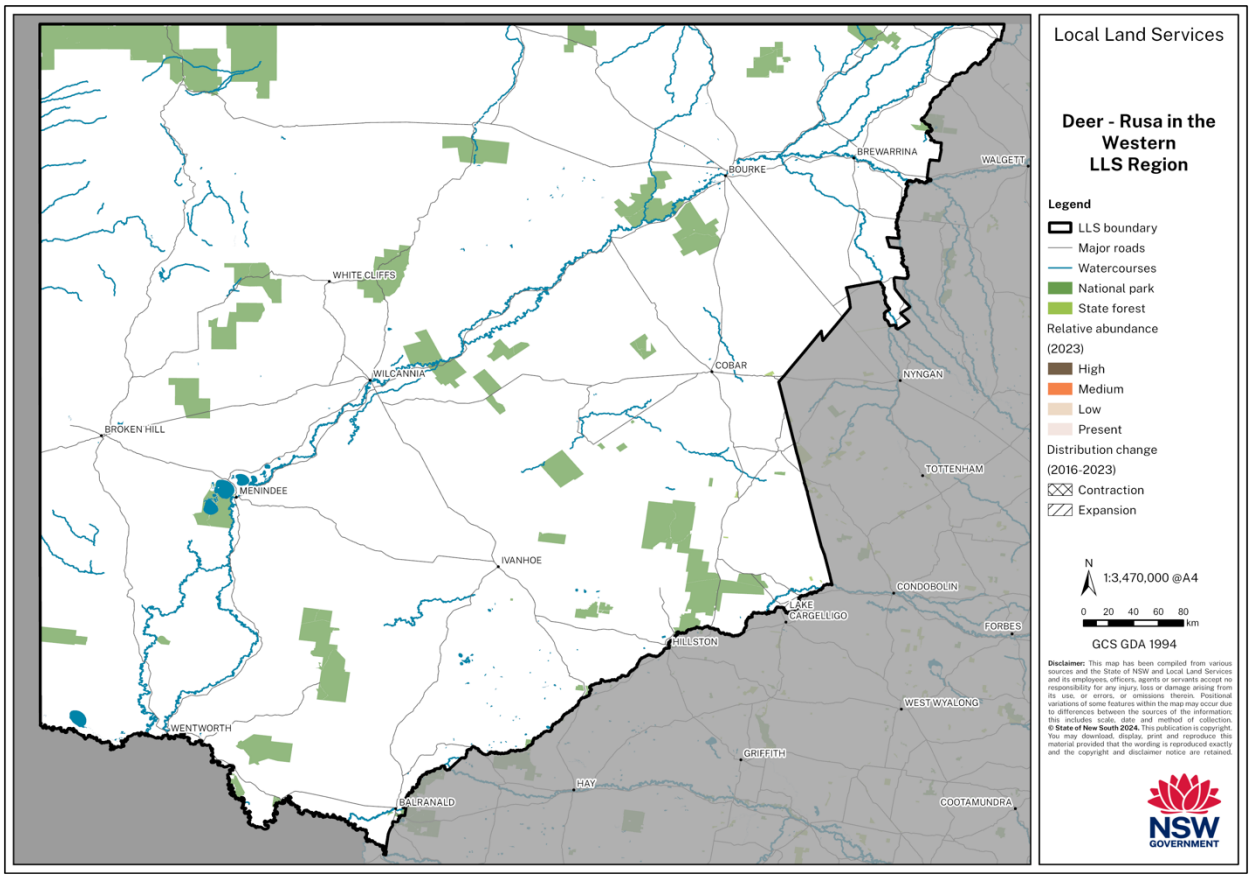
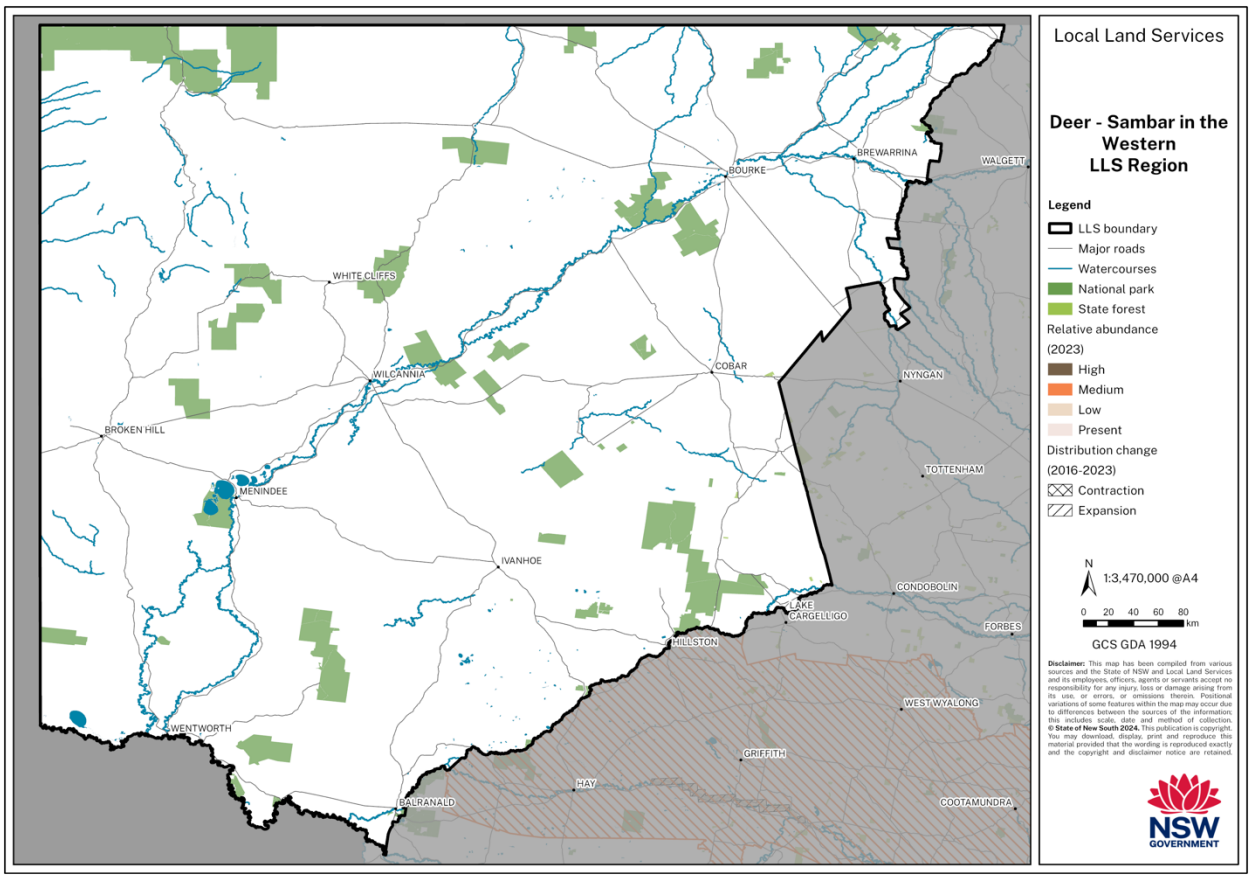


**Figure 5.1.5: Sambar deer in the Western LLS Region distribution map**




## Impacts

Feral deer have a range of environmental impacts, including browsing and grazing that affects plant seedling recruitment and growth, damage to vegetation through trampling and antler rubbing, impacts on water quality through wallowing and faecal contamination and transporting weed seeds. Herbivory and environmental degradation caused by feral deer has been listed as a key threatening process by the NSW Scientific Committee. All deer species compete with livestock for pastures; adding to the total grazing pressure experienced on farm and can significantly impact crop production. All deer species because of their semi nocturnal habits have a tendency to become disorientated in bright lights and are a significant collision risk on roads. Mature males can become aggressive around the breeding season.

## Management and control

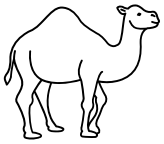
Effective deer control is difficult due to limited control options and no registered toxin. The desirability of feral deer as a hunting animal is at times a hindrance to the roll out of broad scale primary control methods in some parts of the region, with some land managers reluctant to control feral deer to maintain a population for hunters and gain financial benefit and other services from recreational hunters.

Aerial control is the most effective control option we have at current, though its expense is out of reach for many land managers and even government agencies at times. With feral deer being a cloven hooved species they have the potential to be a vector in the spread of foot and mouth disease if it was to enter Australia. This threat has seen welcome funding to assist in control in the Western region. The first step in control is awareness of the issue, and Western LLS strongly encourages land managers and members of the public to continue reporting feral deer to further control strategies.

