ISAAC REGION BIOSECURITY PLAN

2024-2027

Current as at 02/02/2024

Presented by **Liveability and Sustainability**

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ISAAC REGION
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EXECUTIVE SUMMARY

The Isaac Region Biosecurity Plan defines stakeholder roles and responsibilities in the management of pest, plants and animals. Within the focus of this document, pest animals and weeds are described as non-native invasive species that can have, or threaten to have, significantly negative impacts economically, culturally, environmentally, and socially (*Queensland Legislation, 2020*).

Under Section 53 of *Queensland's Biosecurity Act 2014*, Isaac Regional Council must develop and make publicly available its Biosecurity Plan, outlining priorities for managing invasive species. The purpose of the Biosecurity Plan is to minimise biosecurity risks within the local government area by providing a framework to mitigate the impacts of pest animals and weeds on local biosecurity considerations.

The Biosecurity Plan intends to be versatile and holistic within its approach so that all stakeholders have proficient understanding of their roles. Within this document, the Biosecurity Plan determines desired outcomes, provisions for achieving regional goals, a prioritisation framework, and stakeholder responsibilities.

The Isaac regional Biosecurity Plan is valid for three years from 2024 – 2027, and can be used as a resource that:

- Establishes a pest planning direction that is sustainable across the region.
- Promotes shared responsibility and collective ownership of biosecurity risk mitigation.
- Looks to co-ordination and collaboration to deliver and review biosecurity objectives.
- Enables accountability for biosecurity responsibilities.
- Esteems risk-based prioritisation and best practice implementation.

GENERAL BIOSECURITY OBLIGATION

The General Biosecurity Obligation refers to anyone who knows or aught reasonably to know about their direct or indirect interactions with biosecurity matter. It is everybody's legal responsibility to take practical and reasonable steps to reduce the movement or spread of matter that is listed as either restricted or prohibited under the *Biosecurity Act 2014* (*Appendix 2*).

Issac Regional Council supports Queensland State and the Australian Federal Government in roles of compliance, education, and technical support to stakeholders. Landholders (whether they are the landowner or otherwise) are responsible for the management of biosecurity matter on that property.

Isaac Regional Council does not support any illegal trade or movement of prohibited matter, and where legally authorised must be consulted by any stakeholders and governing bodies transporting or translocating prohibited matter throughout the region. If prohibited matter is suspected, it must be reported to Biosecurity Queensland within 24hrs.

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KEY DEFINITIONS

The Act – refers to the *Biosecurity Act 2014*

Active control – the transition between eradication and containment where deliberate action is taken to investigate whether eradication is possible in a defined area.

Asset – something with environmental, social, or economic value, whether publicly or privately owned, that biosecurity matter may affect directly or indirectly.

Asset-based protection – managing a widespread pest species only where reducing the effects provide benefit to high value assets (*Victorian Government, 2022*)

Biosecurity consideration – things which may be negatively impacted by biosecurity matter, for example, human health, social amenity, the economy, or the environment.

Biosecurity matter – a) a living thing, other than a human or part of a human; b) a pathogenic agent that can cause disease in a living thing other than in a human or a human by the transmission of the pathogenic agent from an animal to the human; c) a disease; or d) a contaminant.

Biosecurity risk – a risk of any adverse effect on a biosecurity consideration caused by, or likely to be caused by biosecurity matter, dealing with biosecurity matter or a carrier, or carrying out any activity relating to biosecurity matter or a carrier.

Carrier – anything (alive, dead, or inanimate) that is carrying biosecurity matter or may contain biosecurity matter and has the capacity to translocate it.

Containment – the prevention of the spread of weed or pest animal species beyond a defined area.

Contaminant – anything that may be harmful to animal or plant health, or pose a risk of any adverse effect on a biosecurity consideration (e.g. weed)

Environmentally Significant Area (ESA) –National Parks, State Forests, Nature reserves, waterways with remnant vegetation, waterways with vegetation regrowth, coastal dune systems with remnant vegetation, endangered/of concern/not of concern remnant vegetation, and areas containing high biodiversity as defined by local government biodiversity plans.

Eradication – the total removal of all target weeds or pest animal species from a defined area.

General Biosecurity Obligation (GBO) – Any person who deals with biosecurity matter or a carrier, or carries out an activity, should know or ought to reasonably know that it is likely to pose a biosecurity risk. The person has an obligation to take all reasonable and practical measures to prevent or minimise the biosecurity risk. (s. 23 “the person has a GBO not to do or omit to do something if the person knows or ought reasonably to know that doing or omitting to

do the thing may exacerbate the adverse effects, or potential adverse effects, of the biosecurity matter, carrier or activity on a biosecurity consideration" e.g. failing to manage the impact of invasive plants and animals on a person's land)

Government- All departments of State and Local Government.

Incursion – an isolated population of a pest recently detected in an area, not known to be established, but expected to survive for the immediate future.

Industry- Commercial Enterprise and Not For profit Groups.

Natural Resource Management groups – Fitzroy Basin Association (FBA), Reef Catchments (RC), and North Queensland Dry Tropics (NQDT). Delivery agents for national natural resource management priorities based on catchment areas.

Pest animal – a prohibited or restricted animal as identified in the *Biosecurity Act 2014,* or as declared under Isaac Regional Council Local Laws, that has, or has the potential to have, adverse environmental, economic, or social impact in the Isaac region, as defined in the Isaac Regional Council Biosecurity Plan.

Prevention – actions that minimise the risk of prioritised pest species entering an area.

Prohibited Matter – biosecurity matter that is not currently present in Queensland but may have a significant effect on a biosecurity consideration if it did enter the state, as defined under Schedule 1 Parts 3 and 4 of the *Biosecurity Act 2014* or under a prohibited matter regulation.

Regional Pest Management groups –Mackay Regional Pest Management Group (MRPMG), Burdekin Dry Tropics Regional Pest Management Group (BDTRPMG), and Capricorn Pest Management Group (CPMG). Stakeholder working groups for pest management in the respective catchment areas.

Restricted Matter – biosecurity matter that is currently found in Queensland and may have an adverse effect on a biosecurity consideration if unmanaged, as defined under Schedule 2 Part 2 of the *Biosecurity Act 2014* or under a restricted matter regulation.

Sleeper population – species that have formed a small population or populations and whose range may be restricted but if conditions change could spread and have adverse environmental, economic, or social impact.

Regional Pest Management Sub- committee – Regional representatives from Local Government that advise the State Oversight Group on biosecurity needs and research relevant to their regions.

Weed – a plant as identified in Schedule 1 Part 2 of the *Biosecurity Act 2014* that are having, or with potential to have, adverse environmental, economic, or social impact in the Isaac region, as defined in the Isaac Regional Council Biosecurity Plan.

INTRODUCTION

The Isaac Regional Biosecurity Plan is the principal document in determining the strategic priorities and actions for pest animal and weed management in the Isaac Region. It is not an Isaac Regional Council Plan; it is a Plan generated by Council for the people of the Isaac Region. Integration of the Isaac Regional Biosecurity Plan objectives into Government, Industry and private management and operations will improve biosecurity outcomes, drive co-benefits such as biodiversity improvements and filter biodiversity into day-to-day operations.

The Isaac Region encompasses an area that is 58, 708km^2, hosting a wide variety of industries and ecosystems. Adjoining the Great Barrier Reef in the east to the coal mining basin in the west, townships include Carmila, Clermont, Dysart, Glenden, Greenhill, Ilbilbie, Middlemount, Moranbah, Nebo, and St Lawrence (See *Figure 1*). The Isaac Region local government area stretches across the Brigalow Belt, Central Queensland Coast, and Desert Uplands bioregions, encompassing headwaters of the Burdekin and Fitzroy River systems and contain ecosystems of unique vegetation and wildlife.

Preserving, improving, and appreciating our vibrant natural assets is essential to our Isaac way of life. Our natural environment is our bountiful heritage to pass on. Our region is resource-rich- it supports exceptional quality broadacre cropping, grazing and agricultural industries while simultaneously hosting significant Bowen and Galilee Basin coal reserves.

