NSW GOVERNMENT

NSW Invasive Species Plan 2023-2028

VISION:
Stakeholders working together to reduce the adverse impacts of invasive species in NSW

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Contents

1. Introduction

The NSW Invasive Species Plan 2023–2028 (the Plan) is an update of the NSW Invasive Species Plan 2018–2021. The Plan supports the NSW Biosecurity and Food Safety Strategy 2022-2030 and identifies key strategies (Section 7) to help prevent new incursions, eliminate or contain existing populations and effectively manage already widespread invasive species. Its scope includes weeds, and vertebrate and invertebrate pests, in terrestrial, freshwater and marine environments. While the link between healthy ecosystems and their resilience to biosecurity threats is noted, and it is also acknowledged that some native species can have adverse impacts in some circumstances, native species are not covered by this Plan. Native species are protected by law in NSW and issues associated with managing native species impacts should be addressed separately in consultation with the National Parks and Wildlife Service and having regard to the regulatory requirements of the *Biodiversity Conservation Act 2016*.

The Plan adopts four goals (consistent with the broad objectives of the NSW Biosecurity and Food Safety Strategy) to achieve this:

GOAL 1:

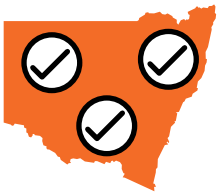
EXCLUDE

Prevent the establishment of new invasive species

GOAL 2:

ERADICATE OR CONTAIN

Eliminate, or prevent the spread of new and emerging 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

By identifying strategies under these goals, the Plan will help guide investment and resource allocation for invasive species prevention and management activities in NSW.

The Plan supports the NSW Biosecurity Framework (Figure 1). It complements other strategies, in particular the NSW Biosecurity and Food Safety Strategy, the Australian Pest Animal Strategy, the Australian Weeds Strategy and the MarinePestPlan. NSW state, regional and local invasive species plans should adopt the invasive species management principles outlined in Section 3 and link back to one or more of the Plan goals.

The Plan has been endorsed by the NSW State Weeds Committee, State Pest Animal Committee, Marine Pest Working Group and Ornamental Fish Reference Group.

All stakeholders – government agencies, industry, landholders and members of the community – play a valuable role in confronting the challenges and taking action to achieve the goals outlined in this Plan.