**Feral deer management framework**

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Containment | Whole region | • Biodiversity assets and threatened species<br>• Domestic livestock<br>• Enterprises<br>• Horticultural<br>• Enterprises<br>• Human health and<br>• Safety<br>• Aboriginal cultural<br>• Assets<br>• Road Safety | Primary control techniques to utilise include:<br>• Aerial shooting<br>• Ground shooting<br><br>Supplementary control techniques to utilise include:<br>• Exclusion fencing<br>• Trapping- clover, corral and paddock traps<br><br>Timeframe: Ongoing throughout July 2024 - June 2028 |

# 5.2 Feral camel



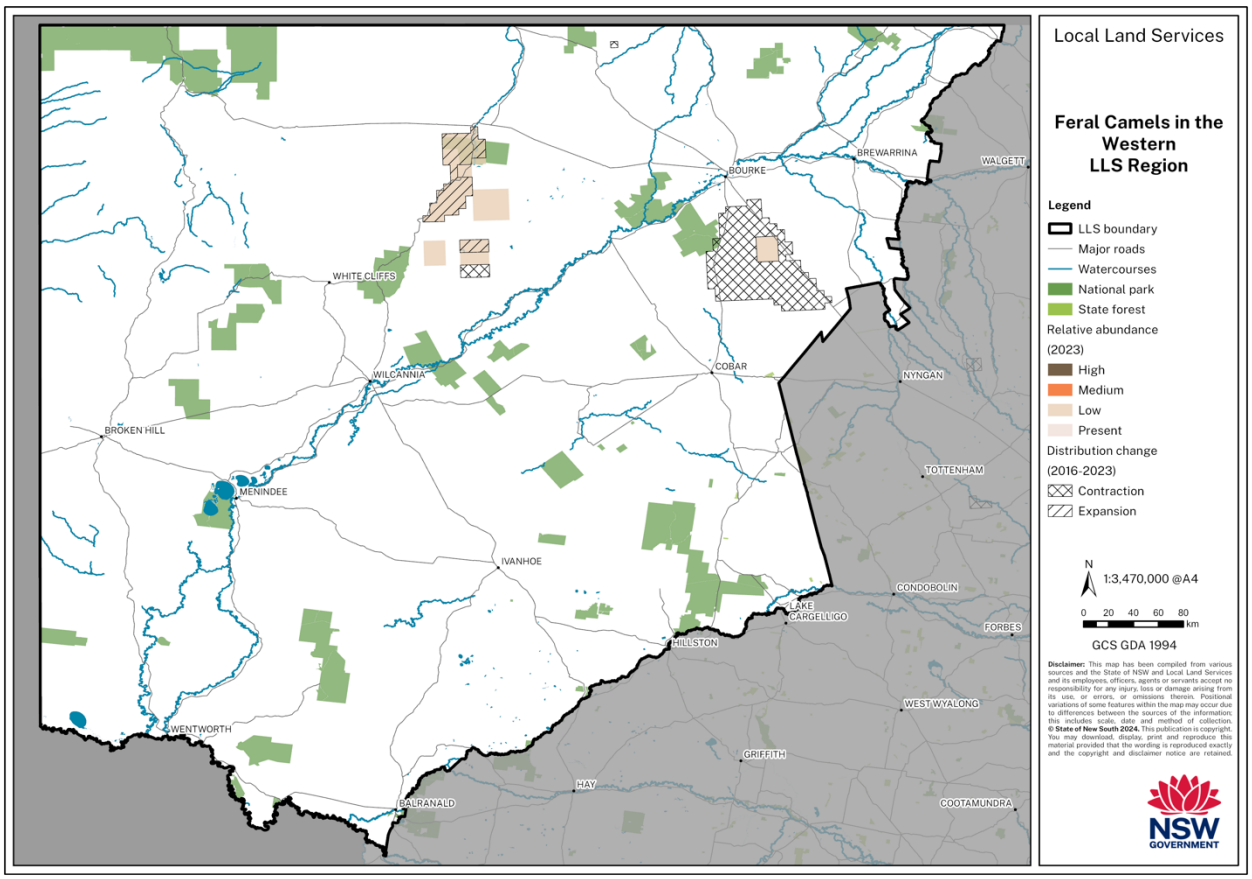
**CONTAINMENT**

| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Support land managers to undertake control<br>• Ensure managed populations have the required permits in the Western region |
| **Public and private land managers** | • Report sightings and locations to WLLS or Feral Scan<br>• Using best practice techniques actively control, and keep controlled feral camels on properties managed by the land manager |

### Distribution

The number and exact location of feral camels (Camelus dromedarius) in the Western LLS region is somewhat uncertain, although current information shows that there are a few isolated, relatively small herds present, all in the northern half of the region. The situation is somewhat complicated by the presence of a few 'domestic' herds, some of whom do not appear to be held under the required permit. Feral camels have the potential to spread to most parts of the region.

**Figure 5.2.1: Feral Camels in the Western LLS Region distribution map**



### Impacts

Feral camels can cause significant damage to the region's primary production, environmental and community assets if left unchecked. They can do severe damage to fencing and water infrastructure and compete directly with domestic livestock for water. At high numbers, they have considerable grazing impact and have the ability to alter entire plant communities. Feral camels have caused significant damage to key infrastructure in small communities and have heavily impacted on water – related Aboriginal cultural sites interstate (for example SA, NT and WA).

### Management and control

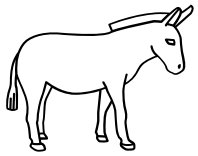
Currently, control of feral camels in the region is opportunistic and undertaken by private land managers controlling herds as they expand.

### Feral camel management framework

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Containment | Whole region | • Domestic livestock enterprises<br>• Threatened and endangered flora species<br>• Aboriginal cultural assets | Primary control technique to utilise;<br>• Aerial shooting<br><br>Supplementary control techniques to utilise include:<br>• Mustering<br>• Trapping<br>• Exclusion fencing<br>• Ground shooting<br><br>Timeframe: opportunistic |

