Queensland feral deer management strategy 2022-27

Queensland Government

This publication has been compiled by Invasive Plants and Animals, Biosecurity Queensland, Department of Agriculture and Fisheries.

Cover photo: Feral red deer. Keith Staines – *Deer research project,* University of Queensland.
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Preamble

Deer are not native or indigenous animals of Queensland or Australia.

Four species — fallow deer (*Dama dama*), chital deer (*Axis axis*), rusa deer (*Cervus timorensis*) and red deer (*Cervus elaphus)* are established in Queensland.

There are no known populations of hog deer (*Axis porcinus*) or sambar deer (*Rusa unicolor*) living in a wild state in Queensland. However, the State remains vulnerable to escape of specimens kept under permit or spread from populations elsewhere in Australia.

The established populations of feral red, feral fallow, feral chital and feral rusa are putting pressure on natural and agricultural assets in Queensland.

The *Feral deer management strategy 2022-27* provides stakeholders with a vision and set of strategic goals and objectives to guide feral deer management in Queensland.

Vision

Feral deer are effectively managed to prevent introductions, reduce impacts and limit the distribution of feral deer in Queensland.

Goals

1. Feral deer are effectively managed using best practice management informed by research.
2. Feral deer management is effective through partnerships, planning, and collaboration.
3. Feral deer impacts are widely understood, and land managers have the practical knowledge and tools to control feral deer.

The strategy recognises that feral deer herds are increasing in number and distribution in Queensland. The growth in numbers and distribution corresponds to increased impact to biodiversity, agricultural assets and risk to public safety, including road safety.

Persons dealing with feral deer have a general biosecurity obligation to take reasonable and practical measures to prevent or minimise the adverse impacts of the feral deer. Feral deer are also regulated as restricted matter under the *Biosecurity Act 2014* (the Act). This means that certain dealings are restricted with offences applying. These restrictions are necessary to reduce, control or contain feral deer in Queensland to reduce adverse impacts caused by feral deer.

The development of the strategy was coordinated by the Department of Agriculture and Fisheries (DAF) in consultation with stakeholders. It replaces the *Feral deer management strategy 2013-18* and will assist stakeholders to understand their role in managing feral deer and reducing feral deer impacts.

Public consultation was undertaken in developing the strategy through DAF's online consultation platform. Targeted consultation was conducted with key stakeholders through inviting them to review the draft strategy, and a webinar was also delivered. A communications strategy was implemented across multiple communication channels to promote the consultation and encourage stakeholder feedback. Stakeholders for the public consultation included the general community, peak primary industry groups, local governments, state-owned land agencies, federal government, water authorities, land managers, conservation groups, regional NRM organisations, land management groups, animal welfare groups, recreational and commercial hunters and deer research organisations. There were 379 responses to the web-based survey, and 24 organisations and individuals provided written submissions.

The strategy recognises that stakeholders have different viewpoints about managing feral deer. The feedback gained through public consultation assisted in the refinement of the strategy by clarifying the intent of the strategy so that it best considers the needs and aspirations of all stakeholders.

However, the strategy cannot and does not exist outside Queensland laws that regulate the management of land resources, animal welfare and biosecurity. This strategy is within that legal framework.

Introduction

The purpose of this strategy is to provide a clear set of strategic directions to guide the management of feral deer in Queensland. The strategy also aims to help stakeholders understand how to respond to feral deer in the context of the Act, including requirements and obligations under other Queensland legislation.

This strategy uses the definition of feral deer decided by the Queensland Parliament in 2014. This definition is used in this strategy to reduce confusion between the aspirational components of the strategy as it applies to all stakeholders and the legal obligations and responsibilities of those stakeholders.

> A feral deer is an animal that is living in a wild state; and is not being farmed or kept for any other purpose.

This is supported by:

> A deer is being farmed or kept for another purpose only if the deer is kept in an escape-proof enclosure, cage or other structure.

Under the Act, everyone has a general biosecurity obligation (GBO) in relation to the "biosecurity matter" they deal with and the activities they undertake, particularly if the biosecurity matter or activity could pose a risk to Queensland's agriculture, environment or society. This means that individuals may have a GBO for the established feral deer that inhabit the land they own or manage.

A precautionary principle underpins preventative actions for feral deer not yet established in Queensland such as hog deer or sambar deer. Under the Act, the precautionary principle allows authorities to take initial action if there is a reasonable belief that a serious risk exists, without having to wait for scientific confirmation which can take years to collect.

The strategy was developed on the basis that successful invasive animal management relies on the cooperation of all stakeholders who work, interact or come into contact with a biosecurity matter such as feral deer. A cooperative, coordinated approach by all stakeholders is fundamental to successfully managing feral deer.

The development of this strategy draws on, aligns with, and complements other key biosecurity documents including:

- The Australian Pest Animal Strategy 2017-2027
- National Biosecurity Strategy 2022-2032
- The Queensland Biosecurity Strategy: our next five years 2018-2023
- The Queensland Invasive Plant and Animal Strategy 2019-2024
- National Feral Deer Action Plan 2022-27(draft dated 10 July 2022)

Three goals have been identified to realise the vision for the strategy, and a set of corresponding objectives provide the framework with more detailed actions to be undertaken. The actions, as part of the framework, including who may undertake them were also developed.

During the development of this strategy, several issues were raised by stakeholders and/or respondents to the consultation survey that are considered out-of-scope of this strategy. These include the management arrangements for issues that are not feral deer specific. These issues have existing national, state or local arrangements established by law or intergovernmental or industry agreements that are beyond the scope of the influence of this strategy.

Hunting on state managed land

Hunting on Queensland's state managed lands is covered by various pieces of legislation, for example, protected areas and forest estate are regulated by the *Nature Conservation Act 1992* and *Forestry Act 1959*. The arrangements for hunting of deer on protected areas and forest estate are outside the scope of this strategy.

