Department of Agriculture and Food

GOVERNMENT OF WESTERN AUSTRALIA

Invasive Species Plan for Western Australia 2015-2019

February 2015

Acknowledgements

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Important disclaimer

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Copies of this document may be available in alternative formats upon request.

3 Baron-Hay Court, South Perth WA 6151
Tel: +61 (0)8 9368 3333
Email: enquiries@agric.wa.gov.au
agric.wa.gov.au

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1 Foreword

This Plan outlines Western Australia's (WA's) approach to managing existing and potential invasive species that can harm the state's economy, environment and people. Invasive species[1] in the context of this Plan refers to plants and vertebrate animals that can cause undesirable impacts on economic, environmental and social assets and values.

Addressing the threat posed by these species to WA makes a major contribution to strengthening our agricultural and other primary industries, protecting our environment and our overall commitment to biosecurity.

We have shared responsibilities in working to protect our unique and valued environments and our lifestyles from the impacts of invasive species. Invasive species prevention, eradication, containment and targeted asset protection are tasks for all Western Australians. The Plan has been prepared within government to provide leadership through its strategies and actions. Implementation over the next five years requires active involvement by government, industry, community and individual landholders.

Preparation of the Plan is timely. One of the observations made in the WA Auditor-General's 2013 review of the state's management of terrestrial plant and animal invasive species was that "Western Australia lacks an integrated statewide plan for managing pests and respective roles and responsibilities of government agencies are not clearly defined". The Auditor-General recommended that the Department of Agriculture and Food, Western Australia (DAFWA) develop a statewide plan for the management of declared pests. This plan has been prepared in consultation with other government agencies in response to that recommendation.

The Plan has been prepared by staff from the Departments of Agriculture and Food, Parks and Wildlife, and Fisheries. Other relevant agencies and organisations have provided input to the content. The Plan is consistent with the WA *State Biosecurity Strategy* being prepared by the state's biosecurity agencies in consultation with the Biosecurity Council, and with the state's national obligations.

The lead agency for the implementation of the Plan is DAFWA. The department will work within its resource capacity and collaborate with other relevant organisations to implement this Plan and improve outcomes for invasive species management across WA. Its successful implementation will generate significant benefits for our well-being, economy and environment.

[1] See Box 1 and the glossary for a definition of 'invasive species' as used in this Plan.

2 Executive summary

Invasive species[2] are not welcome in WA. Undesirable plants and animals which are already present cause serious economic losses for our agricultural, forest and fishing industries, adversely affect our unique environments and biodiversity, and cause harm to our community well-being.

This Plan describes actions for the prevention, eradication and containment of and targeted asset protection from invasive species that can harm our economy, environment and way of life. Underlying the actions is a recognition that all Western Australians – landholders, businesses, community groups and government agencies – have responsibilities in invasive species management.

Examples of harmful animals already established include wild dogs, foxes, feral cats, feral pigs and feral camels. These animals impact on livestock industries and may out-compete or predate upon vulnerable native fauna, spread disease and destroy natural habitats. Undesirable plants that are widely established include blackberry, arum lily, bridal creeper and narrow-leaf cotton bush across the south west, and mesquite, parkinsonia, and prickly acacia in parts of northern WA. These plants reduce forage production for livestock, may out-compete native flora, alter ecological functions or reduce the amenity of our natural landscapes. Minimising the impacts of well-established invasive species is sometimes difficult and expensive. The most effective approach to managing well-established weeds and pest animals is by community coordinated control programs involving all landholders.

However, a more effective way to manage invasive species' risk is to prevent them entering through vigilance at the points and pathways where they can cross into WA, accompanied by a capacity to quickly detect, identify and eradicate those that do evade detection and become locally established. In many cases, it is in these processes of prevention, early detection and rapid response that government resources are best used.

The lead agency for implementation of the Plan is DAFWA. It will work collaboratively with the Department of Parks and Wildlife (DPW) the Department of Fisheries (DoF) and others in government in implementing the Plan. There are many other people and organisations who will be involved in implementing the actions presented in the Plan, including all landholders, industries, other state agencies, local governments, community groups with an interest in invasive species management, and Australian Government partnering agencies.

The structure of the Plan is presented in Table 1. The challenge posed by invasive species is significant, however, implementation of the Plan may be limited by the resources that are available. There are five objectives, five goals, 15 strategies and 38 actions. Success in achieving the objectives will only be realised through

[2] See Box 1 and the Glossary for a definition of 'invasive species' as used in this Plan.

collective and collaborative commitment of landholders, community groups, industry and government agencies, as outlined in the Plan.

The Objectives of the Plan are:

- improved priority setting and transparency in declaration processes in invasive species management
- coordinated prevention, eradication and response plans are implemented for high priority invasive species
- partnerships between community, industry and government are achieving effective containment and control of widely established invasive species
- efficiently applied regulation underpins effective control of invasive species the community, industry and government have relevant information to inform and report on invasive species management.

Table 1 The structure of the Plan

Goal 1. Setting priorities	**Goal 2. Prevention and eradication**	**Goal 3. Control of widespread and established invasive species**	**Goal 4. Regulation and compliance**	**Goal 5. Information and accountability**
Community, industry and government actions in invasive species management are targeted to deliver the greatest benefit from the resources available for prevention, eradication, containment and targeted asset-based protection.	Effective border quarantine, surveillance and detection, and eradication actions prevent new high-impact invasive species becoming established in Western Australia.	Landholders, industries and governments work together to reduce the impacts of widespread and established invasive species.	Ensure regulatory and compliance mechanisms underpin activities in invasive species management.	Ensure priority setting and continuous improvement in invasive species management is informed by relevant and timely information available to, and shared between, all parties.
Strategy G1.1 – Evaluating risks for invasive species *3 Actions*	Strategy G2.1 – Pre-border and border processes *2 Actions*	Strategy G3.1 – Routine surveillance *2 Actions*	Strategy G4.1 – Effective regulatory mechanisms	Strategy G5.1 – Sharing information and knowledge *3 Actions*

Goal 1. Setting priorities	**Goal 2. Prevention and eradication**	**Goal 3. Control of widespread and established invasive species**	**Goal 4. Regulation and compliance**	**Goal 5. Information and accountability**
Strategy G1.2 – Declaration processes and responsibilities *2 Actions*	Strategy G2.2 – Post-border surveillance and detection *3 Actions*	Strategy G3.2 - Controlling the impact of widespread and established invasive species *3 Actions*	Strategy G4.2 – Ensuring compliance *2 Actions*	Strategy G5.2 – Monitoring and evaluation *1 Action*
Strategy G1.3 – Investing in the future *4 Actions*	Strategy G2.3 – Emergency Response Plans *3 Actions*	Strategy G3.3 – Processes, organisations and resources for controlling invasive species *6 Actions*		Strategy G5.3 – Reporting the results *2 Actions*
	Strategy G2.4 – Eradication Plans *2 Actions*			

3 Introduction

3.1 Invasive species in WA

Many introduced animals and plants become pests if they establish unwanted populations in new areas. The ways in which these species are introduced vary widely, but they are often the result of accidental or deliberate human activities.

Whatever their means of arrival, invasive species can have an adverse and often very damaging impact on agriculture, the natural environment and our lifestyle. Box 1 provides the definition of 'invasive species' and 'invasive species management' as defined in this Plan.

Although WA is relatively free of many potentially harmful plants and animals, many introduced species have become widely established since European settlement. Plants such as mesquite, narrow-leaf cotton bush, blackberry and bridal creeper, and animals such as wild dogs, foxes, rabbits, feral goats, feral cats, exotic freshwater fish and cane toads impose economic costs and damage our natural environment.

Maintaining vigilance in preventing new harmful species becoming established, and limiting the impacts of those already established, generates benefits for our primary industries and protects our unique natural landscapes and biota.

Box 1

'Invasive species' and 'invasive species management' as defined in this Plan

Invasive species include plants and vertebrate animals that are pests of high priority for the state. These species cause undesirable impacts on economic, environmental and social assets and values.

This Plan addresses invasive plants and vertebrate animal species that live on land and in freshwater bodies (rivers, lakes, wetlands). The species covered by this Plan may or may not be declared under legislation as 'declared species' (see Section 3.5.2).

Management includes prevention, eradication, and containment of these species, and protection of valuable assets, as shown in the generalised invasion curve presented in Figure 1.

The Plan does not address fungi, microorganisms and diseases of plants and animals, invertebrates, or any marine invasive species, as these are dealt with in other management instruments.

Invasive species management is, therefore, a component of biosecurity, being defined as 'protection from the adverse effect of any organism on another organism, people, environment, and economic activities' – see s.6 of the *Biosecurity and Agriculture Management Act 2007*.

While there are broad similarities in the situation in WA compared to other states and territories, there are some important differences:

- WA occupies one-third of the continent, and includes very large areas of sparsely populated pastoral leasehold land and unallocated crown land (UCL) and unmanaged reserves (UMR). Maintaining surveillance for invasive species incursion across our long coastline and in these sparsely populated areas is a major challenge. Access and logistics are particularly challenging in remote areas.
- WA is free of some important weeds and feral animals that affect other states and territories. Examples include starlings, and important weeds such as tropical soda apple and red witchweed. Preventing incursion of these invasive species requires constant vigilance at the state border. Some other species occur in isolated areas, including Bathurst burr and skeleton weed, with programs in place to restrict their spread.
- WA has a large range of climates supporting habitats suitable for a wide range of invasive species. Also, the state has a larger area of Mediterranean climate than other parts of Australia, with a commensurately higher burden of Mediterranean-climate weeds which have particular importance to agriculture.

3.2 WA's approach to managing invasive species

3.2.1 The case for managing invasive species

WA has a long history of managing risks from invasive species and diseases that potentially impact on the state's primary industries and its natural environment. Some invasive species also have implications for human health, stored products and the built environment. Sanitary and phytosanitary measures continue to be applied offshore, at the international and interstate borders, and within the state to mitigate against organisms that impact negatively on businesses (especially in primary industries), the environment and society as a whole, or which could have the potential to do so.

Protecting the favourable biosecurity status of WA's primary industries and the environment is of prime importance to the state. WA agriculture, forest and fisheries industries are export-oriented industries, and the maintenance of both reduced biosecurity-related costs (compared with competitors) and market access into countries or states free of invasive species, is crucial for export success. Examples of programs undertaken by government are provided in the accompanying Boxes 2 to 4.

3.2.2 When and how to act

Managing invasive species includes preventing them entering WA, eradicating isolated new incursions before they can spread and, for those species established widely, exerting a level of targeted control that limits their adverse impacts on key areas, assets and/or values. Given the unique features of the WA situation noted above, this requires border quarantine measures to prevent incursions, and a surveillance and emergency response capacity to tackle those species that do enter,

combined with effective landholder[3] control and monitoring of widely established species.

The WA approach in managing invasive species is broadly aligned with the 'generalised invasion curve' (see Figure 1). Typically, the most cost effective actions are in preventing a new invasive species entering or eradicating it before it becomes widely established. It is at this stage where public investment is most needed and often delivers the greatest return on investment. It is also where government needs to commit most of its efforts.

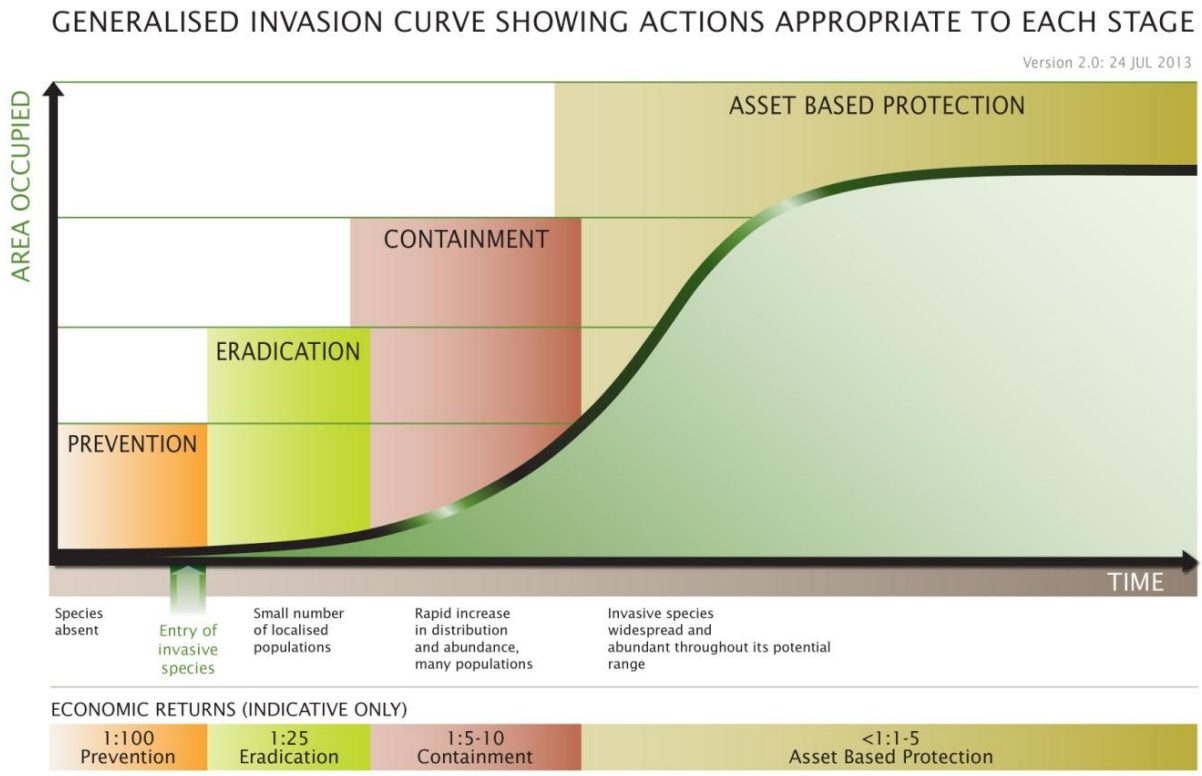

Figure 1 Generalised invasion curve for the management of invasive species (Source: Victorian Department of Environment and Primary Industries)

For widely established species, containment refers to restricting the distribution of the invasive species and stabilising their impact. Control takes this further and usually involves minimising the impact of the invasive species and/or reducing their geographical distribution. At the right hand end of the curve where invasive species are widely established, it is in landholders' private interest to protect their assets by

[3] A 'landholder', as defined in the BAM Act, means a person who is in occupation or control of the land, or is entitled to be in occupation or control of the land, whether or not that person owns the land. Some government agencies and authorities, and local governments are also landholders.

controlling invasive species on their land. Investment in containment and control[4] is usually effective up to the point where the control costs equal the benefits delivered.