These industries are reliant on the health and function of the natural environment and are also susceptible to the threat of pest flora and fauna. The mobile nature of operating businesses in these sectors also requires frequent movement of vehicles and equipment across the region, perpetuating the movement of biosecurity matter. Some factors that are anticipated to contribute to the distributions and interactions of pest species include climate change, the development and closure of mines and eco-tourism growth.

Diverse bio-regional and land-use values makes for favourable establishment of many exotic pests and has potential for the growth of already existing populations of regional pests and weeds. The direct impacts of pest species include the loss of agricultural productivity (pasture competition, reduced stocking capacity, and predation of livestock); water quality, irrigation, land degradation, erosion concerns, and mitigation management costs (*Biosecurity Queensland, 2019*). Environmental and social impacts include reduced biodiversity values, predation of native fauna, ecosystem modification, pollution, human health, and safety concerns, diminished aesthetic quality, urban nuisance/disturbance, and damage to recreational and social infrastructure (*Department of Agriculture and Fisheries, 2023; Queensland Government, 2017*).

Recent estimates put the total cost of pests and weeds in Australia since 1960 at almost A $390 billion (*Bradshaw et al. 2021*). Agricultural industries incur approximately 90% of these observed costs (*Hoffmann & Broadhurst 2016*). The true cost to Australia's economy and society, however, is far greater than the observable costs. Impacts on Australian ecosystems (e.g., reduce species richness) and communities (e.g., reduced amenity and liveability, diminish cultural and recreational uses of infested areas) can be difficult to quantify in monetary terms and are not accounted for to their full value (*Shackleton et al. 2018*). Bradshaw (*Bradshaw et al. 2021*) estimated the non-market costs of pest and weeds to be approximately 10 times larger than directly observable costs in the Detailed Assessment of the Reported Economic Costs of Invasive Species in Australia. This puts the average yearly cost to Australia in the range between AU$7.9 billion and AU$75.6 billion annually over the past six decades. If losses of welfare are also accounted for in the total value, the true cost is likely to be higher still (*Greiner, Kancans & Nelson 2023*).

Having a strong approach to biosecurity planning and action means protecting our economic, environmental, human health, and social amenity values from the impacts of pest animal and plant matter (*Queensland Legislation, 2020*).

There are significant challenges for small communities living across an expansive region to consider in biosecurity planning for sustainable futures, including the implications of climate change and disaster management response. Effective pest species management through utilising efficient and effective resources, can help our region to become more competitive and productive (*Victorian Government, 2022*). Our biosecurity network also reflects the safety, reliability, and assurance that local businesses strive to uphold as industry leaders (*Department of Agriculture and Fisheries, 2023)*. By working collectively on biosecurity integrity, we can achieve resilient aspirations for our region.

MAP OF THE ISAAC REGION

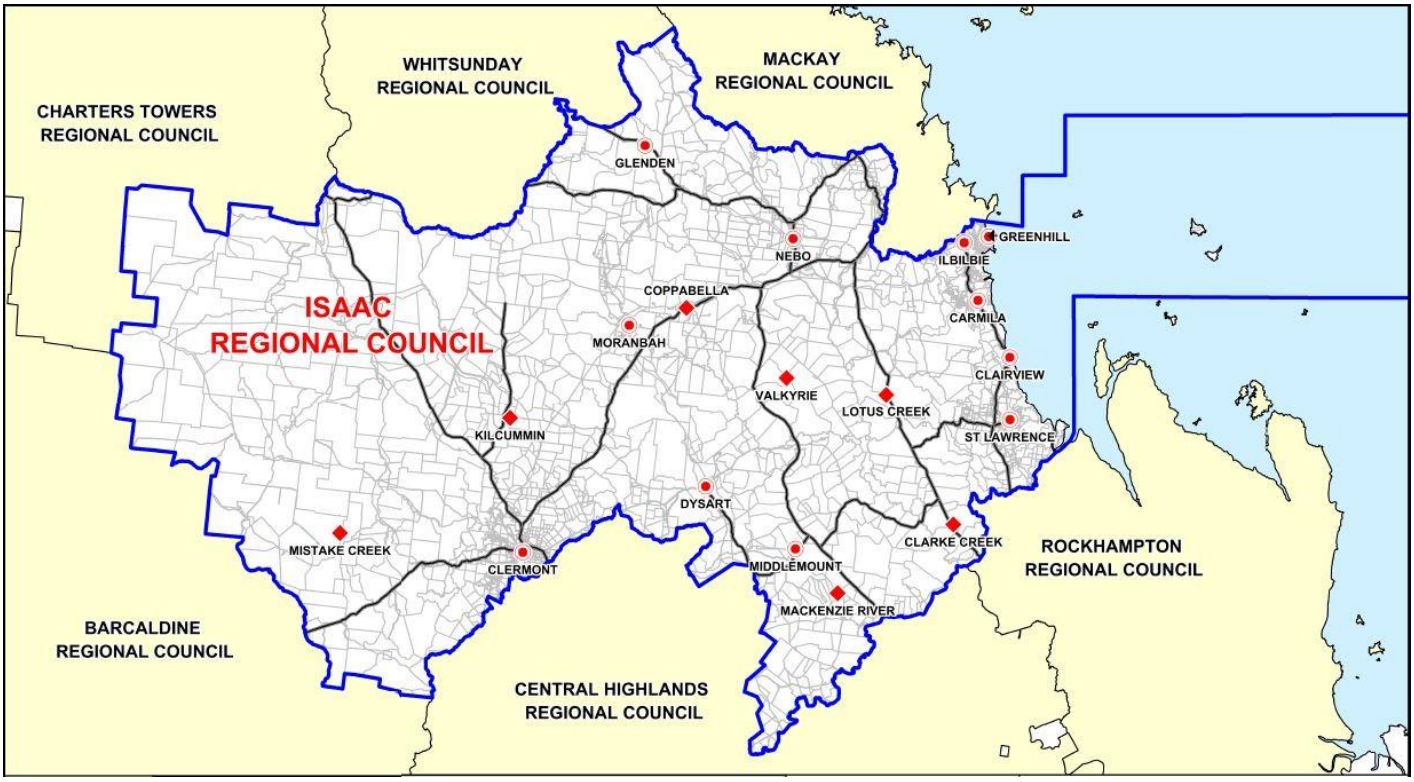


Figure 1: Isaac Regional Area Map

PURPOSE AND SCOPE

The Isaac Regional Biosecurity Plan will reduce biosecurity risk within the Isaac Regional Local Government Area by providing a framework for stakeholders to mitigate the impacts of pest animal and weeds on local biosecurity considerations.

The implementation of the Biosecurity Plan fulfils Council's legal obligations under the '*Biosecurity Act 2014'.* As per Section 48 of the Act, the primary function of local government is to ensure that the following biosecurity matter is managed within the local government area (*Queensland Legislation, 2020*):

- Prohibited matter mentioned in schedule 1, parts 3 and 4;
- Prohibited matter taken to be included in schedule 1, parts 3 and 4 under a prohibited matter regulation or emergency prohibited matter declaration;
- Restricted matter mentioned in schedule 2, part 2;
- Restricted matter taken to be included in schedule 2, part 2 under a restricted matter regulation.

Isaac Regional Council is also required to assist the State Government on matters of biosecurity management (such as under an emergency biosecurity order, movement control order, or biosecurity program).

The pest species identified and targeted in this biosecurity plan are listed as restricted matter under the *Biosecurity Act 2014* and Council's local laws. Consistent with state focus, this species selection is limited to exotic pests and is not inclusive of overabundant natives, marine species, or crop weeds (*Biosecurity Queensland, 2019*).

The purpose of the Biosecurity Plan is to be achieved through five desired outcomes:

1. **Strategic Planning and Management:** Pest management planning is co-ordinated, collaborative, and risk based.
2. **Stakeholder Awareness and Commitment:** All stakeholders have an improved working knowledge of regional pest species, understand their biosecurity responsibilities, and hold agency in management goals.
3. **Effective and Integrated Management Systems:** Pest management is based on best practice information and is integrated.
4. **Proactivity for Prevention and Early Intervention:** Timely and collaborative responses diminish pest spread and promotes cost-effective, long-term asset protection.
5. **Monitoring and Assessment:** Review processes strive to better understand and improve biosecurity management.

