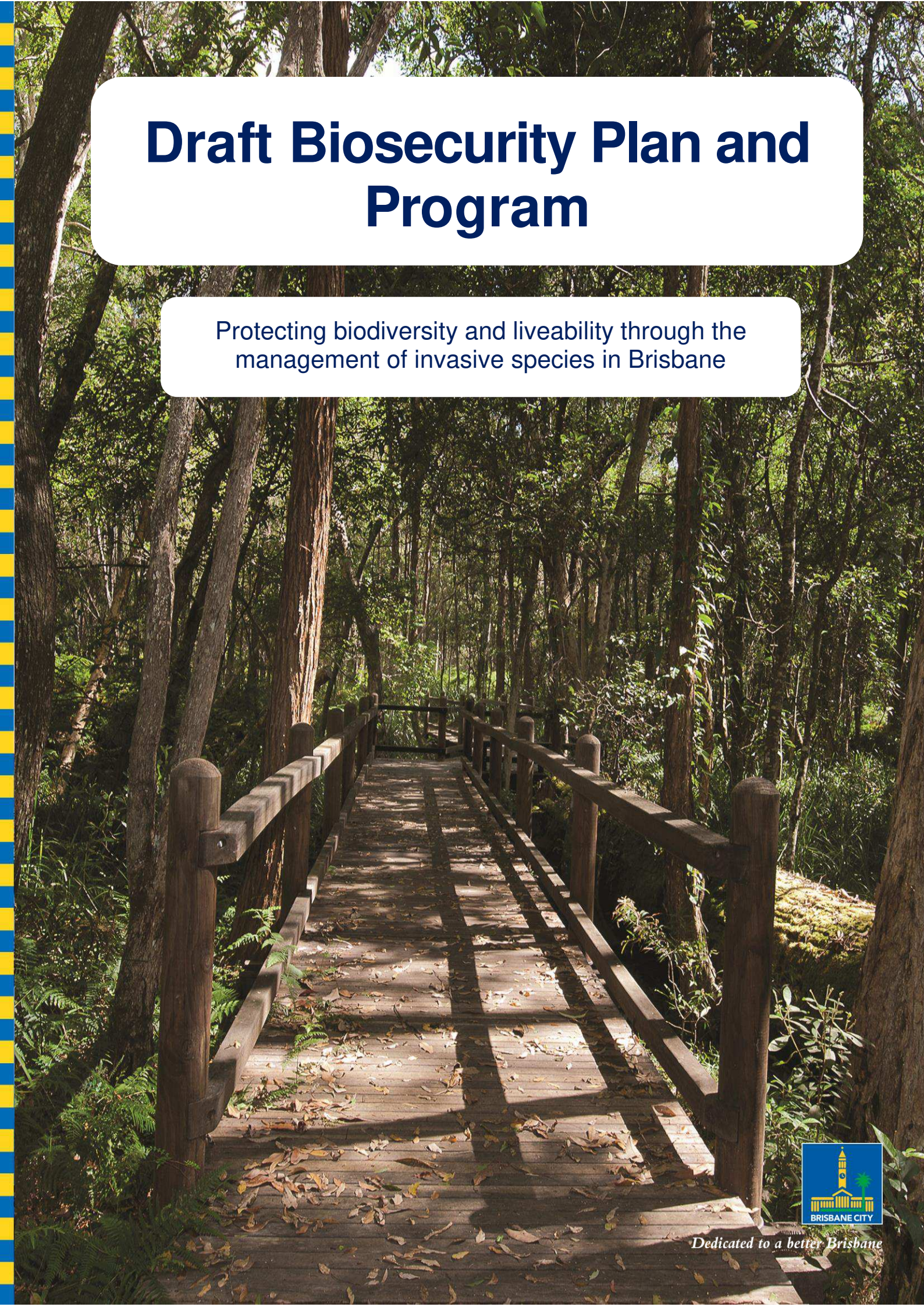
Draft Biosecurity Plan and Program

Protecting biodiversity and liveability through the management of invasive species in Brisbane



BRISBANE CITY

Dedicated to a better Brisbane

A biosecurity plan to keep Brisbane clean and green, making our city liveable and sustainable for our children and their children to follow.

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Introduction

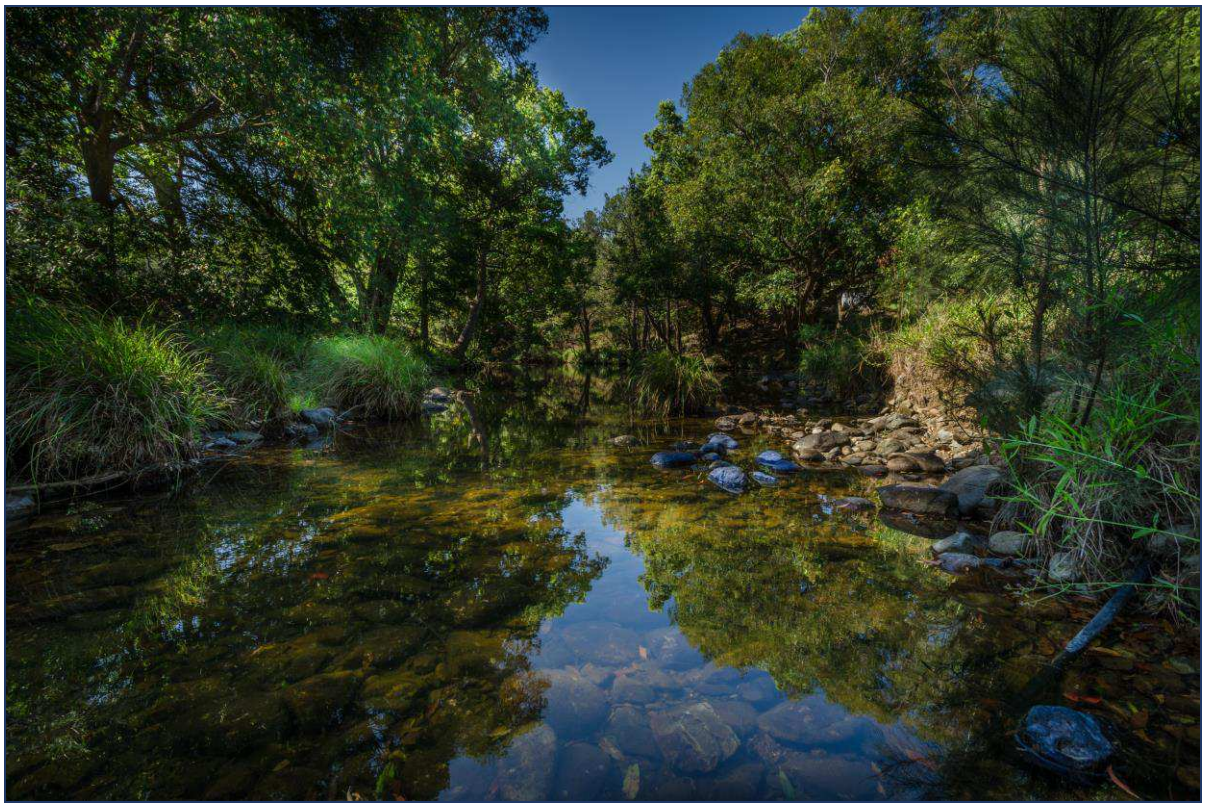
Brisbane is Australia's most biodiverse capital city. The beauty of our subtropical natural spaces underpins Brisbane's status as a New World City, its liveability and continued prosperity.

Healthy open spaces are vital to our city's resilience. Brisbane's open space benefits the whole community by encouraging a healthy and active lifestyle, strengthening local economies and providing shaded, cooler public spaces for all to enjoy. The city's vast natural areas and parklands provide food, shelter and habitat for unique and diverse wildlife.

One of the greatest threats to the health and resilience of our natural spaces is the ongoing competition from introduced species. Extreme weather can disrupt healthy ecosystems and bring conditions that cause introduced pests to establish and spread. The chance of new pests inadvertently being introduced through our busy port and airports is another constant risk.

Brisbane City Council is committed to keeping Brisbane clean, green and sustainable, which includes protecting natural systems by managing the impact of introduced species. Guiding local priorities in Queensland is a new statutory framework (the *Biosecurity Act 2014*) that requires biosecurity plans to be developed specific to each local government area.

Brisbane's first biosecurity plan will replace the *Brisbane Invasive Species Management Plan 2013-17* (BISMP). This plan delivers on Council's obligations and commitment to the management of invasive species that have the potential to impact our lifestyle, threaten natural environments and harm the biodiversity they support.



1. Brisbane City

This plan has been developed to manage biosecurity risks and invasive species in the Brisbane City Council Local Government Area (LGA). Brisbane City Council is the largest local government in Australia, responsible for a jurisdiction that covers almost 1400 km^2, including Moreton Island. The LGA adjoins Moreton Bay Regional Council to the north, Ipswich City and Somerset Regional councils in the west, Logan City Council to the south and Redland City Council to the east.

Located at 27^0 south of the equator, Brisbane enjoys a subtropical climate with average temperatures ranging from 15.8 -25.4ºC. The city receives 1148 mm of rain on average each year. The population of Brisbane's LGA is slightly over 1.16 million with 112,421 businesses employing 669,580 people.

2. The Queensland biosecurity framework

The *Biosecurity Act 2014* commenced on 1 July 2016. This legislation replaced six acts, made amendments to three others and integrated 11 pieces of subordinate legislation. Most relevant to local government is the replacement of the *Land Protection (Pest and Stock Route Management) Act 2002* and the *Plant Protection Act 1989*.

In accordance with section 53 of the Act, Council must develop and make publicly available, its biosecurity plan, outlining priorities for managing invasive species. This responsibility is delegated to local governments and their communities in recognition that they are best placed to design practical, appropriate solutions to deal with risks in their region.

3. New terminology for invasive species

In the Act, biosecurity refers to all species, including plants, fauna, insects, fish, disease and pathogens that are not native to Australia. Any introduction of these exotic pests will have the potential to degrade our natural environment, economy and social amenity.

To guide the delivery of responsibilities to manage invasive species the Act has introduced a range of new terms.

The term 'biosecurity matter' is used to describe any living thing that isn't human including pathogens of plants and animals, and some contaminants. A biosecurity matter is further broken down into prohibited matters and restricted matters.

A prohibited matter is one not currently established in Queensland, but would have a detrimental impact on human health, social amenity, the economy and natural environment.

Prohibited matters are listed in Schedule 1 of the Act. It is illegal to deal with a prohibited matter within Queensland and anyone becoming aware of one should report it to Biosecurity Queensland immediately.

A ‘restricted matter’ is a biosecurity matter that is present and likely to have a detrimental impact.

Restricted matters have specific actions that are required to be undertaken to limit their impact by reducing, controlling or containing them. There are seven categories for restricted matters.

- **Category 1** – must be reported to a Queensland Government inspector within 24 hours.
- **Category 2** – must be reported to a Queensland Government inspector or a local government authorised officer.
- **Category 3** – must not be distributed. This means it must not be released into the environment unless the distribution or disposal is authorised in a regulation or under a permit.
- **Category 4** – must not be moved.
- **Category 5** – must not be possessed or kept under your control unless they are kept under a permit issued in accordance with the Act or another act.
- **Category 6** – must not be fed except for the purpose of preparing for or undertaking a control program.
- **Category 7** – must be destroyed and disposed of in accordance with Queensland Government requirements as soon as practicable.

4. The General Biosecurity Obligation

A General Biosecurity Obligation (GBO) has also been introduced under the biosecurity framework. It requires everyone in Queensland to take all reasonable and practical measures to prevent or manage biosecurity risks and not to exacerbate adverse effects.

This obligation was introduced to encourage individuals, industry and government to be proactive in preventing, managing and addressing biosecurity risks that relate to them. It includes an obligation to keep land free of pests and to ensure that pests do not spread to neighbouring properties (the ‘good neighbour’ principle) and is designed to ensure proactive steps are taken to prevent serious incursions or incidents.

The introduction of the GBO provides flexibility in the management of invasive species, as it requires responses to be specifically matched to the level of harm or risk posed. This allows risks to be prioritised and responses customised to suit local conditions and the assets or industries that are priorities for protection.

Council has undertaken a comprehensive assessment of the risks posed by all biosecurity matters listed in the Act, focusing on those delegated to local governments to manage. The risk assessment formed the basis for the prioritisation of species in this biosecurity plan.

5. Prioritisation of risks

Although the Act outlines expectations to manage risks and impacts associated with invasive species across Queensland, this plan focuses on matters relevant to Brisbane. These are listed in Schedule 1 parts 3 and 4, and in Schedule 2 part 2 of the Act.

To ensure species that pose the greatest risk across Queensland are appropriately managed, the biosecurity framework allows the application of a risk-based methodology that considers current and inherent risks to identify priorities for management.

To consider broader threats and potential invasive species, a further assessment was undertaken to determine risks posed by other species not included in the Queensland Government's biosecurity framework. This included consideration of species listed by the Australian Government as 'weeds of national significance' or included in the *Environment Protection and Biodiversity Conservation Act 1999*.

6. Assessment process for the evaluation of risks

To prioritise these risks, an evaluation process was designed to classify species according to their potential to cause economic, social or environmental harm in Brisbane. This allows resources to be targeted at species that pose the greatest threat by considering the following.

- The likelihood of the species establishing within South East Queensland considering climatic factors and other conditions that make it suitable or unsuitable for a species to establish and thrive.
- The possible social, economic and environmental consequences of the species establishing within the Brisbane LGA including costs associated with treatment and eradication, and the costs associated with not managing a species at all.
- The concerns of land managers and invasive species specialists (technical assessment) including observations of change, new incursions and on-ground information that may have not yet translated into science or publications.
- The level of concern across South East Queensland of the potential impact and level of concern of invasive species including considering the priorities of neighbouring local governments to ensure cooperation and coordination in invasive species management (good neighbour principle).
- The feasibility of treatment options for each species including the cost of treatment, the availability of biological and natural controls, and the population density and distribution.
- The risk associated with not intervening or managing a known risk and the risks posed by species that have not yet been identified in legislation but have the potential to cause significant harm (precautionary principle).

7. Priority species for management in the Brisbane LGA

In delivering its GBO to prevent or minimise biosecurity risks and to take all reasonable and practical measures to prevent or minimise these risks (s.23(2) of the Act), priorities for the Brisbane LGA have been identified. Focusing on species delegated for management by local governments, invasive species have been evaluated and classified according to their social, economic or environmental impact and the feasibility of successful management. Six categories have been identified (Figure 1).