In short, government has the lead role in prevention and eradication of new incursions, and landholders have the major role in the control of widely established species.

Some exceptions to this general rule apply in the case of some native flora and fauna, where the marginal benefit of controlling a threatening invasive species is often very high, particularly where the native flora and fauna in question are reduced to sub-viable local populations.

Industry, community and natural resource management (NRM) groups can play a major role in coordinating landholder control and management of invasive species.

Box 2

The Invasive Species Program – operated by DAFWA

DAFWA's Invasive Species Program is responsible for guiding and regulating the strategic and operational management of harmful animals and weeds that pose a threat to agriculture production systems or to market accessibility for agricultural produce in WA. Severe outbreaks of Australian plague locusts are also included within this program. Activities of the Invasive Species Program include state and national policy development, risk assessment, provision of technical advice and information, implementation of regulations, emergency response, property inspections, industry liaison and the planning and coordination of some significant weed control or eradication programs.

In 2012/13, DAFWA spent $14.6 million in consolidated funds on border biosecurity and the management of declared species. An additional $9.4 million was funded by the Royalties for Regions program, Australian and other state governments, and via rates raised by Recognised Biosecurity Groups and Industry Funding Schemes

[4] The terms 'containment' and 'control' are defined in the glossary. In the text control is used when referring to landholder and landholder group activity in minimising the impact of an invasive species on an area of land or in a waterway.

Figure 2 Biosecurity Officer Lindsay Strange setting a small pest animal trap

Box 3

Invasive species on conservation estate and other land managed by DPW

DPW has statutory responsibility for managing approximately 28.5 million hectares of land in WA, including national parks, marine parks, nature reserves, state forests and timber reserves, for a wide range of values and uses. The department undertakes a range of programs, often in partnership with other organisations, to manage a number of introduced species, including activities to:

- control introduced predators, particularly foxes and feral cats, to maintain populations of unique and vulnerable native fauna (for example, through the Western Shield Program)
- manage environmental impacts from local populations of introduced animals, such as feral goats and feral pigs, and invasive weeds, on land managed by DPW
- prevent satellite populations of cane toads and manage the impact of cane toads on native animals in the Kimberley and potentially in the Pilbara region
- minimise the spread and impact of Phytopthora dieback disease in native plant communities in the state's south-west.

The department has also been given responsibility for weed and pest animal management on around 89 million hectares of UCL and UMR (but not including such land within the metropolitan region, regional centres and gazetted townsites).

Box 4

Freshwater biosecurity research and management – operated by the Department of Fisheries (DoF)

Invasive exotic fish species can be released into our rivers and dams. They can out-compete native species or predate upon them. They can also change the aquatic habitat, for example, by making streams muddy.

DoF's biosecurity unit carries out research into the distribution, identification, management and control of invasive aquatic pests. The results are used to provide scientific and technical advice to government, industry and the community on the management of aquatic pests in freshwater environments.

Departmental staff scan bodies of freshwater for pests and scientifically verify new pest sightings. Along with regular pest monitoring and control activities, this is done to protect native species and aquatic environments. Rehabilitation of freshwater water-bodies involves restocking native species after pest fish have been eradicated. DoF manages a freshwater fish distribution database, which covers all known records of where pest fish have been identified in the state.

3.3 Challenges in managing invasive species in WA

Invasive species management is a challenge for governments, industries and landholders in WA. Key challenges addressed and the responses identified in this Plan are shown in Table 2.

Table 2 Challenges and responses in invasive species management in WA

Challenges	Responses	Strategies addressing this challenge
It is difficult to develop operational rules relevant to the generalised invasion curve. Rules will need to be species-specific and sometimes region-specific.	Resources are required to do the analytical work to determine the best approach to invasive species management.	G1.1 G1.3 G2.3 G2.4 G3.2 G3.3
Increased cargo and human traffic into the state by sea, road, rail and air transport increases the likelihood that a species may enter undetected.	There is a need to continually adapt border surveillance to address new and expanded entry pathways for invasive species.	G2.1 G2.2 G2.3
Extensive sparsely populated areas of the state increase the likelihood that an invasive species may establish or spread without being noticed.	Deployment of efficient, effective, risk-based means of surveillance is required.	G2.2 G3.1
Developing and maintaining an emergency response capability requires sufficient resources and highly trained personnel.	Well-trained and resourced staff are required to ensure this ‘insurance’ capability.	G2.2 G2.3
Information on invasive species is held by a range of agencies and organisations and may not be readily available to all parties.	Improved systems of information storage and retrieval, and for sharing of this information between partners, are required.	G5.1
Biosecurity knowledge is at risk of diminishing with smaller, dispersed agency staff levels. Generational transfer of new knowledge becomes more difficult.	Generating new knowledge through partnership arrangements and use of web-based information systems will assist in enhancing effective knowledge transfer.	G5.1

Challenges	Responses	Strategies addressing this challenge
There is a mixed understanding across governments, industry, landholders and the wider community about the 'big picture' for the invasive species situation in WA, and respective roles and responsibilities of all parties for invasive species management, resulting in poorly uncoordinated effort.	An important requirement is for all parties to have a shared understanding, and accept and act upon their roles and responsibilities.	G1.2 G2.2 G2.3 G2.4 G3.1 G3.2 G3.3 G4.2 G5.1
The resources for invasive species management will always be constrained.	A sound process for identifying priorities for investment, based on a robust understanding of the impact of invasive species, will ensure resources are used most effectively.	G1.1 G1.2 G1.3 G2.3 G2.4 G3.2 G3.3
In some cases, asset-based control is too expensive to generate sufficient benefits from reduced impacts.	Continued investment in researching more cost-efficient control technologies is required.	G1.3
While regulation is necessary to address aspects of invasive species management, it is expensive and on its own is insufficient for meeting objectives.	Improved legislative capacity, coupled with collaborative management by partnerships between government, industry, landholders and the wider community, will be more effective in the long run.	G4.1 G4.2
It is difficult to maintain investment in monitoring the status of invasive species, and evaluate the effectiveness of intervention.	Improved methods of monitoring invasive species, and assessing and publicising the value of public and private investment are required.	G1.3 G5.2 G5.3

3.4 Principles in managing invasive species

Listed below are the principles developed for managing the invasive species which are the subject of this Plan. They are consistent with those in the WA *State Biosecurity Strategy*, the national *Inter-Governmental Agreement on Biosecurity* (IGAB), which the WA Government has signed, and with the current Australian Weeds and Pest Animal Strategies.

1. Invasive species management is a shared responsibility between land and water managers, community, industry and government and integral to sustaining and protecting the economy, environment, human health and social amenity. Landholders are responsible for controlling declared invasive species on the land they manage.

2. Good science, a risk management approach and evidence-based decisions need to underpin strategy, policy, priority setting, levels of investment and operational decision making and review.

3. Invasive species management requires coordination and capacity-building among all levels of government in partnership with industry, landholders, water managers and the community, regardless of tenure.

4. The WA approach to invasive species management is informed by the generalised invasion curve (see Figure 1). Preventing new species entering WA, and early response to new incursions, typically provides the most cost-effective long term benefits. Responses to incursions of invasive species need to consider the feasibility and cost-effectiveness of eradication.

5. For widespread and established pests, the WA Government may invest where there is a net public benefit from any such intervention. Priority will be given to those circumstances where returns on investment are greatest. Evaluation of the returns for intervention, and the costs of not intervening, need to consider productivity, environmental and social issues.

6. Animal welfare is an important consideration in developing management responses and selecting control techniques for harmful animals.

3.5 The need for a Plan to manage invasive species

This Plan is timely. Since the *Biosecurity Agriculture and Management Act 2007* (BAM Act) was passed, a number of significant biosecurity initiatives have begun. The government has established the Biosecurity Council (BC) and a Biosecurity Senior Officers Group (BSOG). Five Recognised Biosecurity Groups (RBGs) are already working in the pastoral areas of the State. The BSOG has developed the consultation draft of the Western Australian *State Biosecurity Strategy*.

The Plan complements these initiatives with specific principles, goals, strategies and actions for the management of invasive species. It also helps to clarify the roles and responsibilities of government agencies and associated bodies.

Finally, the actions included in the Plan provide useful information to stakeholders in invasive species management, especially the public, about arrangements to focus the WA Government's effort into minimising the impacts of invasive species on WA's economy, environment and community well-being.

3.5.1 The role of the Plan in the State Biosecurity Governance Framework

The Western Australian State Biosecurity Governance Framework is shown in Figure 3, with the Plan highlighted.

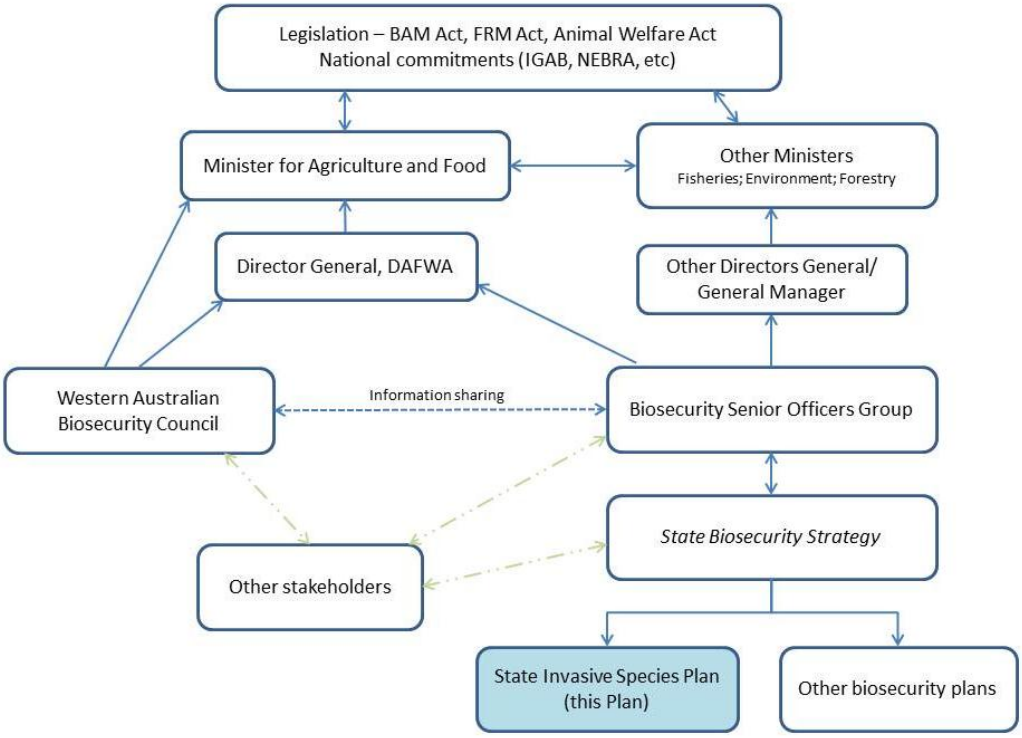

Figure 3 The State Biosecurity Governance Framework in WA[5]

The key relevant state legislation is the BAM Act, which is the responsibility of the Minister of Agriculture and Food. There are a number of other relevant Acts which are the responsibility of other Ministers (see Appendix 1).

The BC was established under the BAM Act as a specialist advisory group to the Minister for Agriculture and Food and the Director General of DAFWA on any matter related to biosecurity. BC membership is drawn from people who are experienced or

[5] Within DAFWA, the implementation framework for biosecurity occurs through a range of program areas. These program areas – border biosecurity, plant biosecurity, livestock biosecurity, regulation and response and invasive species – are responsible for pre-border, border and post-border biosecurity issues.

actively involved in primary production (including agriculture[6], fishing, aquaculture, pearling or related commercial activities), natural resource management, environmental protection, and/or regional communities.

Relevant WA agencies coordinate their activities through the operation of BSOG which interacts with the BC and a range of other stakeholders, including local governments (represented by the WA Local Government Association), industry groups, and community groups with an interest in biosecurity management.

BSOG provides strategic overview and inter-agency coordination of biosecurity issues of interest to the State and the activities of member agencies. BSOG will have strategic overview of the implementation of this Plan, and its relationship with other specific strategies and plans. DAFWA will lead implementation of the Plan.

The roles and responsibilities of those organisations involved in invasive species management and in implementing this Plan are presented in Section 4.2.

3.5.2 About the Plan

Scope

This Plan addresses invasive species (invasive plants and animals) that are important threats in WA. With few exceptions, these species are exotic, that is they are not native to this State. It covers all of the state's lands and freshwater ecosystems. It does not cover:

- invertebrates
- diseases of humans, plants, wildlife and livestock
- microorganisms

which are covered in other management mechanisms.

The scope reflects scientific and community opinions about the most important invasive species that have the potential to harm, or are already harming our economy, environment and well-being.

This Plan is underpinned by the BAM Act and other relevant legislation as shown in Appendix 1.

[6] The BAM Act defines 'agricultural activity' to include apiculture, aquaculture, silviculture, viticulture and the raising or supply of plants or animals, and any related activity, including fallowing or resting land used for an agricultural activity.

Categorising invasive species in the Plan

Declared invasive plants and animals

The BAM Act provides for the declaration of organisms as undesirable species across the state, or in particular areas. The Minister for Agriculture and Food may declare an organism for an area if there are reasonable grounds for believing the organism has, or may have, an adverse effect on:

- an organism native to the area
- the well-being of the people in the area
- the natural environment in the area
- the productivity of the state's agricultural[7], forest, fishing and pearling industries.

Details of declared species are available in the Western Australian Organism List (WAOL), which can be found at agric.wa.gov.au/n/1432.