The Biosecurity Plan is valid as a public resource for three years from 2024 – 2027, and can be used to:

- Establish pest planning direction that is sustainable across the region.
- Promote shared responsibility and collective ownership of biosecurity risk mitigation.
- Co-ordinate and collaborate on the delivery and review of biosecurity objectives.
- Enable accountability for biosecurity responsibilities.
- Esteem risk-based prioritisation and best practice implementation.

INTEGRATION

Planning for this document has been guided by the seven principles of pest management defined by the Queensland invasive plants and animals' strategy 2019–2024 (*Biosecurity Queensland, 2019*):

1. Integration, collaboration, and coordination.
2. Strategic risk-based planning.
3. Shared responsibility and commitment.
4. Capability building through education and awareness.
5. Prevention and early intervention.
6. Best practice and research.
7. Monitoring and evaluation.

The following documents have also been considered:

- Burdekin Dry Tropics regional pest management strategic approach 2020-2025.
- Queensland invasive plants and animals' strategy 2019–2024.
- Mackay Whitsunday Isaac Natural Resource Management Plan (2014 – 2024)
- Burdekin Dry Tropics Natural Resource Management Plan -2016-2026
- Regional Pest Management Strategy – Isaac Mackay Whitsunday 2011-2014.

Accompanying legislation that is relevant to the formation of this Plan includes, but is not limited to, the following Acts and their associated Regulations:

- *Agriculture and Veterinary Chemicals Act 1994;*
- *Agricultural Chemicals Distribution Control Regulation 1998;*
- *Biosecurity Act 2014;*
- *Environmental Protection Act 1994;*
- *Land Act 1994;*
- *Land Title Act 1994;*
- *Nature Conservation Act 1992;*
- *Pest Management Act 2001;*
- *Stock Route Management Act 2002;*
- *Transport Infrastructure Act 1994;*
- *Vegetation Management Act 1999;*
- *Water Act 2000.*

CONSULTATION

The Isaac Region has a range of stakeholders with diverse expectations, concerns, and priorities. A whole-of region approach to due diligence requires all our communities to be actively involved in recognising biosecurity considerations. Strong ongoing partnerships with landholders, community groups, industry groups, Natural Resource Management organisations, local governments, and state agencies are fundamental to achieving shared goals. These partnerships help:

- Gain wider perspectives on desired outcomes, prioritisation, and operational guide.
- Encourage collaborative management with all stakeholders.
- Ensure responsibilities under the *Biosecurity Act 2014* are defined and understood.

Key aspects of the Biosecurity Plan were developed and reviewed by a Council technical group to ensure the desired outcomes, prioritisation, and operational guide were appropriate and achievable for the region. The Biosecurity Plan

was then presented to Council before a wider stakeholder and community consultation period. Key considerations from these channels have been formalised and incorporated into the Biosecurity Plan.

Isaac Regional Council will undertake a three-yearly review of the biosecurity plan. An Isaac Region Biosecurity Working Group will be formed for ongoing consultation during review, and updated management practices will incorporate ongoing community feedback.

The following organisations are currently recognised as stakeholders involved in biosecurity management in the Isaac Region:

- AgForce
- Central Highlands Regional Resource Use Planning (CHRRUP) Cooperative Pty Ltd
- Department of Agriculture and Fisheries (DAF)
- Department of Environment and Science (DES)
- Department of Resources (DOR)
- Department of Transport and Main Roads (DTMR)
- Ergon Energy
- Fitzroy Basin Association (FBA)
- GrainCorp
- Isaac Regional Council (IRC)
- Isaac Region landholders
- Local Government Association of Queensland (LGAQ)
- Regional Pest Management Sub-committee (RPMSC)
- NQ Dry Tropics (NQDT)
- Powerlink
- Queensland Rail (QR)
- Reef Catchments (RC)
- Regional Pest Management Groups (RPMG)
- Resource partners including Adani, American/Mitsui/Nippon Steel, Arrow Energy, BHP Billiton Mitsubishi Alliance (BMA), BHP Billiton Mitsui Coal (BMC), Glencore, Peabody Energy, Rio Tinto, Stanmore Coal, Vale
- Sarina Landcare Catchment Management Association (SLCMA)
- Neighbouring Local Government Areas
- Traditional Owners

RESPONSIBILITIES

All stakeholders should have a clear understanding of their responsibilities.

Landholder responsibilities:

- Discharge their General Biosecurity Obligation
- To exercise due diligence by taking all practical steps towards best practice management of pest species, as defined by the *Biosecurity Act 2014* or under Isaac Regional Council local laws, on land that they occupy.
- Promote good neighbour ethos.

Community responsibilities:

- Hold a good level of awareness of regional weeds and pests, knowledge of how to obtain further information, and an understanding of the strategies and goals we all work towards in matters of biosecurity.
- Promotion of this knowledge within the wider community

Governing and Industry responsibilities:

- Discharge their General Biosecurity Obligation.
- Development and implementation of policy through legislation, research, and education.
- Provide guidance and support in weed and pest animal management.
- Co-ordinate and implement appropriate level action and response.
- Identify and fund research priorities that contribute to better management.
- Encourage the provision of extension services to the community and assist them in fulfilling their responsibilities.

Isaac Region Council responsibilities:

- Discharge their General Biosecurity Obligation.
- Ensure target objectives and goals are co-ordinated, collaborative, appropriate and effective over time.
- Ensure restricted, prohibited, and locally declared biosecurity matter is controlled on Isaac Regional Council land and within the local government area.
- To facilitate collaborative review and development of the Isaac Regional Council Biosecurity plan according to Section 53 of the Act.
- Commitment to prevention and early intervention measures.
- Facilitate education and extension services to effectively assist community, landholders, and stakeholders in fulfilling their biosecurity responsibilities.

TABLE 1: DESIRED OUTCOMES

DESIRED OUTCOME 1: STRATEGIC PLANNING AND MANAGEMENT Pest management planning is co-ordinated, collaborative, and risk based.				
No.	**Strategic Action**	**Responsible**	**Success Indicator**	**Timeframe**
1.1	Biosecurity Plan aligns with local, regional, state, and federal management frameworks	Isaac Regional Council	**1.1A** Alignment with Natural Resource Management group strategies	As Plans/framework change
			1.1B Alignment with peer local, state, and federal government strategies	
1.2	Biosecurity is considered in projects, plans, policies, and strategies	All stakeholders	**1.2A** Corporate and Operational Plans reflect commitment to pest management obligations	As plans and projects/works are developed/reviewed or scoped
			1.2B Delivery of project/works plans reflect consideration of and commitment to regional biosecurity goals	
		Isaac Regional Council	**1.2C** Development of relevant IRC policy and strategy to provide stakeholders with certainty	Within 12 months of adoption
1.3	Prioritisation is risk-based and defensible	Isaac Regional Council Biosecurity Queensland Regional pest management groups	**1.3A** Risk assessment procedure is regionally accepted	Reviewed yearly
			1.3B Prioritisation is regionally relevant	
			1.3C Pest distribution mapping aligns with best available data collection methods	
1.4	Continue to foster strong working partnerships	Government and Industry Stakeholders	**1.4B** Attendance at 75% of regional pest working group meetings, workshops, and events	Annual
			1.4C Support for State and Local Government pest surveys and biosecurity response activities	

		All Stakeholders	**1.4D** Stakeholders incorporate Isaac Regional Biosecurity Plan into their relevant plans and strategies	Ongoing
1.5	Effective resourcing	All Stakeholders	**1.5A** Operational plans are adequately resourced to achieve objectives	Annual
			1.5B Engagement in project opportunities that attract funding and resources from external sources	Ongoing
		Isaac Regional Council Regional Pest Management Groups	**1.5C** Review of capacity to attract and distribute funding for property-based pest control	

DESIRED OUTCOME 2: STAKEHOLDER AWARENESS AND COMMITMENT

All stakeholders have an improved working knowledge of regional pest species, understand their biosecurity responsibilities, and hold agency in management goals.