# 5.3 Feral donkey

**CONTAINMENT**

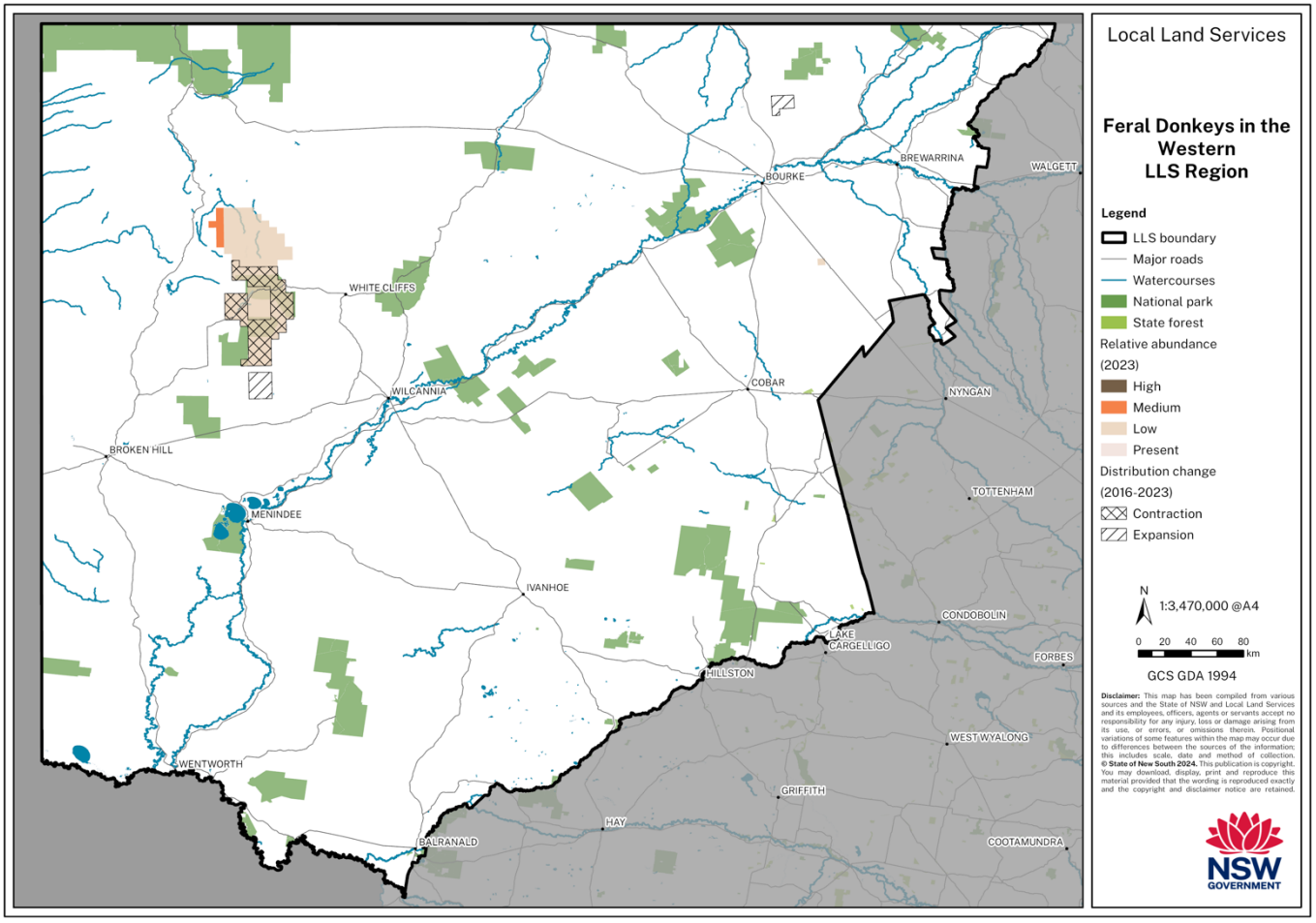


| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Support land managers to undertake control |
| **Public and private land managers** | • Report numbers and location of feral donkeys to Western LLS and/or Feral Scan wherever found<br>• Using best practices control techniques actively control, and keep controlled feral donkeys on properties managed by the land manager.<br>• Do not release un-neutered guardian donkeys. |

### Distribution

Currently, there are relatively few small, quite localised populations of feral donkeys (Equus asinus) found in the northern half of the Western LLS region. This species has the potential to spread throughout much of the northern and western parts of the region. Donkeys can be utilised as guardian animals for sheep flocks, for protection against attack by canid predators such as wild dogs and foxes. Feral donkeys often get used for this task, the main issue with this being that many have not been neutered and can breed with other 'guardians' and the existing feral herd, thus contributing to an increase in numbers and distribution.

**Figure 5.3.1: Feral Donkeys in the Western LLS Region distribution map**



### Impacts

To date, the main impact of feral donkeys has been on domestic livestock enterprises in the areas they are present. Donkeys destroy fencing infrastructure, which has compromised a number of biosecurity programs that require strict segregation of livestock groups. They can reduce feed availability for domestic livestock species and deny them access to water. They have the potential to be involved in serious injury or fatal vehicle accidents. Given their preference for hilly habitats, they have the potential to threaten the environmental values of such areas.

### Management and control

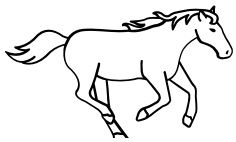
The available control measures and strategies for feral donkeys are effective. Given the tendency of groups of donkeys to remain within a localised area and the region's limited numbers, it is possible to contain the species. There is some reluctance across both private and publicly managed land to undertake further control.

### Feral donkey management framework

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Containment | Whole Region | • Domestic livestock enterprises<br>• Native pasture species<br>• Threatened and endangered flora species<br>• Human health and safety | Primary control techniques to utilise include:<br>• Aerial shooting<br><br>Supplementary control techniques to utilise include:<br>• Mustering<br>• Trapping<br>• Exclusion fencing<br>• Ground shooting<br><br>Timeframe: opportunistic throughout July 2024 - June 2028 |

# 5.4 Feral horse

**CONTAINMENT**

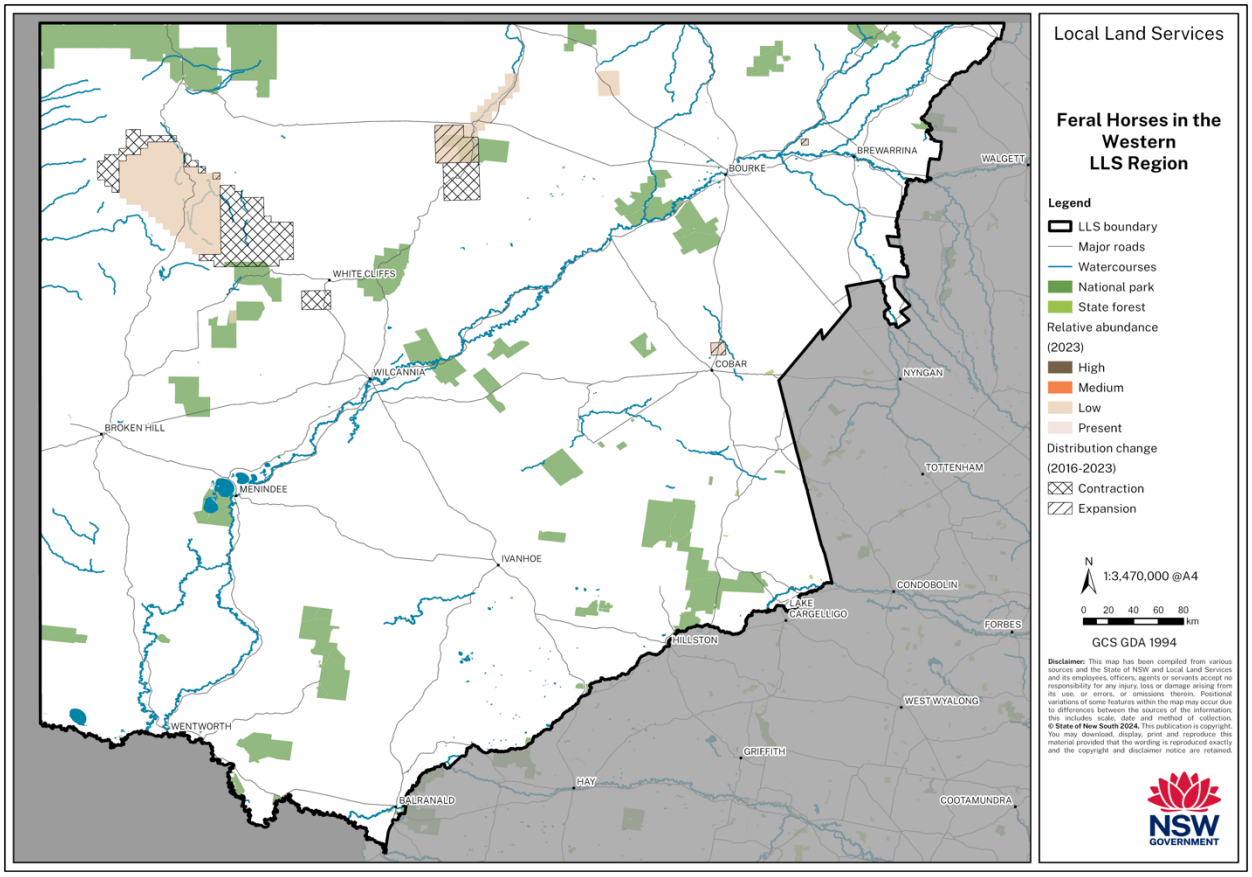


| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Support land managers to undertake control<br>• Provide advice to land managers on control techniques |
| **Public and private land managers** | • Implement control following best practice techniques on their land<br>• Report sightings and locations of feral horses to Western LLS |

### Distribution

While reporting on feral horses (*Equus caballus*) is improving, there remains a degree of uncertainty in relation to the number and distribution of feral horses in parts of the region. Areas in the north of the Western LLS region tend to be more prevalent with populations. Most properties are believed to have at least a residual population, generally in small mobs or individual animals. Collectively, however, these populations would run into the thousands. Feral horses exist on both public and private lands and there is clear potential for feral horses to increase their density and distribution in the region.

**Figure 5.4.1: Feral Horses in the Western LLS Region distribution map**



### Impacts

In recent times, high populations have caused infrastructure damage and have a high degree of impact on the total grazing pressure of the landscape. They have clearly demonstrated their ability to cause serious damage in similar environments in other states (for example QLD and WA), particularly on or near rivers, creeks and other water bodies. Feral horses are also involved in serious injury or fatal vehicle accidents from time to time. In the western region road issues arise in drier seasonal conditions as feral horses often make use of water points alongside unfenced roadways.