A range of regulatory and management responsibilities apply to declared species. Species can be declared as permitted (section 11 of the BAM Act), prohibited (section 12), declared (section 22) or otherwise remain unlisted (section 14). Declared organisms are categorised into three control categories – exclusion (C1), eradication (C2) and management (C3) and three keeping categories – prohibited, restricted and exempt.

The scope of this Plan includes the prevention, eradication, containment and control of those plants and vertebrate animals that are declared under sections 12 and 22 of the BAM Act.

Non-declared invasive plants and animals

The Plan also provides clear direction on the management of harmful invasive species that, although not declared, threaten WA environments and economic activities. These species include important environmental and economic weeds, such as Amazon frogbit and opuntioid cacti. Some have the capacity to affect the productivity of crops and pastures and need to be managed by landholders, and others such as feral cats, which predate on native wildlife, are of concern to the wider community.

The relationship between the invasive species considered in this Plan and the broader suite of declared and non-declared pest animals, plants and diseases is shown in Figure 4.

[7] The BAM Act defines 'agricultural activity' to include apiculture, aquaculture, silviculture, viticulture and the raising or supply of plants or animals, and any related activity, including fallowing or resting land used for an agricultural activity.

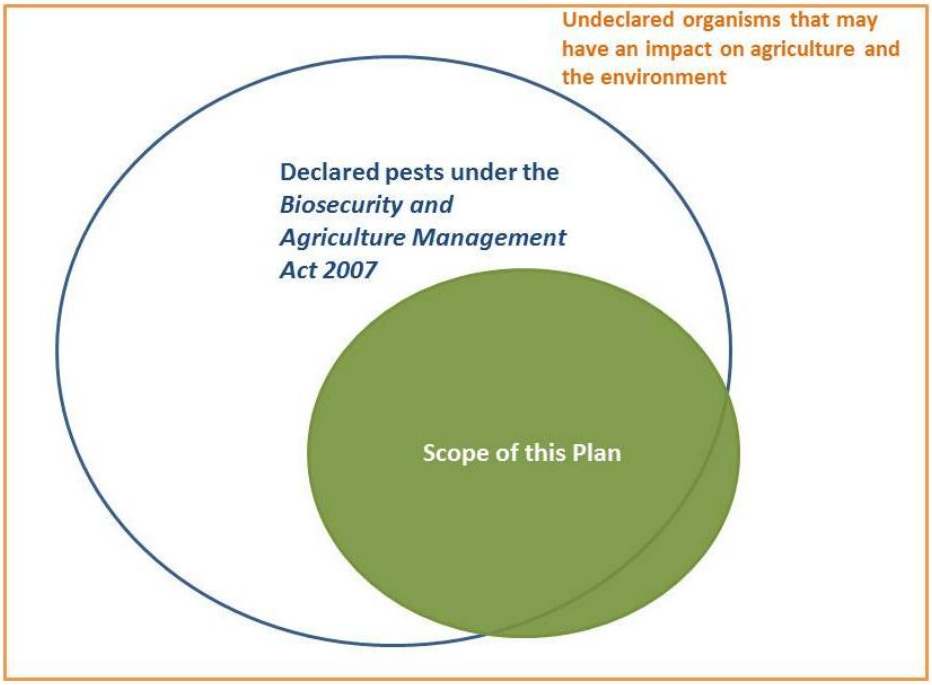

Figure 4 Invasive species covered by this Plan

Stakeholders in the Plan

All Western Australians have a role in managing invasive species.

Everyone has a responsibility to report the presence of unusual plants and animals. Landholders, managers and occupiers of land and freshwater bodies have the primary responsibility for the control of invasive species on the lands they manage and they are legally obliged to control those invasive species that have been declared.

The Australian, state and territory governments have a role in implementing the Plan through the various existing measures aimed at strengthening pre-border and border surveillance and emergency responses (see Section 3.5.3). The Australian Government is also a funder of control programs for invasive species being implemented by WA NRM groups and other community groups.

Although the lead agencies for the implementation of this Plan are DAFWA, DPW and DoF, all other state agencies have some responsibilities in supporting the objectives, goals, strategies and actions outlined in the Plan. For example, the Departments of Environmental Regulation, and Mines and Petroleum, establish conditions for the control of invasive species in certain developments and on mining leases.

The Department of Lands administers WA's Crown land estate under the *Land Administration Act 1997* and has overall responsibility for all UCL and UMR[8]. The Department of Lands provides administrative support to the Pastoral Lands Board, a statutory authority charged with administering pastoral leases, amongst other functions. Crown land makes up 92% of the state.

The Department of Transport is responsible for the main roads network in WA, the seven Port Authorities and the government-owned rail network. The Port Authorities are important participants in preventing invasive species entering WA, and control of invasive species on road alignments minimises their spread across the state. The Forest Products Commission is responsible for managing the harvest and sale of forest products from public forests and share farms it has established on private land. The major public utilities, Western Power and the Water Corporation, manage extensive infrastructure easements across the state. Keeping these lands free of new invasive species and managing existing invasive species is an important responsibility.

As well as in some cases being significant landholders, local governments across WA play an important role in supporting coordinated control programs being implemented by their communities. Local government staff can also be empowered under the BAM Act and have powers under the *Local Government Act 1995* (LG Act) as inspectors of local pest plants.

The BAM Act enables communities to form RBGs at the local and regional scale to control declared species that are important in those areas (see Section 5.3.2).

Many other industry, community and biosecurity groups are involved in controlling invasive species, including grower groups, local 'friends' of specific reserves, local catchment groups, and landholder groups focused on specific species (for example, fox control in parts of the agricultural areas and mesquite control in the Pilbara).

The seven regional NRM groups in WA have included activities around invasive species management within their strategic plans and have obtained funding from state and Australian Government community funding programs for projects to control some invasive species in selected areas.

3.5.3 Inter-governmental relationships in invasive species management

Australia's biosecurity systems are shaped by several international and national arrangements. These include global and regional conventions and treaties, and bilateral agreements. A list of these is presented in Appendix 2.

In implementing the recommendations of an independent review of Australia's Quarantine and Biosecurity Arrangements completed in 2008, Australian governments established the IGAB and the National Environmental Biosecurity

[8] However, DPW has the responsibility for managing fire preparedness and pest animal and weed control on UCL and UMR, outside gazetted townsites.

Response Agreement (NEBRA). All Australian and governments are signatories to the IGAB and the NEBRA.

The shared and separate operational roles of the Australian and WA Governments in invasive species management are described in Box 5. Further details on the activities in WA border biosecurity are discussed in Section 5.2.1 and Box 6.

Box 5

Operational roles of the Australian and Western Australian Governments

The Australian Government has formal responsibility for international government-to-government relations and Australia's compliance with international sanitary and phytosanitary obligations, including import and export conditions. It has responsibility for risk management measures pre-border and at the Australian border and associated compliance and enforcement, and performs risk analysis to provide an appropriate level of protection against invasive species. The Federal Australian Quarantine and Inspection Service (AQIS) is responsible for detection and prevention of invasive species entry via international shipping and air traffic.

The Australian Government assists the WA Government in providing national biosecurity policy leadership, and in providing a national coordinating role. Both governments contribute to the national capacity to prevent, eradicate and contain significant invasive species. State and Territory Governments also agree on cross-border quarantine and inspections arrangements.

The WA Government bears the primary responsibility for WA border biosecurity surveillance and the emergency management of outbreaks within WA, including preparedness and emergency responses (see Box 6). The Australian Government will support WA in implementing emergency responses to outbreaks through cost-sharing if an outbreak is considered to be of national significance.

The WA Government leads the eradication and control of significant invasive species within the State (including State-owned and -managed land and waters), where it is feasible and cost-effective.

The exception is on the significant areas of Australian Government owned land, notably land held by Defence (e.g. RAAF Curtin, RAAF Pearce and HMAS Stirling), where the Australian Government has full responsibility.

4 Objectives, roles and responsibilities

4.1 The objectives of this Plan

The objectives of this Plan are:

- improved priority setting and transparency in declaration processes in invasive species management
- coordinated prevention, eradication and response plans are implemented for high priority invasive species
- partnerships between community, industry and government are achieving effective containment and control of widely established invasive species
- efficiently applied regulation underpins effective control of invasive species
- the community, industry and government have relevant information to inform and report effective invasive species management.

4.2 Implementing the Plan – roles and responsibilities

The roles and responsibilities in implementing the strategies and actions in invasive species management presented in this Plan are summarised in Table 3.

Table 3 Roles and responsibilities in invasive species management

Entity	Role and responsibility
Minister for Agriculture and Food	Declares species on advice from government agencies and communities. Allocates funds for invasive species management as authorised by the BAM Act. Liaises with Australian Government on invasive species matters (with advice provided by DAFWA and other agencies as appropriate).
Director General Department of Agriculture and Food	Provides strategic leadership on biosecurity matters across WA. Advises the Minister for Agriculture and Food on matters relating to management of declared pests under the BAM Act.
Biosecurity Council	Advises the Minister for Agriculture and Food and Director General of DAFWA on matters in relation to biosecurity (including management of the invasive species considered in this Plan).
Biosecurity Senior Officers Group	Develops cross-agency strategies for biosecurity management within WA. Provides leadership for the management of emerging and ongoing biosecurity issues within WA. Raises awareness and provides advice on biosecurity issues to the Minister for Agriculture and other Ministers as required. Provides strategic overview of the implementation of this Plan.

Entity	Role and responsibility
Department of Agriculture and Food	Administers the BAM Act, including the declaration process. Leads implementation of the Plan. Manages border biosecurity and specific high priority eradication programs. Enables RBG operations by providing information. Provides information on invasive species to the agricultural industry. Coordination and engagement of stakeholders.
Department of Parks and Wildlife	Manages invasive species on areas reserved under the *Conservation and Land Management Act 1984* (approximately 28.5 million hectares), and has responsibility for managing invasive species on UCL and UMR outside gazetted town sites (approximately 89 million hectares). Administers and has other responsibilities under the *Conservation and Land Management Act 1984 and Wildlife Conservation Act 1950*. Participates in relevant community groups focused on invasive species management, including biosecurity groups. Provides information on invasive species to partner organisations and community groups.
Department of Fisheries	Manages invasive species in fresh waters under the *Fish Resources Management Act 1994*. Provides information on invasive species to the commercial (including ornamental) and recreational fishing sectors.
Department of Aboriginal Affairs	Manages invasive species on land held by the Aboriginal Lands Trust. Supports Aboriginal landholders and community groups in the management of plant and animal pests on their landholdings and traditional lands.
Forest Products Commission	Reduces the impact of weeds, pests and diseases on the productive capacity of the forest.
Swan River Trust	Manages invasive species in areas of the River Reserve under the *Swan and Canning Rivers Management Act 2006*. Manages invasive species along adjacent shorelines and land in partnership with land managers. Participates in interagency, local government and community groups focused on invasive species management, throughout the Swan-Canning river system and its catchment.
Local governments	Administer local pest plant laws under the BAM Act and the *Local Government Act 1995*. Manage invasive species on land held by local governments. Support community activities.

Entity	Role and responsibility
Utilities and government authorities	Manage invasive species on land held by utilities (e.g. Water Corporation) and government authorities (e.g. Port Authorities).
Recognised Biosecurity Groups	Provide leadership in management of declared species in the region. Collaborate with landholders and government agencies to develop and implement strategic, landscape-wide management programs for invasive species.
Private land occupiers, owners and managers (also termed as landholders)	Control invasive species on their own landholdings. Participate in biosecurity group and RBG programs and initiatives.
Community groups including regional NRM groups and biosecurity groups	Provide services in invasive species management in line with funded programs. Participate in coordinated, targeted invasive species control activities with relevant agencies.

4.3 Implementing the Plan – maximising the return from limited resources

The challenge posed by invasive species to the state's economy, environment and community well-being is considerable. The rewards from effective and efficient action by all parties are obvious. This Plan sets out strategies and actions that will deliver improved invasive species management across the state when implemented. However, as in many areas of societal aspiration, the resources available often fall short of those desired. It is vital, therefore, that these resources are managed in an effective and efficient manner and targeted toward priorities.

A shared understanding of responsibilities is critical. Invasive species management requires commitment by all parties, and cannot be left to one or two organisations. The fundamental principle of landholder responsibility for control of declared invasive species was established in WA in the former *Agricultural and Related Resources Protection Act 1976*, with the principle continuing in the BAM Act.

Landholders include private individuals, corporate entities, state government agencies and utilities, and local governments. Landholders will contribute the bulk of the resources towards the control of widespread and established invasive species.

Where state government is a landholder, it meets its commitments within resource constraints. Where state government is not a landholder, its main functions are in border and post-border surveillance and detection, in emergency response and in eradication planning and implementation. Given the difficulty of eradicating pests that have become established, government recognises that a key focus of invasive species management in WA needs to be the prevention of new incursions. The extremely low level of new pest incursions becoming established in WA in recent times provides a little recognised measure of the effectiveness of efforts in this area.

Government, especially DAFWA, has important roles in working with landholders to ensure invasive species are eradicated or controlled by the landholder. These include provision of information, community and industry engagement and regulatory roles. The level to which these roles are undertaken is directly related to the resources available, which have declined in real terms over recent years.

Constrained resources available to landholders and government cannot be ignored when reading this Plan. The best response to this situation will be for all parties to address their own responsibilities as fully as possible, focus on priorities and coordinate their activities with others to achieve synergies in prevention and control of invasive species and, hence, achieve the maximum return from the resources available.

As the lead agency in the implementation of the Plan, DAFWA will work within its current resource capacity to provide strategic direction and coordination to complete actions outlined in the Plan.

5 Goals

5.1 Goal 1 – Setting priorities

Goal 1: Community, industry and government actions in invasive species management are targeted to deliver the greatest benefit from the resources available for prevention, eradication, containment and targeted asset-based protection.

Outcome: Government agencies, biosecurity groups and landholders are equipped with the tools and technical information that allow them to make rational and transparent decisions about the invasive species to tackle for prevention, eradication, containment and targeted asset-based protection in respect of the risks presented by the species, the feasibility of acting and the benefits flowing from taking action.