Management of deer during an emergency animal disease response

Detailing the management of feral deer as part of an emergency animal disease incursion response is beyond the scope of this strategy. In the event of an emergency animal disease incursion response, if there is an inconsistency between the goals, objectives or actions mentioned in this strategy and the emergency response requirements, the National Response Plan or actions required by Queensland law prevail.

Road safety arrangements

Detailing the management of feral deer on road or rail safety is beyond the scope of this strategy. There are existing state and local government arrangements for removing animals from roadways or preventing animals from entering roadways. The Department of Transport and Main Roads and local governments engage with key stakeholders to understand where there are particular high-risk locations for animal-vehicle collisions along the existing road network that need to be managed. This strategy supports those existing arrangements.

Supply of harvested venison

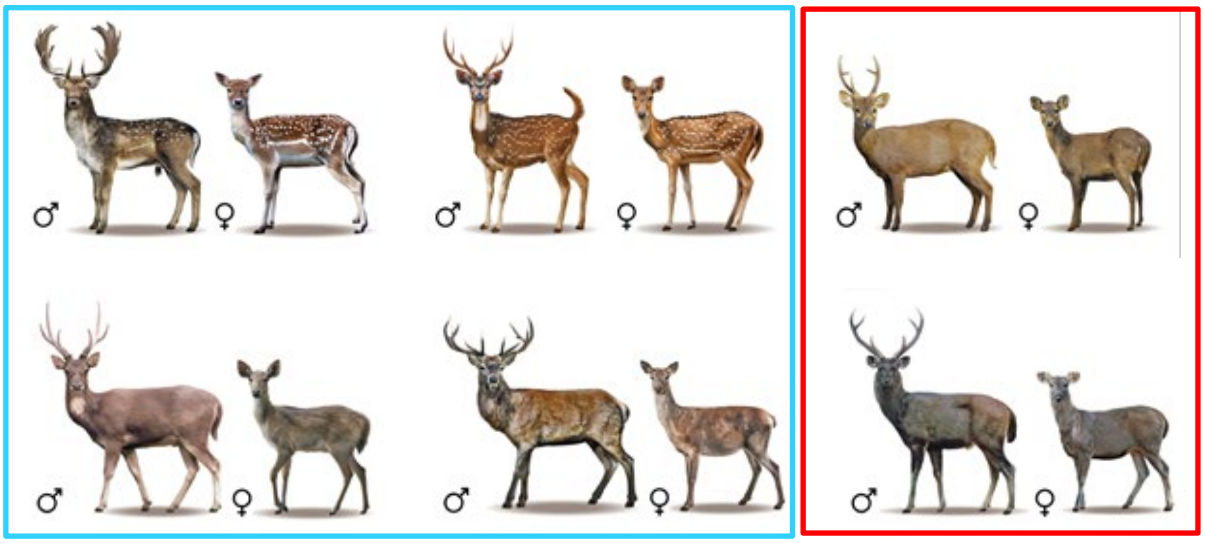
The supply (donation or sale) of wild harvested venison for human consumption is regulated under the *Food Production (Safety) Act 2000*. Supply of venison can occur if the hunter/supplier is appropriately licenced by SafeFood Production Queensland as a "wild animal harvester" (see the information on the Meat Scheme - Safe Food website.

Impacts of zoonotic disease on human health

Queensland Health arrangements for responding to outbreaks for zoonotic diseases in humans are out of scope of this strategy.

History of deer management in Queensland

Deer are not native or indigenous animals of Queensland or Australia. Deer were introduced to Queensland in the late nineteenth and early twentieth centuries from Europe and Asia.



The six feral deer species established in Australia. Fallow deer and chital deer, (top left and top right of blue rectangle), rusa deer and red deer (bottom left and bottom right of blue rectangle) are present in Queensland. Hog deer and sambar deer (top and bottom of the red rectangle) are not present in Queensland. Images adapted from the Victorian Game Management Authority.

Further information about each species can be found on the Business Queensland website by searching for restricted invasive animals.

The first significant introduction of chital deer in Queensland appears to have been a release of chital on the Darling Downs in 1870 (Jesser, 2005). However, this herd did not survive. A subsequent release at Maryvale Station near Charters Towers in 1886 led to the establishment of the species on several properties in that area.

The first shipment of six fallow deer arrived in Queensland from a Tasmanian herd in 1865 followed by another six from a different Tasmanian herd. The Queensland Acclimatisation Society held the deer at Bowen Park in Brisbane before releasing them at Westbrook and Warwick on the Darling Downs between 1870 and 1872. Fallow deer from this release can still be found in areas east of Warwick.

A further release of fallow deer occurred at Pikedale, south-west of Warwick, in 1890. The descendants of these animals now constitute the major feral fallow deer herd in Queensland.

Red deer were an early introduction to Queensland. Released on 21 September 1873 by the Queensland Acclimatisation Society with the consent of the Queensland Government, the original animals were a gift from Queen Victoria's great herd at Windsor Park to provide '…additional food and sport' for the people of the state. The initial release of four hinds and two stags occurred at Cressbrook Station near Esk. A further release occurred on 20 May 1874 of another six deer at the same location. These red deer came from the Duke of Richmond's estate in Scotland.

The last of the official releases of deer in Queensland was the introduction of rusa deer to Friday Island in the Torres Strait in 1912. This release took place with the permission of the Commonwealth Government. The deer later swam or were transported to other islands including Prince of Wales Island which now supports the major population. Rusa deer are known to have swum to the Australian

mainland from the Torres Strait islands. Other rusa have swum from Papua New Guinea to the northern Torres Strait islands.

The evolution of deer management in Queensland

Deer were hunted for food and sport in the years following the establishment of those herds in Queensland.

Deer became protected species under the *Fauna Conservation Act 1952.* That Act accorded deer a status similar to native animals and effectively outlawed recreational deer hunting. However, despite that, hunting continued illegally because of the strong hunting community.