Extreme	Extremely serious social, economic and ecological impacts. Requires significant investment to manage but the cost of not responding is likely to be catastrophic.
Significant	Serious social, economic and/or ecological impacts expected. Once established, these species are extremely difficult to eradicate.
High	Likely to be well established in natural and urban environments. These species have significant impacts and are priorities for management.
Moderate	Where left unmanaged or allowed to establish, these species present significant impacts.
Low	Species that may be established, naturalised or that are not causing severe impacts across the Brisbane LGA. They include species that may be significant at local or property scales for management. Might be priorities for reduction where possible.
Very Low	Minimal impacts likely as the risk level is so low significant investment into management is not an immediate priority beyond monitoring for change in impact or incursion.

Figure 1: Risk categories classification key

The priorities and statutory requirements for the management of each species are detailed in Tables 1 and 2. In addition to this list, all matters managed by the Queensland Government (listed as Category 1 in the Act) pose extreme risks to the Brisbane LGA.

Table 1: Priority fauna for management in the Brisbane LGA

Risk classification	Common name	Species name
High	**Dog – other than domestic**	*Canis lupus familiaris*
	Fallow deer (feral)	*Dama dama*
	Cat (other than a domestic cat)	*Felis catus* and *Prionailurus bengalensis x Felis catus),*
	European red fox	*Vulpes vulpes*
	Pig (feral)	*Sus scrofa*
	Red deer (feral)	*Cervus elaphus*
	Rusa deer (feral)	*Cervus timorensis*
Moderate	**Red-eared slider turtle**	*Trachemys scripta elegans*
	European rabbit (domestic and wild breeds)	*Oryctolagus cuniculus*
Low	**Goat (feral)**	*Capra hircus*
	Sambar deer	*Rusa unicolor, syn. Cervus unicolor*
Very low	**Yellow crazy ant**	*Anoplolepis gracilipes*

Table 2: Pest plants for management in the Brisbane LGA

Risk classification	Common name	Species name
Significant	**Alligator weed**	*Altenanthera philoxeroides*
	Cabomba	*Cabomba caroliniana*
	Horsetails	*Equisetum spp.*
High	**Broad-leaved pepper tree**	*Schinus terebinthifolius*
	Cat's claw creeper	*Dolichandra unguis-cati*
	Hymenachne	*Hymenachne amplexicaulis*
	Kudzu	*Pueraria lobate*
	Parthenium	*Parthenium hysterophorus*
	Rat's tail grass/giant rat's tail grass	*Sporobulus pyramidalis* and *S.natalensis*
	Salvinia	*Salvinia molesta*

Risk classification	Common name	Species name
High	Senegal tea	*Gymnocoronis spilanthoides*
	Water hyacinth	*Eichhornia crassipes*
	Water lettuce	*Pistia stratiotes*
	Water mimosa	*Neptunia oleracea* (and *N. plena*)
Moderate	Asparagus ferns	*Asparagus aethiopicus 'Sprengeri' A. africanus*
	Balloon vine	*Cardiospermum grandiflorum*
	Bridal creeper	*Asparagus asparagoides*
	Broadleaf privet	*Ligustrum lucidum*
	Giant Parramatta grass/rat's tail grasses/Parramatta grass	*Sporobolus fertilis, S. africanus, S. jacquemontii*
	Groundsel bush	*Baccharis halimifolia*
	Hygrophila/glush weed	*Hygrophila costata*
	Kahili ginger	*Hedychium gardnerianum*
	Madeira vine	*Anredera cordifolia*
	Willows	*Salix spp.* other than *S. babylonica, S. x calodendron, S. xreichardtii* and *S. chilensis; syn. S. humboldtiana* = pencil willow (Chilean willow)
Low	Annual ragweed	*Ambrosia artemisiifolia*
	Bitou bush	*Chrysanthemoides monilifera subsp. rotundata*
	Boneseed	*Chrysanthemoides monilifera ssp. Monilifera*
	Camphor laurel	*Cinnamomum camphora*
	Chinese celtis	*Celtis sinensis*
	Dutchman's pipe	*Aristolochia elegans*
	Fireweed	*Senecio madagascariensis*
	Honey locust	*Gleditsia triacanthos* including cultivars and varieties
	Mexican feather grass	*Nassella tenuissima*
	Rubber vine	*Cryptostegia grandiflora*
	Tropical soda apple	*Solanum viarum*
	Yellow ginger	*Hedychium flavescens*
Very low	African fountain grass	*Pennisetum setaceum (Cenchrus setaceus)*
	African tulip tree	*Spathodea campanulata*
	Athel pine	*Tamarix aphylla*
	Belly-ache bush/cotton leaf/physic nut	*Jatropha gossypiifolia*
	Bitterweed	*Helenium amarum*
	Blackberry	*Rubus anglocandicans, Rubus fruticosus agg.*
	Chilean needle grass	*Nasella neesiana*
	Elephant ear vine	*Philodendron spp. Argyreia nervosa*
	Harrisia cactus	*Harrisia martinii*
	Lantana (all species)	*Lantana spp.*
	Mexican bean tree	*Cecropia. palmata* and *C. peltata*
	Miconia	*Miconia calvescens, M. racemosa* and *M. nervosa*
	Mother of millions hybrid	*Bryophyllum × houghtonii*
	Pond apple	*Annona glabra*
	Prickly pear/tiger pear/ drooping tree pear/westwood pear/velvety tree pear	*Opuntia spp. (O. elata* and *O. microdasys* – cat.2,3,4,5)
	Sagittaria	*Sagittaria platyphylla*
	Singapore daisy	*Sphagneticola trilobata*
	Small-leaved privet/ Chinese privet	*Ligustrum sinense*
	Telegraph weed	*Heterotheca grandiflora*
	Yellow bells	*Tecoma stans*
	Yellow oleander/Captain Cook tree	*Cascabela thevetia syn. Thevetia peruviana*

8. Precautionary approach to invasive species management

The management of invasive species and biosecurity matters requires adaptation and ongoing evaluation to respond to new incursions, new species and unforeseen impacts of matters already under management.

The application of the GBO will require ongoing consideration of emerging risks and monitoring of the impacts of invasive species. Where circumstances change, or new species emerge as priorities for management, the prioritisation process described above will be implemented to evaluate changed conditions and potential impacts.

Twenty-three species of plants and animals have been identified by the Queensland Department of Agriculture and Fisheries as priorities for early detection in South East Queensland (Table 3). These include species that are popular illegal pets and are well-suited to establishing in Brisbane if released.

Table 3: Priority species for early detection in South East Queensland

Risk classification	Common name	Species name
High-risk fauna	**Saw-scaled viper**	*Echis carinatus*
	Boa constrictor	*Boa constrictor*
	Indian palm squirrel	*Funambulus spp.*
	Asian spined toad	*Bufo melanostictus*
	American corn snake	*Elaphe guttata*
	Cobra	*Aspidelaps spp., Boulengerina spp., Hemachatus spp., Naja spp., Ophiophagus spp., Pseudohaje spp., Walterinnesia spp.*
	Burmese python	*Python bivattatus*
	Chameleon	*Furcifer pardalis*
	Eastern Hermann's tortoise	*Testudo hermanni*
	Green iguana	*Iguana iguana*
	Red-eared slider turtle	*Trachemys scripta elegans*
	Russian land tortoise	*Agrionemys horsfieldii*
	Southeast Asian box turtle	*Cuora amboinensis*
	Spotted pond turtle	*Geoclemys hamitonii*
	Star tortoise	*Geochelone elegans*
High-risk flora	**Siam weed**	*Chromolaena odorata* and *Chromolaena squalida*
	Miconia	*Miconia calvescens; M, cionotricha, M.racemosa, M.nervosa*
	Mexican bean tree	*Cecropia spp.*
	Horsetails	*Equisetum spp.*
	Giant sensitive tree	*Mimosa pigra*
	Yellow fever tree	*Vachellia xanthophloea*
	Tropical soda apple	*Solanum viarum*
	Red sesbania	*Sesbania punicea*

9. Management requirements for listed biosecurity matters

For those biosecurity matters (invasive species) listed in the Act and included as priorities for the Brisbane LGA, the minimum requirements for management are outlined in Schedule 2 of the Act. This section of the Act details the minimum statutory response required and applies to all land in Queensland. Table 4 lists pest species and Table 5 weed species.

Table 4: Statutory requirements for pest species listed in Council's biosecurity plan

Common name	The Act category						
	Category 1	**Category 2**	**Category 3**	**Category 4**	**Category 5**	**Category 6**	**Category 7**
	Must be reported to the Queensland Government	Must be reported to Council	Must not be distributed or released into the environment	Must not be moved	Must not be kept without a permit	Must not be fed (except to trap)	Must be destroyed
Dog – other than domestic			■	■		■	
European rabbit (domestic and wild breeds)			■	■	■	■	
European red fox			■	■	■	■	
Fallow deer (feral)			■	■		■	
Cat (other than a domestic cat)			■	■		■	
Goat (feral)			■	■		■	
Pig (feral)			■	■		■	
Red deer (feral)			■	■		■	
Red-eared slider turtle		■	■	■	■	■	
Rusa deer (feral)			■	■		■	
Sambar deer		■	■	■	■	■	
Yellow crazy ant			■				

Table 5: Statutory requirements for weed species listed in Council's biosecurity plan

Common name	The Act category						
	Category 1 Must be reported to the Queensland Government	Category 2 Must be reported to Council	Category 3 Must not be distributed or released into the environment	Category 4 Must not be moved	Category 5 Must not be kept without a permit	Category 6 Must not be fed (except to trap)	Category 7 Must be destroyed
African fountain grass			X				
African tulip tree			X				
Alligator weed			X				
Annual ragweed			X				
Asparagus ferns			X				
Athel pine			X				
Balloon vine			X				
Belly-ache bush/ cotton leaf/ physic nut			X				
Bitou bush		X	X	X	X		
Bitterweed	Prohibited in Queensland						
Blackberry			X				
Boneseed		X	X	X	X		
Bridal creeper		X	X	X	X		
Broadleaf privet			X				
Broad-leaved pepper tree			X				
Cabomba			X				
Camphor laurel			X				
Cat's claw creeper			X				
Chilean needle grass			X				
Chinese celtis			X				
Dutchman's pipe			X				
Elephant ear vine			X				
Fireweed			X				
Giant Parramatta grass/rat's tail grasses/Parramatta Grass/American rat's tail grass			X				
Groundsel bush			X				
Harrisia cactus			X				
Honey locust			X				
Horsetails	Prohibited in Queensland						
Hygrophila/glush weed			X				
Hymenachne			X				
Kahili ginger			X				
Kudzu			X				

Common name	The Act category						
	Category 1	**Category 2**	**Category 3**	**Category 4**	**Category 5**	**Category 6**	**Category 7**
	Must be reported to the Queensland Government	Must be reported to Council	Must not be distributed or released into the environment	Must not be moved	Must not be kept without a permit	Must not be fed (except to trap)	Must be destroyed
Lantana (all species)			X				
Madeira vine			X				
Mexican bean tree		X	X	X	X		
Mexican feather grass		X	X	X	X		
Miconia		X	X	X	X		
Mother of millions hybrid			X				
Parthenium			X				
Pond apple			X				
Prickly pear/tiger pear			X				
Rat's tail grass/giant rat's tail grass			X				
Rubber vine			X				
Sagittaria			X				
Salvinia			X				
Senegal tea			X				
Singapore daisy			X				
Small-leaved privet (Chinese privet)			X				
Telegraph weed			X				
Tropical soda apple	**Prohibited in Queensland**						
Water hyacinth			X				
Water lettuce			X				
Water mimosa		X	X	X	X		
Willows			X				
Yellow bells			X				
Yellow ginger			X				

10. Targeted invasive species management

In addition to required management actions, the Act includes provisions to undertake additional actions in each LGA to manage invasive species.

Recognising that a species may have different impacts in different parts of Queensland, the introduction of the GBO provides flexibility in the management of weeds and pests in the Brisbane LGA. This allows responses to be specifically matched to the level of harm or risk that a species may pose at different locations. It also allows biosecurity risks to be prioritised and responses customised to suit local conditions and the assets, industries or activities that are priorities for protection.

For instance, while cane toads are naturalised across South East Queensland, Moreton Island continues to be cane toad free. Therefore, specific efforts to prevent incursions are appropriate at this location, even though eradication across the region may not currently be realistic.

This methodology, which considers the size and the distribution of an infestation when determining the most appropriate management response, can be represented on an invasion curve (Figure 2).

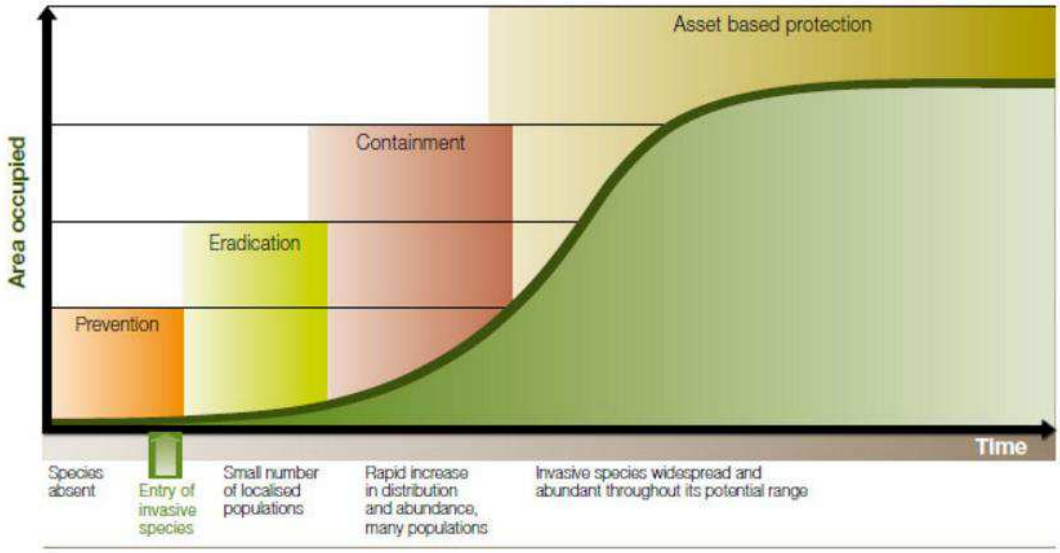


Figure 2: Generalised invasion curve showing actions appropriate to each stage

Depending on its distribution and density at a location, and the potential impact that the species could pose if established, the most suitable management action can be selected (Table 6). Management responses will focus on the following.

- Surveillance to identify the presence of species, recognising that it is more efficient and cost effective to prevent a pest species from establishing than managing it once it has established.
- Reporting extreme risks to be eradicated through Queensland Government programs.
- Asset protection to ensure high-risk species do not become established in areas of high biodiversity value.
- Eradication including local eradication of high-risk species from areas of high biodiversity value.
- Reducing the density of species that could become a greater risk if allowed to establish.
- Containing the distribution of species to their current range to protect other areas.
- Monitoring changes to the species distribution and risks posed as part of a precautionary approach to meeting the GBO.