5.1.1 Strategy G1.1 – Evaluating risks for invasive species

Assessing risks in determining priorities for action

All invasive species can cause undesirable impacts to our economy, environment and/or social well-being. There is a large number of invasive species already established, and many more with the potential to enter WA. As noted in Section 0, it is essential that private and public resources are directed at those species – both already established, and with potential to establish – that pose the highest *risk* to industries, the environment and people.

Determining the level of risk involves relating the level of undesirable impact and the likelihood of a species becoming widely established, as shown in Figure 5.

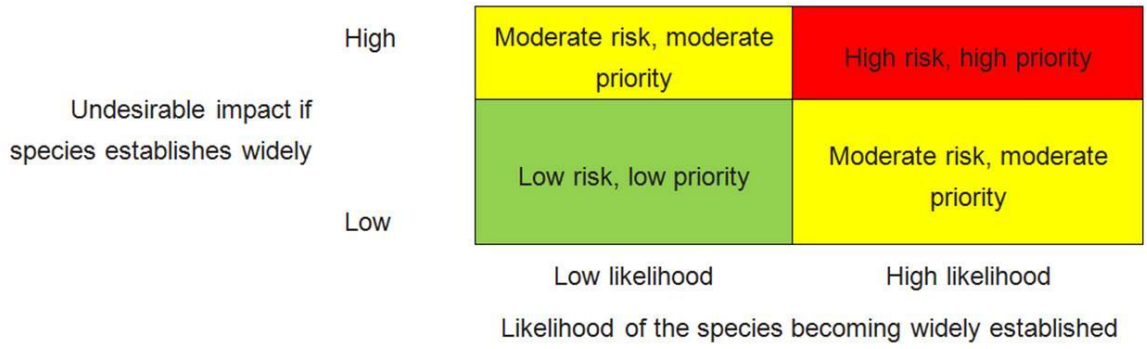

Figure 5 Determining risk in invasive species management

'High priority invasive species' for prevention, eradication, containment and targeted asset-based protection are those high risk invasive species that can easily establish widely and, if so, cause the most undesirable impact. Invasive species that have a small impact or that cannot establish widely should receive less attention.

The likelihood of success (feasibility) in eradicating or controlling the invasive species needs also to be considered on a 'third axis', using techniques such as benefit-cost

analysis. An invasive species may be judged as being of high risk, but the resources required to manage impacts may be greater than the benefits from the control activities. In this situation, there is a case for resources being directed to investigating more cost-effective means of control.

Whole-of-state versus regional risk assessments

Some invasive species, such as foxes and feral cats have established and cause undesirable impacts throughout much of the state. Conversely, some invasive species (such as blackberry in the south west) are more confined.

In designing and planning invasive species control programs, the regional significance of the species needs considering. High priority invasive species in one area may not be a high priority in another area – hence there is a need for regional risk assessments.

Considering high priority and high profile invasive species

'High priority invasive species' are defined in this Plan as those that will be assessed through a formal and transparent process as high risk, and are likely to be feasibly prevented, eradicated, and contained or controlled.

'High profile invasive species' are those assessed by the community – normally already widely established – as being major problems. They are often, but not always, high priority invasive species. The Plan covers both 'types' of invasive species as being of importance to the community and the state generally.

Periodic reviews of high priority and high profile invasive species

The status of invasive species can change over time. In some cases, new control techniques can increase the cost-effectiveness of eradication or control. Conversely, new agronomic techniques in agriculture may reduce the impact of a previously harmful species. Periodic reviews of the risk status of high priority invasive species are required.

Strategy 1.1 actions

Action	2018 outcome	Responsibilities *	Linkages with other actions
G1.1.1. Refine existing cross-agency evidence-based approach for assessing the risk of invasive species at regional scale.	A consistent approach across government agencies for assessing risks available for use by RBGs, and other biosecurity and community groups in planning.	DAFWA, DPW, DoF	G1.2.1 G1.2.2
G1.1.2. Review the level of, and geographic distribution of risks of existing priority invasive species and species groups.	Evidence-based risk assessments are used in allocating resources for management programs.	DAFWA, DPW, DoF	G1.2.1 G1.2.2

Action	2018 outcome	Responsibilities *	Linkages with other actions
G.1.1.3. Undertake a mid-term review of 'high priority' and 'high profile' invasive species.	Reviews completed at mid-term of the Plan to ensure that risks of invasive species are based on current evidence.	DAFWA, DPW, DoF	G1.2.1 G1.2.2 G3.2.1

* The coordinating agency is noted by underlining. Where there is no underlining, the action is managed collaboratively.

5.1.2 Strategy G1.2 – Declaration processes and responsibilities

Improving the declaration process for invasive species under the BAM Act

The considerations for declaring an organism are summarised in Section 3.5.2. The declaration process and criteria for declaration are documented in DAFWA's draft[9] policy *Declaring the Status of Organisms*. Once finalised and approved, the policy will be made public to assist transparency in the declaration process.

Agencies or any interested parties may lodge a proposal to DAFWA for the Minister for Agriculture and Food to declare an invasive species under the BAM Act. Although the Minister may declare a species on the recommendation of a party other than DAFWA, the process involved is currently not entirely clear and can be improved.

Further, in the event that a species is declared under the BAM Act at the request of another party, there are no current guidelines for the allocation of resources to manage and regulate the species.

These issues will be addressed through the development of a Memorandum of Understanding (MOU) for how the declaration process and subsequent management and regulation operates across the agencies with responsibilities for invasive species management.

Rationalising the list of declared invasive species

There are a large number of species listed in DAFWA's WAOL and declared under s.12 (prohibited) and s.22 (declared pest) of the BAM Act. It is not feasible to cover all with eradication or response plans. Further, the risk of some species may be over-stated, with a re-assessment warranted. In short, the current list of declared invasive species should be reviewed.

[9] The document was in draft form as at 19 February 2015.

Strategy 1.2 actions

Action	2018 outcome	Responsibilities	Linkages with other Actions
G1.2.1 Improve the process for declaring species, and allocating responsibility for its management.	MOU operating between agencies for administering the declaration process.	DAFWA, DPW, DoF	G1.1.1 G1.1.2 G1.1.3
G1.2.2. Review the current list of declared invasive species twice during the life of the Plan and rationalise the list as indicated by review findings.	A rational list of declared invasive species.	DAFWA, DPW, DoF	G1.1.2 G1.1.3 G1.2.1

5.1.3 Strategy G1.3 – Investing in the future

Future preparedness

Invasive species management requires an on-going commitment by landholders, industry, community and government. Forward planning and resource allocation for known future challenges is required. For example, where an invasive species is expected to expand its distribution, the nature and level of resources required for containment and control may need to increase proportionately. In another example, increased road and rail traffic into WA will require review of resourcing levels for pre-border and border surveillance.

Responsibility for costs

As shown in the generalised invasion curve (Figure 1), the relative contributions of landholders and government to the management of an invasive species vary according to the location of the species on the curve. Species that are widely established are principally the responsibility of landholders, or groups of landholders. As shown in Figure 6, this allocation of responsibility can vary depending on the nature of the species' impacts.

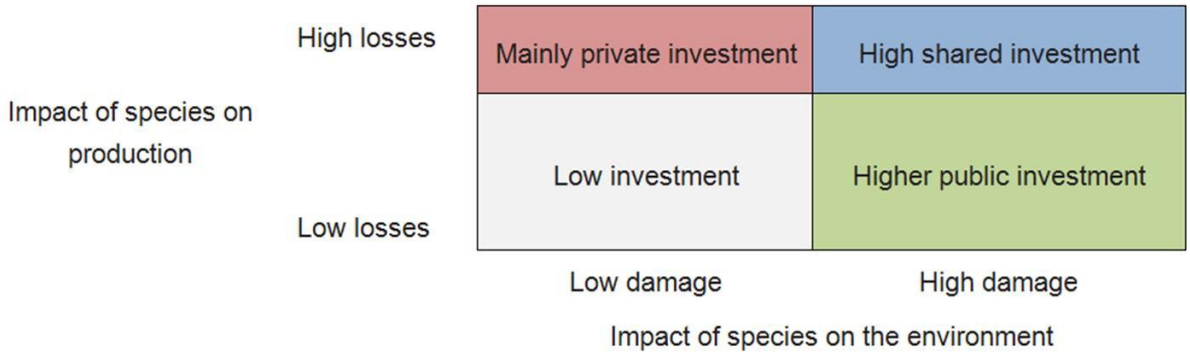

Figure 6 Cost-responsibility principles matrix

Where a species mainly affects production, landholders are responsible, as it is in their private interest to manage the impacts. An example is cotton bush in the south west agricultural areas. Where the species mainly causes environmental harm, as in the case of water hyacinth in freshwater lakes and slow-moving creeks in the south west, there is a case for a higher contribution from public sources.

Development and use of sound evidence-based principles for cost-responsibility between private and public invasive species managers needs to be routinely and consistently applied.

Developing improved detection and control technologies

Given that there will never be enough resources for aspirational levels of control in invasive species management, there is a strong case for investment in research and development (R&D) to improve the cost-effectiveness of prevention, eradication and control technologies. For example, research has been instrumental in maintaining the starling-free status of WA. Research has improved operational control of starlings assessing through identifying entry points and corridors into WA, assessing different trap and lure types, developing the 'Judas' technique for starlings and developing a proof-of-concept for remote audio detection of starlings. Research has also assisted in prioritising this species through using population models to determine economic impacts and appropriate investment in starling control to prevent starling populations establishing in WA.

Continued investment in R&D, particularly in the development of technologies that can deliver positive benefit-cost ratios, is required.

Strategy 1.3 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G1.3.1. Review future estimates of resources required for effective management of priority invasive species and species groups.	WA Government is able to meet commitments in this Plan and in national agreements.	BSOG, DAFWA, DPW, DoF	G2.2.3 G2.4.1
G1.3.2. Determine and publicise evidence-based cost-sharing principles for use by agencies and communities in invasive species management.	Cost-sharing principles developed which are used in management plans for priority invasive species and species groups.	BSOG, DAFWA, DPW, DoF	G1.3.1
G1.3.3. Encourage WA and Australian Government community-based programs to support investment in management of priority invasive species and species groups.	Investment through WA and Australian Government community-based programs complement and support State and community invasive species management plans.	State NRM Office, DAFWA, DPW, DoF, Department of Regional Development.	G1.1.3 G3.3.6
G1.3.4. Identify priorities and seek funding for R&D in invasive species management.	R&D projects established that deliver increased effectiveness and efficiency in invasive species management.	BSOG, DAFWA, DPW, DoF	G1.3.1

5.2 Goal 2 – Prevention and eradication

Goal 2. Effective border quarantine, surveillance and detection, and eradication actions prevent new high-impact invasive species becoming established in Western Australia.

Outcome: The border protection, emergency response and eradication programs operating under this Plan engage all stakeholders in effective and timely action in preventing, where technically feasible and cost-effective, new invasive species becoming established in WA.

5.2.1 Strategy 2.1 – Pre-border and border processes

Pre-border and border processes include assessment, verification and inspection activities that establish which goods posing a biosecurity risk can enter WA, their entry pathways, conditions of entry, and inspection and compliance arrangements.

The importance of prevention

As shown in the generalised invasion curve (Figure 1), often the most cost-effective investment is in preventing new invasive species becoming established. Given that WA is free, or almost free of a number of invasive species that are widely established in other states (for example, starlings, sparrows, parthenium weed, branched broomrape), sound pre-border and border inspections at road and rail entry points to WA, as undertaken by DAFWA staff, are critically important (see Box 6). Equally important is the surveillance of shipping traffic in WA ports, undertaken by AQIS (see Box 5) and supported by DAFWA.

Close collaboration between Australian, state and territory Governments ensures effective prevention activities at the points where invasive species can be brought into WA (see Boxes 5 and 6).

Maintaining vigilance

The expanding volume of road, rail, air and sea traffic increases the chance that invasive species may enter WA undetected. Ongoing monitoring and review of detection effort, and changing patterns of incoming traffic are required to identify potential weaknesses in existing processes and address these through new processes and re-allocation of resources.

Strategy 2.1 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G.2.1.1 Maintain close collaboration with Australian, State and Territory governments in pre-border and border processes.	Continued effective and efficient pre-border and border processes.	DAFWA, BSOG, (Quarantine WA)	G2.1.2

Action	2018 outcome	Responsibilities	Linkages with other actions
G2.1.2. Monitor and review existing levels of detection effort and reporting of invasive species.	Any gaps in processes and procedures in border processes identified and mitigated	DAFWA, BSOG, (Quarantine WA), DoF	G2.1.1 G5.2.1 G5.3.1 G5.3.2

Box 6

Border biosecurity in WA

Australian states and territories have interstate quarantine regulations in place to control the movement of goods, which could carry and introduce invasive species. Preventing and minimising the spread of invasive species (and other pests and diseases) is important because, once established, they can be difficult and expensive to eradicate or control.

WA remains relatively free of invasive species that adversely affect our primary industries and environment, which facilitates better access to worldwide markets. Other states and territories have a number of invasive species that are not present in WA.

Border checkpoints are the first line of defense in protecting WA from incursion of invasive species (and other pests and diseases) which could arrive on freight, cargo, people and items people bring in from interstate. DAFWA maintains road checkpoints at Kununurra and Eucla which operate 24 hours a day throughout the year, and surveillance also is maintained by AQIS on international shipping and air traffic, and by DAFWA on domestic air traffic and interstate rail traffic.

DPW also monitors freight near Kununurra for “hitch hiker” cane toads.

Figure 7 Quarantine WA inspector Lara Gray with active detector dog Yaegar, inspecting parcels at the Australia Post express mail centre

5.2.2 Strategy 2.2 – Post-border surveillance and detection

National Surveillance and Diagnostics Framework

Under the IGAB, all governments in Australia have committed to developing a national surveillance and diagnostic system that builds on current arrangements and seeks to ensure that all affected parties are involved, bear their share of costs and benefit from these activities. Surveillance and diagnostic activities undertaken in WA support the national system by:

- detecting new incursions of invasive species
- providing evidence of the absence of invasive species for ongoing market access
- monitoring changes in the distribution of invasive species, to allow associated risks to be identified and managed
- monitoring changes in other surveillance risks such as changes in the climate related changes and changes in trade patterns.