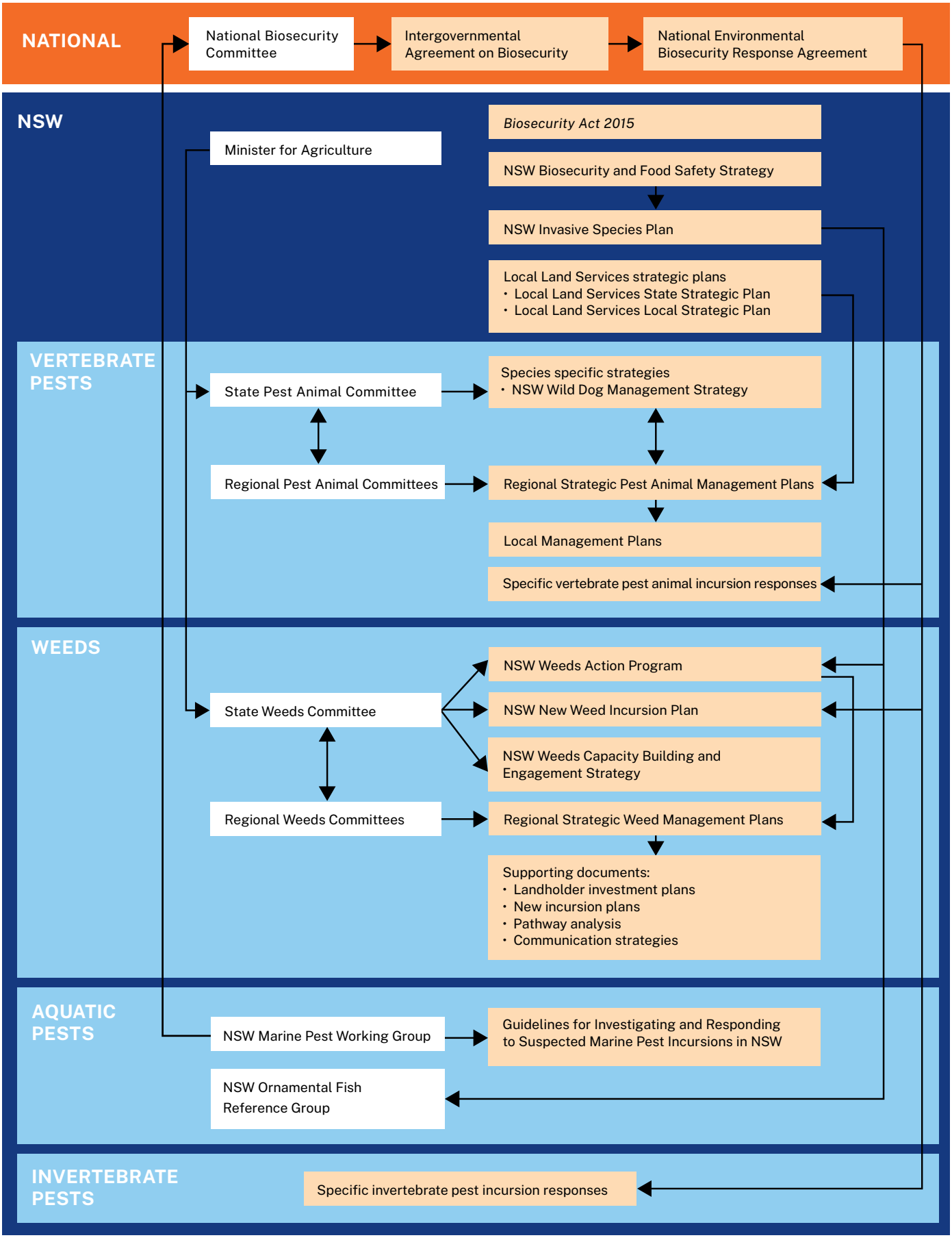


Figure 1. Governance and guiding documents for invasive species management in NSW

2. Impacts of invasive species

Invasive species cause financial losses to agriculture and other industries, including infrastructure damage. The cultural, public amenity and ecological impacts of invasive species can be more difficult to quantify but they are substantial. There have been significant declines in and extinctions of Australia's native flora and fauna since the arrival of European settlers, with introduced pest animals and plants contributing to much of this loss. With new introduced species being detected regularly at the national border and in the open environment, invasive species represent one of the greatest threats to biodiversity in Australia. As the actual and future impacts of climate change are being modelled and realised, invasive species management will also need to increasingly account for associated changes to invasive species' ability to establish and spread.

Over 1650 introduced plant species have become established in NSW, with at least 300 of these weeds having significant environmental impacts, including bitou bush, lantana and blackberry. In many cases weeds form monocultures which displace native species. Throughout agricultural areas, weeds can out-compete crops and pasture species, resulting in lower economic returns and the need for expensive and ongoing control measures. It is conservatively estimated that the cost of weed impacts and weed management to the NSW agriculture sector is around $1.8 billion per annum.

Wild dogs, feral pigs, wild rabbits, foxes, feral goats, feral cats, feral deer and carp are the most significant widespread pest animals in NSW. Other pest animals, such as feral horses and redfin perch, can cause regional or localised problems. Cane toads are established in the north coast region of NSW, but there is a Biosecurity Zone in place because it is considered feasible to contain the distribution of this species in NSW. Red-eared slider turtles and invasive ants are emerging threats. It is conservatively estimated that pest animals cost the Australian economy over $1 billion annually and the NSW economy over $170 million annually.

More than 250 introduced marine species have been detected in Australian coastal waters to date. Marine pests such as the northern Pacific seastar and Japanese kelp in Tasmania and Victoria, and the Asian green mussel in Cairns, can create serious problems for marine environments and animals, as well as the industries and communities they support. Freshwater pest fish, such as carp and tilapia, can also out-compete native species. Aquatic pests, both marine and freshwater, pose a significant risk to the profitability of Australia's $2.4 billion-a-year commercial and recreational fisheries and aquaculture industries.

Managing the impacts of invasive species will require sustained coordinated effort across all land tenures. A key focus of the *NSW Biosecurity Act 2015* and this Plan is to facilitate this objective.

3. Principles of invasive species management

Effective and efficient invasive species management is underpinned by the following principles:

- Invasive species impacts and risks are properly defined before developing or implementing any management strategy.
- Management plans are based on the best available knowledge (supported by a strong applied research capability), while accepting the need for a precautionary approach where information is lacking. Ideally, plans are underpinned by formal risk assessment systems.
- Management of invasive species is most cost-effective when new incursions are detected early and rapid responses are implemented.
- Established invasive species management requires a long-term strategy involving ongoing commitment and effort. Maintaining adequate intensity and scale of management following a risk-based prioritisation process will address the most critical threats to identified environmental, community and industry assets, rather than attempting to manage established invasive species throughout their entire range which is usually impractical and dilutes effort.
- Strategic management programs are developed in collaboration with an informed and skilled community and involve an across-tenure planning approach. The variety of social and ethical values is recognised to facilitate community engagement.
- Legislative, policy and community engagement frameworks need to support management objectives. In particular, landowners and managers need to understand their general biosecurity duty to effectively manage invasive species, and the best practice management approaches to achieve this.
- An adaptive management approach is employed that incorporates monitoring of outcomes and changing technology, knowledge and circumstances (e.g. changing land use and seasonal conditions).
- The inherent value of native species and natural ecosystems is highlighted, and the link between healthy ecosystems and their resilience to biosecurity threats is noted.
- Best practice approaches are adopted, which minimise adverse effects of management on public safety, off-target species, the environment and animal welfare.

4. Roles and responsibilities in invasive species management in NSW

The roles and responsibilities of key parties involved in invasive species management in NSW are outlined below. The key strategies identified in this Plan (Section 7) will facilitate coordination and communication between organisations and individuals. Government agencies have important roles to play in policy, information sharing, coordination, public land management and research. However, biosecurity is a shared responsibility that also requires the active involvement of industry, private landholders and the general community.

MINISTERIAL ADVISORY COMMITTEES

State Weeds Committee

The State Weeds Committee is responsible for ensuring a coordinated and strategic approach to weed management in NSW. The Committee:

- ensures Regional Weeds Committees operate on a tenure-neutral basis and implement regional strategic weed management plans that are effective, risk-based and inclusive of all major stakeholders in the landscape
- oversees the implementation of key policy and strategy documents related to weeds
- evaluates weed priorities, based on potential long-term risks and impacts to the economy, environment and community
- will consider options for resourcing high-risk incursion management
- evaluates the effectiveness of weed management programs.