No.	Strategic Action	Responsible	Success Indicator	Timeframe
2.1	The Isaac Regional Biosecurity Plan is accessible	Isaac Regional Council	**2.1A** Biosecurity Plan is available in digital format on Isaac Regional Council website, hard copy upon request	Ongoing
2.2	Biosecurity Outreach	Isaac Regional Council Biosecurity Queensland	**2.2A** Websites are a source of information that displays current biosecurity information and links to information	Ongoing
		Isaac Regional Council Biosecurity Queensland Natural Resource Management groups	**2.2B** Four annual awareness campaigns based on strategic priority species promoted through media channels	Quarter
			2.2C Weed spotter network workshops and events promoted as available	Ongoing

			2.2D Biosecurity representation at relevant community events	
2.3	Stakeholder engagement and commitment	Isaac Regional Council	**2.3A** High customer service interaction between Council and landholders/community	Ongoing
			2.3B Landholder participation through property pest surveys or assistance	
		All Stakeholders	**2.3C** Codes of Practice, Standard Operating Procedures, and other technical support is available at all levels of government and research agencies	
			2.3D Key stakeholder networks and contact information is maintained	
2.4	Increased pest knowledge within Isaac Regional Council	Isaac Regional Council Biosecurity Queensland Regional Pest Management Groups	**2.4A** One annual training event	Annual
			2.4B One annual weed hygiene workshop	
		Government and Industry	**2.4C** Weed identification and treatment program developed for asset owners	Within 2 years from adoption
			2.4D Asset owners attend training and professional development opportunities where appropriate to increase identification and control techniques along with current best practice	

DESIRED OUTCOME 3: EFFECTIVE MANAGEMENT SYSTEMS

Pest management is based on best practice information and is integrated.

No.	Strategic Action	Responsible	Success Indicator	Timeframe
3.1	Commit to best practice, sustainable, and integrated operations	All stakeholders	**3.1A** Operational programs are informed by IRC, Biosecurity Queensland, NRM groups, and research agencies	Ongoing
			3.1B Operational programs consider methods that are seasonal, co-ordinated, safety conscious, and socially responsible	
			3.1C Biocontrol agents are utilised and distributions are monitored	
3.2	Co-ordinated control of priority species at landscape level	Government and Industry Stakeholders	**3.2A** Operational plans and programs have a cohesive organisational approach to treatment and monitoring	Ongoing
		Isaac Regional Council Biosecurity Queensland	**3.2B** The community has access to officers for liaison on pest management advice	
		Biosecurity Queensland Dept. Agriculture & Fisheries NRM groups	**3.2C** Landholders have access to resources to develop Property Biosecurity Plans to control priority species	
3.3	Effective data use	Government and Industry	**3.3A** Mapping data is collected at best practice guidelines	Ongoing
			3.3B Data integrated from integrated government, NRM, and research sources informs decision-making	
			3.3C Continue to lobby/support for platform to facilitate regional data sharing	
3.4	Target environmental assets	Government, NRM Groups and Landholders	**3.4A** Environmentally Significant Areas are identified, mapped, and monitored	Ongoing
3.5	Compliance and enforcement	Isaac Regional Council	**3.5A** Compliance and enforcement plan developed and implemented	2025

			3.5B Administration of registers and databases is accurate and effective	Ongoing
			3.5C Authorised officers under the *Biosecurity Act 2014* are trained and competent to undertake compliance	
			3.5D Isaac Regional Council local laws reviewed to strengthen capacity for local risk mitigation	
3.6	Biosecurity Plan is improved through review	Isaac Regional Council & invited Stakeholders	**3.6A** Review of the IRC Biosecurity Plan at three-year increments	2025-2026

DESIRED OUTCOME 4: PROACTIVITY FOR PREVENTION AND EARLY INTERVENTION

Timely and collaborative responses diminish pest spread and promotes cost-effective, long-term asset protection.

No.	Strategic Action	Responsible	Success Indicator	Timeframe
4.1	Prevention of new pest species establishment	Isaac Regional Council	**4.1A** Response procedure developed for new incursions	2024
			4.1B Review IRC Weed Hygiene procedure	
			4.1C Procurement and contracting agreements include biosecurity considerations.	Ongoing
		All Stakeholders	**4.1D** Alerts and potential new pests identified and discussed at regional pest management working group meetings	
			4.1E Stakeholders to have agency in implementing protocols and codes of practice on their occupied land	
		Biosecurity Queensland	**4.1F** Restricted and prohibited permit properties are monitored	

4.2	Mitigate the spread of pest species	Isaac Regional Council	**4.2A** Identify control status and control objectives of target species in operational plans	Annual
			4.2B Develop co-management plans across local government areas	Ongoing
			4.2C Sleeper species are identified and considered as part of long-term risk analysis	
			4.2D Surveillance Programs scoped and developed	
4.3	Weed hygiene facilities are in good working order and are maintained regularly	Isaac Regional Council	**4.3A** Wash down facility audit for weed emergence and effectiveness	Annual
			4.3B Visual information on vehicle areas to target is displayed near wash-down area	Ongoing
			4.3C Council maintained public wash down facilities have all necessary equipment and are promoted for public use	
			4.3D Alternative/mobile weed hygiene facilities investigated	

DESIRED OUTCOME 5: MONITORING AND ASSESSMENT

Monitoring and assessment processes strive to better understand and improve biosecurity management.

No.	Strategic Action	Responsible	Success Indicator	Timeframe
5.1	Develop Action Plan for IRC to deliver its actions	Isaac Regional Council	**5.1A** Organisational Action Plans reviewed for continued success and efficacy	Annual
5.2	Information collection is effective	Isaac Regional Council Biosecurity Queensland	**5.2A** Weed mapping undertaken on bi-annual schedule	Bi-annual

		Regional pest management groups Natural Resource Management groups	**5.2B** Stakeholders are collecting and sharing pest information	
		Isaac Regional Council	**5.2C** Isaac Regional Council maps and monitors Council services (1080 baiting, dingo scalps, treatment programs)	Ongoing
5.3	Risk assessment becomes more comprehensive over time	Isaac Regional Council Biosecurity Queensland	**5.3A** Development of improved local risk impact assessments as they relate to investigate ecological, social, and economic costs	2024-25
		All Stakeholders	**5.3B** Monitor new species incursions and distribution dynamics to better prioritise risk	Annual
		Issac Regional Council Regional Pest Management Sub-committee LGAQ	**5.3C** Continue to liaise with State Government agencies regarding support requirements for procedures/guidelines to conducting risk analysis	Ongoing
5.4	Continue to seek a better understanding of the biology and ecology of pests	Isaac Regional Council Biosecurity Queensland NRM organisations Regional Pest Management Sub-committees	**5.4A** Local training and workshops are facilitated	Ongoing
			5.4B Participate in co-ordinated research programs	
			5.4C Local knowledge is gained through surveys, feedback, and customer interactions	

RISK ASSESSMENT AND PRIORITISATION OF PEST SPECIES

Implementing strategic control measures requires assessing the risks that may occur if a pest species establishes. Risk assessments can examine the likelihood and consequence of a pest infestation and provide (*Department of Agriculture and Fisheries, 2021*):

- A better understanding of pests in the region and a way to monitor their impact over time.
- Best-practice management of existing and emerging pest species.
- Guidance on resource allocation, management objectives and targets, and policy development.

Understanding the extent and economic impact of pest species assists in defining how management objectives are allocated in this plan. *Figure 2 is based on the Generalised Invasion Curve (Biosecurity Queensland, 2019*) indicating the economic returns of managing an invasive species over time. This is measured by assessing the known risks (*Appendixes 3, 4 and 5*) and estimated feasibility of control methods (*Appendixes 6, 7, and 8*) for priority species. Impacts have been assessed using best available information, and distributions have been determined through region-wide mapping - both of which will produce more robust data over time. The criteria were developed with guidance from Biosecurity Queensland (*Personal Communication, 2023*).