Encouraging active and passive post-border surveillance

Post-border surveillance includes activities undertaken to prevent the establishment of potentially serious invasive species that enter WA or arise internally. Knowledge of the known entry pathways for invasive species with the potential to establish in WA directs active post-border surveillance to those areas. Passive post-border surveillance relies on people in the community noticing and querying unusual plants and animals encountered during everyday activities.

Encouraging community involvement in detecting potential invasive species involves providing information about such species (see the list in Table 4 and Table 5) and a service where detection of suspicious plants and animals can be reported.

DAFWA's Pest and Disease Information Service (PaDIS) provides advisory and identification services on animal and plant pests, weeds and diseases that impact WA's agriculture and food industries. This service plays an important frontline role for the detection and reporting of unfamiliar and potentially damaging pests, weeds and diseases of agricultural and quarantine concern. The service is contactable on:

Freecall: 1800 084 881

Email: info@agric.wa.gov.au

Mobile: 0427 994 546

Identifying high risk creating pathways and industries

Invasive species can be carried to new areas by many different kinds of human activity, such as road and rail traffic, livestock movements, on people's clothing or in luggage, by wind and water movement, and along transport and infrastructure corridors. Mapping these 'pathways' and the industries that use them, and identifying those that create high risks for moving new invasive species across areas, is an important component of active surveillance.

The risks created by industry-operated pathways are always changing. For example, new pathways may open as new roads, pipelines, and power lines are located. Traffic on previously little-used transport corridors may increase. New ports may open, or the origin of shipping using existing ports can change. Working with these industries and organisations (e.g. utilities, livestock and fodder transport, tourism) in identifying new pathways and mitigating the risks of invasive species movement remains important.

Strategy 2.2 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G2.2.1. Complete a risk-based assessment of the current level of active post-border surveillance.	Active post-border surveillance is set at an appropriate level on a regional basis to manage risks.	DAFWA, DPW, DoF	G2.1.1 G2.1.2
G2.2.2. Maintain consistent encouragement of community post-border surveillance activity and capacity.	Community post-border surveillance activity complements and supports government activity.	DAFWA, DPW, DoF, other agencies	G3.1.1 G3.1.2

Action	2018 outcome	Responsibilities	Linkages with other actions
G2.2.3 Identify and support high risk creating industries and activities in mitigating risks.	High risk creating industries implementing management plans to mitigate risks.	BSOG, DAFWA, DPW, DoF, other agencies	G1.3.1 G3.1.2 G3.2.3 G3.3.5

5.2.3 Strategy 2.3 – Emergency Response Plans

In the event that an invasive species does 'slip through the net' and enter the state, quick and decisive action is needed to remove it before it can establish. Emergency response capacity is needed, much in the same way that emergency teams are in place to respond quickly to address major accidents or natural disasters.

General Emergency Response Plans (ER Plans) have been developed at national and state-level. At the national level, the Biosecurity Incident Management System has been developed to provide guidance on contemporary practices for the management of biosecurity incident response and initial recovery operations in Australia.

At the state level, the *State Emergency Management Plan for Animal and Plant Pests and Diseases* (March 2008) addresses outbreaks or incursions in WA. Through this Plan, species-specific ER Plans will be developed for high risk invasive species of particular importance.

The need for species-specific ER Plans

ER Plans for *specific* invasive species detail the strategies, actions, resources and responsibilities that are required to prevent widespread establishment of potentially harmful species. ER Plans need to be maintained in a high state of readiness for immediate implementation once an incursion of a high priority invasive species occurs in WA.

The criteria used to determine the invasive species for potential emergency response planning are that the invasive species:

- is not present in WA, or present in a small contained area in WA
- has significant distribution potential in WA
- is assessed as representing a high risk to primary industry, the environment and/or human health if an incursion occurs.

Candidate invasive species for ER planning

'Candidate' invasive species for ER planning are shown in Table 4 and Table 5. During the life of this Plan, and after a formal risk assessment of all species, ER Plans will be developed for selected high priority invasive species.

Table 4 Candidate invasive species for Emergency Response Plans: plants

Species[10]	Description and habitat	Impact if species establishes
Siam weed	Siam weed is considered one of the world's most invasive weeds. Grows as a dense, tangling bush to 2-3m and scrambles up trees to 20m. Suited to highly productive land types, and grows easily along watercourses, foreshores and swamps in high rainfall and semi-arid (monsoonal) tropical environments.	It quickly invades and smothers native vegetation, and can out-compete native vegetation, pastures and crops. It causes skin problems and asthma in allergy-prone people and can poison livestock. It increases frequency and intensity of bushfires.
Tropical soda apple	Upright multi-branched perennial up to 0.5-2m high. Stems are armed with thorn-like prickles up to 12mm long. It prefers open, disturbed sites, and would establish in pastures and areas around cattle yards. It is best suited to coastal, high-rainfall habitats in tropical and subtropical areas.	Primarily agricultural impacts. It invades and replace pastures, including improved pastures. The leaves are unpalatable to livestock (fruit are readily eaten). It would render WA grain exports unacceptable to many importing countries. It can provide an alternate host for at least six viruses that affect various vegetables.
Red witchweed	Red witchweed is a parasitic weed. It can be found growing on a wide range of tropical grasses common in headlands and pastures.	Primarily agricultural impacts. The weed robs its host of water and nutrients, suppressing its growth. Hosts of red witchweed include economically important tropical grasses and summer cereals such as sorghum and sugar cane.
Gamba grass	A vigorous perennial tussock grass growing in tropical areas. It can grow up to 4m tall with tussocks up to 70cm in diameter. Widely established in the Northern Territory and Queensland in areas that receive more than 400mm rainfall.	Although used as a pasture species, it replaces native grasses, thereby reducing natural biodiversity on non-grazed land. High biomass can fuel intense bushfires leading to loss of tree cover and long-term environmental damage. It can invade non-grazed parcels of land such as conservation areas, semi-urban residential land and mining leases.

[10] Scientific names for the species shown are presented in Section 6.3.

Species[10]	Description and habitat	Impact if species establishes
Amazon frogbit	*Limnobium laevigatum* is a floating aquatic plant, and is a popular aquarium plant. It naturally inhabits inland waterways, dams and wetlands.	Primarily environmental impacts. It is capable of forming dense mats in natural and man-made water bodies, such as dams, drainage ditches, canals, lakes and creeks, and has the potential to become an abundant and troublesome pest, mainly in highly disturbed, open wetlands where the water is less than 15cm deep.

Table 5 Candidate invasive species for Emergency Response Plans: animals

Species[11]	Description and habitat	Impact if species establishes
House sparrow	The house sparrow is native to Europe, Asia and North Africa. Introduced populations occur worldwide. In Australia, it has become established in all states except Western Australia. House sparrows are often found in traps set for starlings at the border of South Australia and Western Australia, near the coast. These birds are attempting to extend their range west.	Sparrows damage many cereal and fruit crops. They also spoil cereal crops, animal feed and stored grain with their droppings. Their nests may block gutters and down pipes, resulting in damage to buildings. They are also pests in outdoor eating areas. Birds entering the country onboard ships may carry exotic diseases of animals and humans. Sparrows may also compete with native birds for food and nesting sites.
Tree sparrow	The tree sparrow occurs naturally in Eurasia but introduced populations have established in North America and Australia, in Victoria, New South Wales (Riverina region) and the Australian Capital Territory. Tree sparrows often arrive in Western Australia on ships from south-east Asia. Birds are usually found near sea ports.	Same impact as house sparrows.

[11] Scientific names for the species shown are presented in Section 6.3.

Species[11]	Description and habitat	Impact if species establishes
Common or Indian myna	Medium-sized bird native to the Middle East, India and Asia. It is not native to Australia but has established populations in eastern and south-eastern Australia, as well as other countries worldwide.	The species is listed by the IUCN (World Conservation Union) as one of 100 of the world's worst invasive alien species. It is a pest of agriculture causing damage to orchard fruits such as fig, apple, pear, strawberry, guava, mango and grape. It also damages standing cereal crops including maize, wheat and rice. It is considered an environmental pest and is reported to eat eggs and young birds and mammals including endangered species. The myna aggressively competes for nest hollows and food, adversely affecting the breeding success of other birds and hollow-nesting mammals. It has the potential to transmit diseases to humans and can carry blood-borne parasites like plasmodium that causes malaria, as well as other parasites such as mites, roundworm and threadworm. Mites from nests built in urban dwellings can invade homes and cause dermatitis and allergies in susceptible people.

Species[11]	Description and habitat	Impact if species establishes
Indian house crow	The house crow is not native to Australia but has been transported here on numerous occasions on ships. It is 42-44cm in length (body and tail) has black plumage that appears glossy with a metallic greenish blue-purple sheen on the forehead, crown, throat, back, wings and tail.	The crow is a major pest of agriculture, raiding crops such as wheat, maize and sunflower. It causes severe damage to vegetables and fruit crops including mango, guava, pawpaw, fig, apple, pear, grape and stone fruit. It will attack and can kill poultry, new-born calves and kid goats. Adult livestock are harassed and can be injured. In some countries the crow is considered a major pest of the environment, preying on the chicks and eggs of native birds, destroying nests and harassing birds and other animals. Some native birds in Kenya have been displaced by the introduced house crow.
Red-eared slider turtle	Fresh water turtle, growing up to 30cm, with a distinctive red strip behind each ear. The species is prohibited in Australia but has been brought into the country for illegal keeping. As a result populations have become established in QLD, NSW and Victoria from accidental and deliberate release. Sliders have been removed from the wild in Perth WA, but is not considered to have established self-sustaining populations at this point in time.	Since red-eared sliders are omnivorous (particularly juveniles), they impact on a range of aquatic prey items, including fish and amphibians. They are a threat to nesting waterbirds, and would out-compete native turtle species for habitat, food and basking sites. Captive red-eared slide turtles have been a source of salmonella infection in humans in the United States of America.

Species[11]	Description and habitat	Impact if species establishes
Starling	Starlings are small to medium-sized birds with males and females similar in appearance. It is one of the most invasive bird pests worldwide, having established populations in many countries outside its natural range.	Starlings are considered a major pest of agriculture, environment and public amenity. They cause damage to horticultural crops and cereal crops, which are susceptible when grain is freshly sown and during ripening. Starlings also take grain from feedlots, storage areas, piggeries, dairies and poultry farms and cause damage to commodities by spoiling with their excreta. Starlings can carry parasites and diseases, raising concern in food factories and industrial areas and are a potential risk to livestock industries. Infrastructure damage, and environmental and aesthetic impacts are also associated with starlings. The spread of environmental weeds by starlings is also an issue.
Northern palm squirrel	Northern palm squirrels are small mammals, 225-400mm long with prominent stripes along body. They are not native to Australia but have established a small population in the area of South Perth/Como, WA.	They damage fruit crops such as mango, apples, pineapples and grapes and in urban areas can cause a nuisance with their scavenging. Other impacts include predation of native birds' eggs, potential competition with species for resources.
Tilapia	A small fish originating from the warm, fresh and salty waters of Africa, South and Central America, southern India and Sri Lanka. They are one of the world's 100 most invasive species	Primarily environmental impacts. Tilapia has successfully invaded and dominated many aquatic habitats due to their highly efficient reproductive strategy, simple food requirements and their ability to live in a variety of conditions. They affect native species when competing for habitat and food, behaving aggressively and disturbing plant beds when building nests.

Figure 8 Siam weed

Figure 9 Red-eared slider turtle

Strategy 2.3 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G2.3.1. Assess the relative risks posed by the candidate invasive species for ER planning.	Candidate invasive species ranked according to risk	BSOG, DAFWA, DPW, DoF	G1.1.2
G2.3.2. Complete ER Plans for selected priority (i.e. high risk) invasive species during the life of this Plan.	Emergency Response Plans completed for selected priority invasive species.	As identified in each ER Plan	G1.1.1 G1.1.2 G1.1.3 G1.2.1 G1.2.2
G2.3.3. Undertake inter-participant exercises to test the effectiveness of completed ER Plans during the life of this Plan to review and improve them.	All participant roles and responsibilities for implementation understood and resourced.	As identified in each ER Plan	G2.3.2

5.2.4 Strategy 2.4 – Eradication plans

Inevitably some invasive species enter the state and establish small, geographically confined populations. As shown in Figure 1, eradication of such invasive species, while they are confined in this manner can be technically feasible and economically viable. Under s.22 of the BAM Act, a number of declared species are categorised as C2 – for eradication.

Existing eradication plans

Western Australian agencies have a good record in eradicating a number of invasive species before they could establish (see Box 7). Currently, eradication plans for eight invasive species are active. The invasive species are:

- ragwort
- praxelis
- parthenium weed
- *Mimosa pigra*
- gamba grass
- skeleton weed
- bedstraw
- hoary cress.

These eradication plans are periodically reviewed by DAFWA for their effectiveness and the resources required to carry the plans through to fulfilment (effective eradication of the target invasive species).

New eradication plans

Risk assessments of newly located invasive species are used to determine if these should be considered for eradication planning and allocation of resources to achieve complete removal.

Strategy 2.4 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G2.4.1. Review the status and available resources for all current eradication plans.	Existing (as at 2014) eradication plans are maintained for effective implementation.	Custodians of current eradication plans	G1.1.2 G1.2.2 G1.3.1
G2.4.2. Complete additional eradication plans for newly identified high priority invasive species (see Strategies G1.1 and 1.2).	Additional eradication plans developed for newly identified high priority invasive species	BSOG, DAFWA, DPW, DoF and as identified in future eradication plans	G1.1.2 G1.1.3 G1.2.2 G1.3.1

Box 7

The value of early detection and eradication

Early detection and eradication of high risk invasive species delivers economic benefits to the agricultural industries throughout the region. Some examples of successful WA campaigns are:

- Kochia - was successfully eradicated from WA by 2000. Kochia can spread rapidly and if consumed in large quantities may be toxic to stock. Kochia was able to be eradicated as its distribution was well known and eradication began within 12 months of the first reports of its occurrence. The cost of eradication was $494 600, which was of greater economic benefit to agricultural industries.

- Sparrows – although the introduction of the house sparrow in eastern Australia was deliberate, and welcomed by many people, it quickly became a major problem species, and a reward was paid by the government for the birds and their eggs. Today, the species is so well established in the east that no amount of effort will eliminate the ever-expanding population. So far sparrows have been prevented from establishing in WA, with every bird observed being destroyed.