The State Weeds Committee provides strategic planning advice to Regional Weeds Committees to ensure consistent approaches across the State.

State Pest Animal Committee

The State Pest Animal Committee was established in 2017. Its terms of reference are broadly consistent with those of the State Weeds Committee and key responsibilities include:

- overseeing a consistent approach to the formation and ongoing operation of Regional Pest Animal Committees
- overseeing development, implementation and review of tenure-neutral Regional Strategic Pest Animal Management Plans across the State, to ensure they are effective, risk-based and inclusive of all major stakeholders
- advising on regional and State pest animal policy and regulation
- overseeing the implementation of key policy and strategy documents such as the NSW Wild Dog Management Strategy
- improving the consistency and comprehensiveness of reporting on pest animal management inputs and outcomes across the State
- considering response options for managing high-risk incursions.

GOVERNMENT AGENCIES

Department of Primary Industries

The Department of Primary Industries (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.

NSW DPI represents the NSW Government at national forums where invasive species management is discussed and coordinated. Through this engagement, NSW is a signatory to national agreements relevant to biosecurity, including the Intergovernmental Agreement on Biosecurity (IGAB), the Emergency Animal Disease Response Agreement (EADRA), the Emergency Plant Pest Response Deed (EPPRD) and the National Environmental Biosecurity Response Agreement (NEBRA). These agreements outline the roles and responsibilities of government and industry in responding to nationally significant incursions of emergency animal diseases, emergency plant pests and diseases, and invasive species. The agreements also detail the funding arrangements for those responses.

In addition, NSW DPI:

- has the lead role in administering key legislation such as the *Biosecurity Act 2015* (NSW)
- is the lead agency for the NSW Weeds Action Program 2020-2025
- administers the NSW Marine Pest Surveillance Plan (2022-2026)
- administers the NSW Freshwater Pest Surveillance Plan (2022-2026)
- has Vertebrate Pest and Weeds Research Units that collaborate nationally and internationally to develop improved invasive species control techniques and management approaches
- administers licensing systems for recreational hunting of certain game and pest animals and for the keeping of certain permitted non-indigenous animals
- facilitates delivery of accredited invasive species management training to promote best practice community engagement, planning and management.

NSW DPI develops policy and guidelines to support the work of the State Weeds Committee and State Pest Animal Committee to ensure a consistent approach to planning, operations and enforcement across the state.

Local Land Services

Local Land Services (LLS) is the interface between landholders 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 landholder groups to undertake pest animal management, including education and compliance related to landholder 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:

- capacity building and technical advice
- lead agency for the regional sub-program of the NSW Weeds Action Program 2020-2025
- facilitating the planning, implementation and review processes of Regional Pest Animal Committees and Regional Weeds Committees

- distributing the vertebrate pesticide 1080 (sodium fluoroacetate) and providing associated training for landholders
- coordinating large-scale across-tenure pest animal control programs with associated landholder communication and compliance activities as necessary
- supporting applied research and extension of latest research results.

National Parks and Wildlife Service

The National Parks and Wildlife Service (NPWS) is a representative of the NSW Government at national forums where invasive species management is discussed and coordinated, including the Environment and Invasives Committee.

NPWS manages an estate that covers over seven million hectares (approximately 9% of NSW). NPWS undertakes strategic pest management to mitigate the impacts of invasive species on the natural and heritage values of the National Parks estate, as well as mitigating their impacts on neighbouring properties. In line with this strategic approach to pest management, NPWS undertakes extensive wild dog control as part of coordinated across-tenure programs to minimise the impacts of wild dogs on neighbouring livestock producers.

NPWS is an authorised distributor for the vertebrate pest poison 1080, primarily for control programs on NPWS estate. NPWS is also involved in inter-agency research and training to develop and promote additional management techniques and strategies for pest and weed management.

Crown Lands

Crown Lands is responsible for facilitating the sustainable use of land and natural resources to deliver environmental, social and economic benefits for NSW. Crown Lands is responsible for managing the NSW Crown Estate comprising approximately 42% of the State of NSW, including some of the most iconic and diverse public land in NSW. Crown Lands develops, funds and implements invasive species management strategies on land under its direct control. It also supports activities undertaken by community groups and other stakeholders that manage land on its behalf, including appointed Crown Land Managers. Crown Lands incorporates a risk-based approach to managing invasive species on Crown land, in collaboration with neighbouring landholders and other land management agencies where appropriate. This includes education, extension, project implementation, audit and compliance activities.

Forestry Corporation

Forestry Corporation manages over two million hectares of native and plantation forests for sustainable timber production, recreation and biodiversity. Where wild dogs are a threat to neighbouring properties, Forestry Corporation is involved in integrated management programs using baiting, trapping and guard animals. Forestry Corporation also allows for recreational hunting on its lands and has assessed each declared NSW State Forest to decide whether it should be open to hunters, and the licensing and access conditions.