Table 6: Management actions associated with risk classifications

<table>
<tr><th>Risk classification</th><th>Impact</th><th colspan="2">Management actions</th></tr>
<tr><td>Extreme</td><td>Extremely serious social, economic and ecological impacts.
Requires significant investment to manage but the cost of not responding is likely to have catastrophic consequences.</td><td rowspan="2">Eradication of this species is extremely desirable.
This will require surveillance, reporting and monitoring of new incurences.</td><td>Where detected, these species must be reported to Biosecurity Queensland for eradication.</td></tr>
<tr><td>Significant</td><td>Serious social, economic and/or ecological impacts expected.
Once established, these species are extremely difficult to eradicate.</td><td>Where detected, these species must be immediately eradicated in the Brisbane LGA.</td></tr>
<tr><td>High</td><td>These species are likely to be well established in our natural and urban environments. They have significant impacts and are priorities for management.</td><td colspan="2">While established, these species are priorities for local eradication/asset protection. This should be based on the prioritisation of sites, focusing on the protection of high-value biodiversity, risks posed and socio economic considerations.</td></tr>
<tr><td>Moderate</td><td>Where left unmanaged or allowed to establish, these species present significant impacts.</td><td colspan="2">Impacts associated with this species will increase if it is allowed to establish. The focus of management should be on reducing density to prevent these species establishing or spreading.</td></tr>
<tr><td>Low</td><td>These are species that may be established, naturalised or that are not causing severe social, economic or environmental impacts across the Brisbane LGA. They include species that may be significant at local or property scales for management. They are also species that might be priorities for reduction where possible.</td><td colspan="2">Because these species are likely to already be widespread, management focus should be on containment and asset protection of those sites where it has not established, and reducing the density of key sites of high biodiversity value.</td></tr>
<tr><td>Very low</td><td>Minimal impacts so investment into management is not an immediate priority beyond monitoring for change in impact or incursion.</td><td colspan="2">These species should be monitored to ensure that circumstances do not change that result in them posing a greater risk than initially assessed.</td></tr>
</table>

11. Selection of an invasive species management response

While the risk assessment classifications outlined in the biosecurity plan will be used to prioritise species for investment on Council land, to be effective the type of response selected from the toolkit needs to consider the local risk posed by a species, and the most suitable actions for its management (Figure 3). This will ensure that management actions undertaken across the LGA are best matched to the threat that invasive species pose.

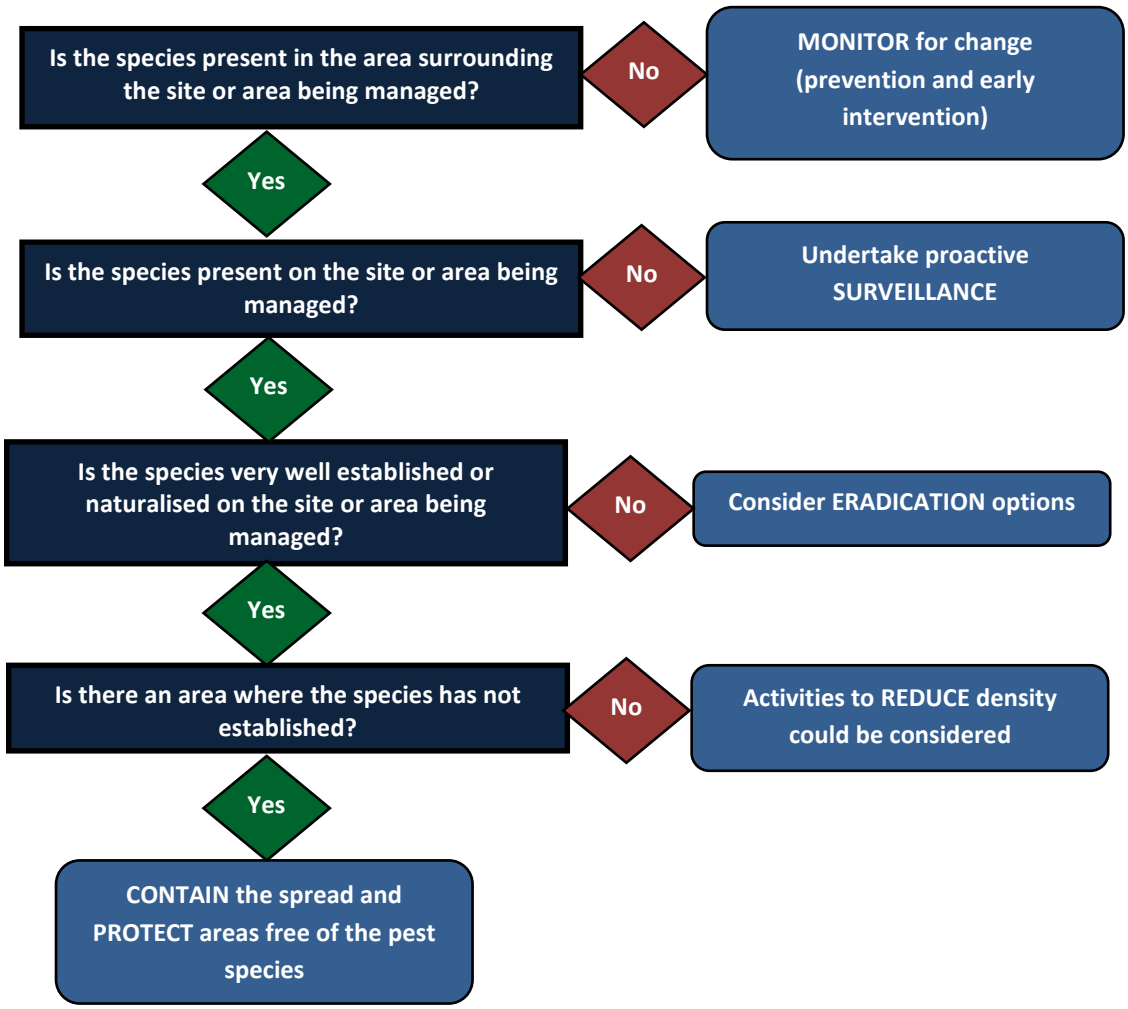


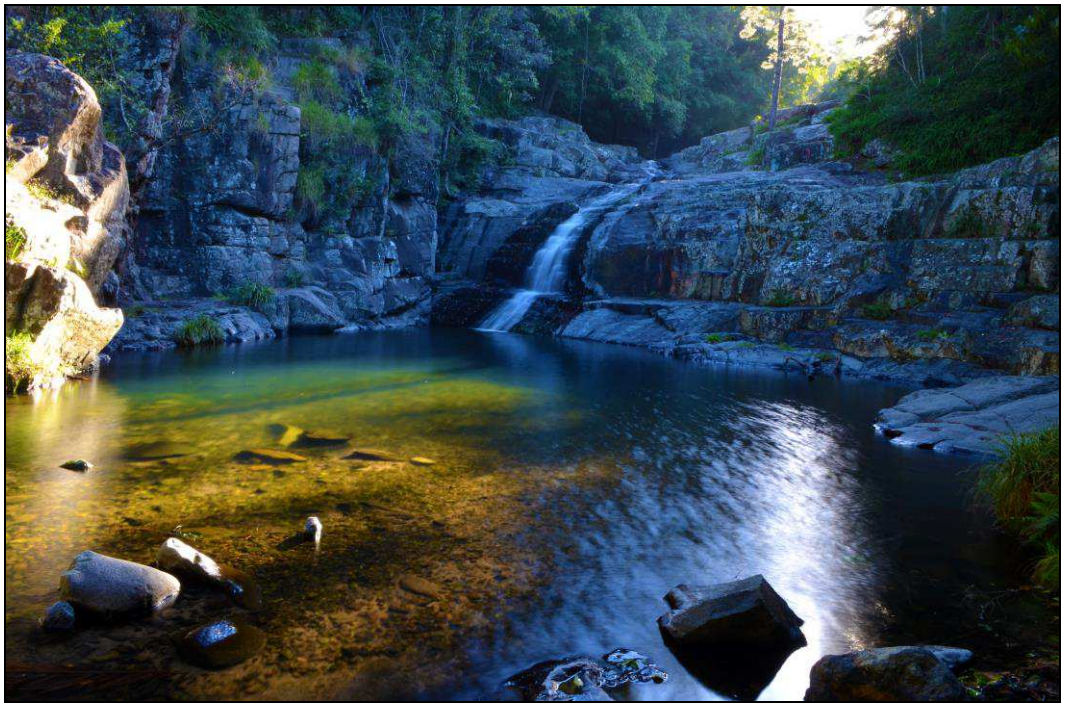
Figure 3: Simplified assessment process for the selection of management actions

12. Alignment with the Queensland weed and pest strategy

The approach to invasive species management that is deployed through the strategies and responsibilities outlined in this plan are aligned with principles of the *Queensland Weed and Pest Management Strategy 2016-2020*, which recognises the following.

- Prevention and early intervention is more efficient to prevent a pest species from establishing than to manage it once it has established.
- Monitoring and assessment, and specifically the collection and validation of information enables effective decision making.
- Awareness and education is essential so that stakeholders are informed, knowledgeable and have ownership of weed and pest management.
- Effective and integrated management systems utilising risk-based decision making ensures selected management strategies deliver optimal outcomes.
- Strategic planning framework and management strategies that have acceptable levels of stakeholder ownership and are informed by risk management are more likely to achieve desired results.

- Commitment, roles and responsibilities, and the integration of the principle of shared responsibility is a founding principle within the Act and will deliver objectives across a LGA.



To guide the management of invasive species, plans and actions have been developed that can be applied to manage both public and private land in the Brisbane LGA. In recognition that there may be differences in the level of impact that a species may have at a property, suburb or regional scale, this program has been designed to be able to be flexibly applied while ensuring that compliance with the priorities of the Queensland Government, and the significant risks that some species pose to the broader LGA are managed.

Through the application of an approach that considers local impact, statutory obligations and objectives of community groups, business and residents, a management plan that is both coordinated as well as specific has been designed.

13. Biosecurity programs and strategies for pest animal management

A biosecurity program has been developed for the management of high-risk pest fauna species in the Brisbane LGA (Table 7). It includes strategies available to be deployed for the management of pest species on both public and private land.

As detailed in Table 7, actions have been specifically developed for the nine species identified through the prioritisation process as requiring management in the Brisbane LGA.

Actions incorporate obligations for these species as outlined in the Act, however it also extends management responses to achieve best practice in the Brisbane region. Prevention and control programs are authorised in accordance with section 235 of the Act (Appendix 3 of this plan) and will be delivered as described in the following sections.

The suite of strategies selected from this toolkit will be selected depending on their suitability, considering the density and extent of the infestation and the desired outcome of the intervention. Any combination of the actions and strategies described in the program are available for the management of any of the listed pest species.

In recognition of community concern about the impacts of some species that are not listed in Queensland Government legislation as a management priority, localised treatment plans will also be developed for key species and/or sites across the Brisbane region. This includes management actions to prevent cane toad incursions on Moreton Island.

Table 7: Biosecurity program for pest animals in the Brisbane LGA

Management response	Education	Collaborative opportunities	Research, science and technology
Surveillance opportunities Deploy new and proven technologies to undertake surveillance, including of known harbourage areas to better understand the population distribution, movement and dynamics. Explore aerial surveillance technologies, data-driven optimisation and information analytics to map distribution and spread of invasive species. **Reporting** Report sightings of pest animals. **Asset protection** Identify environmentally significant areas and associated populations through monitoring and mapping, to target management efforts. **Eradication/reducing the density** Undertake eradication in key protected areas, discrete or recently established populations, or populations with a high local social, economic or biodiversity impact. Carry out best practice humane control actions focusing on the areas where risks are posed to life, property and/or native biodiversity on both public and private land. **Containing the distribution** Work in collaboration with partners and the community involved in management of this species to achieve a holistic management approach.	Raise public awareness about impacts of species and techniques and strategies for their management. Accessible guidance material available on best practice management options for land managers. Promote extension programs to increase the awareness of domestic and feral animal concerns, the need for management and the responsibilities in relation to feeding and containing dogs and cats. Encourage and promote citizen science research opportunities and community delivery of invasive species programs. Encourage public support for management activities through landholder, industry, educational institutions and local awareness programs.	Work with adjacent neighbours and other local governments to develop collaborative and regional management approaches. Invasive species to be managed in a coordinated and collaborative way for efficiency and cost effectiveness. Management to focus on important social and environmental sites including riparian areas, wetlands, public spaces (including parks, playgrounds and BBQ areas), and locations where important biodiversity, including migratory wildlife, is known to feed or roost. Develop, implement and regularly review community-based programs for managing impacts and reducing population density. Provide support and maintenance for local control efforts. Investigate options for incentives to be used to encourage the management of high-risk invasive species on private land.	Support the development, adoption and implementation of the latest technologies in controlling population numbers (e.g. baiting, trapping, fencing, aversion fencing, guardian animals). Where proven effective, new technologies will be implemented for the management of species and the reduction of risks across the LGA. Consider, pilot and implement new science and technologies to manage high-risk species populations. Improve understanding and quantify the social, economic and environmental impacts of pest species in the Brisbane LGA. Investigate and trial technologies for the suppression or reduction of breeding rates. Explore alternative management options for invasive species population control. Partner with other institutions to investigate new treatment methodologies and test standard treatment practices.

Biosecurity prevention and control program for the management of wild dogs in the Brisbane LGA

Wild dog (*Canis lupus dingo* and *Canis lupis familiaris* – other than a domestic dog)

Purpose of the program

Raise public awareness of the impacts of wild dogs and the techniques and strategies for their management.

Encourage responsible pet ownership so that domestic dogs do not add to the wild dog population.

Powers of authorised officers

Carry out management actions to control wild dog populations.

Carry out compliance and regulatory responsibilities for any particular offences under the Act, and to ensure compliance when landowners do not take reasonable steps to contribute to the control of wild dogs.

The term 'wild dog' refers to purebred dingoes, dingo hybrids and domestic dogs that have escaped or been deliberately released and now live in the wild. The dingo (*Canus lupus dingo*) is defined as both 'wildlife' and 'native wildlife' under the *Nature Conservation Act 1992* and is a natural resource within protected areas such as national parks. Under the *Nature Conservation Act 1992*, protected areas have prescribed management principles which refer to protecting and conserving the natural resource and the natural condition.

Wild dogs can have negative impacts on livestock and threatened species. These impacts can be economic, environmental or social and include:

- predation on small remnant populations of native species such as koalas and wallabies, threatening biodiversity
- risk of disease spreading to domestic animals and humans
- can attack people and pets in urban areas
- can be a nuisance to householders and tourists.