- Nodding thistle – a small number of plants were found at an airstrip in Green Range, north east of Albany, in the mid-1970s and removed. No further instances of nodding thistles have been seen in WA. However, nodding thistle was a low-level contaminant of karoo canola imported into WA in 1996, but did not establish new populations. Nodding thistle competes with pastures and is not palatable to stock.

- Creeping knapweed – a small infestation was found in Ravensthorpe in the early 1990s and eradicated. In other parts of Australia and the world it is a significant weed of pastures and crops and is toxic to horses.

- Horsetails – two infestations of *Equisetum hyemale* have been found in nurseries in Perth and eradicated by DAFWA. Horsetails can invade irrigated pastures, pastures in high rainfall areas and some crops. Horsetails are difficult to kill and are toxic to livestock.

5.3 Goal 3 – Control of widespread and established invasive species

Goal 3: Landholders, industries and governments work together to reduce the impacts of widespread and established invasive species.

Outcome: The impact of priority invasive species is minimised through cost effective landholder control, supported by programs operating at landscape scale designed collaboratively by biosecurity groups and partner organisations.

5.3.1 Strategy 3.1 – Routine surveillance

Encouraging routine surveillance for high priority established invasive species

Routine surveillance describes those actions undertaken by landholders, industry, community and agencies in monitoring the occurrence and distribution of already widespread and established invasive species – especially those recognised as high priority for control.

These activities can range from landholder observations of the spread of established invasive species into a new part of a farm or station, and surveys conducted along newly made corridors (e.g. roads, power lines) to look for invasive species that may have been transported along the corridor, to active community-based surveys of the distribution and density of a high priority invasive species in their area.

Routine surveillance is important in providing the 'intelligence' that underpins control programs at landholder, local and regional scale.

Strategy 3.1 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G3.1.1. Encourage stakeholders to become involved in routine surveillance and reporting, especially for the high priority invasive species identified in Strategy G2.3, and high priority invasive species and species groups identified in Strategy G3.2.	Routine surveillance processes developed and extended for high risk species and high priority invasive species and species groups.	As identified in the ER Plan for each species	G2.3.1 G2.3.2 G2.3.3 G3.1.2 G3.2.1 G3.3.1 G3.3.2 G5.1.3
G3.1.2. Increase capacity and skills of selected stakeholders to identify high priority invasive species and species groups.	Surveillance activities are delivered efficiently and effectively and are able to adapt to changing circumstances.	As identified in the ER Plan for each species	G3.1.1 G3.1.2 G3.2.1 G3.2.2 G3.3.2 G5.1.3

5.3.2 Strategy 3.2 – Controlling the impact of widespread and established invasive species

Framework for the National Management of Established Pests and Diseases of National Significance

The WA Government has contributed to the development of a *Framework for the National Management of Established Pests and Diseases of National Significance* which has been developed under the IGAB to guide future activity and investment by government in the management of established invasive species of national significance. The following methods and actions are aligned with the agreed approaches in the National Framework.

Controlling the impact of invasive species

There is a large number of invasive species that are widely and well established in WA. The impacts of these on economic, environmental and social values vary, as does the technical ease and cost of control. Where these invasive species are declared under the BAM Act, they are categorised as *Control category 3 (C3) — Management: If eradication of the declared pest from an area is not feasible, but it is necessary to alleviate the harmful impacts, reduce the distribution or prevent or contain spread of the declared pest in an area*.

Effective control of widespread and established invasive species focuses on minimising their *impacts*, and not equating control simply with *the level of effort* committed – as in the number of animal pests destroyed or the areas of weeds removed. For example, in fox control, the important measure of control effectiveness is minimising the level of predation by foxes on livestock and native animals, and not simply the count of the number of foxes killed. Similarly, in assessing the effectiveness of weed control in farming systems, success is measured as minimal loss of production due to weed infestation, not necessarily total removal of the weed from the farm.

Management response planning for high priority invasive species and species groups

The invasive species and species groups shown in Table 6 are identified as being candidates for management response planning. They include invasive species that have both economic and environmental impacts which require coordinated action by all of the agencies involved in the implementation of this Plan.

DPW is implementing the *Cane Toad Strategy for Western Australia 2009-2019* and DAFWA leads in the management of widely established weeds of agricultural significance.

Management response plans for some of the species in Table 6, Table 7 and Table 8 may be developed and implemented within the life of this Plan (see the Actions below).

Table 6 Candidate widespread and established invasive species and species groups for management response planning: coordinated cross-agency leadership (coordinating agency\ies shown in parentheses)

Invasive species or species group	Details	Distribution	Impact
Large feral herbivores (DAFWA)	Feral camels Feral donkeys Feral horses Feral goats	Feral camels are widespread in UCL and UMR east of the pastoral leasehold areas, with spread into adjacent pastoral leases. Feral horses and donkeys are mainly found in the Kimberley and Pilbara. Feral goats are mainly found in the Gascoyne and Murchison areas.	Competition with domestic livestock for feed resources. Damage to infrastructure. Destruction of seasonal wetland habitats in UCL, UMR and conservation reserves.
Introduced predators (DAFWA and DPW)	Foxes Wild dogs Feral cats Feral pigs	Foxes are widespread south of the Pilbara. Wild dogs are widespread in pastoral areas and on the margins of agricultural areas. Feral cats are widespread across the state. Feral pigs are widespread in the Kimberley, Gascoyne and south-west Western Australia.	Livestock losses due to wild dog predation. Native fauna losses due to feral cat and fox predation. Native fauna losses and habitat destruction due to feral pig predation and foraging.
Exotic freshwater fish (DoF, SRT)	Koi carp Gambusia Goldfish	Swan-Canning Riverpark and other freshwater bodies in the south west.	Competition with native species for resources. Destruction of native habitat. Disease and parasite transmission.
Aquatic weeds (Department of Water)	Salvinia Water hyacinth	Occasional outbreaks in wetlands, and lakes in the south west of the state.	Destruction of natural habitat. Fouling of open waters. Eutrophication.

Invasive species or species group	Details	Distribution	Impact
Opuntioid cacti (DAFWA) (see commentary in Box 8)	Cacti and prickly pear	Becoming common around old town sites and homesteads in the rangelands.	Modification of natural habitat. Competition with forage species grazed by domestic livestock. Loss of amenity.
Prickle bush weeds (DAFWA)	Mesquite Parkinsonia Prickly acacia	Mesquite is common along the coast and river frontages in the Pilbara and is becoming established in the Gascoyne. Prickly acacia is under eradication in the Kimberley grasslands.	Modification of natural habitat and cultural sites. Competition with forage species grazed by domestic livestock. Loss of amenity.

Table 7 Candidate widespread and established invasive species and species groups for management response planning: DPW leadership

Invasive species or species group	Details	Distribution	Impact
Cane toads*	*Rhinella marina*	Present in the Kimberley, but are likely to be moving south via wetland environments.	Severe population decline in native carnivores. Habitat destruction.

* The *Cane Toad Strategy for Western Australia 2014-2019* is being implemented by DPW

Table 8 Candidate widespread and established invasive species and species groups for management response planning: DAFWA leadership

Invasive species or species group	Details	Distribution	Impact
Agricultural weeds	e.g. Cotton bush Arum lily Blackberry	Agricultural lands in the south west.	Competition with forage species grazed by domestic livestock. Reduction in hay quality. Reduced crop yields.

Strategy 3.2 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G3.2.1. Develop and implement response plans for the control of selected higher priority species and species groups.	Response plans in place and being implemented by responsible parties.	As identified in each management response plan.	G1.1.1 G1.3.1 G3.2.1
G3.2.2. Establish formal partnership arrangements between Departments and other parties with responsibilities in the management of priority widespread and established invasive species and species groups.	Government, industry and community organisations and landholders fully aware of their roles and responsibilities, which are documented in response plans.	As identified in each management response plan.	G3.2.1 G5.1.1 G5.1.2
G3.2.3. Develop and publicise control practices for the higher priority invasive species and species groups (as shown in Table 6).	Effective and efficient practices delivering improved control of priority widespread and established invasive species.	As identified in each management response plan.	G3.3.2 G3.3.3 G3.4.2

5.3.3 Strategy 3.3 – Processes, organisations and resources in controlling invasive species

Landholders have the primary responsibility in controlling the impact of widespread and established species on land they own or manage, especially those categorised in the C3 – Management category under the BAM Act. It is not always possible or efficient for landholders to act individually and use only their own resources to control many of these species. A range of processes, organisational structures and resources are available or are being developed that can complement the essential efforts of individual landholders.

Encouraging a community coordinated approach

The preferred approach for managing widespread and established invasive species is through a community coordinated approach. Where invasive species occur widely across property and jurisdictional boundaries, effective control is difficult and costly for individual landholders to achieve in isolation. Under these circumstances, a community-led, cross-tenure, landscape-scale approach is required. This involves proactive leadership by the community to control invasive species, with engagement and cooperation between government, industry and the community that adds value to landholder efforts and responsibilities.

Establishing biosecurity groups

A community coordinated action approach can involve formation of a biosecurity group that is responsible for controlling invasive species on public and private land within the group's defined area, for example, a local government authority (LGA) or catchment, or a group of neighbouring local governments. A group may include representation by private landholders, government officers from relevant state agencies and local governments, and from regional NRM groups.

A biosecurity group should undertake a high level of engagement within the community, and would normally address more than one invasive species. Government can engage with groups to provide capacity building and regulatory functions. The relative responsibilities of the community and DAFWA in community coordinated invasive species management is shown in Table 10.

Table 10 Roles in a community coordinated approach for declared pest control

Community role	DAFWA role
Form a community group/ biosecurity group (option for recognition from the Minister as a Recognised Biosecurity Group)	**Develop the engagement process** (including private and public engagement)
Develop a Situation Statement (based on the current distribution, potential impact and further risk posed by declared invasive species in the area)	**Provision of information** (including maps, and impact and risk assessments)
Develop a simple Strategic Plan (including clear objectives, targets for outcomes and a compliance strategy)	**Support for local area planning** (including agreed local Best Practice Management guides)
Prepare a local Best Practice Management guide (develop an agreed method of declared species control most suited to the area)	**Capacity building** (including governance and compliance processes)
Develop an Annual Budget and Operational Plan (the Operational Plan needs to be approved by DAFWA if matching funding from state government is included)	**Provision of compliance enforcement** (the community coordinated approach is aimed at maximising participation, so that actions for enforcement of compliance are minimised)
Annual monitoring and reporting (including progress against outcomes, targets, expenditure and non-compliance)	

Recognised Biosecurity Groups

If a biosecurity group is formally recognised by the Minister, it becomes a RBG as defined in sections 169-171 of the BAM Act. As a RBG, these groups can raise funds, known as the Declared Pest Rate (DPR), within their area of operation to carry out programs to control declared invasive species. The funds are matched dollar-for-dollar by the State Government. The Minister for Agriculture and Food sets the DPR, based on the funds needed by the RBG to carry out annual programs to control the specified invasive species. The funds are held in the Declared Pest Account, which is managed by DAFWA.

DAFWA works in partnership with RBGs offering advice on governance and development of annual operational plans, assisting with community consultation, and providing technical advice and operational support.

Five RBGs have operated in the pastoral areas in WA since 1 July 2010. The objectives of the pastoral RBGs are to:

- foster the control of declared invasive species throughout the area via the formulation, implementation, and review of appropriate management plans and programs
- encourage integration, coordination and general collaboration of all area stakeholders in invasive species management matters
- promote the adoption of sound biosecurity practices throughout the area generally.

The work of the Goldfields-Nullarbor Rangeland Biosecurity Association in cacti control in the Goldfields is presented in Box 8.

The BAM Act also provides for RBGs to be established in agricultural regions.

Industry Funding Schemes

From July 2010, three agricultural Industry Funding Schemes commenced to address biosecurity threats relevant to the grains/seed/hay, sheep/goat, and cattle industries. The Schemes use funding arrangements authorised under the BAM Act, whereby producers can contribute funds to tackle priority pests and diseases. Industry Management Committees (IMCs) oversee the management of the Schemes and the pests and disease threats that require action. Members of the committees include participants in the Schemes (that is, contributing producers), appointed by the Minister for Agriculture and Food.

One of these schemes addresses invasive plants affecting the grains, seeds and hay industries. Under this scheme, producers pay a 30 cent contribution on the first sale of every tonne of grain and seed produced within the South West Land Division, and 15 cents per tonne on the first sale of every tonne of hay produced within the South West Land Division. The contributions currently fund continuing programs for the control of skeleton weed and the eradication of three-horned bedstraw.

Other community funding schemes

The Australian and WA Governments operate a number of community funding schemes which support local and regional projects in industry development, environmental management and community development.

The schemes include those accessible through Regional Development Australia, the National Landcare Program and the WA Government's Royalties for Regions Program and State NRM Program. For example, commencing in 2015-16, the WA Government is allocating $24 million over three years for community-based NRM programs through the State NRM Program.

These funds have provided support for community groups – including the regional NRM groups – in implementing control programs for locally and regionally significant invasive species.

Strategy 3.3 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G3.3.1. Encourage the formation of biosecurity groups and RBGs in the agricultural areas to control priority widespread and established invasive species and species groups in those areas.	Biosecurity groups and RBGs established to manage priority widespread and established invasive species.	DAFWA	G3.2.2 G3.2.3
G3.3.2. Enable biosecurity groups and RBGs to design and implement their management programs to control priority widespread and established invasive species and species groups.	Biosecurity groups and RBGs designing and implementing effective and efficient control programs for priority invasive species within their areas.	DAFWA	G3.2.3 G5.1.3 G4.2.1 G4.2.2
G3.3.3. Encourage active involvement of relevant government agencies, industry, local governments, utilities and other community groups in biosecurity group and RBG activities, as appropriate.	Biosecurity group and RBG control programs benefit from the active involvement of a wide range of relevant stakeholders in invasive species management.	BSOG, DAFWA, other agencies	G3.2.3 G3.2.2
G3.3.4. Support biosecurity group and RBG programs with effective compliance activities.	Biosecurity group and RBG control programs benefit from the intervention of targeted and effective compliance activities.	DAFWA	G4.2.1 G4.2.2

Action	2018 outcome	Responsibilities	Linkages with other actions
G3.3.5. Continue to provide strategic advice and support to Industry Funding Schemes	Industry Funding Schemes achieve increased invasive species control.	DAFWA	G1.3.1
G3.3.6. Encourage and support community-driven activity in management of widespread and established invasive species through discretionary funding programs.	Resources directed at high priority invasive species and species groups supplemented through investment from the WA and Australian Government community funding programs.	State NRM Office, Department of Regional Development, DAFWA, DPW, DoF,	G1.3.3

Box 8

Controlling the spread of Opuntioid cacti at Leonora – the Goldfields-Nullarbor Rangelands Biosecurity Association

Opuntioid cacti (opuntioids) are highly invasive species that impact on Australia's economic, environmental and social assets and are Weeds of National Significance. These weeds include approximately 27 species from the *Austrocylindropuntia*, *Cylindropuntia* and *Opuntia* genera (excluding *Opuntia ficus-indica*). All species are introduced.