Local Control Authorities

Local Control Authorities (LCAs) may include Local Councils, Joint Organisations of Councils and Weeds County Councils. They are authorised under the *Biosecurity Act 2015* (NSW) with responsibilities for: weed management inspections and enforcement; implementing priority weed control programs; controlling weeds on LCA-managed lands; and providing weed education, training and resources for staff and the community. LCAs, together with Regional Weeds Committees, have responsibilities for delivering the NSW Weed Action Program, under direction from NSW DPI, via management programs throughout the state. Local councils also have obligations under the *Local Land Services Act 2013* and *Companion Animals Act 1998* to manage both pest and domestic animals on land they own, occupy or manage. Local councils play an important role in coordinated pest control programs for weeds and pest animals.

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, historic 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.

OTHER STAKEHOLDERS

Industry (including private land managers)

Key roles of industry 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 such as the disposal of ships' ballast.

Research and innovation organisations

NSW DPI's Vertebrate Pest and Weeds Research Units and other NSW government agencies, universities and other research and innovation organisations, play a significant role in driving advances in invasive species monitoring and management technologies to address new and existing threats.

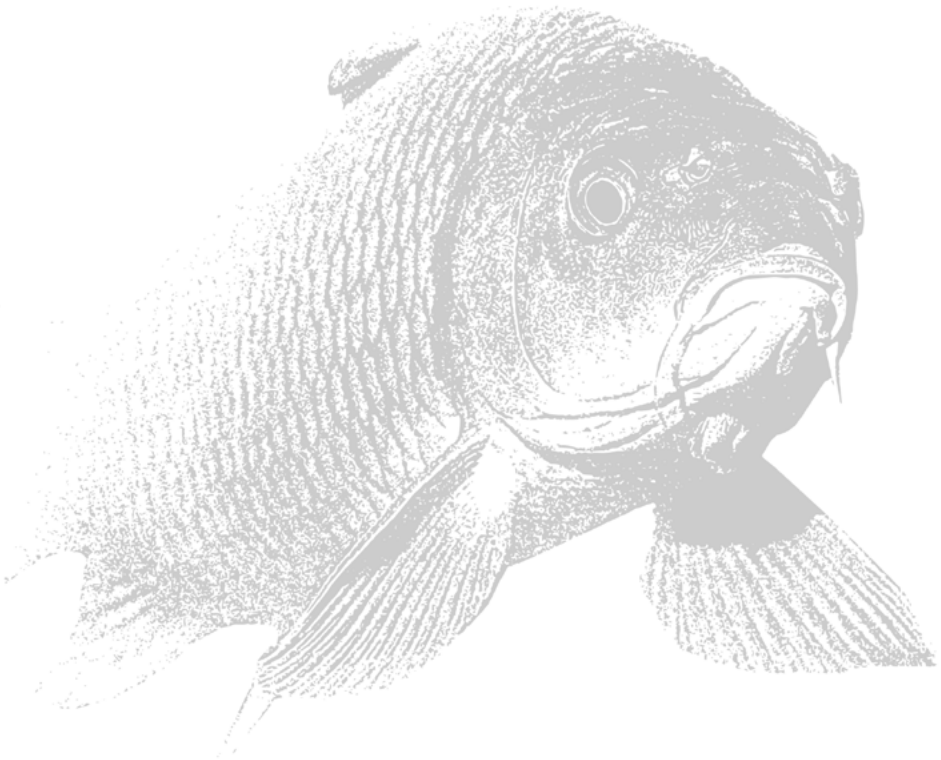
Special interest groups and community organisations

This Plan recognises the important role community volunteers and special interest groups play in the management of invasive species in NSW. These groups and individuals provide thousands of hours each week assisting in the management of private and public lands through direct invasive species control and monitoring activities, while others work on conserving biodiversity, which increases the resilience of our natural environment to pest animals and weeds. Building capacity throughout the community and sharing biosecurity responsibilities is essential.

Community

All members of the community have an important role to play in minimising the impacts of invasive species, including detecting and reporting new incursions. Eradication attempts need community support to be successful and landowners, occupiers and the public in general also have roles and responsibilities in the ongoing management of established pest animals and weeds on their own land, in collaboration with their neighbours and community.

Achieving and maintaining a high level of commitment to invasive species management by landowners and managers continues to be a challenge and one that will require more innovative approaches to engagement, supported by an understanding of the general biosecurity duty and other aspects of the *NSW Biosecurity Act 2015*.