### Management and control

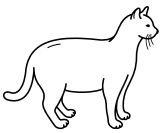
Control of the species often occurs opportunistically when local populations get out of hand. There remains a degree of reluctance amongst some land managers and the general community for feral horse control to be undertaken in the region. This is partly because, in most cases, they don't currently appear to be causing significant damage and partly because of their historic value.

### Feral horse management framework

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Containment | Whole Region | • Riparian ecosystems<br>• Threatened and/or endangered flora and fauna species<br>• Domestic livestock enterprises<br>• Cultural assets<br>• Human health & safety | Control techniques to utilise include:<br>• Mustering<br>• Trapping<br>• Aerial shooting<br>• Exclusion fencing<br>• Ground shooting<br><br>Timeframe: opportunistic throughout july 2024 - june 2028 |

# 5.5 Feral cat

**ASSET BASED PROTECTION**



| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Provide advice to land managers on control techniques<br>• Research control options to provide a broad scale technique to feral cat management |
| **Public and private land managers** | • Implement best practice control techniques on their land<br>• Practice responsible cat ownership to prevent abandonment, unwanted breeding and predation of native wildlife |

### Distribution

Feral cats (*Felis catus*) are widely distributed and well established throughout the Western LLS region. Feral cats are highly opportunistic by nature and have adapted exceptionally well to living in all environments. Existing populations, particularly around towns and villages are regularly boosted by releases and escapes of domestic cats, both intentional and unintentional.

### Impacts

Feral cats are a significant threat to the environmental and cultural heritage values of the region, through their predation of many small to medium sized native mammals and ground nesting birds. Many of these are threatened or endangered species, which are also important totems for Aboriginal communities. Feral cats are not known to have any significant impact on primary production in the region. In NSW there have been around 30 instances of toxoplasmosis causing disease in livestock. The toxoplasma parasite impacts livestock by causing abortions in sheep and goats and has a varying degree of impact on human health.

### Management and control

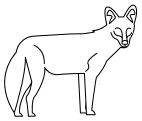
Feral cat control is very difficult and costly and success rates of programs are highly variable. There is to date no approved broad scale primary control measure for feral cats in NSW. Research in this space has been ongoing for multiple years finding a broad scale effective tool. Anecdotally, seasonal baiting programs carried out throughout the region targeting foxes and wild dogs have varied impact on populations. Control is very opportunistic, often via ground shooting. Exclusion fencing to exclude feral cats is being used in a small number of cases within the region, in specific areas that are working with the re-establishment of native mammals. Notably, Scotia Sanctuary in the southwest and Wild Deserts within Sturt National Park in the northwest of the region.

### Feral cat management framework

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Asset based protection | Whole Region | • Native Fauna<br>• Threatened and endangered fauna species<br>• Aboriginal community totems<br>• Human health and safety | Broad scale, cost effective control techniques are limited for feral cats.<br>• Control measures include;<br>• Exclusion fencing<br>• Ground shooting<br>• Trapping- cage and padded jaw<br><br>Timeframe: Ongoing throughout July 2024 - June 2028 |

# 5.6 Wild dog

**ASSET BASED PROTECTION**



| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Provide capacity building and technical advice to enhance control activities<br>• Coordinate large-scale across-tenure pest animal control programs<br>• Distribute 1080 (sodium fluoroacetate) bait products and provide associated training for land managers<br>• Support pest management groups to control wild dogs in a coordinated manner<br>• Support the maintenance of the Wild Dog Barrier Fence |
| **Pest management groups** | • Groups to support the control of wild dogs in a coordinated manner to achieve maximum results<br>• Report wild dog activity to Western LLS and/or Feral scan |
| **Public and private land managers** | • Using best practice techniques actively control and maintain efforts to control wild dogs on properties managed by the land manager<br>• Actively participate in coordinated group control programs for wild dogs<br>• Report sightings and impacts of wild dogs and results of control programs to neighbouring properties, local pest management group and/or Western LLS |

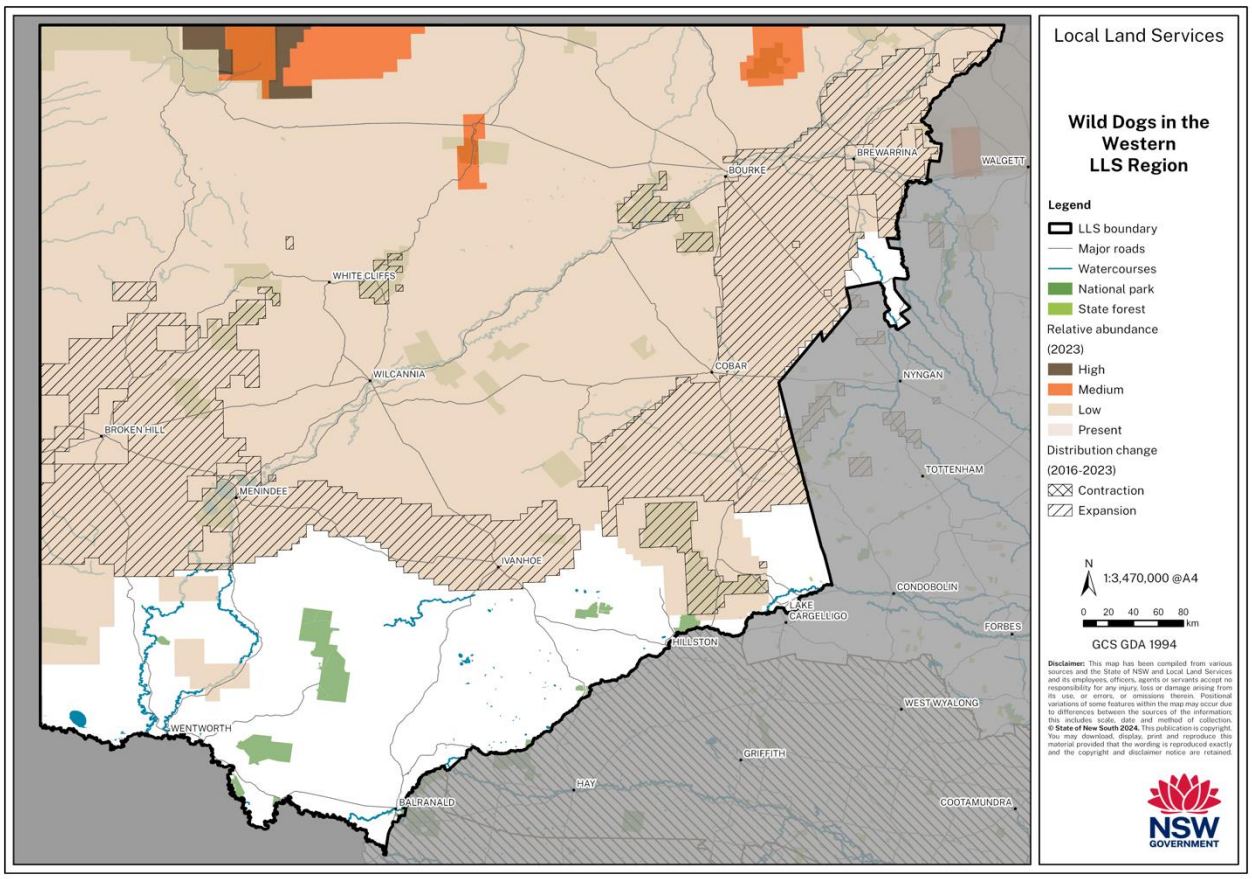
### Distribution

The distribution and abundance of wild dogs in the Western LLS region shows a distinct north–south divide. In the northern two-thirds of the region, wild dogs are present in most areas in varying densities. They are far less common in the southern third of the region, although resident populations have been long established in certain areas. Wild dogs are slowly expanding their range in the southern part of the region, partly through the gradual southward movement of northern populations and partly through cross-border incursions of wild dogs from South Australia, from populations that reside south of Southern Australia's internal dog fence. Landholders in the north-east of the region have also experienced wild dog incursions along the Queensland border.

### Impacts

Wild dogs can cause significant losses to livestock enterprises in the region, with consequent economic and social impacts. Livestock can make up a significant part of a wild dog's diet, though at times they predate for fun, causing death or prolonged suffering.  Other very common prey includes native animals such as birds, echidnas, emu's, reptiles, kangaroos and other small mammals.