Opuntioid cacti impact on grazing enterprises by limiting access and contaminating hides and wool. They are a significant hazard to native wildlife, in some instances causing painful death, and reduced habitat opportunities. They are also a serious safety risk to weed managers due to the extremely spiny nature of some species. Native vegetation is also adversely affected through competition by opuntioid cacti for resources. The distribution and nature of the infestations was initially described in a Situation Statement published by DAFWA in 2014 (see agric.wa.gov.au/declared-plants/opuntioid-cacti-situation-report).

In 2013 the Goldfields-Nullarbor Rangelands Biosecurity Association Inc. (GNRBA), a RBG, was contracted by Rangelands NRM Inc. to deliver the Coralling the Coral Cactus project at Tarmoola near Leonora, funded by the Australian Government. The project not only saw the mapping and control of outlier infestations of the invasive coral cactus on the station, but the core infestation was fenced in readiness for the planned release of a biocontrol in the next few years. Partnerships with the mining company St Barbara Limited, DPW, DAFWA, Kalgoorlie/Boulder Urban Landcare, Shire of Leonora and local pastoralists were also developed as a result of the project, and a Cactus Forum was held in Gwalia in May 2013 to plan future actions.

Riding on the momentum of the Tarmoola project and the Cactus Forum, Rangelands NRM Inc. assisted the GNRBA on two funding applications for another cactus control project in the Leonora area, both of which were successful. Rangelands NRM Inc. are also undertaking Opuntioid cactus control work in the Pilbara as part of the Pilbara Corridors Project. GNRBA has also been working on a further application for cactus control activities on the Nullarbor.

GNRBA is liaising directly with local government councils and with the Goldfields Voluntary Regional Organisation of Councils and others to achieve greater control of opuntioid cacti in the Goldfields. Several infestations have been sprayed and herbicide demonstration plots have been set up.

Figure 11 Members of the Goldfields-Nullarbor Rangelands Biosecurity Association Inc examining an infestation of coral cactus

5.4 Goal 4 – Regulation and compliance

Goal 4: Ensure regulatory and compliance mechanisms underpin activities in invasive species control.

Outcome: The provisions of the BAM Act and related legislation are used in a risk-based compliance regime linked to coordinated control programs operating in the relevant area, to maximise stakeholder invasive species control.

5.4.1 Strategy 4.1 – Effective regulatory mechanisms

The BAM Act establishes a regulatory framework under the Minister for Agriculture and Food to provide effective biosecurity and agricultural management and provide a statewide response to invasive species control. DAFWA is responsible for the administration of the BAM Act. Compliance and enforcement activities are carried out by DAFWA and delegated authorities to achieve good biosecurity outcomes.

While the BAM Act is the main legislation for the regulation of invasive species, there are other statutes that provide other government agencies with regulatory powers to manage certain invasive species within their areas of responsibility (see Appendix 1).

5.4.2 Strategy 4.2 – Ensuring compliance

Under the BAM Act, landholders are responsible for controlling declared invasive species on their respective lands. It is important that regulatory agencies involved in invasive species management are able to complement landholder activity and strategic approaches by biosecurity groups, with targeted and agreed regulatory support to achieve good biosecurity outcomes.

Using compliance mechanisms

Compliance mechanisms may be applied to individual landholders (including land owners, occupiers or persons who are conducting an activity on that land) who are identified as not meeting expectations and responsibilities for control of a declared invasive species. These expectations, responsibilities and compliance measures will be outlined in the operational plans developed by biosecurity groups, in management response plans identified in section 5.3.2 or in formally-recognised Management Plans developed under the BAM Act for a specific declared invasive species or species group in a defined area.

Compliance strategies for C3 Declared Species

DAFWA has developed compliance strategies for a number of high profile declared invasive species that are well established across large areas. The invasive species are categorised as control category 3 (C3) with the objective being to minimise impacts, and reduce or contain distribution of the species. Review and improvement of these strategies will be undertaken during the life of this Plan.

Strategy 4.2 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G4.2.1. Where appropriate, make greater use of existing enforcement mechanisms under the BAM Act to ensure landholders meet their responsibilities to control invasive species on their land.	Relevant parties have access to agreed regulatory support as agreed with DAFWA or delegated authority.	DAFWA or delegated authority.	G1.2.1 G1.2.2 G3.3.4 G4.2.2
G4.2.2. Revise existing compliance strategies for C3 Declared (invasive) Species.	The compliance strategy increases the efficiency and effectiveness of regulatory support for control of C3 Declared (invasive) Species	DAFWA or delegated authority.	G1.2.1 G1.2.2 G3.3.4 G4.2.1

5.5 Goal 5 – Information and accountability

Goal 5: Ensure priority setting and continuous improvement in invasive species management is informed by relevant and timely information available to, and shared between, all parties.

Outcome: The importance of invasive species management, and the activities required, are understood and appreciated by the WA community, which has developed effective partnerships across government, industries and landholders to manage threats and report outcomes.

5.5.1 Strategy 5.1 – Sharing information and knowledge

The importance of partnerships and shared responsibility

The acquisition, management and use of data and information required for effective invasive species management involves many organisations. Sound partnerships and shared responsibilities for the 'invasive species information and knowledge system' are required for this system to work well. Working groups involving all partner organisations can develop systems for ensuring that invasive species data and information held within organisations can be readily shared between the organisations, as appropriate.

Improved stakeholder access to information

Recent decades have seen considerable changes in the way the WA Government manages invasive species, and increasing sophistication and variety in data acquisition, storage and retrieval technology and systems.

Landholders, industry, community and other entities need up-to-date information to support their activities in invasive species detection, prevention, eradication, containment and control. All parties in invasive species management require ready access to relevant information regarding:

- what invasive species are and are not high priority or high profile for prevention and control, and a description of these species
- current geographic distribution of high priority invasive species at state and regional scales
- prevention and control technologies for high priority invasive species
- contact details for technical advice at local, regional and state scales
- existing prevention, eradication and control programs active at state and regional scales; and the organisations (e.g. agencies, RBGs, biosecurity groups, other community groups) managing these programs.

Coordinating data and information acquisition, storage and delivery

Information on invasive species is spread throughout various entities across the State, based on their individual requirements. Data storage ranges from paper

records, to simple spreadsheets to web-based multi-relational, spatially-enabled databases. In instances where data and information are shared, or need to be shared, a consistent approach to data formats and sharing protocols needs to be established. An effective acquisition, storage and delivery system has the following characteristics:

1. An agreed method to share data. As well as the principal agencies involved (DAFWA, DPW and DoF), data can be shared with the Western Australian Land Information System (WALIS), the WA Museum and national databases (e.g. the Atlas of Living Australia).

2. Agreed invasive species spatial data attribute standards. Data standards ensure that each organisation is combining the same type of data using the same recording standards.

3. A shared understanding of the legal obligations of each organisation involved in managing data and information. Due to confidentiality clauses and data ownership issues, some data cannot be shared between entities.

A potential framework for a coordinated invasive species data management system for WA is depicted in Figure 12.

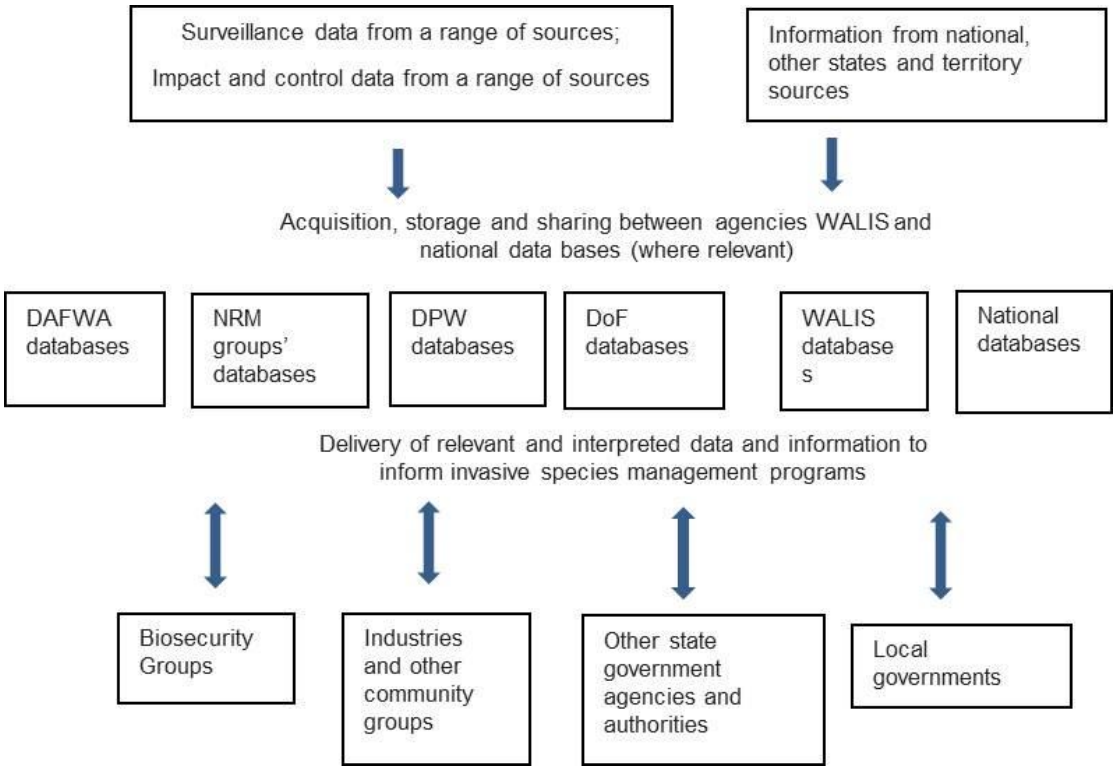

Figure 12 Framework for a desirable scheme for coordinated information flows and stores in invasive species management in Western Australia

Strategy 5.1 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G5.1.1. Formalise arrangements and standards in data and information management required for invasive species management.	MOUs and standards established for the acquisition, storage, retrieval and interpretation of relevant invasive species management data and information.	BSOG, WALIS, DAFWA, DPW and other agencies	G2.1.1 G2.1.2 G3.1.1 G3.1.2 G3.2.2
G5.1.2. Facilitate data coordination between agencies and for whole-of-state reporting.	Relevant parties have access to valid and reliable relevant data and information required to support the design and implementation of invasive species management programs.	BSOG, WALIS, DAFWA, DPW and DoF and other agencies	G2.1.1 G2.1.2 G3.1.1 G3.1.2 G3.2.2
G5.1.3. Improve accessibility of publicly available information (e.g. Apps) on invasive species to support community coordinated action in surveillance and management activities.	Increased use of accessible information resulting in increased levels of, and more effective community coordinated action.	BSOG, WALIS, DAFWA, DPW and DoF, and other agencies	G2.2.2 G2.2.3 G3.3.2 G3.3.3

5.5.2 Strategy 5.2 – Monitoring and evaluation

Measuring the impacts of invasive species management is essential for several reasons. For example, the findings from monitoring and evaluation enable:

- trends in impacts achieved and resources committed to be measured, informing evaluation of the effectiveness and efficiency of the activities undertaken
- resources to be reallocated where the impacts from existing effort are unsatisfactory
- funders of invasive species management to have confidence in the effectiveness and efficiency of the activities undertaken
- areas for improvement in invasive species management to be identified.

Responsible agencies and RBGs need to establish their own monitoring and evaluation programs for activities undertaken. Consistent cross-agency and cross-

RBG programs are required to ensure ease of reporting, and consistency of information in reporting to others.

Strategy 5.2 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G5.2.1. Develop and implement a monitoring and evaluation framework for invasive species management	Consistent cross-agency and RBG monitoring and evaluation that is able to report useful information at the mid-term and end-of-term review of the Plan.	BSOG, DAFWA, DPW and DoF	G5.3.1 G5.3.2

5.5.3 Strategy 5.3 – Reporting the results

This Plan sets out actions and outcomes to be achieved by 2018. However, managing invasive species is a dynamic set of circumstances and processes. For example, over the coming five years 'new' invasive species may invade, establish and assume importance, and new control technologies may reduce the resources required for containing or controlling some widespread invasive species.

The Plan needs to be reviewed at mid-term which will allow adjustments in activities to address issues identified during Plan implementation. Another review at the end of this Plan's life in 2018 will report on achievements in invasive species management to interested parties and will also be used in planning the subsequent Plan for the next period.

Strategy 5.3 actions

Action	2018 outcome	Responsibilities	Linkages with other actions
G5.3.1. Review the Plan at mid-term and report to BSOG.	All parties use the review findings to address issues identified during plan implementation.	DAFWA, DPW, DoF	G1.3.1 G5.2.1 G5.3.2
G5.3.2. Undertake an end-of-term evaluation of the Plan in 2018, as part of preparing a new Plan, and report to BSOG	Planning for the period beyond 2018 is informed by the experiences from implementing his Plan.	DAFWA, DPW, DoF	G1.3.1 G5.2.1 G5.3.1

6 Glossary, abbreviations and species list

6.1 Glossary of terms

Terms, as they are defined in the presentation and implementation of this Plan are presented in Table 9 below.