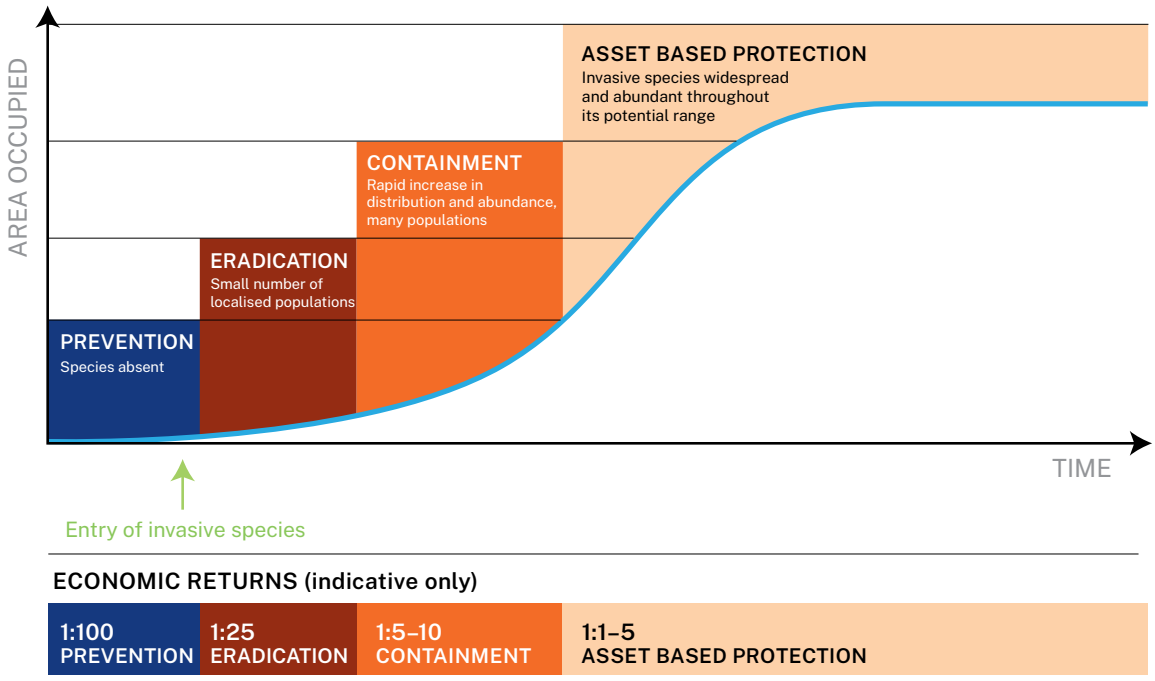


5. Prioritisation and risk assessment

With limited resources to address the risks and impacts of invasive species, activities and investment must be prioritised.

Invasive species management can be classified under four approaches: Prevention, Eradication, Containment and Asset-Based Protection. These four approaches are aligned with the invasion process from arrival to widespread establishment (as illustrated in Figure 2).

Generalised Invasion Curve showing actions appropriate to each stage



*Invasion Curve sourced from Biosecurity Victoria, Department of Primary Industries, Victoria

Figure 2: The 'Invasion Curve' provides an indicative guide of the importance and relative cost-effectiveness of managing invasive species before they establish large populations. The actual economic return at each stage depends on the species and location.

The most cost-effective way to minimise the impacts of invasive species is to prevent their incursion in the first instance. This requires being able to identify high risk species, thoroughly assess their potential invasiveness, and implement effective barriers to prevent their establishment. The risks posed by an incursion of a novel invasive species (animal or plant) is informed by data on whether it has invaded other countries, its biology, its native range, preferred habitat, suitable climate and how well this matches conditions in NSW and Australia. Formal risk assessment techniques for invasive species estimate likelihood (including of successful reproduction, establishment and spread) and consequences (including environmental and economic impacts and social considerations).

Comprehensive data to inform risk assessments is often lacking and the 'precautionary principle' should be considered for new incursions into NSW. Eradication should always be considered as a first response, particularly where a new incursion or confirmed establishment has a defined and limited distribution.

New incursions can colonise areas rapidly and successful control will be highly dependent on a rapid effective response. The challenge in the initial stages of establishment is to ensure early detection, reporting and rapid action by developing and deploying effective and efficient ways to eradicate or contain the introduced species before it becomes widespread. This usually results in a species-led approach.

Once widespread, the eradication of pest animals and plants over wide areas of different land tenure is rarely practicable. Priorities for the control of these species must be determined and resources focused in areas where the benefits of control will be greatest. This requires identifying the priority assets that are most at risk. Assets may be environmental, primary production or community (human health, infrastructure or cultural). A prioritised approach to invasive species management ensures maximum benefit from finite resources.

The large number of weed species in NSW has led to the development of a formal quantified Weed Risk Management (WRM) system to provide a transparent process for prioritising management in NSW. Although the number of pest animal species in NSW is relatively small, aspects of the WRM system, and other invasive species prioritisation systems, have been considered in prioritising pest animals listed in the Regional Strategic Pest Animal Management Plans.

The general community and landholders also have a role in prioritisation to maximise the use of limited invasive species management resources. Under the *Biosecurity Act 2015* (NSW), public and private landholders are able to work through regional committees to identify the priority invasive species that require cooperative cross-tenure management.

At all levels (local, regional, state and national) and stages of invasion (prevention, eradication, containment and asset protection), monitoring of invasive species management activities is required. Monitoring measures the effectiveness of our actions in reducing the impacts of invasive species and provides data about return on investment. Using this information, invasive species programs can be reviewed and evaluated, and investment of resources (human and financial) realigned as required. Regional weed and pest animal plans are supported by a 'MERI' (Monitoring, Evaluation, Reporting and Improvement) framework to ensure that plans evolve to reprioritise invasive species and management areas and actions as required.

Research, Development and Engagement are critical activities to underpin biosecurity. They provide the monitoring and management tools to support all stages of the 'Invasion Curve'.

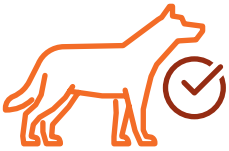
RETURN ON INVESTMENT

There can be large returns on investment for invasive species research (particularly biocontrol) and management (particularly early intervention to manage new incursions). Some examples are:

Improved profitability of agricultural industries from rabbit biocontrol – A CSIRO review of the economic benefits of rabbit biocontrol (myxoma virus and calicivirus) in Australia from 1950–2011 conservatively estimated a benefit of A$70 billion (2011 A$ terms) for agricultural industries over that period.