The situation continued until the emergence of deer farming in the 1970s. Wild deer were still protected, but a permit system was introduced to enable deer trapping. Once captured, deer were accorded a new status similar to domestic animals. In time, both the practice of deer farming and the locations in which farming was permitted were controlled by the *Deer Farming Act 1985*.

During the 1990s, the Queensland system of deer management changed. First, the *Nature Conservation Act 1992* removed the protected status of the deer species. This was followed by the repeal of the *Deer Farming Act 1985*, which removed restrictions on deer farming.

Escapes from deer farms from the 1970s to 1990s and deliberate relocations have enabled increases in both population numbers and the geographic range of deer in Queensland.

In 2009, feral chital, feral rusa, feral red and feral fallow deer were added to the lists of declared pest animals to impose management obligations on landowners to control feral deer on their land.

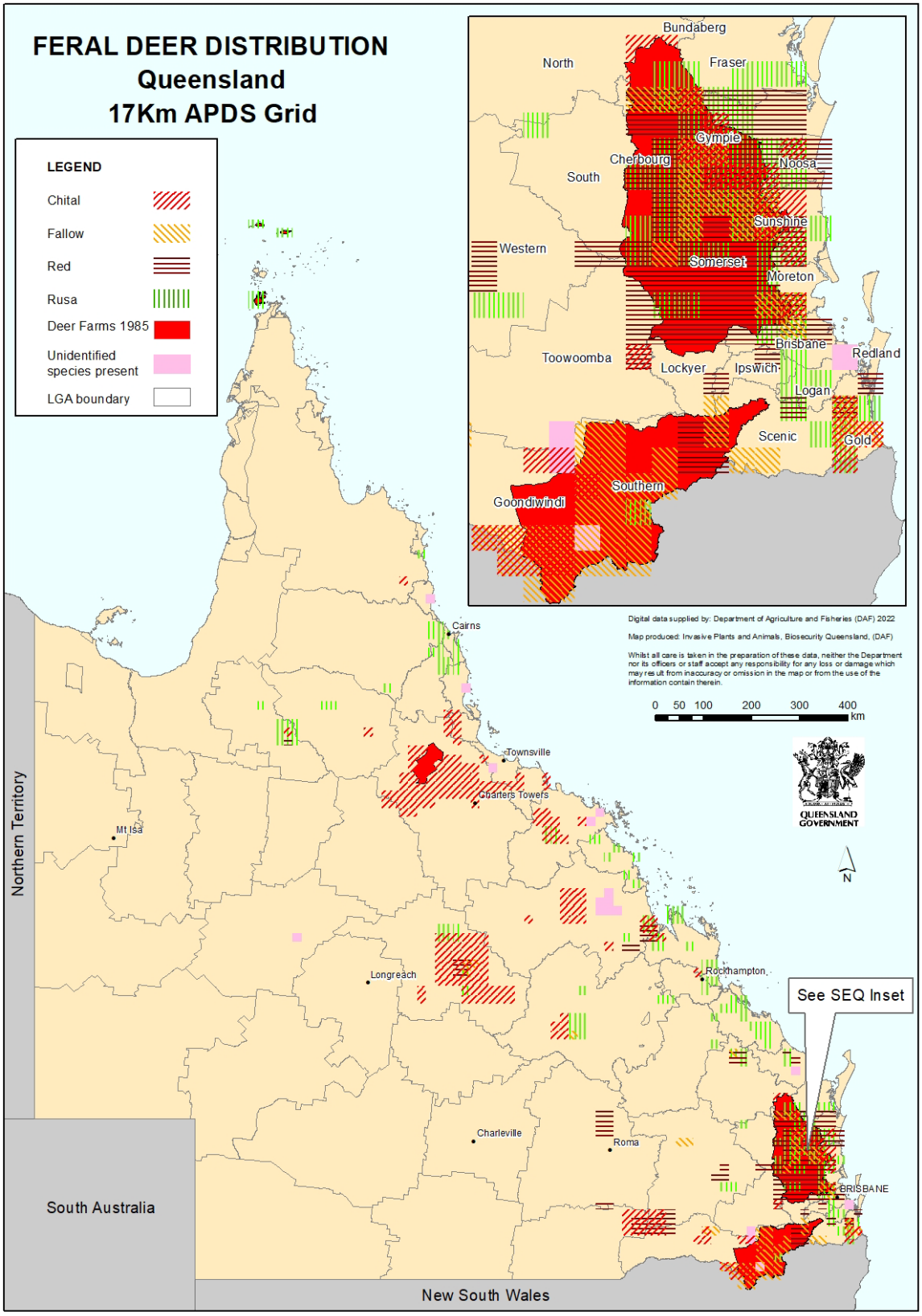
Queensland Coat of Arms

Queen Victoria granted the Queensland Coat of Arms in 1893. The original coat of arms did not include the red deer stag. In 1977, during Queen Elizabeth II's Silver Jubilee year, the Coat of Arms was given a more modern appearance when the Queen granted the two supporting animals, the brolga and the red deer.

Current distribution

There has been an expansion in the ranges of the four species through dispersal. A number of new populations appearing in Queensland in areas unconnected to the historical ranges is indicative of deliberate translocation or deer farm escapes/releases. Many populations of feral deer outside the historic ranges are relatively small and localised, however populations of feral chital deer are established in the Gulf and in central coastal and inland Queensland. Also of note are peri-urban and suburban populations of red and rusa feral deer in western Brisbane, Sunshine Coast, Moreton Bay, Noosa, Gympie and the Gold Coast. Rusa and chital deer have also been reported in several locations in the Wet Tropics (Pople, Paroz & Wilke, 2009).

The following map shows the estimated distribution of feral deer derived from expert elicitation workshops conducted in 2014 and 2018 with local government officers and other stakeholders. The map will be updated following a similar process undertaken during 2022. The red coloured areas indicate where a person could lawfully farm deer under the Queensland *Deer Farming Act 1985* (repealed 19 December 1997).