**Figure 5.6.1: Wild Dogs in the Western LLS Region distribution map**




## Management and control

The participation of many land managers in coordinated control programs for wild dogs is making a significant difference to the losses experienced through wild dogs. The established network of pest management and Landcare groups in the northern part of the region is working well in relation to the promotion and execution of effective coordinated control of wild dogs and is making good use of the resources and guidance provided through regional, state and national strategies. There is clear potential for, and increasing support amongst land managers to, establish new pest management groups in the southern part of the region. Broad scale coordinated seasonal baiting programs are a staple of Western LLS and the pest management groups it works with to achieve such a coordinated program. This control has also had an overwhelming effect on the regions fox population. The seasonal baiting program is vital for the control of both pest species. Anecdotally, land managers who are in a routine habit of seasonal baiting report 'no foxes' and increases in lizards, birds and even the spotting of quolls in their local area. Trapping is a common and successful tool used to control wild dogs in the region. Over recent years many organisations have supported and provided trapping workshops to enhance a land manager's ability to independently respond to predation through trapping on their property and others in their local area.

Given the widespread distribution of wild dogs in the Western LLS region (albeit at varying densities) and the need to protect the region's livestock industries, the appropriate management category for wild dogs at a region-wide basis is asset based protection. This approach anticipates the expansion of current control efforts and does not prevent individual land managers or pest management groups aiming to achieve eradication or containment at the local level.

**Wild dog management framework**

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Asset based Protection | Whole region | • Domestic livestock enterprises<br>• Threatened and endangered fauna species | Primary control techniques to utilise include:<br>• Ground baiting<br>• Aerial baiting<br><br>Supplementary control techniques to utilise include:<br>• Trapping<br>• Canid pest ejectors<br>• Exclusion fencing<br>• Ground shooting<br>• Guardian animals<br><br>Timeframe: ongoing throughout july 2024 - june 2028 |

# 5.7 European red fox

**ASSET BASED PROTECTION**

| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Provide support and advice to land managers<br>• Assist land managers with planning and implementing control<br>• Help establish pest management groups in areas they don't exist<br>• Support existing groups in working towards coordinated control |
| **Pest management groups** | • Actively participate in coordinated control programs |
| **Public and private land managers** | • Undertake regular and continued control using best practice techniques |

### Distribution

The European red fox (*Vulpes vulpes*) is distributed throughout the Western LLS region. There is little to no potential for this species to spread further within the region. The established network of pest management and Landcare groups in the northern part of the region have had an overwhelmingly positive effect on the fox population in these areas, a welcome secondary benefit of wild dog control.

### Impacts

European red foxes have a high impact on the environmental assets of the region, through predation of many threatened fauna species. Foxes can cause significant losses in small stock enterprises in the region, through their predation of lambs and kids, although this impact can vary seasonally. Foxes also have a significant impact on native species that have cultural significance to Aboriginal communities in the Western region, for example malleefowl.

### Management and control

Effective fox control is achievable with broad scale coordinated baiting practices. Due to Western's minimal towns and villages further broad scale knockdown of foxes could be achieved. Broad scale coordinated seasonal baiting programs are a staple of Western LLS and the pest management groups it works with. Such programs are vital to the control of foxes and wild dogs. Expanding on this network of land managers working together is a key goal into the future. Reactive baiting, trapping, shooting are all other techniques commonly used throughout the region. Timing for control primarily focuses on the lifecycle of the fox, targeting it at its weaker moments, that being spring and autumn. It is still very commonplace for land managers to bait prior to lambing and kidding for protection of domestic livestock.

**European red fox management framework**

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Asset based protection | Whole region | • Livestock production-sheep, goats and poultry.<br>• Native mammals, birds, reptiles, amphibians, invertebrates<br>• Horticultural enterprises<br>• Threatened and endangered fauna species, including but not limited to;<br>• Malleefowl, plains wanderer, grey grass wren | Primary control techniques to utilise;<br>• Ground baiting with 1080<br>• Aerial baiting with 1080<br><br>Supplementary control techniques to utilise include:<br>• Canid pest ejectors-1080<br>• Padded-jaw traps<br>• Cage traps<br>• Exclusion fencing<br>• Ground shooting<br><br>Timeframe: ongoing throughout july 2024 - june 2028, peak times spring and autumn |

# 5.8 Feral goat

**ASSET BASED PROTECTION**

| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Support the development of the rangeland goat industry and provide advice to best practice management activities.<br>• Use extension services to provide grazing management education and support to land managers.<br>• Research managed goat production systems and share findings on the productivity and profitability of different goat management practices<br>• Provide advice to land managers on the transition from an unmanaged to managed goat herd to improve control on total grazing pressure |
| **Industry groups** | • Provide advice to land managers and promote the rangeland goat industry |
| **Private land managers** | • Following best practice control techniques regular trapping, mustering and removal of unmanaged rangeland goats on properties managed by the land manager<br>• Follow policy and regulations surrounding unmanaged rangeland goats and the NLIS system |
| **Public land managers** | • Following best practice control techniques, regular trapping, mustering and removal of unmanaged rangeland goats on properties managed by the land manager<br>• Follow policy and regulations surrounding unmanaged rangeland goats and the NLIS system<br>• Removal of unmanaged rangeland goats to protect high value biodiversity and cultural assets |

### Distribution

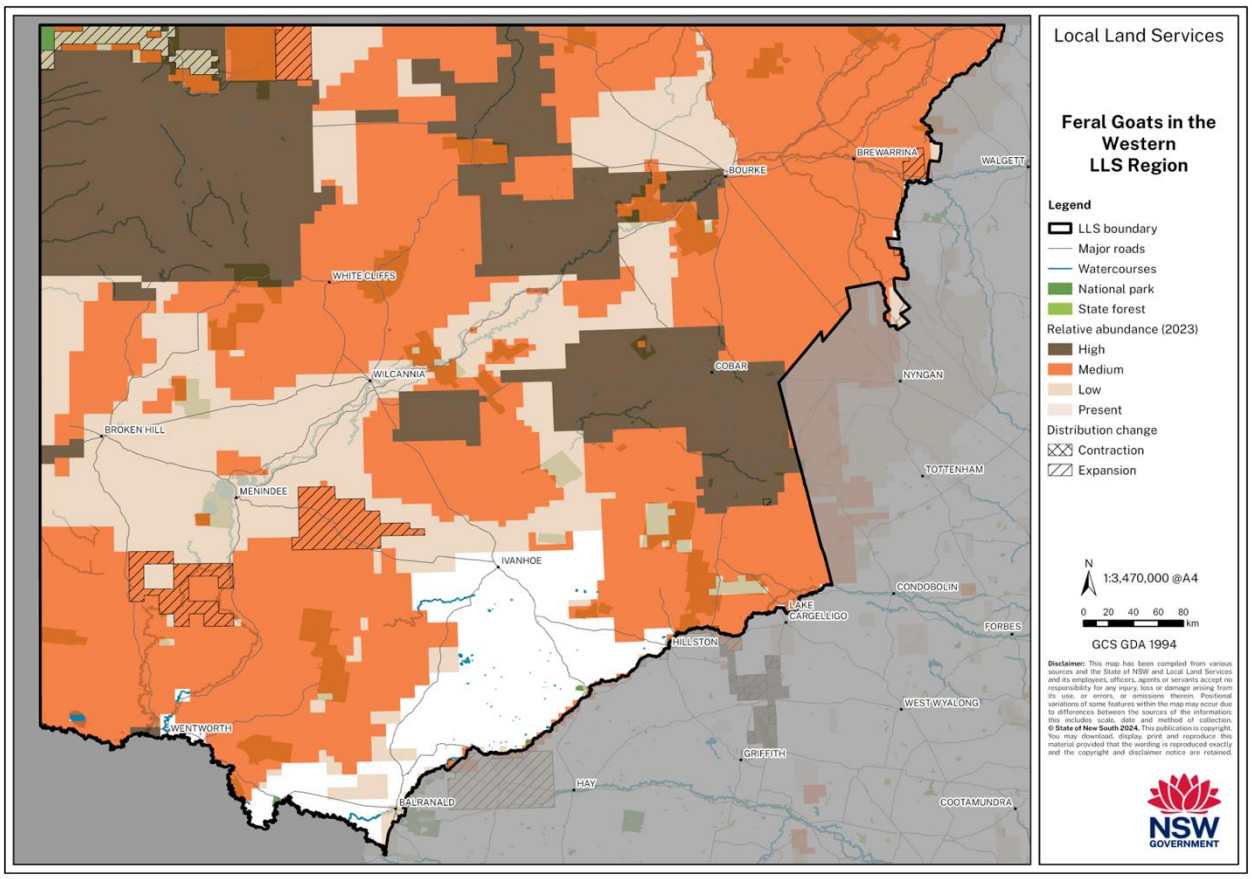
As defined by the NSW DPI, an unmanaged rangeland goat (referred to as 'feral goats' in other LLS regions) is defined as one that has been captured from a wild state, has not been born as a result of a managed breeding program, and has not been subjected to any animal husbandry procedure or treatment.