Distribution
Wild dogs are present in all areas of Queensland. In the remote and far western areas there are a higher percentage of dingoes, whereas there are a higher percentage of hybrids in closely settled areas. In Brisbane, wild dogs are present in the western suburbs of Brookfield, Pullenvale, Kholo, The Gap, Upper Kedron and Mount Coot-tha.

Queensland Government declaration
Wild dogs are a restricted invasive animal under the Act.
They fall under Categories 3, 4 and 6.

Council biosecurity plan risk: Wild dogs are **HIGH RISK species in the Brisbane LGA.**

Operational objectives

- To remove wild dogs from areas where they pose a risk to native biodiversity.
- To prevent wild dog movement into protected areas.
- To manage wild dog numbers in other situations, particularly where they have or could have significant economic, environmental or social impacts.
- To educate the community about the impacts of wild dogs on the natural environment.

Program tools available for selection from Table 7

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Period of the program: This program will operate from February 2018 until 31 December 2022.

Criteria for the selection of places to be entered: Land containing habitat capable of supporting wild dogs.

Places to be entered

- An authorised officer may enter any place (other than a residence) within the Brisbane LGA as part of a prevention and control program.

Biosecurity prevention and control program for the management of deer in the Brisbane LGA

Fallow deer *(Dama dama)* **Red deer** (*Cervus elaphus)* **Rusa deer** (*Cervus timorensis*) **Sambar deer** *(Rusa unicolor, syn. Cervus unicolor)*	**Purpose of the program** Raise public awareness of the impacts of deer and implement techniques and strategies for their management. Protect human life and property and manage the environmental impact caused by deer.	**Powers of authorised officers** Carry out management actions to control feral deer populations. Carry out compliance and regulatory responsibilities for any particular offences under the Act, and ensure that landowners take reasonable and practical measures to control feral deer. Undertake surveillance for sambar deer in the Brisbane LGA.


Fallow deer


Red deer


Rusa deer


Sambar deer

Large deer populations have significant agricultural, environmental and social impacts. These include:

- damaging restoration sites, gardens and parks
- selective grazing changes to floristic composition and structure
- create soil erosion and damage waterways and wetlands
- collision risk for road users.

Distribution

Fallow, red and rusa deer are all found in rural, peri-urban and urban areas in Brisbane. Populations are well established in western suburbs such as Upper Brookfield, Brookfield, Pullenvale, Kholo and also on the southern side of the river at Jindalee, Mt Ommaney, Seventeen Mile Rocks and Oxley. However, these species could expand their range if left unmanaged.

Until recently, **sambar deer** were not thought to be in Queensland, but there is increasing anecdotal evidence of sambar translocations. As a tropical species, sambar deer have the potential to establish in suitable Queensland environments such as the wet tropics, where they would be extremely difficult to eradicate. Sambar deer prefer tropical forest habitats, especially forest adjacent to grassland.

Queensland Government declaration: All species of deer are a restricted invasive animal under the Act. They fall under Categories 3, 4 and 6.

Council biosecurity plan risk: All deer species that occur in the Brisbane LGA are **HIGH RISK species.** Sambar deer are ranked as a **LOW RISK** because there is only anecdotal evidence that they could occur.

Operational objectives

- To remove deer from areas where they pose high risk to people.
- To reduce deer numbers in other situations, particularly where they have or could have significant economic, environmental or social impacts.
- To educate the community about the impacts of deer on the natural environment.

Program tools available for selection from Table 7

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Period of the program: This program will operate from February 2018 until 31 December 2022.

Criteria for the selection of places to be entered: Land containing habitat capable of supporting feral deer.

Places to be entered: An authorised officer may enter any place (other than a residence) within the Brisbane LGA as part of a prevention and control program.

Biosecurity prevention and control program for the management of cats (other than a domestic cat) in the Brisbane LGA

Cat – other than a domestic cat *(Felis catus* and *Prionailurus bengalensis* x *Felis catus)*

Purpose of the program

Raise public awareness of the impacts of non-domestic cats, the techniques and strategies for their management, while also encouraging responsible pet ownership.

Powers of authorised officers

Carry out management actions to control non-domestic cat populations.

Carry out compliance and regulatory responsibilities for any particular offences under the Act and to ensure landowners take reasonable and practical measures to control non-domestic cats.

Cats (other than a domestic cat) are cats without an owner. Cats are opportunistic predators that have a major impact on native species.

Impacts include:

- predation of small mammals, birds, reptiles, amphibians, insects and fish
- threaten critically endangered species
- carry disease such as toxoplasmosis, which can impact marsupials
- can cause injury and transmit disease to domestic cats
- carry parasites that can affect humans
- can cause health problems when in high numbers in urban areas.

Distribution

The cat (other than a domestic cat) is widespread. These cats are often fed by well-meaning people which can allow larger populations to persist than would otherwise occur. Unwanted cats are also released into urban and rural areas by irresponsible pet owners. These cats contribute to the non-domestic cat population and associated impacts.

Queensland Government declaration

Cats (other than a domestic cat) are a restricted invasive animal under the Act. They fall under Categories 3, 4 and 6.

Council biosecurity plan risk: Cats (other than domestic cats) are **HIGH RISK species in the Brisbane LGA.**

Operational objectives

- To remove non-domestic cats from areas where they pose risks to native biodiversity.
- To reduce non-domestic cat numbers in other situations, particularly where they have or could have environmental or social impacts.
- To educate the community about the impact of non-domestic cats on the natural environment.
- To educate the community about responsible pet ownership.

Program tools available for selection from Table 7

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Period of the program: This program will operate from February 2018 until 31 December 2022.

Criteria for the selection of places to be entered: Land containing habitat capable of supporting non-domestic cats.

Places to be entered: An authorised officer may enter any place (other than a residence) within the Brisbane LGA as part of a prevention and control program.

Biosecurity prevention and control program for the management of feral pigs in the Brisbane LGA

Feral pig *(Sus scrofa)*

Purpose of the program

Raise public awareness of the impact of feral pigs, particularly on the natural environment and biodiversity, and undertake management to reduce numbers and impacts.

Powers of authorised officers

Carry out management actions to control feral pigs.

Carry out compliance and regulatory responsibilities for any particular offences under the Act and ensure landowners take reasonable and practical measures to control feral pigs.

Feral pigs are difficult to control for several reasons. They are intelligent, adaptable and secretive animals, with high reproductive potential, a wide range of food sources and large home ranges.

Impacts of feral pigs include:

- carrying diseases that affect native animals, stock and people
- degrade waterways and wetlands
- create soil erosion and facilitate the spread of weeds
- prey on a wide range of native species including small mammals
- compete for resources with native species.

Distribution
Feral pigs are found in all habitat types in Queensland, with the greatest concentrations found along major waterway corridors and wetlands. In Brisbane, they occur along Oxley Creek and Blunder Creek, as well as larger natural areas including Karawatha Forest Park. They are also present in wetland areas surrounding Brisbane Airport and in the rural areas of Kholo and Upper Brookfield.

Queensland Government declaration:
Feral pig is a restricted invasive animal under the Act. They fall under Categories 3, 4 and 6.

Council biosecurity plan risk: Feral pigs are **HIGH RISK species in the Brisbane LGA.**

Operational objectives

- To remove feral pigs from areas where they pose risks to native biodiversity.
- To reduce feral pig numbers in other situations, particularly where they have or could have economic, environmental or social impacts.
- To educate the community about the impact of feral pigs on the natural environment.

Program tools available for selection from Table 7

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Period of the program: This program will operate from February 2018 until 31 December 2022.

Criteria for the selection of places to be entered: Land containing habitat capable of supporting feral pigs.

Places to be entered:

- An authorised officer may enter any place (other than a residence) within the Brisbane LGA as part of a prevention and control program.

Biosecurity prevention and control program for the management of foxes in the Brisbane LGA

European red fox (*Vulpes vulpes*)

Purpose of the program

Raise public awareness of the impact of foxes on the natural environment.

Support the management and reduction of the number of foxes in the Brisbane LGA.

Powers of authorised officers

Carry out management actions to control foxes.

Carry out compliance and regulatory responsibilities for any particular offences under the Act, and to ensure landowners take reasonable and practical measures to control foxes.

The fox has played a major role in the decline of ground-nesting birds and small-to-medium-sized mammals. While land use change is cited as one of the key reasons for decline in many native species, predation by foxes has also been a significant contributor to native animal decline and continues to undermine recovery efforts for native species across Australia.

The fox is often reported by residents as it regularly preys on chickens in Brisbane's urban areas.

Distribution
Foxes are now present throughout most of Australia, thriving under all climatic conditions where there is water availability and in vastly different types of terrain. Foxes are widespread across all areas of mainland Brisbane. They are highly adaptable and have proven well-suited to urban environments.

Queensland Government declaration:
Foxes are a restricted invasive animal under the Act. They fall under Categories 3, 4 and 6.

Council biosecurity plan risk: Foxes are **HIGH RISK species in the Brisbane LGA.**

Operational objectives
- To remove foxes from areas where they pose risks to native biodiversity.
- To reduce fox numbers in other situations, particularly where they have or could have economic, environmental or social impacts.
- To educate the community about the impact of foxes on the natural environment.

Program tools available for selection from Table 7
- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Period of the program: This program will operate from February 2018 until 31 December 2022.

Criteria for the selection of places to be entered: Land containing habitat capable of supporting foxes.

Places to be entered:
- An authorised officer may enter any place (other than a residence) within the Brisbane LGA as part of a prevention and control program.

Biosecurity prevention and control program for the management of rabbits in the Brisbane LGA

European rabbit *(Oryctolagus cuniculus)*

Purpose of the program

Raise public awareness of the impacts of rabbits and the techniques and strategies for their management.

Educating about the impacts of illegal pets and their impacts.

Powers of authorised officers

Carry out management actions to control rabbits.

Carry out compliance and regulatory responsibilities for any particular offences under the Act and ensure landowners take reasonable and practical measures to control rabbits.

In Queensland, it is illegal to keep rabbits as pets. This is in recognition of their potential to cause significant economic impacts and land degradation.

The harm caused by rabbits is largely dependent on the size and density of the population. Biological control measures have deeply impacted rabbit populations throughout Queensland but should resistance to biological controls develop, feral rabbits can be extremely expensive to manage.

Rabbit impacts include:

- degradation of native vegetation and ground cover by eating seedlings, preventing vegetation and ground cover from regenerating
- the reduction of vegetative cover on soils leading to erosion
- compete with native animals for food and habitat
- provide food for predator species, changing their population dynamics
- reduce amenity and landscape values.

Distribution
Myxomatosis, calicivirus and the Darling Downs-Moreton rabbit proof fence have significantly reduced the number of rabbits present within Brisbane. However isolated populations still exist. These populations tend to be found within areas where soil types are suitable for burrowing, such as Belmont and Inala. It should be noted that rabbits are also unlawfully kept as pets or as game meat in Brisbane.

Queensland Government declaration
European rabbits are a restricted invasive animal under the Act. They fall under Categories 3, 4, 5 and 6.

Council biosecurity plan risk: Rabbits are **MODERATE RISK species in the Brisbane LGA.**

Operational objectives

- To investigate reports of rabbits being kept or bred in urban settings.
- To educate the community about the impact of rabbits on the natural environment.
- To undertake management actions to prevent rabbits from becoming established.
- To remove wild rabbits and encourage landholder responses to the management of rabbits.

Program tools available for selection from Table 7

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Period of the program: This program will operate from February 2018 until 31 December 2022.

Criteria for the selection of places to be entered:

- Land containing habitat capable of supporting rabbits
- Locations where it is reported that rabbits are being unlawfully kept.

Places to be entered:

- An authorised officer may enter any place (other than a residence) within the Brisbane LGA as part of a prevention and control program.

Management strategy for environmental pests in the Brisbane LGA

Localised treatment plans

Purpose of the program

Localised treatment plans can be effective in managing the impacts of invasive species on public and private land. These programs can focus on species that are not legislated for management or control but have the potential to cause significant social, economic or environmental impacts.

This can include species such as the cane toad.

Compliance responsibilities

Species not listed in legislation do not require compulsory management.

However, all landowners have a GBO to keep their land free of pest species.

Introduced species in Brisbane that are not listed in the Act can have significant social, environmental or economic impacts.

Some species have become so established that their eradication is no longer feasible, or because they have not been identified as a species that poses a significant threat at a state level.

The GBO supports actions that are taken to manage all invasive species.

Environmental pests can have impacts on the natural environment and biodiversity because they:

- compete with native species for food and habitat
- can be toxic if ingested by native species
- can be a nuisance.

Operational objectives

- To manage environmental pests by reducing the population density of established species.
- To educate residents and the community about the impacts of environmental pests on the natural environment.
- To contain environmental pests and prevent the incursion into areas where they are currently not present.

Program tools available for selection from Table 7

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Cane toad management – Keep Moreton Island Cane Toad Free

Through this program, Council will undertake surveillance activities to detect and respond to cane toads on Moreton Island. This is in recognition of the value of this natural asset and it being one of the few locations in coastal Queensland not infested with cane toads. In addition, Council will also support the development of technologies and treatments for species such as cane toads that are established and that pose significant environmental threats to biodiversity. The focus of this program will be on prevention, eradication, containment and asset protection.

Prevent	Eradicate	Contain	Asset protection
Provide educational material to residents on Moreton Island and tourists visiting the island about its cane toad-free status and the importance of surveillance and detection.	If found on Moreton Island, all cane toads will be captured and humanely euthanised.	New technologies will be piloted to reduce cane toad populations in targeted areas across the Brisbane LGA.	Deploy and pilot science and technology to protect areas that are cane toad free. Undertake activities to reduce the population of cane toads across the Brisbane LGA.

14. Biosecurity programs and strategies for pest plant management

A biosecurity program has been developed for the management of high-risk invasive pest plants in the Brisbane LGA.

It includes strategies available for the management of pest species on both public and private land.

As detailed in Table 8, specific actions are linked to the category assigned in the Act.

The suite of strategies selected from this toolkit will depend on their suitability considering the extent of the infestation at a local scale. Any combination of the actions and strategies described in the program are available for the management of any of the listed pest species.

Specific programs led by Council will focus on the management of those species identified through the prioritisation process. Surveillance programs and management strategies will also be delivered on private and non-Council-controlled land through the Pest Plant Survey program and on Council land, through the Wipe Out Weeds program. Surveillance programs are authorised in accordance with section 235 of the Act (Appendix 3 of this plan) and will be delivered as described in the following sections.

In recognition of concern about the impacts of other invasive plants not listed in the Queensland Government legislation, localised management programs will also be developed for key sites across the Brisbane region.