In 2009, the Invasive Animals Cooperative Research Centre estimated that the benefit:cost ratio for **successful invasive animals research** ranged from 5.1:1 to 13.6:1.

In 2006, the Cooperative Research Centre for Australian Weed Management reviewed 29 **weed biocontrol programs** conducted over a 103-year period and estimated that the 14 programs that were successful delivered a total average annual benefit of $95.3 million for an annual average investment of $4.3 million - a benefit:cost ratio of approximately 22:1.



A 2019 review of the **National Wild Dog Action Plan** estimated that the $2.62 million of investment in Plan activities between 2014-2019 resulted in a benefit-cost ratio of between 6.1:1 and 16.5:1.

Alligator weed has the potential to cost irrigation farming in NSW up to $250 million each year. Containment programs protect the $50 million Sydney Basin turf industry and the $150 million Hawkesbury Nepean vegetable industry in NSW.

6. NSW legislation and invasive species management

The *NSW Biosecurity Act 2015* (the Act) and Biosecurity Regulation 2017 came into effect on 1 July 2017. The Act supports national commitments under the Intergovernmental Agreement on Biosecurity and addressed a key goal (Goal 4) of the NSW Biosecurity Strategy 2013–2021.

The Act has replaced 10 existing Acts and parts of four other Acts with a single Act. A consistent and streamlined approach makes it easier for stakeholders and regulators to effectively manage biosecurity risks to the economy, environment and the community.

The Act:

- embeds the principle that biosecurity is a shared responsibility, with landowners having a key role, including a general biosecurity duty to effectively manage invasive species and other biosecurity risks on their property
- provides modern, flexible regulatory tools and powers that promote effective management of pest animals and diseases, weeds and contaminants across the landscape regardless of whether it is private or public land
- minimises delays and defines responsibilities in emergency situations
- provides for risk-based decision-making that enables a flexible approach to responding to and managing biosecurity risks regardless of the type of biosecurity matter
- supports a national approach to biosecurity and gives effect to intergovernmental biosecurity agreements.

There is strong alignment between the four goals of the Invasive Species Plan and the management tools and powers available through the Act:

GOAL 1 – EXCLUDE

Prevent the introduction of new invasive species

Under the Act, high risk pests and diseases that need to be excluded are identified in the Prohibited Matter or Prohibited Dealings sections (see link at Appendix 3). ‘Mandatory Measure’ provisions under the Act may help prevent the establishment of new pest populations, e.g. by making it illegal to transport, sell or release high-risk invasive species. The Act also provides emergency powers that allow swift action to be taken to respond to significant biosecurity risks.

GOAL 2 – ERADICATE OR CONTAIN

Eliminate or prevent the spread of new invasive species

The Act allows for the creation of 'Control Orders' and 'Biosecurity Zones' to deal with high priority new and emerging pest species. Generally, Control Orders will be made to identify requirements for eradication of new species, while Biosecurity Zones will be used to provide for longer term management of emerging species that can be contained but for which eradication is no longer considered feasible.

GOAL 3 – EFFECTIVELY MANAGE

Reduce the impacts of widespread invasive species

For widespread invasive species, the primary management tool is the 'general biosecurity duty'. The general biosecurity duty provides that any person who deals with biosecurity matter (such as pest animals or weeds) and who knows (or ought to know) of the biosecurity risk posed (or likely to be posed), has a biosecurity duty to ensure that the risk is prevented, eliminated or minimised as far as is reasonably practicable. The general biosecurity duty may be guided by statewide strategies or programs, codes of practice and industry standards, and local and regional plans. For example, the Regional Strategic Weed Management Plans and Regional Strategic Pest Animal Management Plans identify general priorities and actions for the management of weeds and pest animals in each LLS region and help define how the general biosecurity duty may be discharged for priority species. Local plans can provide more specific guidance on how landowners and managers can meet their biosecurity responsibilities to effectively manage particular invasive species in particular areas.

GOAL 4 – BUILD CAPACITY AND CAPABILITY

Ensure NSW has the ability and commitment to manage invasive species

The effectiveness of the Act relies heavily on engagement of landholders and the general community. Landholders need to be informed of their obligations to manage biosecurity risks under the Act but also need to be provided with guidance on the monitoring and management options available to them. Invasive species can only be managed effectively with a high level of coordinated management by all landholders in an area. Achieving this high level of participation continues to be a challenge and requires ongoing effort and employment of innovative facilitation and engagement approaches.

Involvement of the general community is critical in helping to detect and report new incursions.

Key NSW legislation relevant to invasive species management which operate in tandem with the *NSW Biosecurity Act 2015* includes:

- *Agricultural and Veterinary Chemicals Act 1994*
- *Biodiversity Conservation Act 2016*
- *Border Fence Maintenance Act 1921* (formerly known as *Wild Dog Destruction Act 1921*).
- *Crown Lands (Continued Tenures) Act 1989*
- *Crown Lands Act 1989*
- *Environmental Planning and Assessment Act 1979*
- *Firearms Act 1996*
- *Fisheries Management Act 1994*
- *Forestry and National Park Estate Act 1998*
- *Game and Feral Animal Control Act 2002*
- *Local Government Act 1993*
- *Local Land Services Act 2013* – particularly Part 3 (Community Advisory Groups) and Part 10 (Pests) – and Local Land Services Amendment Act 2016
- *National Parks and Wildlife Act 1974*
- *Pesticides Act 1999*
- *Prevention of Cruelty to Animals Act 1979*

7. Goals, Outcomes and Strategies

The following tables identify the key Outcomes and Strategies under each Goal of the Plan.