Queensland feral deer distribution

Potential distribution

Climate suitability has been used as a predictor of successful invasion of invasive animals into new areas. Various models can be used to predict areas of Queensland with climate similar to that of each deer's native range. Based on climatic similarity alone, the six feral deer species could significantly expand their existing ranges in Australia. It is important to note that climate is only one factor influencing the potential future range and abundance, the latter being influenced by many complex factors, including competition from other grazing animal species, land use, habitat suitability (including disturbance regime) and predation from wild dogs. Predictions of the areas suitable for establishment of the six species are available (Davis *et al* 2016). These predictions may be refined over the course of this strategy as more research is undertaken.

Impacts

Internationally, the adverse impacts of feral deer on natural systems have been extensively researched and documented. Evidence of feral deer impacts in Australia has come primarily from observational, smaller scale studies, and there are calls for research that can quantify the extent, type, and severity of these impacts. A review of existing Australian research showed that feral deer can impact on the Australian environment by altering plant communities, competing with native fauna, modifying habitat, interacting with predators, acting as vectors of disease and pathogens, and affecting water quality, soil properties and nutrient cycles, and that occurrence and severity of impacts are likely to increase if not managed (Davis *et al.* 2016).

Research has shown that feral deer can have substantial adverse impacts on natural and agricultural systems through grazing, browsing, trampling, antler rubbing and wallowing (Davis, et al., 2016). However, it has been noted that there are gaps in knowledge about the level of impact incurred by feral deer in Queensland, and more broadly, in Australia. Calls for further research to address these knowledge gaps are warranted (Davis *et al.* 2016).

Environmental	• Changes in plant communities, reductions in biodiversity, changes in vegetative layers, increased light penetration, altered moisture dynamics, spread of seeds, antler damage to trees, bark stripping, creation of bare ground due to rutting activity, damage to aquatic environments from wallowing and facilitation of weed invasion. • Competition with native fauna for food and habitat (Watter *et al.*, 2020). • Potential for feral deer to provide a resource for predators (Forsyth *et al*., 2019; 2014; Watter *et al*., 2020). • Changes to habitat - reductions in populations of small vertebrates in association with reduced shelter, nesting sites and material. • Damage to rare and threatened plants and habitats.
Economic	• Eating pasture, commercial crops, orchards and forestry, fence damage, trampling and fouling of crops, fouling water and damaging timber through antler rubbing. • Aggression towards livestock during rutting. • Vectors of disease– transmission of pathogens between deer and livestock, native wildlife and people (Cripps *et al*., 2019), ticks (Jesser, 2005). • Control costs.
Social	• Motor vehicle accidents that can be as severe as those involving livestock such as cattle and horses. • Aggression to people, pets and domestic animals during rutting season. • Damage to gardens – plants, vegetables, saplings, flowers, fruit trees, stripping bark from trees.

Vision

Feral deer are effectively managed to prevent introductions, reduce impacts and limit the distribution of feral deer in Queensland.

Goals

1. Feral deer are effectively managed using best practice management informed by research.
2. Feral deer management is effective through partnerships, planning, and collaboration.
3. Feral deer impacts are widely understood, and land managers have the practical knowledge and tools to control feral deer.

Goal 1: Feral deer are effectively managed using best practice management informed by research

The aim of effective management is to minimise the impacts of feral deer, limit population growth and spread, and prevent the establishment of feral deer in new areas.

Effective management requires the assessment of risk combined with the acknowledgment of resource limitations to prioritise feral deer management targets.

A risk assessment will indicate where and when feral deer are best managed to reduce their impacts on the environment, agricultural production or to reduce the risks to public safety. A risk assessment is based on the latest available scientific research on feral deer impacts and information about the management intent for the area.

To stop population growth, feral deer must be removed at the same rate the population would otherwise grow. A substantial percentage of the population will generally need to be removed regularly for control to be effective. Maximum annual population increases of around 40% require equivalent removal rates to hold populations at reduced density (Davis *et al.,* 2016). Removal of mature stags alone will not adequately limit population growth. Monitoring will be important to see what is present and in what numbers and where and importantly, to determine whether the desired outcome has been reached.

Prevention plays a key role in effective management and involves:

- stopping establishment of species not present in Queensland
- preventing current feral deer populations from spreading and establishing in new areas in Queensland.

Hog deer and sambar deer are not present in the wild in Queensland. Preventing the establishment of hog and sambar herds in Queensland requires early detection and removal of individual hog and sambar deer.

Established feral red, fallow, rusa and chital deer in historic areas[1] should be managed so that their numbers do not increase, and the ranges of feral red, feral fallow, feral rusa and feral chital deer do not expand.

[1] The historical ranges for feral deer are Brisbane River Valley (feral red deer); Granite Belt (feral fallow deer); Torres Strait Islands and Wet Tropics (feral rusa deer); north of Charters Towers (feral chital deer). There are no verified records of feral hog or feral sambar deer in Queensland.

Resources for control are limited, so populations should be prioritised for management. Factors to consider are the impact of the population (i.e., protect high value assets), feasibility of management and cost. Examples of high priority populations to manage are those in peri-urban areas, those damaging small crops or horticulture and those in environmentally significant areas as part of integrated invasive animal management. In these priority areas and/or tenures control programs may have an objective of local eradication.

Feral deer are highly mobile and may graze across a large area, therefore management efforts will be most effective when conducted cooperatively with other land managers in the area. Regional and local groups will need to determine what is practically and financially viable to achieve in their particular situations.

It is also important to prevent releases of domesticated deer or relocation of feral deer in the wild and ensure that the legislation is understood and adhered to in relation to these actions. At many locations in Queensland, the presence of feral deer is the result of escapes from deer farms or the deliberate translocation for aesthetic or hunting purposes.