Table 9 Glossary of terms

Term	Definition used in this Plan
Agency	As used in this Plan, a Department of the Western Australian Government.
Agricultural activity	As defined in the BAM Act, includes apiculture, aquaculture, silviculture, viticulture and the raising or supply of plants or animals, and any related activity, including fallowing or resting land used for an agricultural activity.
Area freedom	Area freedom is a term used in trading goods to the effect that a specific species in not found in the area where the goods come from. Being able to certify a good as being 'area freedom' from important invasive species is important in maintaining market access.
Biosecurity	Biosecurity means protection from the adverse effect an organism has or may have on (a) Another organism (b) A human being (c) the environment, or part of the environment (d) agricultural activities, fishing or pearling activities, or related commercial activities carried on, or intended to be carried on, in the state or part of the state.
Biosecurity group	A group of landholders and community members that seeks to control invasive species within the group's defined area, e.g. a local government or a regional NRM group or catchment group, or a group of neighbouring local governments. See also Recognised Biosecurity Group.
Containment	Management strategies designed to stop or restrict the spread of populations of invasive species.
Control	In relation to an invasive species, includes eradicate, destroy, prevent the presence or spread of, manage, examine or test for, survey for or monitor the presence of, and treat. For declared invasive species, *Control category 3 (C3) — Management: If eradication of the declared pest from an area is not feasible, but it is necessary to alleviate the harmful impacts, reduce the distribution or prevent or contain spread of the declared pest in an area*.

Term	Definition used in this Plan
Declared species	A species declared by the Minister for Agriculture and Food as per s.11, s.12 and s.22 of the BAM Act. This Plan considers only invasive plant and vertebrate animal species found in terrestrial and freshwater environments, some of which may be declared. Declared species are listed on the WAOL. The Plan does not cover management of declared plant and animal diseases, or marine invasive species.
Emergency Response	Emergency Response, in relation to invasive species, means the actions taken in anticipation of, during and immediately after detection of a new (to WA) invasive species to ensure that its impacts are minimised and may include actions that form part of a coordinated state or national biosecurity incident response.
Eradication	Removal of an entire population of an invasive species from an area, including reproductive propagules (e.g. long-life seeds, eggs, dormant life forms).
Exotic species	A species that is not native to the state (i.e. introduced).
High priority invasive species	As defined in this Plan, a high priority invasive species is one that has been defined by formal process as being a high risk to economic, environmental and/or social values, and where prevention and/or control is feasible. High priority invasive species are often, but not always high profile invasive species.
High profile invasive species	As defined in this Plan, a high profile species is one that the community rates highly for its impacts on economic, environmental and/or social values, and is one where community would like to see some and/or a greater level of control activity. High profile species are often, but not always, high priority invasive species.
Impact	The (usually) negative economic, environmental and/or social effects of invasive species.
Invasive species	As defined for this Plan, invasive species include introduced plants and vertebrate animals that have actual or potential impacts on primary industries and the environment. This Plan addresses invasive species that live on land and in freshwater. The definition does not include diseases, or marine species. Some invasive species may also be declared species.
Invasive species management	As used in this Plan, invasive species management encompasses prevention, eradication, containment, and control of invasive species and asset-based protection.
Landholder	In relation to land, means a person who is in occupation or control of the land, or is entitled to be in occupation or control of the land, whether or not that person owns the land. This also applies to WA Government departments and authorities which own or manage public lands, and also to local governments which own or manage lands.

Term	Definition used in this Plan
Management Plan	As defined in the BAM Act, a Management Plan means a plan that is in force for the management of an area to provide for the control of a declared pest in the area.
Management response plan	A plan prepared by a agencies involved in the coordinated management of an invasive species or a group of species that is widespread and established.
Non-declared (invasive) species	As used in this Plan, non-declared invasive species are invasive species that cause undesirable impacts to economic, environmental and/or social values, but have not been declared under the BAM Act.
Prevention	Management strategies including regulatory and physical measures to ensure that incursions of invasive species are prevented or their impacts mitigated, and include pre-border, border and post-border activities.
Pre-border and border surveillance	Verification and inspection processes that establish which goods posing a biosecurity risk can enter WA, their pathways, conditions of entry, and inspection and compliance arrangements. At the border, inspection and detection activities of the means (e.g. road, rail, airborne and shipping traffic) whereby undesirable invasive species not present in WA may cross the border and become established.
Post-border surveillance	As used in this Plan, refers to detection activity directed at new incursions or newly established invasive species populations in WA.
Recognised Biosecurity Group	Formally recognised groups which control declared invasive species that impact on public and private interests. A Recognised Biosecurity Group can raise a Declared Pest Rate on land within its area of operation. The funds collected can be matched dollar-for-dollar with funds provided by the WA Treasury for authorised invasive species control programs.
Risk	Risk is defined as the combination of the likelihood of an invasive species becoming established or widespread, and the level of impact of that invasive species on economic, environmental and social values.
Risk assessment	Risk assessment focusing on a variety of attributes in order to protect the environmental, economic, social and cultural values identified by society.
Surveillance	Activities to investigate the presence or prevalence of a pest or disease in a given plant or animal population and its environment.

6.2 Abbreviations

Abbreviations for Acts, organisations, and processes used in the Plan are presented in Table 10.

Table 10 Abbreviations used in the Plan

Abbreviation	Full title or name
AQIS	Australian Quarantine Inspection Service
BAM Act	*Biosecurity and Agriculture Management Act 2007*
BC	Biosecurity Council
BSOG	Biosecurity Senior Officers Group
CALM Act	*Conservation and Land Management Act 1984*
DAFWA	Department of Agriculture and Food, Western Australia
DoF	Department of Fisheries
DPW	Department of Parks and Wildlife
DPR	Declared Pest Rate
ER Plans	Emergency Response Plans
FRM Act	*Fisheries Resource Management Act 1994*
GNRBA	Goldfields-Nullarbor Rangelands Biosecurity Association
IGAB	Inter-Governmental Agreement on Biosecurity
LGA	Local Government Authority
LG Act	*Local Government Act 1995*
MOU	Memorandum of Understanding
NEBRA	National Environmental Biosecurity Response Agreement
NRM	natural resource management
PaDIS	Pest and Disease Information Service
RBG	Recognised Biosecurity Group
R&D	research and development
UCL	Unallocated crown land
UMR	Unmanaged Reserve
WALIS	Western Australian Land Information System
WAOL	Western Australian Organism List
WC Act	*Wildlife Conservation Act 1950*

6.3 List of invasive species mentioned in this Plan

The common and scientific names of invasive species referred to the Plan are presented in Table 11.

Table 11 Invasive species referred to in the Plan

Common name	Scientific name
Amazon Frogbit	*Limnobium laevigatum*
Arum lily	*Zantedeschia aethiopica*
Bathurst burr	*Xanthium spinosum*
Bedstraw	*Galium tricornutum*
Blackberry	*Rubus* spp.
Branched broomrape	*Orobanche ramosa*
Bridal creeper	*Asparagus asparagoides*
Cacti (Opuntioid)	*Austrocylindropuntia* spp., *Cylindropuntia* spp. and *Opuntia* spp.
Camel (feral)	*Camelus dromedarius*
Cane toad	*Rhinella marina*, previously *Bufo marinus*
Cat (feral)	*Felis catus*
Common or Indian myna	*Acridotheres tristis*
Cotton bush	*Gomphocarpus fruticosus*
Creeping knapweed	*Rhaponticum repens*
Donkey (feral)	*Equus asinus*
Fox	*Vulpes vulpes*
Gamba grass	*Andropogon gayanus*
Gambusia or mosquito fish	*Gambusia* spp.
Goat (feral)	*Capra hircus*
Goldfish	*Carassius auratus auratus*
Gorse	*Ulex europaeus*
Horse (feral)	*Equus caballus*
Horsetails	*Equisetum* spp.
Indian house crow	*Corvus splendens*
Kochia	*Bassia scoparia*, previously *Kochia scoparia*
Koy carp	*Cyprinus carpio*
Locust	*Chortoicetes terminifera*
Medfly	*Ceratitis capitata*
Mesquite	*Prosopis* spp.
Mimosa	*Mimosa pigra*
Nodding thistle	*Carduus nutans*
Parkinsonia	*Parkinsonia aculeata*
Parthenium weed	*Parthenium hysterophorus*

Common name	Scientific name
Phytophora	*Phytophora* spp.
Pig (feral)	*Sus scrofa*
Prickly acacia	*Vachellia nilotica*, previously *Acacia nilotica*
Prickly pear	*Opuntia* spp.
Rabbit (feral)	*Oryctolagus cuniculus*
Red-eared slider turtle	*Trachemys scripta elegans*
Red witchweed	*Striga asiatica*
Rubbervine	*Cryptostegia grandiflora*
Salvinia	*Salvinia molesta*
Siam weed	*Chromolaena odorata*
Skeleton weed	*Chondrilla juncea*
Sparrow	*Passer domesticus*
Squirrel (Indian palm squirrel)	*Funambulus* spp.
Starling	*Sturnus vulgaris*
Tilapia	*Tilapia* spp., *Oreochromis* spp. and *Sarotherodon* spp.
Tropical soda apple	*Solanum viarum*
Water hyacinth	*Eichhornia crassipes*
Wild dog	*Canis lupus familiaris*, *Canis lupus dingo* and *Canis lupus dingo* x *Canis lupus familiaris*

7 Appendices

7.1 Appendix 1 – Relevant WA legislation in invasive species management

Act	Purpose
Agricultural Produce Commission Act 1988 (APC Act)	The objective of the *Agricultural Produce Commission Act 1988* is to provide for the constitution of an Agricultural Produce Commission for the purposes of encouraging initiative among producers of agricultural produce to form producers' committees for the purposes of providing services to producers of agricultural produce.
Agricultural and Veterinary Chemicals (Western Australia) Act 1995 (AVC Act)	The *Agricultural and Veterinary Chemicals (Western Australia) Act 1995* applies certain laws of the Commonwealth relating to agricultural and veterinary chemical products as laws of Western Australia and for related purposes.
Animal Welfare Act 2002 (AW Act)	The *Animal Welfare Act 2002* provides for the protection of animals by: regulating the people who may use animals for scientific purposes, and the manner in which they may be used; and prohibiting cruelty to, and other inhumane or improper treatment of, animals.
Biosecurity and Agriculture Management Act 2007 (BAM Act)	The *Biosecurity and Agriculture Management Act 2007* provides the legislative framework to provide effective biosecurity and agriculture management for the State. Replaced the *Agriculture and Related Resources Protection Act 1976* and several other pieces of legislation.
Conservation and Land Management Act 1984 (CALM Act)	The *Conservation and Land Management Act 1984* provides for the use, protection and management of certain public lands, waters and native flora and fauna.
Emergency Management Act 2005 (EM Act)	The *Emergency Management Act 2005* provides the legislative framework to provide for prompt and coordinated organisation of emergency management in the State, and for related purposes.
Environmental Protection Act 1988 (EP Act)	The *Environmental Protection Act 1988* provides a legislative framework for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment.

Act	Purpose
Fish Resource Management Act 1994 (FRM Act)	The *Fish Resource Management Act 1994* provides the legislative framework to develop and manage fisheries and aquaculture in a sustainable way; and to share and conserve the State's fish and other aquatic resources and their habitats for the benefit of present and future generations.
Forest Products Act 2000 (FP Act)	The *Forest Products Act 2000* provides the legislative framework to establish the Forest Products Commission and for related matters.
Health Act 1911	The *Health Act 1911* provides the legislative framework for laws relating to public health.
Local Government Act 1995 (LG Act)	The *Local Government Act 1995* provides for a system of local government within Western Australia.
Swan and Canning Rivers Management Act 2006	The *Swan and Canning Rivers Management Act 2006* sets out objectives, structures and functions for the management of the Riverpark.
Wildlife Conservation Act 1950 (WC Act)	The *Wildlife Conservation Act 1950* provides for the conservation and protection of native flora and fauna.

7.2 Appendix 2 – International and National Conventions and Agreements

Internationally, Australia is party to the following conventions and agreements which may be relevant to this Plan.

- Code of Conduct for Responsible Fisheries (1995)
- Convention of Biological Diversity (1992)
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)
- Convention on Migratory Species
- Convention on Wetlands (Ramsar 1971)
- International Plant Protection Convention
- World Heritage Convention
- World Trade Organisation Agreement on the Application of Sanitary and Phytosanitary Measures.

The National Biosecurity Framework is made up large number of significant strategies and plans that are either in place or in preparation, including:

- Australian Animal Welfare Strategy (AAWS)
- Australian Biosecurity System for Primary Production and the Environment (AusBIOSEC) (under development)
- Australian Code of Practice for the care and use of animals for scientific purposes (and various other National Codes of Practice relating to animal welfare)
- Australian *Environment Protection and Biodiversity Conservation Act 1999*
- Australian *Quarantine Act 1908*
- Australian Weeds Strategy
- Bureau of Rural Sciences − National Pest Management Guidelines
- Draft Australian Pest Animal Strategy
- Draft National Plantation Timber Industry Biosecurity Plan

- Emergency Animal Disease Response Agreement (EADRA)
- Emergency Plant Pest Response Deed (PLANTPLAN)
- Generic Incursion Management Plan for the Australian Forest Sector
- Guidelines for the Import, Movement and Keeping of Exotic Vertebrates in Australia
- Inter-governmental Agreement on Biosecurity (IGAB)
- National Aquatic Animal Health Strategy (AQUAVETPLAN)
- National Biodiversity and Climate Change Action Plan
- National Cooperative Approach to Integrated Coastal Zone Management
- National Environmental Biosecurity Response Agreement (NEBRA)
- National Management Strategy for Carp Control 2000-2005 Preamble 7
- National Policy for the Translocation of Live Aquatic Organisms
- National Strategy for the Conservation of Australia's Biological Diversity (1996)
- National Strategy for Ecologically Sustainable Development
- National Surveillance and Diagnostics Framework
- National Weed Awareness Action Plan
- National Weed Spread Prevention Action Plan (in development)
- Proposed Framework for managing Established Pests and Diseases of National Significance (EPDNS Framework)
- Strategic Approach to the Management of Ornamental Fish in Australia
- Weeds of National Significance (WONS) Strategies.