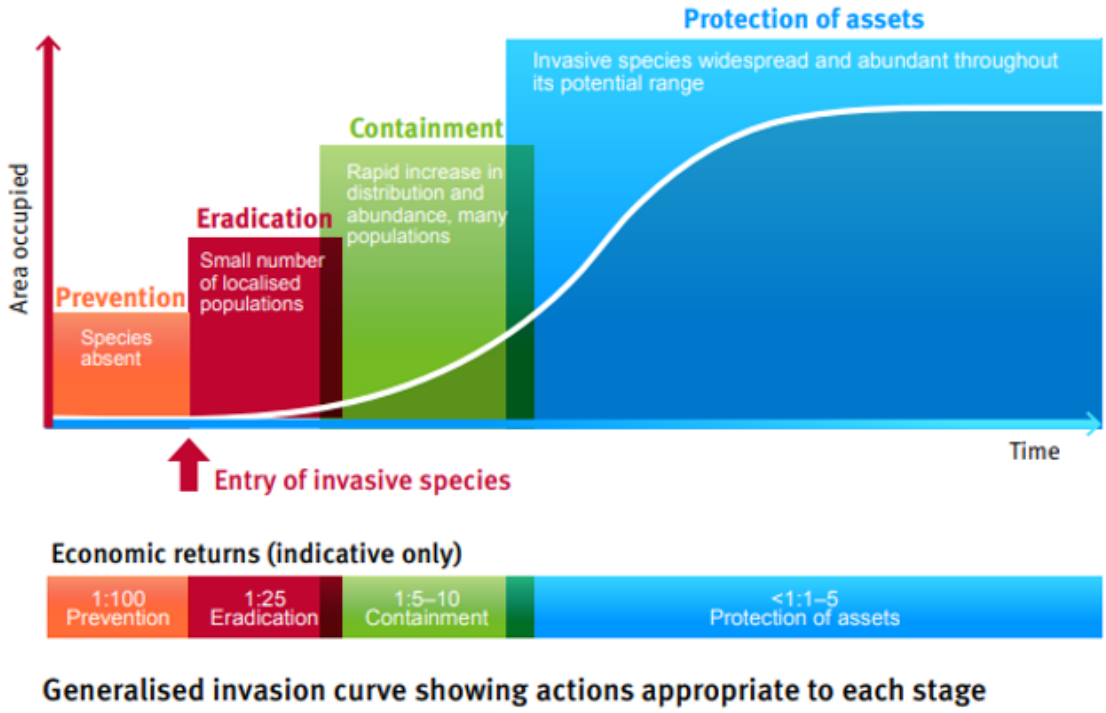


Figure 2: Revised Invasion Curve (*Biosecurity Queensland, 2019*)

Considering the risks, management objectives, and control strategies (*Appendix 9)* together forms the basis of the Operational Guide. The Operational Guide (*table 2*) focuses on the Isaac Regional invasive species priority list which includes some but not all prohibited, restricted, and local pests. However, the General Biosecurity Obligation (*Appendix 2*) is inclusive of all prohibited and restricted matter as defined by the Act and the Regulation as well as non-declared invasive species (*Queensland Legislation, 2020*). A full list of prohibited and restricted species is available by viewing the Biosecurity Queensland website.

TABLE 2: OPERATIONAL GUIDE

FERAL PIG (Sus scrofa)

Management Objective: Population reduction and program development

Risk category: Very high

Management Phase: Protection of Assets

Description:

One of the most widespread and damaging pest animals in Queensland. Feral pigs in Australia are descendants of various subspecies of the domestic pig. Accidental and deliberate releases of domestic and semi-feral pigs have resulted in a large feral pig population.

Local Distributions:

- Widespread and abundant.

Local Impacts:

- Agricultural destruction.
- Domestic livestock predation.
- Human health hazard.
- Significant ecological impact.
- Risk of transmitting disease.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Co-ordination with neighbouring local governments in aerial shooting program.
- To provide technical support to landholders.

Property Owners:

- Participate in 1080 baiting program.
- Co-ordination with neighbouring local governments in aerial shooting program.
- Investigate and apply appropriate control methods.
- Co-ordinate programs with neighbouring properties.
- Identify infestation areas and movements and report to Council.

Success Indicators:

- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.
- Number of landholders participating in 1080 baiting program.
- Number of inquiries/incidents about feral pigs.
- Alternative programs investigated and assessed.
- Co-management projects.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

FERAL CATS *(Felis catus)*

Management Objective: Data Collection and participation in state control

Risk category: Very high

Management Phase: Protection of Assets

Description:

The feral cat has greater muscle development around the neck, shoulders, and head, and is substantially larger than domestic or stray cats. Feral cats are prolific breeders and highly successful predators and do not rely on human habitation to survive.

Local Distributions:

- Considered widespread, density unknown. (Does not include stray cats of urban and peri urban areas)

Local Impacts:

- Threat to biodiversity.
- Damaging to domestic livestock.
- Spread parasites (Toxoplasmosis) to native fauna.
- Human health hazard when incursion into urban areas.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Investigate and apply appropriate control methods.
- To provide technical support to landholders.

Property Owners:

- Investigate and apply appropriate control methods.
- Co-ordinate programs with neighbours.

Success Indicators:

- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.
- Number of inquiries/incidents about feral cat.
- Alternative programs investigated and assessed.
- Co-management projects.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

WILD DOG/ DINGO (*Canis familiaris*)

Management Objective: minimise wild dog impacts to economic and social assets

Risk category: Very high

Management Phase: Protection of Assets

Description:
The term wild dog refers collectively to purebred dingoes, dingo hybrids, and domestic dogs that have escaped or been deliberately released.

Local Distributions:
- Scattered through Isaac region

Local Impacts:
- Damaging to domestic livestock and native fauna.
- Human health hazard when urban areas under incursion.

<u>Operational Management</u>

Government and Industry:
- Co-ordinate integrated strategies throughout region.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Investigate and apply appropriate control methods.
- Co-ordinate programs with neighbouring local government areas/neighbours.
- To provide technical support to landholders.

Property Owners:
- Participate in 1080 baiting program and Dingo bounty programs.
- Investigate and apply appropriate control methods.
- Co-ordinate programs with neighbours.
- Identify infestation areas and movements and report to Council.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.
- Number of landholders participating in 1080 baiting program.
- Number of inquiries/incidents reported about wild dogs.
- Alternative programs investigated and assessed.
- Co-management projects.

RESTRICTED FERAL DEER – Fallow (*Dama dama*) Chital (*Axis axis*), Red (*Ceruus elaphus*), and Rusa (*Ceruus timorensis*)

Management Objective: minimise feral deer impacts to economic, environmental, and social assets, and increase responsible livestock practices

Risk category: High

Management Phase: Protection of Assets

Description:
Feral deer were originally released as game animals in the 19th Century and are classed as any deer that are not contained within the limits of a deer-proof fence. In Queensland there are four restricted species of deer; Fallow, Red, Chital and Rusa.

Local Distributions:

Localised populations throughout region

Local Impacts:

- Pasture competition / modify vegetation composition and structure.
- Crop decimation.
- Threatens disease risk to livestock.
- Biosecurity weed spread risk.
- Park and residential damage.
- Creek erosion and water fouling.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Stabilise population in Moranbah township and surrounds.
- Co-ordinate control with neighbouring Councils/stakeholders/neighbours.
- To provide technical support to landholders.

Property Owners:

- Identify infestation areas and movements and report to Council.
- Investigate and apply appropriate control methods.
- Co-ordinate programs with neighbouring properties.
- If a property owner is to keep or move deer as livestock they may only do so with relevant registration, licencing, fencing and transport vehicles as enforced by the *Queensland Government* (*2023).*
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.
- Appropriate management methods determined to control populations.
- Identified herd populations and movements.
- Number of enquiries received.
- Attendance and participation in feral deer workshops.

PARTHENIUM (*Parthenium hysterophorus*)

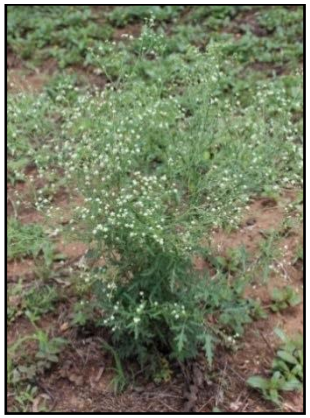
Management Objective: Co-ordinate integrated treatment of high-value asset areas and along roads and creeks.

Control:

Spread:

Risk category: Very high

Management Phase: Protection of Assets



Description:

- Annual herb with deep taproot growing to 1.5m.
- Alternate, pale green leaves covered with soft, fine hairs that are deeply divided and deeply lobed.
- Small white flowers in heads spanning around 4mm that cluster at the top of the plants.
- Flowers contain 4-5 wedge shaped black seeds 2mm long.