Objectives	Actions	By whom	Helped by
Implement best practice feral deer management for effective and humane management of feral deer (red, fallow, chital and rusa deer).	1.1 Identify areas for local management programs – established or recently established herds or herds with high local impact on the environment, agricultural production or public safety	Private land managers and public land managers	Recreational hunters, professional shooters, contractors, regional NRM organisations, Landcare, local governments.
	1.2 Manage, including to locally eradicate, established herds of feral deer that are causing high impact		
	1.3 Manage feral deer herds to stop range expansion as per regional planning (see Action 2.2)	Land managers, including public and private, regional NRM organisations, land management groups	
	1.4 Manage feral deer in response to an incursion of an exotic animal disease as per national agreements[2]	As per the Emergency Animal Disease Response Agreement (EADRA)	
Regulate for the management of feral deer to prevent introductions and limit distribution in Queensland (hog deer, sambar deer)	1.5 Ensure information is up to date and accessible on the legislative requirements when dealing with feral or captive deer	DAF, Local governments (LGs)	
	1.6 Provide procedures to prosecute parties for translocation of feral deer or release of captive or farmed deer[3]	DAF, LGs	
	1.7 Undertake preparedness and prevention activities for hog deer and sambar deer	DAF, LGs	
	1.8 Maintain and enforce regulatory and permitting requirements for keeping of Restricted Matter Category 2,3,4,5,6 deer (sambar and hog deer) in captivity		
Improve feral deer (red, fallow, chital and rusa deer) management practices	1.9 Evaluate and document best practice humane feral deer management	Research providers	Hunting groups, regional NRM organisations, Landcare, community groups, citizen scientists.
	1.10 Review existing management technologies and identify gaps and areas for improvement in effectiveness, efficiency and humaneness		
	1.11 Conduct research on new management technologies		
Increase understanding of the biology and impacts of feral deer (red, fallow, chital and rusa deer) in Queensland	1.12 Conduct research on ecology, biology, population, behaviour and impacts of feral deer impacts across different landscapes	Research providers	Hunting groups, regional NRM organisations, Landcare, community groups, citizen scientists.
	1.13 Quantify economic, environmental and social impacts of feral deer		
	1.14 Develop, implement and refine monitoring techniques for population and impact monitoring		
	1.15 Expand current knowledge of the distribution and size of feral deer herds in Queensland	Public land managers, research providers, regional NRM organisations, land management groups	
	1.16 Maintain and increase science collaboration between researchers and end users including citizen science and monitoring approaches	DAF, land managers, research providers	

[2] Emergency Animal Disease Response Agreement see https://animalhealthaustralia.com.au/eadra/ see also The Australian Veterinary Emergency Plan (AUSVETPLAN) Informing EAD Responses - AUSVETPLAN - Animal Health Australia.

[3] This includes procedures involving the Biosecurity Act and Local Laws

Goal 2: Feral deer management is effective through partnerships, planning, and collaboration

Managing feral deer effectively requires planning, communication and cooperation amongst all parties. Control efforts are most successful when they are conducted cooperatively with all land managers in an area.

Partnerships are required to achieve the level of coordination and efficiency needed to manage feral deer effectively for various tenures of land and at different scales. Local circumstances are important in planning feral deer management and the local government biosecurity planning process is integral to this. One of the challenges to encouraging cooperation is the considerable variation in stakeholder views about feral deer in the landscape, management, and perceptions of impacts.

The draft National Feral Deer Action Plan 2022-27 recommends that priorities for and decisions about feral deer management programs should be based on consideration of relevant factors. These factors may include in the Queensland context:

- environmental and agricultural values of the area
- public road safety
- cultural values and uses of first nations people (Aboriginal and Torres Strait Islander peoples)
- feasibility of meeting annual culling targets (ongoing) that exceed natural population growth (e.g., fallow populations can increase by 34 per cent each year in good conditions, Hone *et al*. 2010)
- ability to reduce biosecurity, environmental, agricultural (including forestry) and community impacts, and maintain a low level of impact over time
- strong support and participation from communities across the home range of the feral deer population
- sub-populations where priority assets are threatened, or where their distribution may spread
- willingness to use best-practice approaches and control tools in a coordinated way across most neighbouring properties where the feral deer spend time (control at the single property scale is Rarely effective because deer frequently move across many properties)
- presence of new populations next to towns or cities, and small, isolated populations in other areas.

Objectives	Actions	By whom	Helped by
Incorporate feral deer management into planning and management programs	2.1 Develop local government area biosecurity plans that include the management of feral deer risks and are supported by the community, state government, land managers and land management groups	LGs	All other stakeholders
	2.2 Establish regional partnerships and collaborate to develop regional biosecurity plans or projects for the management of feral deer risks	Land managers, including public and private, regional NRM organisations, land management groups	
	2.3 Incorporate feral deer management into management of state-owned lands	Public land managers	
Encourage partnerships with key stakeholders to build support, commitment and ownership for feral deer management	2.4 Promote sharing of resources, expertise and knowledge for effective feral deer management	All stakeholders	All other stakeholders
	2.5 Encourage a landscape level approach to feral deer management		
	2.6 Source alternative investments in feral deer management		

Goal 3: Feral deer impacts are widely understood, and land managers have the practical knowledge and tools to control feral deer

To improve awareness and understanding of feral deer impacts and improve capability to manage feral deer, communication and engagement needs to focus on different groups of people. It is important for those involved in feral deer management, including planning, research and control, recognise there is considerable variation in people's knowledge, attitudes and views about feral deer and their management. Effective communication and engagement efforts need to be responsive and tailored to best address the knowledge needs and the range of views about feral deer impacts and management. Land managers need to be aware of the legal status of feral deer and how to fulfil their general biosecurity obligation to manage them.

There is a need for tailored information to a range of audiences about feral deer impacts and legislative obligations and build stakeholder capability to use best practice to manage feral deer.