Table 8: Biosecurity program for invasive pest plants in the Brisbane LGA

Management responses	Education	Collaborative opportunities	Research, science, technology
Surveillance opportunities Invasive species surveys, audits and inspections to identify restricted matters (all listed species) on public and private land. Monitor areas potentially at risk. **Reporting** Report all sightings of prohibited species to Biosecurity Queensland within 24 hours. Report all sightings of Category 2 weeds to an authorised officer within 24 hours. **Asset protection** Prevent the spread into un-infested properties through restrictions on the movement of machinery contaminated with seed. **Eradication/reducing the density** Eradicate small isolated infestations, new infestations and infestations outside of containment lines. Note: Category 5 species are not able to be moved from the location in which they are found. They must be treated on site. Enforce compliance when landowners do not take reasonable measures to control these species. **Containing the distribution** Encourage hygiene practices and movement controls to prevent seed spread. Council to have available internal policies, procedures and training for the management and reporting of Category 3 weeds. Reduce the size of existing infestations of species not required to be eradicated, particularly where they have, or could have, significant environmental impacts. Compliance activities to respond to the keeping, sale and distribution of invasive plants without a biosecurity permit.	Council to provide information online about all restricted weed species and other pest vegetation through the Weed ID tool, Contact Centre and public awareness campaigns. Awareness campaigns to be targeted to areas at risk of invasion. Encourage public support for management activities through landholder, industry and local awareness programs. Incentives may be provided to landowners to participate in coordinated control programs. Encourage the use of native or non-invasive plants in urban areas and gardens. Raise public awareness about impacts of species and techniques and strategies for their prevention and management. Encourage and promote citizen science research opportunities and community delivery of invasive species programs. Encourage land management practices that reduce erosion from a site and encourage practices that prevent weed (seed and plant matter) spread. Explore opportunities to use behaviour change and compliance theory to improve community involvement in invasive species management and to change behaviour where practices have the potential to increase spread of invasive species.	Develop strategic alliances and stakeholder networks to identify potential threats and best practice management techniques, contemporary practices and innovations. Work with other local governments to develop a collaborative management approach. Invasive species to be managed in a coordinated and collaborative way for efficiency and cost effectiveness. Provide support to local control efforts. Investigate options for incentives to be used to encourage the management of high-risk invasive species on private land.	Promote the use of proven biocontrol options for the management of aquatic weeds to reduce herbicide impacts on native biodiversity. Monitor the effectiveness of new biocontrol agents and where proven effective, trial new options on Council-owned land. Improve understanding and quantify social, economic and environmental impacts of weed species in the Brisbane LGA. Maintain records of where restricted matters, in particular, Category 2, 4 and 5 species, have been found and treated to better understand distribution and spread. Monitor new treatment methods and recommendations of the relevant professional bodies with regards to the chemical treatment of weeds. Explore opportunities to use aerial surveillance technologies, data driven optimisation and information analytics to map distribution and spread of invasive species. Monitor change in distribution and spread of species and respond should their risk or impact increase.

Biosecurity surveillance program for significant and high-risk species in the Brisbane LGA

High-risk weed targets

Salvinia *(Salvinia molesta)*

Purpose of the program

To confirm distribution, monitor compliance, respond to and minimise the impacts of high-risk weed species across the Brisbane LGA through the facilitation of information, support, advice and possible treatment options.

Management responses will be delivered through the Wipe Out Weeds program, Pest Plant Surveys on lands not managed by Council and through the provision of information and advice.

Powers of authorised officers

On private property, Council will carry out compliance and regulatory responsibilities for particular offences under the Act and ensure that landowners take reasonable and practical measures to control restricted matters – invasive plants as part of the Pest Plant Survey surveillance program.

High-risk weeds were identified in the biosecurity plan because of their potential to have serious social, economic and environmental impacts which can include:

- infestation of waterways affecting economic, recreational and ecological values
- reduction of oxygen levels in waterways making them unsuitable for aquatic biodiversity
- reduction of habitat for biodiversity
- can cause allergies
- expensive and difficult to manage or eradicate once established
- can result in ecosystem decline and collapse, reduced land values and make areas unsuitable for recreational purposes.

Operational objectives

- To manage, eradicate and respond to high-risk species.
- To provide advice and support to land managers to eradicate these species.
- To investigate and provide biological and other controls for deployment where suitable.
- To provide information to assist in the identification and treatment of high-risk invasive species.

Significant-risk and high-risk weeds in the Brisbane LGA

Alligator weed (*Altenanthera philoxeroides*). Native to South America, alligator weed is a vigorous perennial plant that grows on land in damp soil, or on water as dense floating mats. Leaves are dark green with a distinct midrib, 2-12 cm long, 0.5-4 cm wide, arranged in opposite pairs along stems. Optimum growth occurs in fresh water with a high nutrient level and can establish in semi-aquatic areas, wetlands, stream and creek banks, and on land. Alligator weed affects water flow, water quality, native plants and native animals, and has major economic and social impacts. Alligator weed poses an extreme threat to waterways, wetlands and irrigated crop lands from Cape York to Queensland's southern border.

Cabomba (*Cabomba caroliniana*). Cabomba is an aggressive perennial that can form dense canopies below the water surface via multiple stems up to 10 m long. Cabomba grows in ponds, lakes and quiet streams and is generally rooted in water 1-3 m deep (sometimes up to 6 m) but continues to grow free-floating if uprooted. Propagation is through stem fragments although reproduction by seed has been observed in the Northern Territory and Victoria. Cabomba aggressively invades fresh water ecosystems with the potential to cause localised flooding and siltation. Swimmers can become entangled in the stems. Native to North and South America, Cabomba was originally introduced to Australia as an aquarium plant. While five species of Cabomba are recognised, only one of these, *Cabomba caroliniana*, is known to be naturalised in Australia. In South East Queensland large infestations have established in Ewen Maddock Dam near Caloundra and Lake Macdonald near Noosa.

Hymenachne (*Hymenachne amplexicaulis*). Hymenachne is a robust, perennial grass, with leaf blades 10-45 cm long and up to 3 cm wide. It can grow up to 2.5 m tall. Hymenachne has become an unwanted pest of stream banks, shallow wetlands and irrigation ditches, primarily in the coastal wet tropics of northern Queensland. Hymenachne increases flooding by reducing flow capacity of drainage networks and can impact on irrigation infrastructure and significantly alter habitat. Native to South America, it was originally introduced to Australia to provide ponded pasture for cattle. It is now found from far-north Queensland to Casino in New South Wales and in the top end of the Northern Territory.

Horsetails (*Equisetum spp.*). Horsetails are a primitive, non-woody, herbaceous plant growing 5-120 cm tall (scouring rush horsetail up to 120 cm, common horsetail up to 80 cm) and have the appearance of miniature bamboo. Horsetail can form pure stands over extensive areas, mainly in wetlands and low-lying cropping areas and spread mostly by vegetative means. The horsetail group includes about 30 different species in the genus Equisetum which are native to much of the world including temperate parts of Europe, North America and Asia. Australia is one of the few countries that is still free of major infestations.

Broad-leaved pepper tree (*Schinus terebinthifolius*). Broad-leaved pepper tree is a broad, spreading tree up to 10 m tall with dark-green leaves consisting of 5-9 leaflets forming opposite pairs. Flowers are small, whitish, growing at the end of branches and form bunches of glossy red 4-5 mm wide with a single seed. Broad-leaved pepper trees form dense thickets that can choke native plants and can out-compete and replace native grasses used in grazing. They can spread rapidly in waterlogged or poorly drained soils and will readily establish in disturbed bushland.

Cat's claw creeper (*Dolichandra unguis-cati*). Cat's claw creeper is a large woody vine that climbs and grows aggressively. Leaves have two leaflets 5-25 mm long, with three-clawed tendrils (cat's claw) 3-17 mm long growing between them. Flowers are yellow, bell-shaped, 4-10 cm long, up to 10 cm wide that form long narrow flat pods containing many seeds. Cat's claw creeper will smother native vegetation including growing up over trees and can also alter soil chemistry. Native to tropical America, they were introduced as an ornamental plant in Queensland gardens and are now found in many parts of Queensland.

Kudzu (*Pueraria lobate*). Kudzu is a rapid-growing perennial vine reaching 20-30 m in length with a massive fleshy tap root up to 1.8 m long that can weigh 180 kg. Roots can form wherever the stem touches the ground. Kudzu has purple-pink fragrant flowers 1-1.5 cm long. It is capable of outcompeting and smothering native vegetation and can cover/damage buildings, overhead wires and other structures. The plant is native to Asia and has become a major pest in Japan and America. It is currently present in north Queensland and recently found at a few locations in South East Queensland.

Parthenium (*Parthenium hysterophorus*). Parthenium is an annual herb growing 1-1.5 m tall, developing many branches in its top half when mature. Leaves are pale green up to 2 mm long, deeply lobed and covered with fine, soft hairs. Parthenium invades pastures and competes for nutrients and space with crops. It affects human health as its pollen can cause reactions such as dermatitis and hayfever. Parthenium is native to North America.

Rat's tail grass (*Sporobulus pyramidalis* and *S.natalensis*). Rat's tail grass is an upright grass 0.6-1.7 m tall. The name rat's tail grass comes from its seed heads, which are narrow and can be up to 45 cm long, appearing like a rat's tail. As the seed head matures they broaden looking more like an elongated pyramid. A square metre of rat's tail grass can produce 85,000 seeds per annum with around 90% viability. Overgrazed pasture and disturbed soil is particularly at risk to rat's tail grass infestation which can quickly dominate and reduce the carrying capacity of pasture and decrease returns by up to 80%. Native to Africa, giant rat's tail grass was introduced to Australia around the early 1960s in contaminated pasture seed. Now present from Cook Town to Central NSW, ecoclimatic modelling has shown 30% of Australia is suitable for colonisation by rat's tail grass.

Salvinia (*Salvinia molesta*). Salvinia is a free-floating aquatic fern with small green leaves with stiff water-repellent hairs positioned in pairs along a common stem. Salvinia prefers slow-moving streams or water bodies where it can form thick mats that can quickly cover water storage areas and degrade water quality, habitat values and damage irrigation infrastructure. In times of flood, thick mats can collect debris putting additional pressure on, and cause the failure of, infrastructure such as bridges and fences. Native to Brazil, *Salvinia molesta* is one of several species of salvinia that occur naturally in America, Europe and Asia but the only species to become established in Queensland. Biological controls are effective in the management of salvinia in South East Queensland.

Senegal tea (*Gymocoronis spilanthoides*). Senegal tea is an aquatic perennial that grows over the water's surface, producing runners and floating stems up to 2.5 m long, and on land it forms a rounded bush. Leaves are shiny, dark green and 5-20 cm long, in opposite pairs and emanate from a stem that is hollow between nodes providing the buoyancy. It will readily invade natural wetlands and waterways where it forms floating mats that block irrigation and drainage channels. Native to South America, Senegal tea was introduced to Australia as an aquarium plant.

Water hyacinth (*Eichhornia crassipes*). Water hyacinth is a floating waterweed up to 65 cm tall with round, bright-to-dark-green, leaves up to 5-10 cm in diameter. The plant has an extensive root system (up to 1 m) which is feathery and black-to-purple. Flowers are in dense spikes above the plant and are light purple with darker blue/purple and yellow centre, 4-6 cm long, 3.5-5 cm wide. Water hyacinth destroys native wetlands and waterways, depleting water of oxygen it kills native fish and other wildlife, providing a breeding ground for mosquitoes. Large infestations can stop movement of boats and reduce recreational opportunities on water bodies. Native to Brazil, water hyacinth was introduced to Australia in the early 1900s as an aquatic ornamental plant. Valued for its floral presentation, water hyacinth was released into ponds and lagoons in public parks throughout Queensland.

Water lettuce (*Pistia stratiotes*). Water lettuce is a free-floating, spongy, aquatic perennial with hairy fan-shaped leaves resembling a small open head of lettuce. Flowers are small, green and around 10-20 mm long. Water lettuce can transform aquatic ecosystems shading out native aquatic plants and restricting the flow of water. Large infestations interfere with boating and other recreational activities. Water lettuce is found in tropical countries worldwide, including Asia, Africa and equatorial America. Its country of origin is not clear but was introduced to Australia as an aquarium and water-garden plant.

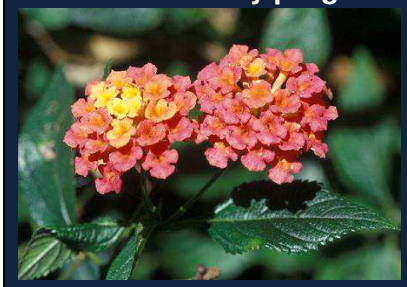
Water mimosa (*Neptunia oleracea* and *N. plena*). Water mimosa is a floating perennial weed with stems to 1.5 m long. Where attached to the bank at the water's edge it sends down a taproot, the portion growing out over the water form spongy, fibrous coverings to assist with flotation. Leaves have fine leaflets that are very sensitive to touch and close quickly. Flowers are small, yellow and ball-shaped with 30-50 per spike. Water mimosa restricts water flow in creeks, channels and drains and can prevent light penetration, impacting on native aquatic plants as well as reducing oxygen levels in the water column. Being a nitrogen-fixing legume the release of nitrogen can lead to increased algal blooms and encourage growth of other weeds such as water hyacinth, water lettuce and salvinia.

Program tools available for selection from Table 8

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Biosecurity surveillance program for the identification and treatment of restricted matters – invasive plants in the Brisbane LGA

Pest Plant Survey program



Lantana *(Lantana camara)*

Purpose of the program

To survey private properties and non-Council controlled properties to identify invasive plants, confirm their distribution and monitor compliance in the Brisbane LGA to prevent their spread and distribution across the region.

Powers of authorised officers

Carry out compliance and regulatory responsibilities for any particular offences under the Act and to ensure landowners take reasonable and practical measures to control restricted matters – invasive plants.

Council is responsible for ensuring that invasive biosecurity matters are managed in compliance with the Act within the Brisbane LGA. Through this program, inspections are undertaken of private properties and non-Council-controlled land to identify restricted matters that are priorities for management in Brisbane's biosecurity plan.

The aim of the program is to maintain Brisbane's rich native biodiversity, and manage the adverse social and economic impacts posed by invasive plants.

This program has two components, the first being a response to complaints from Brisbane residents, the second a proactive component targeting properties that are within Council's biodiversity prioritisation mapping.

An authorised officer may enter any place (other than a residence) within the prioritised survey area under this program.

Once the properties are identified, land holders are notified and provided with information on the purpose and timing of when the pest plant surveys will be conducted.

Operational objectives

- To identify restricted matters – pest plants for management on private properties and non-Council-controlled land.
- To determine the distribution of restricted matter – pest plants across the Brisbane LGA.
- To prevent the spread or movement of restricted matters – pest plants that pose a risk to areas of high biodiversity value.
- To ensure and enforce compliance with the Act.

Program tools available for selection from Table 8

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Period of the program

This program will operate from February 2018 until 31 December 2022.