Local Distributions:

- Widespread and locally abundant in some areas.

Local Impacts:

- Vigorous species that rapidly colonises weak pastures with sparse ground cover.
- Reduces pasture productivity and outcompetes forage plants.
- Threatens native grasslands.
- Contains skin and respiratory allergens that can lead to dermatitis and hay fever / asthma.
- **TOXIC** to animals.
- Livestock, pasture seed, hay, and grain devalued by contamination.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Active control on council managed transport corridors (roads, creeks etc).
- Active control on infestations in Environmentally Sensitive and high asset areas.
- To provide technical support to landholders.

Property Owners:

- Treated infestations are monitored for follow up.
- Strategic destocking on high value agricultural land.
- Weed hygiene is maintained for machinery and fodder.
- Active control on transport corridors (roads, creeks etc).
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Environmentally sensitive areas impacts are reduced.
- Management leads to decrease in infestation.
- Attendance at relevant training opportunities and distribution of information throughout community.
- Regional mapping indicates infestation is stable or reduced.
- Funding / project management in collaboration with NRM's.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

PARKINSONIA (*Parkinsonia aculeata*)

Management Objective: Reduced infestations along waterways and in grazing areas

Control:	Spread:	Risk category: Very high	Management Phase: Protection of Assets

Description:

- Perennial spiny shrub/tree growing up to 10m tall.
- Stems, branches, and often trunks green with zigzagging branches and spines 7-12mm at leaf base.
- Long, flattened, alternated stalks 20-40cm long with small oblong leaflets 3-6mm long.
- Bright yellow flowers with one orange marked petal approx. 20mm diameter.
- Green to brown pencil-like pods with hard exterior.

Local Distributions:

- Infestations along major waterways, flood plains, and adjoining properties.
- Upper Fitzroy Catchment and Mackenzie Rivers.

Local Impacts:

- Forms dense and often impenetrable thorny thickets along water courses.
- Decreases wetland health through erosion, lowering water tables, and damming water courses.
- Seed pods thick and durable, allowing them to survive dormant for long periods and enables ready transportation during flooding.
- Difficult for mustering and restricts access to watering points.
- Decreases pasture growth.
- Decreases wetland waterbird habitat.
- Expensive to control once establish.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on Isaac Regional Council Road reserves and transport corridors.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Reduction along targeted distribution areas and waterways.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

PRICKLY ACACIA (*Vachellia nilotica*)

Management Objective: Actively control in riparian areas and increased knowledge to farmers about using prickly acacia as fodder and the threats it poses

Control:

Spread:

Risk category: Very high

Management Phase: Protection of Assets

Description:

- Thorny perennial shrub/tree growing 4-10m and forming dense, spiny thickets.
- Finely divided, fern-like leaves with a pair of stout spines at each leaf-base.
- Yellow globular flowers 12mm diameter grouped on leaf joints from Feb-June.
- Long, flat pods 10-15cm with narrow constrictions between seeds.

Local Distributions:

- Established throughout region.

Local Impacts:

- Grown as high protein fodder but viable seed spread through livestock ingestion.
- Favours water courses and bore drains which makes for costly maintenance.
- Outcompetes natives for water.
- Livestock operations including mustering and property management restricted.
- Pasture declines.
- Transforms grasslands into thorny scrub/woodlands and decreases their biodiversity.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on Isaac Regional Council transport corridors.
- Map, strategically control target areas, and monitor.
- Co-ordinated property-based management programs investigated.
- Engage Landholders to discourage grazing.
- Technical support provided to landholders.

Property owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Infestations identified and prioritised.
- Reduction in property infestations.
- Landholders are aware of impacts of using prickly acacia for grazing.
- Training events and workshops attended.
- Number of service requests.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

CASTOR OIL PLANT *(Ricinus communis)*

Management Objective: Achieved reduction of Castor Oil plants along Sandy Creek, Isaac River, and Nebo Creek

Control:	Spread:	Risk category: Very high	Management Phase: Protection of Assets

Description:

- Training events and workshops attended.
- Number of service requests.
- Perennial, highly branched shrub growing more than 3m tall with a cane like trunk structure.
- Large, alternate leaves with prominent central vein,

  7-9 pointed segments with toothed margins.
- Leaves glossy and dark red-brown when young, becoming green when mature.
- Small, red flowers at end of stem year-round.
- Fruits 2-3cm diameter with soft green or red spines and three segments.

Local Distributions:

- Major waterways throughout region including Sandy Creek, Isaac River, Nebo Creek

Local Impacts:

- Spreads readily in sandy soil, creek banks, and gullies.
- Seeds and leaves are highly **TOXIC** to humans and livestock.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Continue to map populations and monitor movement within catchments.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Treated infestations are monitored for follow up.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Knowledge of seed/plant transportation extent and changes.
- Infestation reduction along Sandy Creek, Isaac River, and Nebo Creek.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

MIMOSA BUSH (*Vachellia farnesiana*)

Management Objective: Buffer zones established on properties and reduction on transport corridors and private properties

Control:	Spread:	Risk category: Very high	Management Phase: Protection of Assets

Description:

- Round shrub to small tree, 2-3m tall.
- Multi-stemmed with branches growing in zigzag formation.
- Fern-like leaves, 1-6 pairs of leaf branches with 5-20 pairs of narrow leaflets that are 4-8mm long.
- Golden spherical flowers approx. 1cm diameter that grow on stalks.
- Dark brown cigar-shaped pods at maturity up to 6cm long.

Local Distributions:

- Well established throughout region, particularly in western localities and along road/reserves.

Local Impacts:

- Spreads readily and grows quickly.
- Can form thorny thickets and limit herd access to water supply.
- Can be useful as grass supplement in dry season and is readily eaten by stock if healthy pasture competition is available.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council Road reserves and transport corridors (roads etc).
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Encourage landholders to reduce infestations and discourage use as fodder.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Have defined buffer zones between adjoining properties, creeks, and roads.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Reduction in property infestations and visible buffer zones established.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

SALVINIA *(Salvinia molesta)*

Management Objective: Control to elimination (if possible) on Hood's Lagoon and reduce incursions in St Lawrence

Control:

Spread:

Risk category: Very high

Management Phase: Protection of Assets

Description:

- Perennial aquatic floating fern with green folded and compacted floating fronds, and brown submerged fronds.
- Leaves in pairs along common stem and covered in stiff, water-repellent hairs.
- Forms thick mats that completely cover water storage areas in a short time.
- Has long hanging root systems that help entangle the plant into mat like forms.

Local Distributions:

- Isaac coastal region.
- St Lawrence.
- Hoods Lagoon, Clermont.

Local Impacts:

- Divides into daughter plants in as little as three days leading to very quick surface coverage.
- Large loss of water content due to evapotranspiration.
- Degradation of water quality.
- Depletes oxygen and promotes eutrophication causing substantial harm to aquatic fauna.
- Collects debris during flooding and reduces flow to irrigation equipment.
- Inhibits recreational activity.
- Increased risk of mosquito's and mosquito related diseases.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Weed hygiene is maintained for machinery washdowns after aquatic removal.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Support biocontrol breeding and distribution.
- Monitor waterways throughout region and be prepared for timely response.
- To provide technical support to landholders.

Property Owners:

- Active control on infestations in Environmentally Sensitive and high asset areas.
- Treated infestations are monitored for follow up.
- To contain active infestations to isolated sections (where possible).
- Alert IRC of new infestations in flowing bodies of water.
- Engage with neighbouring properties for holistic approaches to management.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Salvinia Weevils are established and available in the Isaac Region.
- Biosecurity measures are met through machinery washdown procedures and appropriate disposal of harvested weed.
- Waterway health improved in previously infested areas.
- Number of service requests.
- Regional increase in capacity to identify species.
- Regional mapping indicates infestation is stable or reduced.
- Targeted waterways have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

CHINEE APPLE (*Ziziphus mauritiana*)

Management Objective: Control in Environmentally Sensitive Areas, vulnerable riparian areas, and transport corridors.