Objectives	Actions	By whom	Helped by
Provide public awareness information of feral deer impacts and legislative obligations	3.1 Apply behavioural insights to public concerns about feral deer management	All stakeholders	All other stakeholders
	3.2 Develop community awareness programs on feral deer and on the type of control needed	LGs	
	3.3 Provide information on legislative obligations to all relevant stakeholders	DAF, LGs	
Enhance stakeholder knowledge and capability in best practice management of feral deer	3.4 Make feral deer management information available	DAF, LGs	All other stakeholders
	3.5 Develop and make best practice guidelines for monitoring and controlling feral deer available to key stakeholders	DAF, research providers collaborators	

Implementation

Planning at property, local government and regional levels is the first step in implementation. Experience has shown that coordinated control programs over wide areas have better long-term success rates than those over smaller areas.

The primary responsibility for pest animal management rests with the land manager, but collective action and coordination of feral deer control at the landscape level that engages all stakeholders has significant benefits. If necessary, enforcement measures may be used to ensure land managers fulfil their duty of care in controlling invasive animals on their land. Normally, enforcement is undertaken only after other avenues to achieve compliance have failed.

Revision of this strategy will be considered, if necessary, after the completion and endorsement of the draft National Feral Deer Action Plan 2022-27. The National Feral Deer Coordinator will have a role in that revision and aligning the implementation of the National Feral Deer Action Plan with the Queensland Strategy.

Stakeholder roles and responsibilities

Feral deer management is a shared responsibility amongst land managers, including private and public land managers, the agricultural sector, commercial deer industry, professional hunting organisations, recreational and commercial hunters, community groups, all levels of government, and the community. A shared commitment to action by all stakeholders is central to success.

A cooperative, nil-tenure approach that engages all stakeholders is best practice. In this approach, control methods are applied in a cooperative and coordinated manner across all land tenures by all stakeholders at a landscape scale rather than at a property scale.

To successfully manage feral deer, clearly defined and accepted roles and responsibilities for stakeholders are needed along with long-term commitment. There is often some confusion about the exact responsibilities of land managers, local governments and state government for managing invasive species. The general responsibilities of each of the major stakeholders in feral deer management are listed in the table below.

Stakeholder	Responsibility
Land managers includes private land managers, state and local government owned or managed lands	• Ensure feral deer management is undertaken consistent with the purpose of the land. • Ensure feral deer management is undertaken in accordance with local government biosecurity management plans. • Adhere to legislative requirements for feral deer management. • Conduct population and damage assessments for their lands. • Conduct control programs when required using the most appropriate and effective methods available. • Monitor the effectiveness of control techniques. • Seek assistance, if required, from other stakeholders to manage feral deer. • Observe and report any significant changes in feral deer behaviour and distribution to the relevant authority.
Recreational deer hunters (individuals)	• Provide assistance as requested by other stakeholders to manage feral deer. • Provide assistance as requested to research providers to undertake feral deer management research. • Comply with regulations in respect to public land. • Comply with regulations in respect to animal welfare. • Avoid trespass on private land. • Abide by *Weapons Act 1990* licensing requirements.
Commercial hunters	• Provide assistance as requested by other stakeholders to manage feral deer. • Provide assistance as requested to research providers to undertake feral deer management research. • Comply with regulations in respect to public land. • Avoid trespass on private land. • Abide by *Weapons Act 1990* licensing requirements.
Deer hunting Industry groups	• Promote the availability and conditions for use of control techniques. • Promote the need for, and help with, the formation or operation of land manager groups for coordinated control. • Contribute to the coordination of feral deer management. • Educate hunters on lawful and ethical hunting practices. • Promote the responsible keeping of captive deer.
Agricultural industry groups	• Promote the responsible keeping of captive or farmed deer. • Promote use of identification aids for farmed deer. • Promote keepers of farmed or captive deer to register as a Registerable Biosecurity Entity (RBE).
Regional NRM organisations, Landcare, community and conservation groups	• Review and participate in education, information, conservation and planning processes. • Contribute to the coordination of feral deer management. • Contribute to monitoring, sentinel sites and citizen science activities to support feral deer management. • Seek funding and support for local and regional feral deer management activities and strategies. • Assist with the formation of land manager groups and organise coordinated campaigns.
Transport (road and rail) network managers	• Continue existing arrangements for response to animal incursions onto the transport network.
Local government	• Incorporate management of feral deer into local government area biosecurity management plans. This could include: – undertake feral deer extension activities that include advice on control techniques – contribute to the coordination of feral deer management – undertake feral deer control – assist with the formation of land manager groups and organise coordinated campaigns

Stakeholder	Responsibility
	– facilitate management for feral red deer, feral fallow deer, feral chital deer and feral rusa deer – prosecute parties for the release of deer (translocation feral deer or release of captive or farmed deer) – investigate complaints. • Provide awareness information and education on feral deer. • Seek funding and support for local and regional feral deer management activities and strategies. • Partner with and support research activities which improve on ground management outcomes.
Queensland Department of Agriculture and Fisheries	• Undertake policy development and planning for invasive animals. • Foster cooperation with government agencies managing public lands. • Provide research to improve feral deer management. • Foster links and communication between all stakeholders. • Support implementation of this strategy. • Undertake feral deer extension activities that include advice on control techniques in support of local governments. • Develop policy and procedures to prosecute parties for the release of feral deer. • Encourage the formation of land manager groups to manage established feral deer populations. • Seek greater local and regional cooperation from departments managing public lands. • Undertake prevention activities for hog and sambar deer. • Lead emergency response (e.g., where feral deer may be a vector for livestock or zoonotic disease). • Assess and coordinate response programs in the event of hog or sambar deer incursions.
Research providers	• Undertake research to support feral deer management as funding is available. • Collaborate with all stakeholders. • Work in partnership with end users and on-ground managers to develop and disseminate best practice management and research outcomes.