Since the introduction of goats (*Capra hircus*) into the Western region of NSW, there has been a rapid expansion of their population and geographic distribution. Aerial surveys conducted by OEH and NSW DPI confirm that goat densities in the Western LLS region are among the highest for any arid region in Australia. As it is not a requirement to tag managed goats on property until they leave the property, it is often difficult to distinguish between managed and unmanaged goat populations via aerial surveying. Variable seasonal conditions, goat prices, harvesting efforts and efficiency and native herbivore populations can all impact on the level of both managed and unmanaged rangeland goat populations in the region.

### Impacts

Unmanaged rangeland goats in the landscape pose significant threats to environmental and cultural assets, the number of domestic livestock a land manger can carry and their on-farm biosecurity. These threats highlight the need for better management across the western landscape. Examples of this include direct competition with yellow footed rock wallaby for habitat sites, and defacing rock art and competition with other native species at watering points in Mutawintji National Park.

**Figure 5.8.1: Feral Goats in the Western LLS Region distribution map**




## Management and control

Management of goats in the region varies considerably across a continuum, from land managers who have managed goats as their main enterprise to others who opportunistically harvest goats depending on density and prices. Land managers adopt a range of management strategies for goats in combination with existing livestock enterprises. Landholders who have opted to undertake a managed goat enterprise have invested in improved fencing, water and yard infrastructure to better manage their goats. Other land managers have introduced improved genetics from more productive goat meat breeds such Boer and Kalahari to increase returns from the female rangeland base stock.

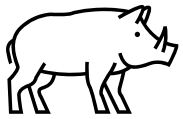
In 2024-2025, Western LLS are delivering the Going Ahead with Goats Project, aiming to assist land managers with the transition from unmanaged to managed goat herds. NSW DPI is delivering the Measured Goats project at Condobolin Research Station, demonstrating the production advancement that can be achieved with the selective breeding of goats in a managed system. Higher standards of fencing significantly reduce the biosecurity risks from neighbouring properties and offer improved internal biosecurity management on the property. Improved fencing also provides greater flexibility in grazing management, with the added benefits of improved biodiversity and reduced risk of soil erosion in those landscapes prone to wind or water erosion. The landscape surrounding cultural assets needs to be consistently managed to preserve assets, minimise degradation and reduce the effects of erosion in the area.

**Unmanaged rangeland goat management programs**

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Asset based protection | Whole region | • Agricultural production, pasture, crops & fences<br>• Native and threatened fauna and communities<br>• Public nuisance | • Ground baiting<br>• Ground shooting<br>• RHDV release<br><br>Ongoing |

# 5.9 Feral pig

**ASSET BASED PROTECTION**



| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Provide capacity building and technical advice to enhance control activities<br>• Coordinate broad scale across-tenure pest animal control programs<br>• Distribute 1080 (sodium fluoroacetate) bait products and provide associated training for land managers<br>• Support pest management groups to control feral pigs in a coordinated manner |
| **Industry groups** | • Liaise with government agencies and public and private land managers to ensure information sharing, reporting and best practice advice is understood and implemented upon |
| **Pest management groups** | • Groups to support the control of feral pigs in a coordinated manner to achieve maximum results<br>• Report feral pig activity to Western LLS and/or Feral Scan |
| **Public and private land managers** | • Monitor and report results of feral pig control programs to local pest management group and/or Western LLS<br>• Using best practice techniques actively control and maintain efforts to control feral pigs on properties managed by the land manager<br>• Actively participate in coordinated group control programs for feral pigs |

### Distribution

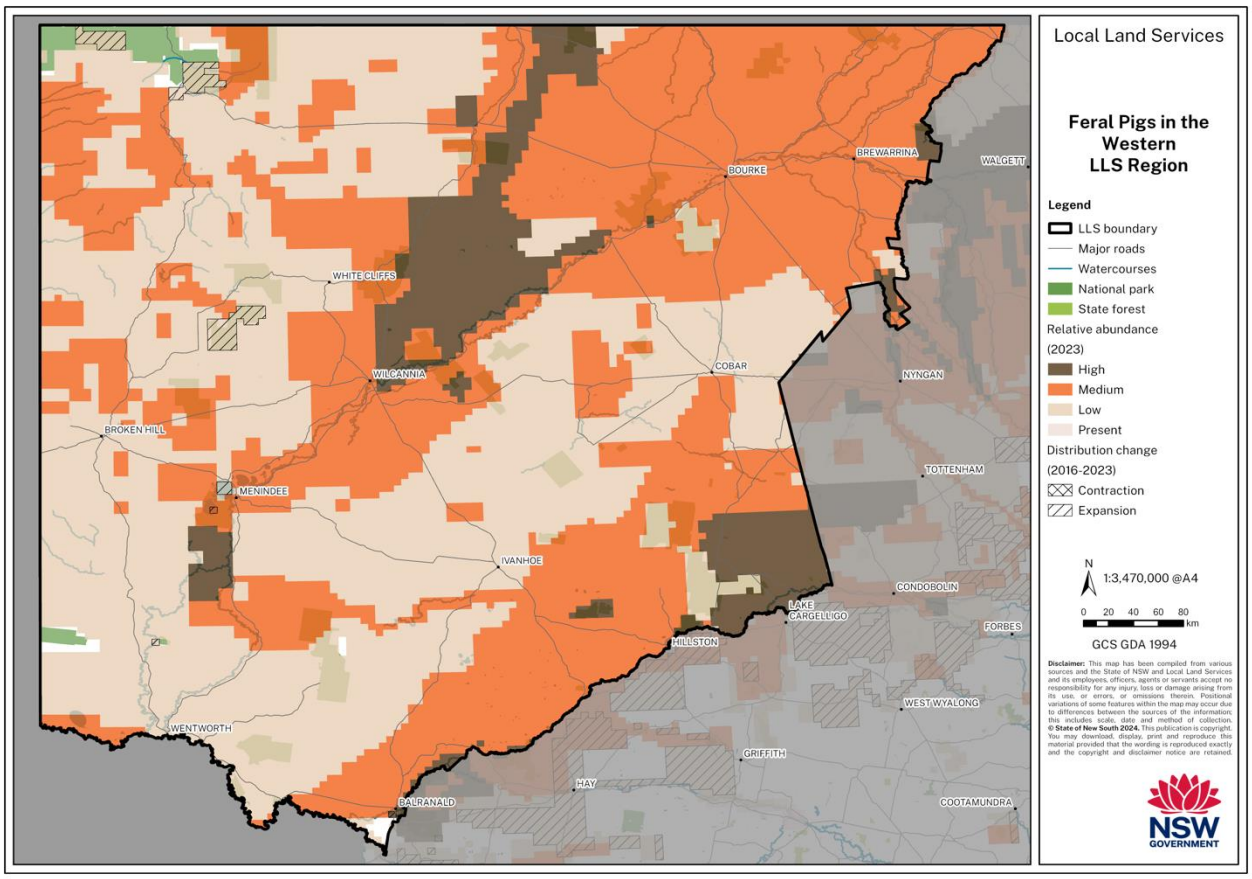
Feral pigs (*Sus scrofa*) are present throughout the Western LLS region, with preferred habitats in the riparian areas, floodplains and lakes associated with the region's extensive river and creek systems. Populations are also based on the presence of cropping and improved pastures and a number other natural and man-made water bodies not connected to river systems.

Pig density and distribution in the region varies markedly depending on seasonal conditions. Following (high rainfall) seasons, numbers are higher and pigs far more widespread and in poorer (lower rainfall) seasons pig numbers reduce, with populations tending to concentrate on preferred habitats.

### Impacts

Feral pigs cause significant economic losses to primary production in the region, particularly to small stock (sheep and goats) and cropping (dryland and irrigated) enterprises. They are hosts or vectors to several important endemic diseases of humans and animals (for example Japanese Encephalitis and Leptospirosis) and would be important vectors of certain exotic diseases (such as foot and mouth disease) should they enter the country. Feral pigs do considerable damage to the natural environment and Aboriginal cultural assets, particularly in riparian and floodplain areas.