Table 1. Goal 1 – Exclude (prevent the introduction of new invasive species)

Outcomes	Strategies
1.1 Improved identification and management of high-risk species and pathways	1.1.1 Develop species and pathway risk assessment frameworks that are consistent with national approaches where appropriate 1.1.2 Review legislative arrangements for control of high-risk species and pathways 1.1.3 Implement legislation, education and enforcement programs for effective management of high-risk species and pathways 1.1.4 Work with industry to mitigate risk, including codes of practice and labelling standards
1.2 Improved early detection capabilities	1.2.1 Continually review and improve early detection capabilities 1.2.2 Undertake regular foresighting to identify and address emerging trends that could lead to increased biosecurity risks 1.2.3 Improve capacity (people, equipment and processes) to identify and report suspected new invasive species 1.2.4 Increase public awareness of incursion risk and reporting mechanisms

Table 2. Goal 2 – Eradicate or contain (eliminate or prevent the spread of new invasive species)

Outcomes	Strategies
2.1 Improved rapid response capabilities to eradicate or contain new incursions	2.1.1 Develop more structured processes to respond to invasive species reports 2.1.2 Develop incursion response plans for extreme risk species 2.1.3 Develop rapid response plans and cost-sharing agreements 2.1.4 Develop a decision-making framework to make recommendations on when eradication should be attempted and the transition points from eradication to containment to ongoing management 2.1.5 Maintain a sufficient statewide network of biosecurity staff to respond to incursions

Table 3. Goal 3 – Effectively manage (reduce the impacts of widespread invasive species)

Outcomes	Strategies
3.1 Management programs prioritised to give more targeted effort and greater benefit	3.1.1 Prioritise invasive species management at the regional level through regional pest animal and weed management strategies 3.1.2 Prioritise management efforts based on current and potential impacts 3.1.3 Programs are measured with clear benchmarks to ensure results are quantified
3.2 Improved management effectiveness	3.2.1 Management is undertaken according to best practice management guidelines and Standard Operating Procedures 3.2.2 Encourage co-operative programs that use integrated management across all tenures 3.2.3 Consider opportunities for management responses to include land use change, commercial harvesting, recreational hunting/ fishing etc. 3.2.4 Utilise new and innovative techniques to increase efficiency and effectiveness 3.2.5 Ensure regulatory framework is implemented to back up voluntary actions 3.2.6 Large management programs should have monitoring, reporting and feedback processes in place to allow continual refinement of management approach

Table 4. Goal 4 – Build capacity and capability (ensure NSW has the ability and commitment to manage invasive species)

Outcomes	Strategies
4.1 Roles and responsibilities are clear for invasive species management	4.1.1 Ensure roles and responsibilities for each stakeholder are clearly defined and understood
4.2 Private landholders and the general community are motivated to support biosecurity at all stages of invasion curve	4.2.1 Inform stakeholders of their obligations under the *Biosecurity Act 2015* 4.2.2 Identify opportunities for community involvement in biosecurity 4.2.3 Maintain and build on existing volunteer networks 4.2.4 Provide a range of information, education and training resources 4.2.5 Raise awareness of the importance of reporting new incursions and provide accessible mechanisms for reporting
4.3 Skilled workforce implementing invasive species management	4.3.1 Maintain availability of competency-based education and training courses 4.3.2 Maintain an adequate network of biosecurity professionals across the state that can be rapidly deployed to manage biosecurity emergencies
4.4 Improved tools to monitor and manage invasive species	4.4.1 Maintain research capacity and links with relevant national and international research organisations 4.4.2 Identify research priorities and potential funding sources 4.4.3 Develop and promote an information management system to improve capacity to understand and deal with biosecurity threats
4.5 Legislation and policy supports effective action at all stages of invasion curve	4.5.1 Develop regulations and policy under the *Biosecurity Act 2015* that increases community involvement in invasive species management 4.5.2 Ensure that consistent community engagement, planning, implementation, monitoring and compliance approaches are employed across NSW 4.5.3 Maintain involvement in national processes, committees and agreements to facilitate more consistent invasive species management approaches nationally
4.6 Commitment to implement and monitor progress of the Invasive Species Plan 2023-2028	4.6.1 Progress against Invasive Species Plan is tracked regularly by SWC, SPAC, Marine Pest Working Group and Ornamental Fish Reference Group 4.6.2 Conduct end of Plan review

8. Implementation of the NSW Invasive Species Plan

Government agencies, stakeholders and community groups all have a role to play in the implementation of NSW Invasive Species Plan 2023–2028. For example, the Plan will help guide regional prioritisation and work programs for weed and pest animal management.

NSW has formal stakeholder consultative frameworks through which invasive species management issues are discussed, including the State Pest Animal Committee, State Weed Committee, NSW Marine Pest Working Group. Committees such as these allow key stakeholders, including peak industry bodies, Local Control Authorities, public and private land managers and non-government organisations, to set policy direction and guide regional management prioritisation. NSW DPI will coordinate monitoring of and reporting against implementation of this Plan in consultation with the State Weeds Committee, State Pest Animal Committee, Marine Pest Working Group and Ornamental Fish Reference Group.