Control:	Spread:	Risk category: Very high	Management Phase: Protection of Assets

Description:

- Deciduous large shrub, small spreading tree growing up to 8m with 10m in canopy diameter.
- Branches are densely bunched, and zig zagged with numerous thorns.
- Leaves are oblong, 5cm long, glossy green above and woolly white underneath.
- Small green-white flowers with characteristic unpleasant odour, flowering December.
- Small, edible yellow to orange fruit, 2-5cm diameter.

Local Distributions:

- Clermont.
- May Downs Road.

Local Impacts:

- Forms dense thickets that impede stock management.
- Reduces land productivity.
- Fruits are edible so livestock, some native animals and feral pigs will eat them and carry for large distance dispersal.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council Road reserves.
- Active control on transport corridors (roads etc).
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Increased knowledge of mapping extent within the Isaac region.
- Cross-regional monitoring for new incursions.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Regional mapping indicates infestation is stable or reduced.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.
- Number of service requests.

GIANT RAT'S TAIL GRASSES (GRT) - (*Sporobolus pyramidalis & s. Natalensis*), Giant parramatta grass (*S. fertilis*), American rat's tail grass (*S. jacquemontii*)

Management Objective: GRT Grass is isolated to known infestations and new infestations are reported and efficiently managed

Control:

Spread:

Risk category: Very High

Management Phase: Protection of Assets

Description:

- Tufted perennial growing up to 2.0m
- Stems tough and wiry – difficult to remove.
- Light green turning light brown when mature.
- All species slightly different with identification features available on Biosecurity Queensland website.

Local Distributions:

- Coastal localities including/east of Marlborough-Sarina Road, Ilbilbie, Collaroy, St Lawrence, Blue Mountain, Nebo.

Local Impacts:

- Seeds are easily spread and remain viable in soil for up to ten years. Can produce up to 85, 000 seeds m^2/year.
- Up to 60% of Queensland suitable for establishment
- Dominates pastures and reduces productivity.
- Outcompetes desirable and native grasses.
- Thrive in disturbed areas, further increasing erosion potential.
- Low palatability but can affect health of cattle.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council Road reserves and transport corridors
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Map and monitor coastal localities for new incursions.
- Identify observation sites and undertake treatment trials and educational workshops with Department of Agriculture and Fisheries / Biosecurity Queensland, liaising on new techniques.
- Increase GRT profile through extension campaigns and improved grazing/pasture management.
- To provide technical support and education to landholders and greater community.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control and containment for infestations in high asset areas.

Success Indicators:

- Improved knowledge of GRT extent in region.
- Infestations on private property and Council reserves are identified and contained.
- Staff are up to date on best practice management following attendance at workshops and training.
- Travel permits ensure rat's tail grasses are identified.
- Community is aware of GRT and educated on associated risks.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.
- Property owners establish and maintain 10m buffer zones on properties.

• Buffer zones are established at least 10m wide on property boundaries, waterways, and transport corridor to reduce severity of spread. • Active control on transport corridors (roads etc). • Treated infestations are monitored for follow up. • Communicate with Department of Agriculture and Fisheries / Biosecurity Queensland, for new management techniques and treatments. • Stock moved through known infestations spelled for at least five days before moving into Isaac. • Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.	

HYMENACHNE (*Hymenachne aplexicaulis*)

Management Objective: Reduction in St Lawrence wetlands and coastal localities

Control:	Spread:	Risk category: Very high	Management Phase: Protection of Assets

Description:

- Rhizomatous perennial grass growing up to 2.5m.
- Stems erect with white pith and leaf blades 10-.
  45cm long that attach strongly at the stem.
- Flowers are spike-like, and 20-40cm long between April-June.

Local Distributions:

- Greenhill / Notch Point
- St Lawrence wetlands

Local Impacts:

- Grown as high nutrient fodder but quickly invades stream banks, wetlands, irrigation ditches, and aquatic habitats.
- Blocks fish passages.
- Can grow down 1.2m in permanent wetlands.
- Increased flooding by reducing capacity of drainage networks.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas
- Active control on Isaac Regional Council Road corridors and catchments.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored and mapped for follow up.
- Discourage landowner use of growing for fodder and educate on moving water transport of aquatic weeds.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Treated infestations are monitored for follow up.
- Investigation of alternative fodder options.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Greater understanding of distribution extent.
- Educational information distributed.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

MOTHER-OF-MILLIONS *(Bryophyllum delagoense)*

Management Objective: Reduction on road reserves and town commons

Control:

Spread:

Risk category: Very high

Management Phase: Protection of Assets

Description:

- Perennial, succulent herb with mottled pale green, olive green, or pink stems.
- Growing to 1 meter tall.
- Leaves 3-10cm long, waxy and teeth near tip.
- Orange- red, bell-shaped flowers clustering at the top of the stem in June-Nov.
- Flattened pods up to 15cm long in dense clusters.
- Plant can easily reproduce from embryoids (plantlets) grown on leaf edges.

Target Distributions:

- Clairview, St Lawrence, Clermont, Moranbah, Dysart.
- Local road networks.

Local Impacts:

- Proliferates rapidly in vulnerable areas, with the ability to colonise watercourses including creek banks and alluvial plains.
- Flowers are **POISONOUS** to stock.
- Impedes grazing and growth of good pasture.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors and urban townships.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Reduce residential garden infestations.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Raised community control and awareness through education.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

LANTANA (*Lantana camara*)

Management Objective: Co-ordinate systematic integrated management in Eastern localities

Control:	Spread:	Risk category: Very high	Management Phase: Protection of Assets

Description:

- Perennial, heavily branched shrub growing to 3m tall, in dense thickets or compact clumps.
- Opposite leaves, bright green above and paler beneath, slightly rounded, and toothed margins.
- Flowers are tiny in terminal heads, with varying colours or red, pink, white, yellow, mauve, orange, and cream. Flowers year-round.
- Glossy purple-black fruits.

Local Distributions:

- Sarina-Marlborough Road
- Dense distributions on roadsides from Nebo through to St Lawrence

Local Impacts:

- Overruns valuable pastures, grazing land, riparian areas, and fence lines.
- **POISONOUS** to livestock.
- Costly maintenance for fencing and control.
- Impacts high biodiversity ecosystems on forest edges, riparian and coastal zones, threatening wildlife habitat.
- Smothers and out-competes native species.
- Impedes recreational use and aesthetic quality.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Strategic use of biocontrol.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Buffer zones established near transport corridors.
- Treated infestations are monitored for follow up.
- Strategic use of biocontrol.
- Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.

Success Indicators:

- Environmentally Sensitive areas are treated and monitored.
- Bio-controls are dispersed in targeted infestations.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

BELLYACHE BUSH (*Jatropha gossypiifolia*)

Management Objective: Contain and reduce populations surrounding properties and increase education on the risks to livestock

Control:

Spread:

Risk category: Very high

Management Phase: Protection of Assets

Description:

- Small tree/shrub 2.5-4m tall, erect with shallow root system. Thick, soft stems with coarse hairs.
- Alternate leaves, 3-5 deep lobes, purple when juvenile and bright green when mature, finely toothed margin, 10cm diameter.
- Small red to purple flowers with yellow clusters in upper part of plant.
- Oblong fruit with three-lobed capsule, 10-12cm long that explodes when ripe.

Local Impacts:

- Prolific seeder, that can fruit and flower year-round.
- Can grow and re-shoot vegetatively from stems or removed garden plants. May be dispersed by ants who assist in germination process.
- Can rapidly colonise riparian areas and reduce biodiversity values.
- Shallow root system and large canopy forms dense monoculture that facilitates out-competition of native vegetation, pasture reduction, and erosion.
- **TOXIC** to stock and can be poisonous to humans.
- Thickets restrict access to land and water.

Local Distributions:

- Moranbah Common, dump, water treatment plant.
- Isaac River.
- Dysart, St Lawrence, Flaggy Rock.

<u>Operational Management</u>

Government and Industry

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Contain emerging infestations and reduce densities in Moranbah and Dysar.t
- New and isolated infestations are identified and targeted for immediate control.
- Treated infestations are monitored for follow up.
- To provide technical support to landholders.