**Figure 5.9.1: Feral Pigs in the Western LLS Region distribution map**




## Management and control

Effective pig control is generally easier in the southeastern parts of the region, where property sizes are smaller, access to grain for baiting is a realistic option and there is good history of integrated, cooperative control programs. Effective control in expansive parts of the region is hampered by large property sizes, and the booms and busts that the extreme seasonal conditions can have on the pig population. Interest in strategic, coordinated pig control across the region is growing and is very much aided by state funding that has targeted the species in the last couple of years. 1080 baiting and trapping are the most commonly used methods of control. The desirability of feral pigs as a hunting animal is only a supplementary control method and considered to be a hindrance to effective pig control in some parts of the region, with some land managers reluctant to control feral pigs so as to maintain a population for hunters and gain financial benefit from that activity.

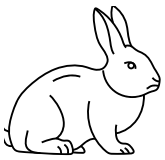
A successful broad scale coordinated program that Western LLS is involved in is the Western Riverina Pest Project which also includes Riverina and Murray LLS regions. The focus animals in this project are feral pigs and feral deer, whilst also controlling foxes and feral cats. Funding dependant, primarily aerial shooting is undertaken once per year in the area due to the wetland and river landscape and is followed up with ground baiting and trapping control programs. This project is successful because it involves all stakeholders in the area; primary producers, NPWS, NSW Water, LLS and private conservation organisations.

**Feral pig management framework**

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Asset based protection | Whole Western region | • Small stock enterprises (sheep, goats)<br>• Cropping enterprises (dryland, irrigated)<br>• Riparian and floodplain ecosystems<br>• Native vegetation<br>• Threatened and endangered flora and fauna species<br>• Aboriginal cultural assets<br>• Human health and safety | Primary control techniques to utilise include:<br>• Ground baiting<br>• Aerial shooting<br><br>Supplementary control techniques to utilise include:<br>• Trapping<br>• Exclusion fencing<br>• Ground shooting<br><br>Timeframe: ongoing throughout july 2024 - june 2028 |

# 5.10 Wild rabbit

**ASSET BASED PROTECTION**

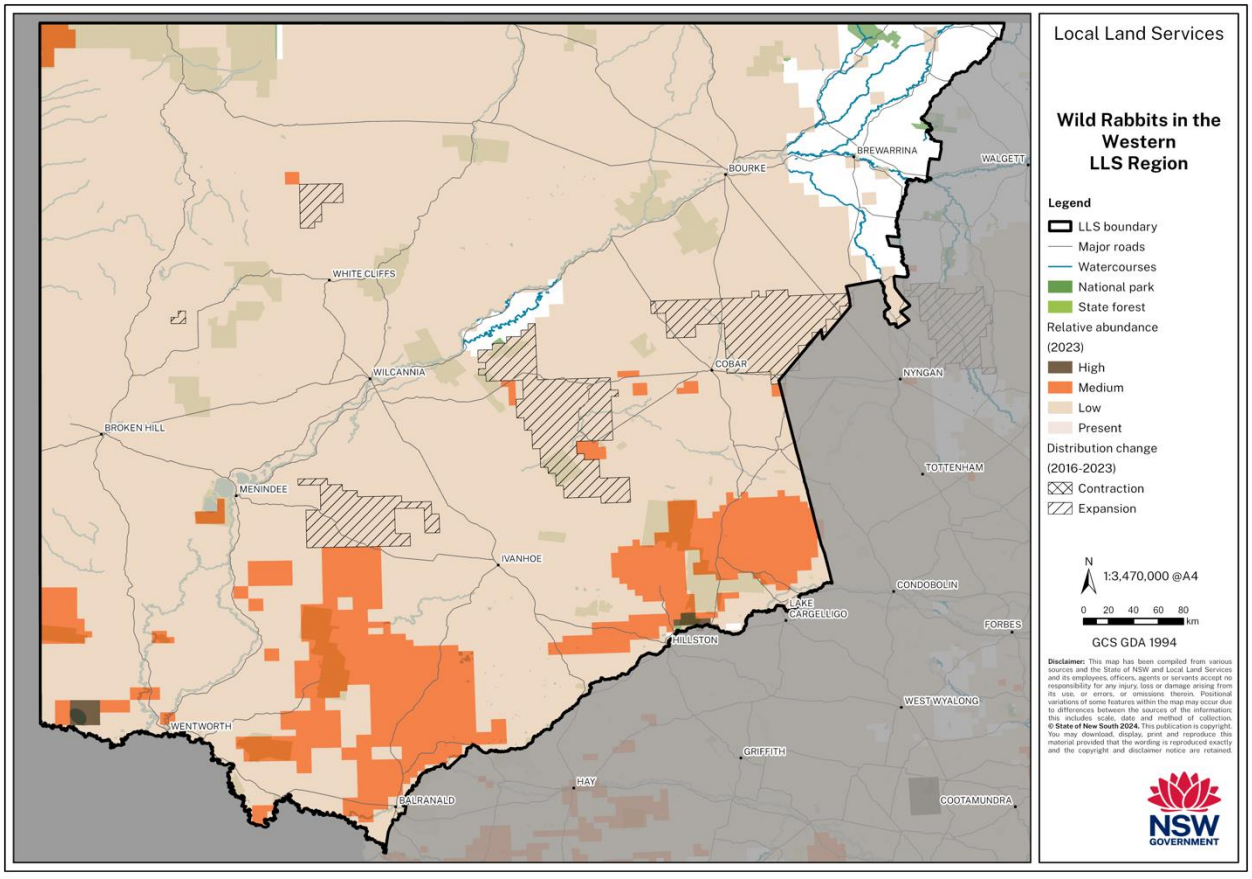


| Key stakeholders | Responsibilities |
|---|---|
| **Government agencies** | • Provide capacity building and technical advice based on control techniques to enhance control activities<br>• Coordinate broad-scale across-tenure pest animal control programs<br>• Distribute 1080 (sodium fluoroacetate) and Pindone bait products and provide associated training for land managers |
| **Public and private land managers** | • Implement best practice control techniques<br>• Participate in coordinated control programs<br>• Report rabbit activity to Western LLS and/or FeralScan |

### Distribution

The wild rabbit (*Oryctolagus cuniculus*) is widely distributed across the Western LLS region and is well established in all environments suited to the species. Densities vary markedly according to seasonal conditions, and the level of activity of established biocontrols (myxomatosis and calicivirus) within the populations.

**Figure 5.10.1: Wild Rabbits in the Western LLS Region distribution map**



### Impacts

Through their contribution to total grazing pressure, rabbits can have significant impacts on grazing enterprises in the region, particularly when their numbers are high. They can cause economic damage to cropping enterprises in the southern and eastern most parts of the region.

Their effect on native plant biodiversity is generally moderate, although some sites can be heavily impacted when rabbit numbers are high. Some significant endangered flora species. For example, the purple wood wattle, can be seriously impacted by rabbits at low densities (one rabbit per 2.5ha) and can prevent regeneration. Significant Aboriginal and European cultural sites can be damaged from time to time by the burrowing activity of rabbits. Land managers do not see rabbits as being a big issue in most seasons, although there is likely to be a general lack of awareness of the impact of rabbits at even low to moderate numbers.

### Management and control

Control of rabbits in the Western region is heavily reliant on established biocontrols. Implementation of other control measures- most commonly baiting and warren ripping tends to be targeted to limited areas, for the specific protection of high value assets. The large size of most properties and the costs involved make large scale control programs impractical for many land managers.

Rabbit control programs supported by government funding have been implemented across the Willandra Lakes Region World Heritage Area (WLWHA) since 2002. For most of that time the control program has been reliant on warren ripping as the main method used. From 2019 to 2023, in the project area approximately 7000 warrens were treated using a combination of warren ripping and implosion. Other secondary control measures used in the last five years included ground baiting, fumigation and ground shooting.

### Wild rabbit management framework

| Management category | Program name/area | Assets (where relevant) | Controls and timeframes |
|---|---|---|---|
| Asset based Protection | Whole region | • Domestic livestock enterprises<br>• Cropping enterprises (dryland, irrigated)<br>• Native vegetation<br>• Threatened species and ecological communities<br>• Cultural assets | Primary control techniques to utilise include:<br>• Ground baiting with 1080 and pindone<br>• Biological control<br>• Warren destruction via ripping<br><br>Supplementary control techniques to utilise include:<br>• Trapping<br>• Exclusion fencing<br>• Warren destriction via explosives<br>• Fumigation<br>• Ground shooting<br><br>Timeframe: ongoing between July 2024 - June 2028 |

# 6. Measuring success and continuous improvement

The development and monitoring toward key performance indicators (KPIs) is a critical component of this plan. Monitoring indicators provides information needed to:

- identify priorities for immediate and future management planning
- evaluate previous or current programs (including both control and community engagement activities)
- improve understanding and knowledge about pest animal densities, current and potential range and their current and potential impacts
- 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 section 6.1 below.