Criteria for the selection of places to be entered

- Land reported to contain restricted matters – pest vegetation.
- Land in important biodiversity areas that is capable of supporting restricted species of pest vegetation.

Places to be entered

- An authorised officer may enter any place (other than a residence) within the prioritised survey area of an approved surveillance program within the Brisbane LGA.

Management strategy for surveillance and treatment of weeds on Council land

Wipe Out Weeds program	Purpose of the program	Compliance responsibilities
 Miconia *(Miconia calvescens)*	To treat weeds on Council land focusing on protecting high-value environmental sites.	All landowners have a GBO to keep their land free of pests and ensure that invasive species do not cause harm or impact to adjoining neighbours. Council will deliver its responsibilities in relation to this obligation through the surveillance and treatment of listed species on Council land.

Council is responsible for ensuring invasive species are managed in accordance with the Act on Council land. This includes parkland, bushland and other protected and public spaces.

This responsibility is delivered through activities that include on-ground restoration work, targeting new and emerging pest vegetation species, and undertaking pest vegetation surveys, treatment and eradication of biosecurity matters – invasive plants on Council land.

With 2030 parks covering 1500 hectares, together with 9000 hectares purchased specifically for conservation, it is essential that these natural assets be protected through a prioritised program.

Through the Wipe Out Weeds program, all natural areas across Brisbane were surveyed with information gathered to ascertain the biodiversity value of each area. This process considers the native species present, the type of vegetation (and vegetation community), the value of the vegetation (e.g. how common or rare the ecological community is) and the importance of the parcel in connecting or linking corridors or high-value sites.

Collectively, this information is used to identify the highest-value sites that warrant the greatest protection and investment, with focus also given to the management of the source of the infestation.

Operational objectives

- To identify biosecurity matters – invasive plants for management on Council land.
- To determine the distribution of biosecurity matters – invasive plants across the region.
- To reduce the impact of invasive species on high-value natural areas.
- To ensure Council delivers its responsibilities in the Act.

Program tools available for selection from Table 8

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Management strategy for environmental weeds in the Brisbane LGA

Localised treatment plans

Ochna (*Ochna serrulata*)

Purpose of the program

Localised treatment plans can be effective in managing the impacts of invasive species on public and private land. These programs can focus on species that are not legislated for management or control.

Powers of authorised officers

Carry out compliance and regulatory responsibility in accordance with the *City of Brisbane Act 2010* for any particular offences under the *Natural Assets Local Law* including provisions for the management of pest vegetation not listed in the Act.

Under the local law, authorised offers can carry out compliance and regulatory responsibilities for any offences and ensure landowners carry out requested management actions to control locally significant pest vegetation.

Introduced species of pest vegetation in Brisbane that are not listed in the Act can have significant social, economic and/or environmental impacts. However, some species have become so established that their eradication is no longer feasible or because they have not been identified as a species that poses a significant threat across all parts of Queensland.

The GBO supports actions that are taken to manage all pest vegetation.

Locally significant species of pest vegetation can have impacts on the natural environment and residents because they:

- compete with native species
- can be toxic if ingested or cause allergic reactions
- reduce environmental values.

This management strategy includes a selective inspection program to identify pest vegetation in the Brisbane LGA from a list of species known to be invasive and capable of causing an adverse environmental impact. The program may also comprise local activities at a neighbourhood, waterway, catchment or property level that focus on the removal or reduction of pest vegetation.

The list of locally significant pest vegetation species is included in Appendix 4, and will be available on Council's website. It is regularly reviewed and updated by a panel of suitably qualified pest vegetation experts.

Operational objectives

- To manage locally significant species of pest vegetation that are not listed in Queensland Government legislation but are of local concern in the Brisbane LGA.
- To support the activities of landowners and community groups to manage locally significant pest vegetation.
- To educate residents and the community about the impacts of locally significant pest vegetation on the natural environment.
- To contain or reduce the volume or impact of locally significant pest vegetation and prevent incursion into areas of high biodiversity value.

Program tools available for selection from Table 8

- Management actions.
- Educational programs.
- Collaborative opportunities.
- Research, science and technology.

Period of the program

- This program will operate from February 2018 until 31 December 2022.
- Inspections to be carried out over recurring periods of not more than three months between February 2018 and December 2022.

Criteria for the selection of places to be entered: Land in important biodiversity areas that is capable of supporting restricted species of locally significant pest vegetation.

Places to be entered: All vacant land and all improved land with an area greater than 600 square metres in the Brisbane LGA.

15. Surveillance and reporting of Category 1 Restricted Matters and Invasive Biosecurity Matters

A biosecurity program has been developed to outline responsibilities in relation to Category 1 Restricted Matters and Invasive Biosecurity Matters on both private and public land in the Brisbane LGA. These species are delegated to the Queensland Government to manage due to their potential extreme social, economic and/or environmental impacts. They are also species that are priorities for immediate detection and eradication.

Biosecurity surveillance program for Category 1 Restricted Matters and Invasive Biosecurity Matters

Surveillance and reporting	Purpose of the program	Compliance responsibilities
 Red imported fire ant *(Solenopsis invicta)*	To deliver statutory responsibilities relating to Category 1 restricted matters. To demonstrate commitment to the eradication of species that pose an extreme risk in South East Queensland.	To report detections to the Queensland Government.

Category 1 Restricted Matters and Invasive Biosecurity Matters pose extreme social, economic or environmental risks. For this reason, the responsibility for their early detection and eradication is led by the Queensland Government. Category 1 species that are priorities for detection in South East Queensland include the: red imported fire ant (*Solenopsis invicta*); West Indian drywood termite (*Cryptotermes brevis*); Asian honey bee (*Apis cerana javana*); bitterweed (*Helenium amarum*); horsetails (*Equisetum spp.*); and tropical soda apple (*Solanum viarum*).

Operational objectives

- To make information available to assist in the early identification of these species.
- To undertake surveillance, and where Category 1 species are identified, immediately report them to Biosecurity Queensland.

Responsibilities in relation to Category 1 Restricted Matters and Invasive Biosecurity Matters: Surveillance, reporting, education and eradication.

Surveillance	Reporting	Education	Eradication
Undertake surveillance for early detection of Category 1 species, such as red imported fire ants. Encourage community participation in surveillance on private and public land. Encourage proactive inspections for fire ants in areas outside of the known fire ant zone.	Report all sightings of Category 1 and prohibited species to Biosecurity Queensland within 24 hours. Council to have available internal policies, procedures and training for the management and reporting of Category 1 and prohibited species.	Information to be available on Queensland Government web sites providing advice about the known occurrences, spread, identification, training, statutory requirements and reporting processes. Council to provide information online about all Category 1 and prohibited species through the Weed ID tool, Contact Centre and public awareness campaigns. Council to have internal policies in place to guide high-risk activities, such as associated with mulch movement and restoration works.	Eradication to be led by the Queensland Government on all land tenures. Council will support the Queensland Government as the functional lead agency for the eradication of red imported fire ants. Council to maintain records of where Category 1 weeds have been found and treated. Treatment programs to be monitored for effectiveness.

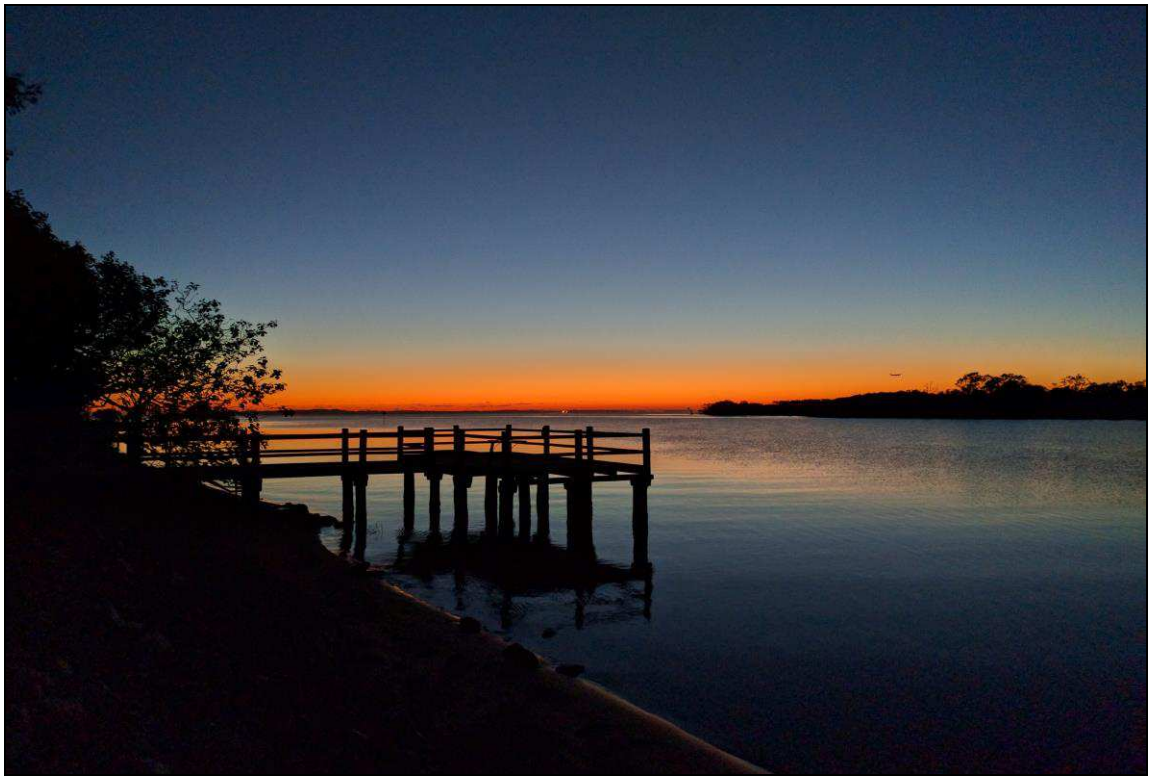
16. Precautionary approach to invasive species management

The management of invasive species and biosecurity matters requires adaptation and ongoing evaluation to respond to new incursions, new species and unforeseen or unexpected impacts of matters currently under management.

Precautionary principle

Where there are threats of serious environmental damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

The application of the GBO will require the ongoing consideration of new and emerging risks and the monitoring of impacts of invasive species across the Brisbane LGA. Where circumstances change, or new species emerge as priorities for management, the prioritisation process described will be implemented to evaluate changed conditions and the impacts that this may cause.



To deliver this obligation, Council will continue to monitor species that have been detected in Queensland, either through the illegal pet trade or that have been known to be found in the natural environment. Information on specific, potentially high-risk species will be made available to assist the early detection of these species and be complemented by ongoing monitoring of the risk posed.

Biosecurity surveillance program for proactive monitoring of potential, new and emerging threats

Precautionary monitoring programs

Red-eared slider turtle *(Trachemys scripta elegons)*

Purpose of the program

To monitor the illegal pet trade to identify potential species that may be released into the environment.

To monitor species known to occur in the Brisbane LGA that are not currently assessed as posing a significant risk, in case there are changes to their distribution or impact.

Provide information and develop responses to new and emerging threats.

Powers of authorised officers

Carry out compliance and regulatory responsibilities for any particular offences under the Act and report any detected breaches of the Act to the Queensland Government that are outside responsibilities delegated to Council.

Species not yet in Queensland

The illegal pet trade results in many species that have the potential to pose a significant risk to Australian biodiversity being brought into the country. Should these species escape their containment, their release could have significant social, economic and environmental implications.

The Queensland Government investigates and evaluates the potential impact of emerging pest species. To support their work in the Brisbane LGA, information will be made available to residents to identify the following pest species that are a high priority for early identification and eradication.

- American corn snake (*Elaphe guttata*)
- Asian spined toad (*Bufo melanostictus*)
- Boa constrictor (*Boa constrictor*)
- Burmese python (*Python bivattatus*)
- Chameleon (*Furcifer pardalis*)
- Cobra (*Aspidelaps spp., Boulengerina spp., Hemachatus spp., Naja spp., Ophiophagus spp., Pseudohaje spp., Walterinnesia spp.)*
- Eastern Hermann's tortoise (*Testudo hermanni*)
- Green iguana (*Iguana iguana*)
- Indian palm squirrel (*Funambulus spp.*)
- Russian land tortoise (*Agrionemys horsfieldii*)
- Saw-scaled viper (*Echis carinatus*)
- Southeast Asian box turtle (*Cuora amboinensis*)
- Spotted pond turtle (*Geoclemys hamitonii*)
- Star tortoise (*Geochelone elegans*)
- Giant sensitive tree (*Mimosa pigra*)
- Red sesbania (*Sesbania punicea*)
- Siam weed (*Chromolaena odorata* and *Chromolaena squalida*)
- Yellow fever tree (*Vachellia xanthophloea*).

Species that have or are known to occur in Queensland

In addition to these species, there are also several species that are not considered a high risk for management, but that will be monitored to ensure that their impacts and risks posed do not change. This includes yellow crazy ants (*Anoplolepis gracilipes*). It will also include those species managed in adjoining LGAs that are not a priority for management in Brisbane.

Operational objectives

- To make information available to assist in the early identification of these species.
- Where high-risk species are identified, immediately report them to Biosecurity Queensland.
- Monitor known species and explore and implement management options where suitable.

17. Responsibilities for the delivery of Council obligations

The obligations outlined in this program will be delivered in collaboration with the Brisbane community. Four business areas in Council will lead delivery of this program on private and public land. Detailed below (Table 9), is a summary of the key roles and services provided by business areas that will be leading the delivery of invasive species management programs in Council.

Table 9: Council business areas with specific invasive species management responsibilities

Council business area	Role	Responsibility
Natural Environment Water Sustainability (NEWS)	**Provide strategic guidance, support and advice in relation to the management of invasive species in the Brisbane LGA**	Lead the development and delivery of educational information and training associated with invasive species and biosecurity management.
		Research, review and trial new technologies, innovation and science to improve detection and management of invasive species.
		Support the delivery of programs, projects and initiatives.
		Provide support to the community to identify weeds including through maintenance of Council's online Weed ID tool.
		Make information available on emerging threats and species that have not yet been released into the environment, but that have been detected in Australia to allow early identification and eradication.
		Collect and compile data to support invasive species management.
		Deliver Council obligations in relation to matters that are listed as Category 1 species in the Act.
Asset Services (AS)	**Manage Council bushland and park assets**	Support volunteer bushcare groups through the Habitat Brisbane program.
		Provide information and education on invasive species and their impacts through environment centres.
		Support private landholder partners to manage weeds on their properties through the Wildlife Conservation Partnerships program.
		Support, provide advice and assist community catchment groups to undertake weed management activities.
		Deliver Community Conservation Assistance funding on volunteer and private landholder partner sites.
		Deliver the Wipe Out Weeds project in conservation reserves across the city.
		Implement weed management projects along corridors.
		Engage with neighbours of Council reserves about the effects of weed dispersal from gardens.
Urban Amenities (UAB)	**Provide on-ground service delivery**	Deliver weed management services within parks, gardens, natural areas, waterways and other public land.
		Manage Council's biocontrol breeding facility for the management of aquatic weeds.
Compliance and Regulatory Services (CaRS)	**Undertake surveillance, education and regulatory enforcement**	Undertake Council's surveillance program and management strategies for pest vegetation across Brisbane in prioritised areas of high biodiversity to determine the distribution of invasive pest plants on private property and non-Council-controlled land.
		Monitor compliance (including enforcement) with the requirements of the Act and the *Natural Assets Local Law 2003*.
		Respond to and investigate complaints and breaches of the Act and the *Natural Assets Local Law 2003* on private and public land.
		Respond to requests for technical advice in relation to the invasive plants and invasive animals.
		Provide education and management direction to landholders regarding invasive pest plant and pest animal management.
		Deliver Council's prevention and control program for invasive animals.