Appendix 1 – Glossary of terms

Across-tenure management	An approach that encourages public and private land managers to cooperatively address invasive species issues for a particular area across all land tenures (irrespective of property boundaries) by collectively identifying the scope of the issue and reaching agreement on the management technique and level of resources required to address it
Aquatic	In or on water (fresh, brackish or salt)
Best practice management	Methods or techniques that integrate all available knowledge and research that is proven to deliver the most effective, cost-efficient and humane invasive species control, while making optimum use of existing science and knowledge resources
Biodiversity	The variety of life forms, and the different plants, animals, microorganisms and ecosystems they form
Biosecurity	Protecting the economy, environment and community from the negative impacts of pests, weeds and diseases
Competency based	Training that meets units of competency, which are agreed statements of the skills and knowledge required for effective performance in a particular role or function
Containment	Restricting the spread of an invasive species incursion
Emerging species	A newly established invasive species whose distribution and abundance is expanding
Eradication	The permanent removal of an invasive species, including all individuals and propagules, from a defined area that has little or no likelihood of re-invasion
Establishment	The point at which a species can reproduce at a sufficient level ensuring survival in a new habitat without further input from outside the system
Evaluation	The process or results of an assessment or appraisal in relation to stated objectives, standards or criteria
Impacts	The (usually negative) economic, environmental and/or social effects of invasive species
Incursion	An isolated population of an invasive species detected in an area where it had not been previously known

Invasive species	A species whose establishment and spread threatens ecosystems, habitats or species with economic or environmental harm
Native species	A species within its natural range (past and present)
New invasive species	Any introduced species that has not been recorded in the area previously and whose impacts are likely to be significant
Pathways	The passage by which invasive species move e.g. air, surface water, groundwater, plants, animals and by human agents
Pest	Any plant or animal having, or with potential to have, an adverse economic, environmental or social impact
Protocol	A procedure or set of rules
Public land and water	Lands and water managed by public authorities
Public authorities	A Minister of the Crown; and/or a local authority constituted by or under an Act; and/or a government department or administrative office; and/or a statutory body representing the Crown; and/or the trustee or trustees of land reserved or dedicated for any public use or purpose; and/or a member of staff or other person who exercises functions on behalf of the above
Risk management	The identification, analysis, control, minimisation or elimination of unacceptable risks
Stakeholders	Those people and organisations with an interest or concern in something
Threatened (species, populations and ecological communities)	A native species/population/ecological community whose survival is at risk, as specified in either the NSW *Threatened Species Conservation Act 1995* or the NSW *Fisheries Management Act 1994*
Vectors	Means allowing the spread of an invasive species into an area or ecosystem
Weeds	Plants that are unwanted in a given situation and which usually have detectable negative economic, environmental or social impacts

Appendix 2 – Acronyms and Abbreviations

DPI	Department of Primary Industries
LCA	Local Control Authority
LLS	Local Land Services
NPWS	National Parks and Wildlife Service
RPAC	Regional Pest Animal Committee
RSPAMP	Regional Strategic Pest Animal Management Plan
RSWMP	Regional Strategic Weed Management Plan
RWC	Regional Weeds Committee
SPAC	State Pest Animal Committee
SWC	State Weeds Committee

Appendix 3 – Key references

Legislation

Biosecurity Act 2015 (NSW) – key terms and definitions:
https://www.dpi.nsw.gov.au/biosecurity/managing-biosecurity/key-terms-and-definitions

Biosecurity Act 2015 (NSW) and supporting instruments:
https://www.dpi.nsw.gov.au/about-us/legislation/list/biosecurity-act-2015

Strategies and plans

NSW Biosecurity and Food Safety Strategy 2022-2030:
https://www.dpi.nsw.gov.au/biosecurity/managing-biosecurity/nsw-bfs-strategy-2022-2030

Regional Strategic Pest Animal Management Plans:
https://www.lls.nsw.gov.au/help-and-advice/pests,-weeds-and-diseases/pest-control/regional-strategic-pest-animal-management

Regional Strategic Weed Management Plans:
https://www.lls.nsw.gov.au/help-and-advice/pests,-weeds-and-diseases/weed-control/regional-strategic-weed-management-plans

Australian Pest Animal Strategy 2017-2027:
https://www.awe.gov.au/biosecurity-trade/pests-diseases-weeds/pest-animals-and-weeds

Australian Weeds Strategy 2017-2027:
https://www.awe.gov.au/biosecurity-trade/pests-diseases-weeds/pest-animals-and-weeds

MarinePestPlan 2018-2023:
https://www.marinepests.gov.au/what-we-do/publications/marine-pest-plan

Biosecurity status

NSW State of Biosecurity Report 2018-2021:
https://www.dpi.nsw.gov.au/biosecurity/managing-biosecurity/nsw-state-of-biosecurity-report

Australia's Biosecurity Future:
https://www.csiro.au/biosecurityreport

Published by the NSW Department of Primary Industries

NSW Invasive Species Plan 2023–2028

First published January 2023

More information

www.dpi.nsw.gov.au

Cover photo credits:
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JN18235 01/2023