## 6.1 Key performance indicators (KPIs)

KPIs have been set to ensure practices are effective and achieving outcomes. These are focused at a regional scale to ensure the implementation of programs delivers effective outcomes for the pest animals outlined in the plan. Statewide objectives and metrics for key species and goals will be formulated over the next 12 months to ensure collaboration of regional planning efforts. These statewide objectives will align with overarching goals and objectives set across plans and will be informed by overarching plans such as the NSW Invasive Species Plan and NSW Biosecurity Strategy. The KPIs set in this plan will be monitored and reviewed annually to ensure targeted progress on key programs and pest animals. This section will address how monitoring and evaluation of the KPIs will take place and review the plan for continuous improvement.

### 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 Western 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 Western region.<br><br>Number of successful containments of incursions of identified alert species outbreaks out of number of containment programs rolled out within the Western 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 | Indicator | Rationale |
|---|---|---|
| **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.<br><br>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

Feral deer – chital, fallow and red deer:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| Populations of feral chital deer are prevented from spreading from existing locations | Reporting of sightings and locations to WLLS or Feral Scan<br><br>Land manager support and participation in broadscale control programs | Reports of populations are received by WLLS or Feral Scan<br><br>Feral chital populations aren't found in Western LLS outside of the wider Canbelego area<br><br>Number of land managers involved in FAAST activities<br><br>Number of hectares involved in FAAST activities | July 2024 to June 2028 |
| Populations of feral fallow deer are prevented from spreading from existing locations | Reporting of sightings and locations to WLLS or Feral Scan<br><br>Land manager support and participation in broadscale control programs | Reports of populations are received by WLLS or Feral Scan<br><br>Feral fallow populations aren't found in broader locations other than indicated on the 2023 distribution map<br><br>Number of land managers involved in FAAST activities<br><br>Number of hectares involved in FAAST activities | July 2024 to June 2028 |
| Populations of feral red deer are prevented from spreading from existing locations | Reporting of sightings and locations to WLLS or Feral Scan<br><br>Land manager support and participation in broadscale control programs | Reports of populations are received by WLLS or Feral Scan<br><br>Feral red populations aren't found in broader locations other than indicated on the 2023 distribution map | July 2024 to June 2028 |

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| | | Number of land managers involved in FAAST activities<br><br>Number of hectares involved in FAAST activities | |
| Increase landholder awareness of the impact of feral deer | Landholder education and extension | Community education program and products delivered | July 2024 to June 2028 |

Feral camel:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| The impact of feral camels on primary production, the natural environment and cultural assets is reduced | Undertake best practice control activities | Feral camels controlled and/or removed from the western region through primary or supplementary control | July 2024 to June 2028 Opportunistically |
| The potential for feral camels to increase their numbers and distribution in the Western LLS region is reduced | Land managers to report sightings to WLLS and/or feral scan | Reports made to WLLS or Feral Scan about the presence of Feral camel | July 2024 to June 2028 |

Feral donkey:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| The impact of feral donkeys on the natural environment and primary production is reduced | Undertake best practice control activities | Feral donkeys removed from the Western region using best practice control | July 2024 to June 2028 Opportunistically |
| The potential for feral donkeys to increase their numbers and distribution in the Western Local Land Services region is reduced | Undertake best practice control activities<br><br>Reporting of sightings and locations to WLLS or Feral Scan | Reports of populations are received by WLLS or Feral Scan | July 2024 to June 2028 Opportunistically |

Feral horse:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| The potential for wild horses to increase in population and distribution in the Western LLS region is reduced | Undertake best practice control activities<br><br>Reporting of sightings and locations to WLLS | Feral horses removed from the Western region using best practice control<br><br>Reports of populations are received by WLLS or Feral Scan | July 2024 to June 2028<br>Opportunistically |
| Increase the understanding of the extent of feral horses in WLLS | Reporting of sightings and locations to WLLS<br><br>Aerial surveys | Changes in mapped distribution for Western LLS | July 2024 to June 2028<br>Opportunistically |

Feral cat:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| Manage feral cats to protect assets | Undertake best practice control activities<br><br>Research continues into a broad scale, cost effective control option for land managers to utilise | Land managers report control efforts<br><br>Approval of new control techniques for NSW | July 2024 to June 2028 |

Wild dog:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| Continue to control wild dog populations to protect assets | Support land managers to implement control programs<br><br>Support existing pest management groups, and facilitate the creation of new pest groups in areas required<br><br>Promote participation in the seasonal baiting programs for broadscale, cross tenure control | Number of properties fox baiting or wild dog baiting is maintained as a regular control practice<br><br>New pest management groups or similar formed in areas that required them, and existing groups maintained<br><br>Seasonal baiting program occurs twice annually at spring and autumn | Annually<br><br>July 2024 to June 2028<br><br>Annually |
| Support landholder participation in broadscale control programs | Landholder education and extension<br><br>Sightings, damage and control activities reported to WLLS and/or Feral Scan | Wild dog workshops and products delivered<br><br>Wild dog reports received by WLLS or Feral Scan | July 2024 to June 2028 |

European red fox:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| Continue to control fox population to protect assets | Support land managers to implement control programs | Number of properties ox baiting or wild dog baiting is maintained as a regular control practice | Annually |
| | Support existing pest management groups, and facilitate the creation of new pest groups in areas required | New pest management groups or similar formed in areas that required them, and existing groups maintained | July 2024 to June 2028 |
| | Promote participation in the seasonal baiting programs for broadscale, cross tenure control | Seasonal baiting program occurs twice annually at spring and autumn | Annually |

Feral goat:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| The number of managed rangeland goat enterprises has increased | Private land managers accurately complete annual stock and land returns | Number of managed goat enterprises reported on stock and land returns | July 2024 to June 2028 |
| | | Maintain the number of landholders who report they run a goat enterprise as per biannual predator program survey | July 2024 to June 2028 |
| | Private land managers complete the biannual predator program survey (where applicable) | 2x Capacity building workshops for managed rangeland goat enterprises are hosted | July 2024 to June 2025 |
| Maintain the number of goat depots servicing the western region as a means of sale for unmanaged rangeland goats | Public and private land managers implement primary control measures | Number of active goat depots servicing the western region that land managers can sell unmanaged rangeland goats to, to remove them from the landscape | July 2024 to June 2028 |

Wild rabbit:

| Objective | Activities | Indicator | Timeframe |
|---|---|---|---|
| Continue to control rabbits to protect assets | Coordinate control programs across landscapes | Develop extension material on best practice rabbit control<br><br>Control continues to be undertaken on Willandra World Heritage Area | July 2026 |
| Landholder participation in ground control programs | Best practice control undertaken by land managers<br><br>Land manger reporting to LLS or Feral Scan | Increase the number of landholders undertaking control programs<br><br>Feral scan continues to be utilised | July 2024 to June 2028<br><br>July 2024 to June 2028 |

## 6.2 Measuring performance

Reporting will occur on an annual basis based on the KPIs identified in this plan. A formal MERI process will be followed to improve regional and statewide collaboration and reporting on pest animal indicators across NSW. Improved intelligence on key pest animals will lead to more efficient management tools and outcomes.

## 6.3 Plan review and improvement

The Western Regional Strategic Pest Animal Management Committee will foster adaptative management and continual improvement in pest animal management.

A midterm review of this plan will start in year 3 (2026) and a full review will commence nearing the end of the 5 year term for this plan (2028).

Pest animal risk assessments will be updated as needed and particular focus on year 3 will be on evaluation and review of the pest animals listed in this plan.

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 www.lls.nsw.gov.au/regions/western 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, RSPAMPs 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 RSPAMPs 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: Acronyms

| | |
|---|---|
| AM | Area manager |
| BES | Biosecurity and emergency services |
| Bio | Biosecurity officer |
| DCCEVW | Department of Climate Change, Energy, the Environment and Water |
| DPI | Department of Primary Industries |
| EWMO | Environmental Water Management Officer |
| FAAST | Feral aerial animal shooting team |
| ISPH | Invasive species and plant health |
| NPWS | National Parks and Wildlife Services |
| NSW DPI VPRU | NSW Department of Primary Industries, Vertebrate Pest Research Unit |
| RSPAMP | Regional Strategic Pest Animal Management Plan |
| VPIT | Vertebrate Pesticide Induction Training |
| WRSPAMP | Western Regional Strategic Pest Animal Management Plan |
| LLS | Local Land Services |