18. Measuring success

To demonstrate how this program will align to the objectives of the *Queensland Weed and Pest Animal Strategy 2016-20*, Council commits to undertaking actions in support of the principles outlined as best practice in Queensland. Success indicators have been developed to allow Brisbane's contribution to the Queensland framework to be evaluated at the expiration of this program (Table 10).

Table 10: Council's commitment to the principles of the *Queensland Weed and Pest Animal Strategy 2016-20*

Desired outcome	Specific action	Success indicator Council branch
Principle 1: Prevention and early intervention – supporting the early identification and eradication of weeds and pests across the region		
Facilitate species identification	Availability of accurate information.	Information available to allow the early identification of new and emerging invasive species.
Ensure capability to quickly respond to new threats	Evaluate new and emerging threats.	Deliver a precautionary project to assess and monitor the changing impacts of invasive species.
	Monitor science, research and media from the Queensland Government.	Review and disseminate information in relation to new and relevant biosecurity risks and priorities.
Prevent the establishment or spread of invasive species	Develop and document processes for preventing the spread of invasive species during Council activities.	Ensure that operational and other procedures are suitable to ensure that Council activities do not exacerbate the effects of invasive species.
	Map locations of existing invasive species to predict where new species may establish.	Progress the development of mapping and other technologies to predict and anticipate high-risk locations for inspections.
	Undertake regular invasive species surveys.	Undertake surveys of public and private land to better understand and respond to invasive species.
	Promote land management techniques that inhibit the establishment of invasive species (e.g. fire management, riparian management, erosion and sediment control).	Provide advice and support to land managers to improve the condition of their properties and manage the impacts of invasive species in their region.
	Share knowledge of new incursions and risks as it becomes available.	Publication of an internal invasive species newsletter and maintenance of information on Council website.
Principle 2: Monitoring and assessment – information will be collected and validated to enable effective decision making		
Maintain accurate records of invasive species	Develop and implement systems to record incursions and inspections for invasive species.	Align Council business area's records and reporting.
	Develop and maintain a record of compliance responses and incursions of Category 1 species.	Maintain information and accurate records.
	Ensure information is publicly accessible to support the management and monitoring of risks on private land.	Ensure the accuracy and availability of information for land managers.
	Encourage community participation in invasive species monitoring.	Develop citizen science opportunities to increase engagement in invasive species management.

Principle 3: Awareness and education – stakeholders are informed, knowledgeable and have ownership of weed and pest animal management		
All Brisbane residents understand their invasive species management responsibilities	Promote Council's Weed ID tool and other web-based information systems.	Weed identification tool information is accurate.
	Promote the biosecurity plan and its objectives.	Feature biosecurity educational activities at Green Heart Fairs and other community events.
	Promote landholder invasive species management through community engagement activities at a property scale.	Property management plans for invasive species developed and implemented.
	Develop targeted awareness campaigns for landholders in areas of high risk of invasion by priority species.	Improve mapping of high-risk species for use by, and distribution to, land managers.
	Provide support for stakeholders involved in bushland regeneration activities.	Develop and disseminate relevant information for use by community groups.
Council officers understand how their activities contribute to the management of invasive species	Provide training and information sessions to business areas to achieve invasive species management objectives.	Develop and deliver training to business areas across Council to improve landscape outcomes.
Principle 4: Effective and integrated management systems – risk-based decision making is the foundation for management strategies that are capable of delivering optimal outcomes		
Local governments work together for mutual benefits	Maintain and enhance local government networks with neighbouring councils.	Strong, collaborative inter-council relationships.
	Maintain presence at forums, advisory boards and networks to deliver regional invasive species priorities.	Council is regarded as a valued and contributing member of regional networks.
Cooperative relationships provide opportunities to improve understand and insights into invasive species management	Contribute to and support regional research priorities.	Priority programs delivered through the Land Protection Fund are supported
	Stay up-to-date with changes to invasive species risks, priorities, impacts and mitigation techniques to achieve land management outcomes.	Science and research to be monitored and information circulated to improve the understanding of those involved in land management activities.
Principle 5: Strategic planning framework and management – invasive species management in Brisbane is relevant, risk-based and considers on-ground and emerging priorities		
The invasive species program is effective, flexible and adequately resourced	Review and continuously improve the invasive species program to ensure it is delivering outcomes as intended.	Evaluate programs at the end of each financial year and identify opportunities for improvement in customer service, delivery and the achievement of desired objectives.
	Identify and test new management methodologies to determine whether they are suitable for implementation.	Undertake projects each year that test a new technology, science or management practice and evaluate and critique its potential.

	Selectively invest into research and development projects offering new and improved ways to manage invasive species.	Support and pilot research into invasive species management that could improve detection, understanding and distribution of invasive species across the LGA.
	Develop cooperative relationships with neighbouring LGAs so that management regimes are coordinated to have the maximum impact.	Review biosecurity plans and programs from adjoining LGAs as they are updated to identify opportunities for collaboration.
Principle 6: Commitment, roles and responsibilities – all parties responsible for the management of land and our natural environment work together to manage, reduce and respond to invasive species in the Brisbane LGA		
All stakeholders work together to protect biodiversity from invasive species in the Brisbane LGA	Improve processes, networks, reporting and communication to maximise value.	Identify opportunities for integration and collaborative delivery of activities to maximise the on-ground benefits of invasive species programs.
	Work with adjoining councils to ensure pest programs are compatible across LGAs.	Council to share information on its programs, priorities and initiatives with its neighbours.
	Improve collaboration, effort sharing and cost sharing to achieve multiple benefits.	Identify new opportunities for invasive species management to be integrated into the delivery of other projects and activities across Council.

19. Conclusion

This biosecurity plan has outlined the priority species for management in the Brisbane LGA. It has been designed to ensure the ongoing health of the region's unique natural biodiversity, flora and fauna. To support the achievement of this objective Council has detailed its commitment to Queensland's biosecurity obligations through biosecurity programs. Through the implementation of this plan, the impacts of invasive species will be managed and minimised for the future preservation of our beautiful natural assets and native biodiversity.

Appendix 1:
Species assessed as having negligible impact or are unlikely to occur

Common name	Species name
Biosecurity matters – pest vegetation	
Acacias non-indigenous to Australia	*Acacia spp.* other than *Acacia nilotica* and *Acacia farnesiana*
African boxthorn	*Lycium ferocissimum*
Anchored water hyacinth	*Eichhornia azurea*
Annual thunbergia	*Thunbergia annua*
Badhara bush	*Gmelina elliptica*
Black Sigatoka of banana	*Mycosphaerella fijiensis*
Candleberry myrtle/candleberry myrth	*Myrica faya*
Candyleaf	*Stevia ovata*
Chinee apple	*Ziziphus mauritiana*
Cholla cactus/coral cactus/devil's rope pear/snake cactus/Hudson pear	*Cylindropuntia spp.* and their hybrids, other than *C. spinosior, C. fulgida* and *C. imbricata*
Christ's thorn	*Ziziphus spina-christi*
Eurasian water milfoil	*Myriophyllum spicatum*
Floating water chestnuts	*Trapa spp.*
Gamba grass	*Andropogon gayanus*
Giant sensitive plant	*Mimosa diplotricha (prev. Mimosa invisa)*
Giant sensitive tree	*Mimosa pigra*
Gorse	*Ulex europaeus*
Harungana	*Harungana madagascariensis*
Kochia	*Kochia scoparia syn Bassia scoparia*
Koster's curse	*Clidemia hirta*
Lagarosiphon	*Lagarosiphon major*
Laurel clock vine, fragrant thunbergia	*Thunbergia laurifolia, (syn grandiflora)*
Limnocharis/yellow burrhead	*Limnocharis flava*
Madras thorn	*Pithecellobium dulce*
Mesquites	All *Prosopis spp.* and hybrids other than *Prosopis glandulosa, P. pallida* and *P. velutina*
Mikania vine	*Mikania spp.*
Parkinsonia	*Parkinsonia aculeata*
Peruvian primrose	*Ludwigia peruviana*
Prickly acacia	*Acacia nilotica syn(Vachellia nilotica)*
Red sesbania	*Sesbania punicea*
Serrated tussock	*Nassella trichotoma*
Siam weed	*Chromolaena odorata*
Sicklepod/hairy cassia/foetid cassia	*Senna obtusifolia, S. hirsuta* and *S. tora* and *obtusifolia*
Spiked pepper	*Piper aduncum*
Tobacco weed	*Elephantopus mollis*
Water soldiers	*Stratiotes aloides*
White ginger	*Hedychium coronarium*
Witch weeds	*Striga spp.* other than native species
Biosecurity matters – pest animals	
Argentine ant	*Linepithema humile*
Asian honey bee	*Apis cerana javana*
Barbary sheep	*Ammotragus lervia*
Blackbuck antelope	*Antilope cervicapra*
Chital (axis) deer (feral)	*Axis axis*
Electric ant or little fire ant	*Wasmannia auropunctata*
Hog deer (feral)	*Axis porcinus*
Tropical fire ant or ginger ant	*Solenopsis geminate*

Appendix 2:
Assessment process for the evaluation of risks

Likelihood of an incursion

The first stage of the assessment process focused on the likelihood a species could establish. Research was based on the current or historical presence of listed species within Queensland and then specifically within South East Queensland to confirm potential to incur. This allowed some species to be prioritised as posing a negligible risk as they were not suited to the climate or environment.

Impact or consequence of an incursion

The impact or consequence of each invasive species was evaluated through the application of a tool that considered the potential social, economic and environmental impact an incursion might cause. Scores were assigned for each species with higher scores meaning a greater potential impact.

- The evaluation of **economic impacts** considered the potential for a species to harm business activities. This included direct impacts on a business such as reduced yields in crops (or other primary production such as honey or wool) and additional costs associated with management of the pest species. Other direct impacts include interruptions to transport systems, such as weed rafts interfering with ferry services, costs associated with vehicle collisions with pest animals or the requirement to implement quarantine activities. Future impacts could include losses associated with a downturn in tourism if a pest species reduced the values that attract tourists to our region.
- **Social impacts** from invasive species are experienced when lifestyle or financial sacrifices are made to manage incursions or impacts. For example, foreign bees and tramp ants can cause anaphylactic shock and allergies in some people requiring medical treatment and time off work, and larger introduced pest species such as feral pigs and deer can damage infrastructure and vehicles when they traverse roads. Similarly, loss of amenity, such as the ability to access waterbodies for recreation due to weed infestations can affect outdoor lifestyles and degrade natural environments, making them unsuitable for wildlife and recreation.
- The **environmental impact** of an invasive species can be easily visible and manifest itself quickly. This is the case for many types of invasive plants such as vines and aquatic weeds. However, ecological impacts are sometimes unknown or unquantified and can take a long time to become apparent. The extent of the ecological impact can vary, from the dislocation of a couple of species to full ecosystem collapse. The impact can also vary geographically, affecting a specific location or more broadly across vast areas with varied ecosystems.

Observations of land managers and invasive species experts

A technical impact assessment that incorporated the knowledge of land managers and invasive species experts informed this assessment. By drawing on observations, studying incursions and managing, responding and eradicating invasive species, findings from the social, economic and environmental impact assessment were validated.

Regional priorities and concerns

Given other LGAs may have different risks and priorities, the content of biosecurity plans and programs from across South East Queensland were considered. This allowed anomalies to be identified and for a coordinated and cooperative approach to be designed (the 'good neighbour principle').

Likelihood of an incursion and the potential impact posed resulted in the identification of the 'inherent' risk in the Brisbane LGA. This risk level assumes that there are no controls in place other than imposed by geomorphology, climate, rainfall and the state of current development, land use and available habitat. That is, the potential harm to the Brisbane's lifestyle, economy and natural environment if no pest management programs were in place.

Feasibility of treatment options

Some invasive species are managed through natural processes. Where effective, this can reduce the impact a species has the potential to cause if left unmanaged. To accommodate these interventions, a feasibility assessment was undertaken for each listed species, including those with the potential to establish in South East Queensland but that may not yet be present. Like the assessment of impact, this evaluation considered social, economic and ecological interventions.

- **Economic feasibility** assessments considered management costs associated with eradicating or controlling the species being examined. It considered the amount of extra funding that would be needed to manage the risks posed by each species.
- **Social feasibility** assessments consider the capacity of the community to manage, control and become responsible for an invasive species. This includes the degree to which management is already occurring, the level of awareness about incursions and the extent of community concern. Management can be limited by the need for specific licences, insurances or knowledge not available to all community members.

Management may be **ecologically feasible** where biological control agents or predators can maintain or controlling incursions. Ecological feasibility is compromised where these options are either ineffective or absent, or where environmental change required to manage the invasive species or improve the resilience of native species is unlikely.

Current risk – is the risk that reflects the current situation within Brisbane. It takes into account current control programs being implemented by Council, and factors external to the Brisbane LGA (such as the Darling Downs Moreton Rabbit Board fence) and self-sustaining biological controls including diseases and biological controls. The prioritisation outlined in this plan reflects the current risk species pose within Brisbane.

Appendix 3:
Biosecurity program authorisation statement

The biosecurity surveillance programs and the biosecurity prevention and control programs outlined in this plan have been developed in accordance with the Act to deliver responsibilities in relation to restricted matters and prohibited matters in the Brisbane LGA.

Council authorises the biosecurity surveillance programs and the biosecurity prevention and control programs outlined in this biosecurity plan pursuant to section 235 of the Act to:

- **determine the presence and/or extent of restricted and prohibited biosecurity matters within the Brisbane LGA (surveillance programs); or**
- **to prevent or control biosecurity matters (prevention and control programs).**

The **key activities** undertaken by **surveillance programs** include, but are not limited to:

- on-ground property inspections by Council authorised persons
- inspections of privately-owned properties will occur between the hours of 6am-6pm Monday to Friday
- places to be entered and inspected will include those previously infested and adjacent areas or where there is a reasonable risk that invasive biosecurity matter may exist
- in the majority of cases authorised officers will enter occupied land with the occupant's consent and enter unoccupied land under the power of entry provided by this biosecurity surveillance program. Under this biosecurity program, entry to occupied land will also be lawful without consent and can be effected as authorised officers deem necessary.