Choosing an appropriate control method

It is beyond the scope of this strategy to detail all the factors that should be considered when choosing and implementing appropriate control methods to manage feral deer populations.

The draft National Feral Deer Action Plan includes a comparison of control methods based on their benefits, limitations and humaneness. Additional information is available at PESTSMART and on the DAF webpages. More information will be provided through the National Feral Deer Action Plan and its supporting documents.

The choices available of control methods for feral deer are limited. It is recommended that best practice methods are used. Feral deer are wary and can become more difficult to manage if subjected to ineffective or poorly implemented control methods. Effective management of feral deer populations requires an assessment and choice of the method most appropriate method suitable in each situation.

The choice of control method needs to consider animal welfare, non-target impacts, public safety, occupational health and safety, land tenure, use and size (e.g., urban and peri-urban, vs large landholdings), legislative and practical restrictions (e.g., use of firearms on small landholdings), disposal of carcasses, public perceptions and the level of land manager support for the activities.

The available methods (in no order of preference) include:

- ground shooting which is the most common control method used for feral deer
- aerial shooting sometimes used with assistance of thermal detection technology
- trapping (using single or pen traps) following appropriate guidelines to minimise adverse animal welfare outcomes
- permanent enclosure traps (or corral traps) that can be effective at sites where deer are known to frequent and provide good animal welfare outcomes
- exclusion fencing is sometimes used by farmers and to protect specific environmental assets, such as orchards or horticultural crops, but may have unintended effects on non-target species.

Ground shooting, aerial shooting and trapping should be carried out by authorised, experienced, skilled persons.

It should be noted that conventional livestock fencing does not adequately exclude feral deer. The minimum standard for an exclusion fence requires a well-maintained high netting fence or equivalent. For more detailed information on fencing to exclude feral deer, go to the DAF webpages and search feral red deer.

The integration of feral deer control with other pest animal control optimises the use of resources. For example, concurrent control of feral pig and feral deer could minimise impacts on environmentally or culturally significant waterholes.

There is currently no toxin, biocontrol or fertility control agent available for feral deer.

Animal welfare

The *Animal Care and Protection Act 2001* provides for the control of pest animals only when the control is done in a way that causes the animal as little pain as is reasonable.

The Model Code of Practice for the Welfare of Animals: Feral Livestock Animals: Destruction or Capture, Handling and Marketing is a voluntary code under the *Animal Care and Protection Act 2001*. This strategy supports the application and use of this code of practice when interacting with feral deer. For further information please visit the CSIRO website and download the Model Code.

A model for assessing the relative humaneness of pest animal control methods was developed under the Australian Animal Welfare Strategy (Sharp & Saunders 2011)[4]. It is recommended that planners consider this model when choosing appropriate methods for state government funded control programmes. For more information visit the Federal Agriculture webpage and download the Australian Animal Welfare Strategy.

Requirements for deer that are farmed or kept for another purpose

It should be noted that conventional livestock fencing does not adequately confine captive or farmed deer. The minimum escape-proof enclosure or an exclusion fence requires a well-maintained high netting fence or equivalent.

People keeping farmed deer should refer to relevant standards and guidelines that have been prepared elsewhere. Many Queensland local governments have animal keeping requirements for deer and other livestock in their local law No.2. animal management and subordinate local laws.

[4] Pages 31-32 and Section 2 Assessing the humaneness of commonly used invasive animal control methods, Appendix 1: Ground shooting of feral donkeys. (Note that the feral donkey section contains feral deer in the summary).

Farmed deer wandering at large are required to return to their owners as per the arrangements under the relevant local laws.

The unlawful killing or theft of owned deer is a criminal offence under the Queensland Criminal Code.

Legislation

Queensland's *Biosecurity Act 2014* (the current Act) commenced on 1 July 2016 and replaced the pest management provisions of the former *Land Protection Stock Routes and Pest Management) Act 2002* (the former Act).

The former Act placed an absolute obligation on landowners to keep their land free of feral rusa deer and feral chital deer. Local governments were also empowered to serve pest control notices on landowners, if feral red deer or feral fallow deer on their land posed a threat to adjoining environmentally significant areas.

The former "keep your land free of deer" obligation was replaced by an obligation to manage the impacts of the feral deer.

Under the current Act, people whose activities pose a biosecurity risk have a GBO and are responsible for managing biosecurity risks that are under their control; and to the best of their ability, recognise and minimise biosecurity risks within their industry, home, or places they are visiting.

Feral deer are biosecurity matter that are regulated to prevent introductions (including release of domestic animals), reduce impacts and reduce distribution in Queensland. The management of feral deer is a shared responsibility of land managers, industry, the community and all levels of government.

The GBO extends to anyone who deals with feral deer, if the person knows that feral deer are likely to pose a biosecurity risk. This means that a person who has feral deer on their property must take all reasonable and practical measures to minimise the biosecurity risks associated with dealing with feral deer (e.g., impact of feral deer on public safety, the economy or the environment).

At the local level, each local government must have a biosecurity plan that covers invasive animals in its area. This plan may include actions to be taken on certain species, and some of these actions may be required under local laws.

Where feral deer are present, the biosecurity plan must include provisions for managing feral deer that reasonably address the level of risk posed. A local government must ensure that all persons within the local government's area are managing feral deer in compliance with the Act. Land managers can take guidance from the relative Local Government Biosecurity Plan on what feral deer management and control strategies they can use to meet their GBO and other legislative requirements.

State government (DAF) sets the legislative framework, supports the administration of the legislation, conducts and collaborates on research to inform best practice.

Department of Agriculture and Fisheries and local governments enforce the provisions of the legislation relating to managing feral deer.

There are obligations to manage feral animals (including deer) and their impacts under a number of Acts that apply to public land (e.g., *Nature Conservation Act 1992*, *Forestry Act 1959* etc)

All stakeholders must comply with the legislation relating to managing feral deer.