The **key activities** undertaken under **prevention and control programs** include, but are not limited to:

- undertaking inspections and providing direction to take reasonable steps to remove or eradicate biosecurity matters nominated within this program and the issue of an offence warning by Council authorised persons
- removing or eradicating a biosecurity matter on Council managed land or private land where the responsible person has failed to do so
- undertaking inspections and issuing notices on privately-owned properties will occur between the hours of 6am-6pm Monday to Friday
- places to be entered will include those previously infested and adjacent areas or where there is a reasonable risk that invasive biosecurity matter may exist
- in the majority of cases authorised officers will enter occupied land with the occupant's consent and enter unoccupied land under the power of entry provided by this biosecurity prevention and control program. Under this biosecurity program, entry to occupied land will also be lawful without consent and can be effected as authorised officers deem necessary.

Powers of authorised officers

Entry of place

The Act provides that authorised officers appointed under the Act may, at reasonable times, enter a place situated in an area to which a biosecurity program applies, to take any action authorised by the biosecurity program. These activities must be done in a timely and efficient manner to ensure that the measures are as effective as possible. The program will authorise entry into places to allow these measures to be undertaken.

In accordance with the Act a reasonable attempt will be made to locate an occupier and obtain the occupier's consent to the entry prior to an authorised officer entering a place to undertake activities under the program. Nevertheless, an authorised officer may enter the place if:

- the authorised officer is unable to locate an occupier after making a reasonable attempt to do so
- the occupier refuses to consent to the entry.

If after entering a place an authorised officer finds an occupier present or the occupier refuses to consent to the entry, an authorised officer will make reasonable attempts to produce an identity card for inspection and inform the occupier of the reason for entering and the authorisation under the Act to enter without the permission of the occupier.

An authorised officer under the biosecurity program must make a reasonable attempt to inform the occupier of any steps taken, or to be taken, and if steps have been taken or are to be taken, that it is an offence to do anything that interferes with a step taken or to be taken. An authorised officer must leave a notice in a conspicuous position and in a reasonably secure way. This notice must state the date and time of entry and information addressing the reason for entry, authorisation to enter a place and the steps undertaken by the authorised officer after entry.

General powers of authorised officers

Nothing in the program or its associated authorisation limits the powers of authorised officers under Chapter 10 of the Act.

An authorised officer of the program appointed under the Act, may enter a place (other than a residence) without a warrant and without the occupier's consent within Queensland under the program. An authorised officer can exercise the powers of an authorised officer under the Act in relation to the program, if the authorised officer is appointed by the Chief Executive Officer.

An authorised officer may make a requirement (a **help requirement**) of an occupier of the place or a person at the place to give the authorised officer reasonable help to exercise a general power.

An authorised officer has general powers after entering a place to do any of the following.

General powers in the Act

- Inspect, examine or film any part of the place or anything at the place.
- Take for examination a thing, or a sample of or from a thing, at the place.
- Place an identifying mark in or on anything at the place.
- Place a sign or notice at the place.
- Produce an image or writing at the place from an electronic document or, to the extent it is not practicable, take a thing containing an electronic document to another place to produce an image or writing.
- Take to, into or onto the place and use any person, detection animal, equipment and materials the authorised officer reasonably requires for exercising the authorised officer's powers under this division.
- Destroy biosecurity matter or a carrier if:
  - the authorised officer believes on reasonable grounds the biosecurity matter or carrier presents a significant biosecurity risk
  - the owner of the biosecurity matter or carrier consents to its destruction.

- Remain at the place for the time necessary to achieve the purpose of the entry.
- The authorised officer may take a necessary step to allow the exercise of a general power.
- If the authorised officer takes a document from the place to copy it, the authorised officer must copy and return the document to the place as soon as practicable.
- If the authorised officer takes from the place an article or device reasonably capable of producing a document from an electronic document to produce the document, the authorised officer must produce the document and return the article or device to the place as soon as practicable.

Measures an authorised officer may take under the program

Searching any part of a place to check for the presence or absence of invasive plants and animals that are restricted matter or prohibited matter in Council's biosecurity plan.

Producing a written and/or electronic note(s) to support the program activities.

Area affected by the program

The program will apply to all Brisbane regions inspected over the life of the program. The particular properties to be entered are predominantly Council reserves, rural/semi-rural private land, crown land and pastoral industry holdings. Surveillance will be based on seasonal changes, outbreaks, infestations and customer requests, in which case priority areas will be surveyed preferentially.

Commencement and duration of the program

The program will begin in February 2018 and will continue until 31 December 2022. The duration of the program is considered to be reasonably necessary to achieve the program's purpose.

Notification of relevant parties of requirements

As required by the Act, the Chief Executive Officer of Council will give public notice of the program 14 days before the program starts by:

- giving the notice to each government department or government-owned corporation responsible for land in the area to which the program relates
- publishing the notice on Council's website.

From the start of the program, the authorisation for the program and the program will be available for inspection or purchase at any Council customer service centre.

Appendix 4:
List of locally significant weed species

Pest plants (from Table 2 of this biosecurity plan) for management in the Brisbane LGA

Common name	Species name
Alligator weed	*Altenanthera philoxeroides*
Cabomba	*Cabomba caroliniana*
Horsetails	*Equisetum spp.*
Broad-leaved pepper tree	*Schinus terebinthifolius*
Cat's claw creeper	*Dolichandra unguis-cati*
Hymenachne	*Hymenachne amplexicaulis*
Kudzu	*Pueraria lobate*
Parthenium	*Parthenium hysterophorus*
Rat's tail grass/giant rat's tail grass	*Sporobulus pyramidalis* and *S.natalensis*
Salvinia	*Salvinia molesta*
Senegal tea	*Gymnocoronis spilanthoides*
Water hyacinth	*Eichhornia crassipes*
Water lettuce	*Pistia stratiotes*
Water mimosa	*Neptunia oleracea (*and *N. plena)*
Asparagus ferns	*Asparagus aethiopicus 'Sprengeri', A. africanus*
Balloon vine	*Cardiospermum grandiflorum*
Bridal creeper	*Asparagus asparagoides*
Broadleaf privet	*Ligustrum lucidum*
Giant Parramatta grass/rat's tail grasses/Parramatta grass	*Sporobolus fertilis, S. africanus, S. jacquemontii*
Groundsel bush	*Baccharis halimifolia*
Hygrophila/glush weed	*Hygrophila costata*
Kahili ginger	*Hedychium gardnerianum*
Madeira vine	*Anredera cordifolia*
Willows	*Salix spp.* other than *S. babylonica, S. x calodendron, S. xreichardtii* and *S. chilensis; syn. S. humboldtiana* = pencil willow (Chilean willow*)*
Annual ragweed	*Ambrosia artemisiifolia*
Bitou bush	*Chrysanthemoides monilifera subsp. rotundata*
Boneseed	*Chrysanthemoides monilifera ssp. Monilifera*
Camphor laurel	*Cinnamomum camphora*
Chinese celtis	*Celtis sinensis*
Dutchman's pipe	*Aristolochia elegans*
Fireweed	*Senecio madagascariensis*
Honey locust	*Gleditsia triacanthos* including cultivars and varieties
Mexican feather grass	*Nassella tenuissima*
Rubber vine	*Cryptostegia grandiflora*
Tropical soda apple	*Solanum viarum*
Yellow ginger	*Hedychium flavescens*
African fountain grass	*Pennisetum setaceum (Cenchrus setaceus)*
African tulip tree	*Spathodea campanulata*
Athel pine	*Tamarix aphylla*
Belly-ache bush/cotton leaf/physic nut	*Jatropha gossypiifolia*
Bitterweed	*Helenium amarum*
Blackberry	*Rubus anglocandicans, Rubus fruticosus agg.*
Chilean needle grass	*Nasella neesiana*
Elephant ear vine	*Philodendron spp.* *Argyreia nervosa*
Harrisia cactus	*Harrisia martinii*
Lantana (all species)	*Lantana spp.*
Mexican bean tree	*Cecropia. palmata* and *C. peltata*
Miconia	*Miconia calvescens, M. racemosa* and *M. nervosa*
Mother of millions hybrid	*Bryophyllum × houghtonii*
Pond apple	*Annona glabra*
Prickly pear/tiger pear/drooping tree	*Opuntia spp. (O. elata* and *O. microdasys* – cat.2, 3, 4, 5*)*

Common name	Species name
pear/westwood pear/velvety tree pear	
Sagittaria	*Sagittaria platyphylla*
Singapore daisy	*Sphagneticola trilobata*
Small-leaved privet/Chinese privet	*Ligustrum sinense*
Telegraph weed	*Heterotheca grandiflora*
Yellow bells	*Tecoma stans*
Yellow oleander/Captain Cook tree	*Cascabela thevetia syn. Thevetia peruviana*

Additional pest plants for management on private property in the Brisbane LGA

Common name	Scientific name
Agave	*Agave spp.*
Amazon frogbit	*Limnobium laevigatum*
Arrowhead vine	*Sygonium Spp.*
Arsenic bush	*Senna septemtrionalis*
Arum lily	*Zantedeschia aethiopica*
Bahia grass	*Paspalum notatum*
Balsam (busy Lizzie)	*Impatiens spp.*
Bamboos	*Phyllostachys aurea* and *nigra*
Black eyed Susan	*Thunbergia alata*
Blackberry nightshade	*Solanum nigrum*
Blade apple, lemon vine, Barbados gooseberry	*Pereskia aculeata*
Blue trumpet vine	*Thunbergia grandiflora*
Brazilian nightshade	*Solanum seaforthianum*
Cadaga or cadaghi	*Corymbia torelliana*
Cape ivy	*Senecio angulatus*
Cape spinach	*Emex australis*
Capeweed	*Arctotheca calendula*
Castor oil plant	*Ricinus communis*
Chinese tallow	*Triadica sebifera*
Cockspur coral tree	*Erythrina crista-galli*
Cocos palm or Queen palm	*Syagrus romanzoffiana*
Common Indian hawthorn	*Raphiolepis indica*
Condamine couch/lippia	*Phyla canescens*
Coral berry or Indian currant	*Ardisia crenata, Rivina humilis* or *Symphoricarpos orbiculatus*
Coral creeper	*Barleria repens*
Corky passion vine	*Passiflora suberosa*
Cotoneaster	*Cotoneaster lacteus*
Creeping lantana	*Lantana montevidensis*
Crofton weed	*Eupatorium adenophorum*
Dense water weed	*Egeria densa*
Devil's fig	*Solanum torvum*
Duranta	*Duranta erecta syn. D. repens* and *D. plumeri*
Dyschoriste	*Dyschoriste depressa*
Easter cassia	*Senna pendula var. glabrata*
Elephant grass	*Pennisetum purpureum*
Feathertop Rhodes grass	*Chloris virgata*
Fire flag	*Thalia geniculata*
Fishbone fern	*Nephrolepis cordifolia*
Foxglove	*Digitalis purpurea*
Giant devil's fig	*Solanum hispidum*
Giant reed	*Arundo donax*
Glory lily	*Gloriosa superba*
Glycine	*Neonotonia wightii*
Golden chain tree	*Laburnum anagyroides*
Golden rain tree	*Koelreuteria elegans ssp. formosana*
Golden rod	*Solidago altissima*
Green cestrum	*Cestrum parqui*
Guinea grass	*Megathyrsus maximus*

Hemlock	*Conium maculatum*
Himalayan ash	Fraxinus griffithii
Hiptage	*Hiptage benghalensis*
Indian rubber tree	*Ficus elastica*
Ivy gourd	*Coccinia grandis*
Jacaranda	*Jacaranda mimosifolia*
Japanese/Mexican sunflower	*Tithonia diversifolia, T.sp*
Japanese honeysuckle	*Lonicera japonica*
Johnson grass	*Sorghum halepense*
Khaki weed	*Alternanthera pungens*
Kidney leaf mud plantain	*Heteranthera reniformis*
Leucaena	*Leucaena leucocephala (*all spp.*)*
Little bluestem	*Schizachyrium microstachyum*
Live plant, resurrection plant	*Bryophyllum pinnatum*
Mile a minute	*Ipomoea cairica*
Mist flower	*Ageratina riparia*
Mock orange	*Murraya paniculata*
Molasses grass	*Melinis minutiflora*
Monkey's comb	*Pithecoctenum crucigerum*
Morning glory	*Ipomoea indica*
Mossman river grass	*Cenchrus echinatus*
Mother-in-law's tongue	*Sansevieria trifasciata*
Needle burr or spiny amaranth	*Amaranthus spinosus*
Ochna	*Ochna serrulata*
Oleander	*Nerium oleander*
Pampas grass	*Cortaderia selloana*
Paper mulberry	*Broussonetia papyrifera*
Para grass	*Urochloa mutica*
Parrot feather	*Myriophyllum aquaticum*
Perennial horse gram	*Macrotyloma axillare*
Perennial ragweed	*Ambrosia psilostachya*
Pongamia tree	*Millettia pinnata*
Praxelis	*Praxelis clemitidea*
Prickly poppy or Mexican poppy	*Argemone ochroleuca*
Purple succulent	*Callisia fragrans*
Red-head cotton bush	*Asclepias curassavica*
Rhodes grass	*Chloris gayana*
Rhus	*Toxicodendron succedaneum*
Ruellia	*Ruellia tweediana*
Shoebutton ardisia	*Ardisia elliptica*
Sicklebush	*Dichrostachys cinerea*
Signal grass	*Urochloa decumbens*
Silver leaf desmodium or velcro plant	*Desmodium uncinatum*
Sirato	*Macroptilium atropurpureum*
Slash pine	*Pinus elliotii*
South African pigeon grass	*Setaria sphacelate*
Stinking roger	*Tagetes minuta*
Taro	*Colocasia esculenta*
Thorn apples	*Datura spp*
Tipuana	*Tipuana tipu*
Tropical pickeral weed	*Pontederia rotundifolia*
Umbrella tree	*Schefflera actinophylla*
Wandering Jew	*Tradescantia fluminensis, T. pallida* and *T. spathacea*
Water lily	*Nymphaea caerulea ssp. zanzibarensis*
Whiskey grass	*Andropogon virginicus*
White moth plant	*Araujia sericifera* and *A. hortorum*
White mulberry	*Morus alba*
Wait-a while	*Caesalpinia decapetala*
Wild aster	*Aster subulatus*
Wild tobacco tree	*Solanum mauritianum*
Zebrina	*Tradescantia zebrina*

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