Restricted matter

Six species of deer are restricted matter under *Biosecurity Act 2014*. An offence or offences apply with each restriction category that applies to the feral deer.

The restriction category offences do not apply to farmed chital deer, farmed fallow deer, farmed rusa deer, farmed red deer. A restricted matter permit or an exhibited animal authority may be granted for certain dealings with hog deer or sambar deer.

Deer species	Restricted category	Restriction category offence provisions
Hog deer Sambar deer	2	All sightings must be reported to an authorised officer (DAF or local government officer) within 24 hours of becoming aware of its presence. *Maximum penalty 200 penalty units.* S42(2) The person must not take any action reasonably likely to exacerbate and must take any action reasonably likely to minimise the biosecurity risk posed by the restricted matter. *Maximum penalty 750 penalty units.* S42(5)
	3	A person must not distribute category 3 restricted matter This includes: • A person must not give the category 3 restricted matter to another person. • A person must not sell or trade in the category 3 restricted matter A person must not release the category 3 restricted matter into the environment. *Maximum penalty 500 penalty units.* S43(1)
	4	A person must not move, or cause or allow to be moved, category 4 restricted matter *Maximum penalty 500 penalty units.* S45(1)(a)
	5	A person must not keep in the person's possession or under the person's control category 5 restricted matter *Maximum penalty 500 penalty units.* S45(1)(b)
	6	A person must not give food to category 6 restricted matter *Maximum penalty 500 penalty units.* S45(1)(c)
Feral chital deer Feral fallow deer Feral rusa deer Feral red deer	3	A person must not distribute category 3 restricted matter This includes: • A person must not give the category 3 restricted matter to another person. • A person must not sell or trade in the category 3 restricted matter • A person must not release the category 3 restricted matter into the environment. *Maximum penalty 500 penalty units.* S42(5)
	4	A person must not move, or cause or allow to be moved, category 4 restricted matter *Maximum penalty 500 penalty units.* S45(1)(a)
	6	A person must not give food to category 6 restricted matter *Maximum penalty 500 penalty units.* S45(1)(c)

Keeping deer as livestock or exhibited animal

Farmed red deer, farmed fallow deer, farmed chital deer and farmed rusa deer can be lawfully kept providing the animals are behind a sufficient fence that prevents the animal from escaping or wandering at large.

All farmed or captive deer held under permits or authorities are designated animals under the Act. The keepers of farmed or captive deer must register with DAF as a registrable biosecurity entity (RBE). This registration allows DAF to contact the owners of the deer during an Emergency Animal Disease Response.

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Definitions

The following definitions have been modified to fit the context of feral deer in this strategy.

Refer to the Act for the full legal definition for the italicised definitions appearing below.

Biosecurity matter includes feral deer as they are living things.

Biosecurity consideration in the case of feral deer includes the following environmental, economic and social impacts:

Environmental	• Damage to natural environment by eating native vegetation, damaging trees, spreading weed seeds and fouling water. • Includes Queensland protected areas and in nationally and internationally significant assets at risk as identified in the National Feral Deer Action Plan.
Economic	• Damage to forestry seedlings, agricultural and horticultural crops, commercial flower crops, orchards, irrigation systems, and fences. • Consumption of new growth and ringbarking of orchard trees, leading to reduced orchard viability. • Competition with livestock and native animals for pasture and supplementary feed.
Social	• Risk to traffic on suburban roads and highways. • Aggression to humans during rutting season.

Feral deer pose a **biosecurity risk** because they pose a risk of an adverse effect on one or more biosecurity considerations.

Chital deer (*Axis axis)*

Fallow deer (*Dama dama)*

Feral deer are deer that are: living in a wild state; not farmed or kept for any other purpose; and not within a deer-proof enclosure, cage or other structure. This includes feral chital deer, feral fallow deer, feral red deer and feral rusa deer.

The **general biosecurity obligation** requires the managers of land on which feral deer are present to take all reasonable and practical steps to stop feral deer from being able to: compete with livestock for pasture; carry pests and diseases that can affect livestock; roam; cause motor vehicle accidents; damage crops; graze native plants; or damage reforestation, landscaping, gardens and parks.

Hog deer (*Axis porcinus)*

Invasive animal means species of animal that has, or is likely to have, an adverse impact on a biosecurity consideration because of the introduction, spread or increase in population size of the species in an area.

Invasive biosecurity matter is matter identified under Schedule 2, Part 2 of the Act and includes feral chital deer, feral fallow deer, feral red deer and feral rusa deer.

Nil tenure is an approach in which a range of control methods are applied across all tenures by all stakeholders at a ‘landscape’ (rather than ‘property’) level in a cooperative and coordinated manner.

Regional NRM organisations means Regional Natural Resource Management organisations in Queensland.

Private land managers are entities or individuals who own or manage privately owned land.

Public land managers are entities that own or manage state and federal government or local government land.

Landcare means Landcare groups

Land management groups includes Landcare groups, and catchment management groups.

Peri-urban landscapes are those that combine urban and rural activities. These areas commonly contain a mixture of land usages including suburban pockets, rural residential lots and small to medium agricultural holdings.

Prohibited matter is biosecurity matter not currently present or known to be present in the State; and there are reasonable grounds to believe that if it did enter the State or part of the State, the biosecurity matter may have a significant adverse effect on a biosecurity consideration.

Research providers include recognised tertiary institutions, government agencies, industry and community groups and other citizen scientists who contribute knowledge to feral deer management.

Red deer (*Cervus elaphus)*

Restricted matter is biosecurity matter currently present in the State and there are reasonable grounds to believe that it may have an adverse effect on a *biosecurity consideration*, unless restrictions under the Act are imposed to reduce, control or contain it. There are seven categories of restricted matter, five of which are used in relation to feral deer.

Sambar deer (*Rusa unicolor)*

Rusa deer (*Rusa timorensis)*