Success Indicators:

- Isaac Regional Council on-ground teams have resources to identify and eradicate new infestations in a timely manner.
- Bi-annual inspections of treated areas at Moranbah, and Dysart.
- Vehicle and machinery checks are conducted on contractor plant.
- Information sheets and flyers available for distribution.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.

Property Owners: • Weed hygiene is maintained for machinery. • Active control on infestations in Environmentally Sensitive and high asset areas. • Active control on transport corridors (roads etc). • Treated infestations are monitored for follow up. • New and isolated infestations are identified and targeted for immediate control. • Property Biosecurity Plans incorporates relevant objectives in the Isaac Regional Biosecurity Plan.	• Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

FERAL LEUCAENA *(Leucaena leucocephala)*

Management Objective: Contain within landholder boundaries and reduce in townships

Control:

Spread:

Risk category: Very high

Management Phase: Protection of Assets

Description:

- Small tree growing to average height of 6m.
- Leaves dull grey-green, approx. 25cm long.
- Cream-yellow spherical flower heads on short stalks.
- Flattened pods up to 15cm long in dense clusters.

Local Distributions:

- Dysart township.
- Lake Elphinstone.
- Road reserves in coastal localities.

Local Impacts:

- Forms dense thickets on disturbed roadsides that decreases visibility, blocks table drains, and poses minor flooding risks.
- Inhibits growth, reproduction, and survival or surrounding species.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Investigate alternative high-value crop species.
- All property managers keeping Leucaena for fodder must meet the guidelines given under ‘the code of practice (COP) for establishing and maintaining Leucaena Pastures’ (*The Leucaena Network, 2020*).

Success Indicators:

- Visible reduction in infestations in townships through systematic treatment.
- COP implemented.
- 10m buffer zones established on major road reserves as per the COP.
- Discussion and development at working group meetings.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan and the COP for establishing and maintaining Leucaena Pastures.

WATER LETTUCE (*Pistia stratiotes*)

Management Objective: Contain infestations in waterways and reduce populations near the coast

Control:	Spread:	Risk category: Very high	Management Phase: Protection of Assets

Description:

- Free-floating, spongy perennial herb with overlapping leaves that give the appearance of an open head of lettuce.
- Leaves form a rosette of pale green, fan-shaped leaves with six prominent veins on underside with short white hairs.
- Small green-white flowers appear in Summer and early Autumn.

Local Distributions:

- Grosvenor Creek, Moranbah, St Lawrence.

Local Impacts:

- Used extensively in aquarium trade and easily spread.
- Rapidly colonises surface of water bodies.
- De-oxygenation, loss of biodiversity, reduced stream flow.
- Increased risk of mosquitos and flood risk.
- Providing raft-like platform for other weeds such as para grass to establish on.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Weed hygiene is maintained for aquatic machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Monitor waterways for new infestations.
- To provide technical support to landholders

Property Owners:

- Active control on infestations in Environmentally Sensitive and high asset areas
- Treated infestations are monitored for follow up.
- Implement control methods for new infestations and isolate the infestation where possible

Success Indicators:

- Control methods are used on isolated occurrences.
- New infestations identified, mapped, and treated in timely manner.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

HARRISIA CACTUS (*Harrisia martinii*)

Management Objective: Reduce populations on transport corridors and increase knowledge of species extent

Control:

Spread:

Risk category: High

Management Phase: Protection of Assets

Description:

- Perennial cactus that has stems growing both horizontally and vertically approx. 50cm high forming dense thickets in tangled mat.
- Stems have six longitudinal ribs with triangular humps covered in grey felt like hairs.
- Funnel-like flowers, white-pink, 15-20cm long. Flowering in spring and summer and opening at night.
- Fruits are round pink to red spherical approx. 5cm diameter covered in bumps with protruding hairs and spines.

Local Distributions:

- Gregory Development Road, Upper Belyando catchment, Kilcummin.
- Property fence lines throughout region.

Local Impacts:

- Produces large quantities of seed, easily spread over wide areas by birds.
- Out-competes desirable pasture plants.
- Can cause painful injuries to persons and cattle that encounter long, sharp spikes.
- Interferes with mustering and agricultural operations.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Increase GPS data to better delineate species extent.
- Provide technical advice and encourage fence line control.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Gather GPS data to better delineate species extent.
- Systematic control and follow-up on prioritised road reserves.
- Provide technical advice and encourage fence line control.
- Investigate bio-controls.

Success Indicators:

- Mapping data outlines areas to focus targeted integrated management strategies.
- Infestations contained and reduced on priority road networks and transport routes.
- Encourage community control and awareness through educational material.
- Discussions with stakeholders and trial site established for biocontrol's if possible.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

RUBBER VINE (*Cryptostegia grandiflora*)

Management Objective: Reduce infestations in road reserves, stock routes and catchments

Control:

Spread:

Risk category: High

Management Phase: Protection of Assets

Description:

- Scrambling woody perennial vine with whip-like shoots that can grow up to 30m high when climbing, or as a shrub 1-2m.
- Opposite glossy leaves 6-10cm long, dark green above and paler underneath with purple midrib.
- Flowers October-April with pink fading to white, five-lobed funnel-shaped flowers, 5cm across.
- Seed pods are rigid and grow in pairs, 10-12cm long and growing at right angles to bottom of the stalk.

Local Distributions:

- Valkyrie / May downs, Clermont Alpha Road, Sandy Creek, Upper Belyando, St Lawrence, and Peak Downs Highway.

Local Impacts:

- Spreads and colonises rapidly, aggressively invading woodlands and riparian ecosystems.
- Forms dense thickets and large canopies that expand outwards, reaching up to 20,000 plants/ha.
- Smothers riparian vegetation and is serious threat to deciduous vine thickets in Queensland.
- Decreases biodiversity and wildlife habitat.
- Loss of pasture.
- Impedes stock access to water.
- Is **POISONOUS** to livestock.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Continue to map movement through catchments.
- Target new infestations on stock routes.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc) and catchments.
- Treated infestations are monitored for follow up.
- Investigate the use of biocontrol agents to integrate with chemical treatments.

Success Indicators:

- Treatment on waterways monitored.
- Stock routes are free of rubber vines.
- Number of integrated biocontrol trials.
- Co-management effective on state-controlled roads, road reserves, and rail sections
- Number of landholders enquires.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

BROAD-LEAVED PEPPER TREE (*Schinus terebinthifolius*)

Management Objective: Increase education to urban property owners and reduce infestations at Council facilities and urban townships

Control:	Spread:	Risk category: Medium	Management Phase: Containment

Description:

- Large spreading tree growing up to 10m tall.
- Dark green leaves with 5-9 leaflets.
- Small white flowers growing at ends of branches.
- Fruits round, red and glossy, 6mm diameter.
- Only female tree's fruit.

Local Distributions:

- Moranbah Common, Dump and Water Treatment facilities.
- Clermont, Dysart, Middlemount.

Local Impacts:

- Invades coastal, wetland, and riparian areas, bushlands, and sandy dunes.
- Sap contains TOXIC resins that can cause irritable or painful skin and eye reactions, and the pollen can cause respiratory issues.
- Can host diseases that impact citrus and mango trees.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Continue to gather mapping data particularly across coastal localities.
- Active control around Council facilities and recreation areas.
- Increase education for property owners on establishing declared species as ornamental plants.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Residential property owners to increase management of declared weeds.

Success Indicators:

- Greater understanding of key distributions within region.
- Treatment on key areas is effective and some native recruitment occurring.
- Council facilities undertake pepper tree control as part of asset-management.
- Reduction in residential gardens.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

CAPTAIN COOK TREE (*Cascabela thevtia*)

Management Objective: Increase education to urban property owners and reduce infestations in residential gardens and riparian areas

Control: 

Spread: 

Risk category: Medium

Management Phase: protection of assets

Description:

- Ornamental perennial shrub growing to 10m.
- Bright green, narrow, pointed leaves 5-15cm long.
- Yellow bell-shaped flowers that are texturally waxy.
- Green fruit 2.5-4cm in diameter maturing to black when ripe.

Local Distributions:

- Clermont.
- All urban centres.

Local Impacts:

- Large spreading tree growing up to 10m tall.
- All parts of shrub are **HIGHLY POISONOUS**, particularly the sap and seeds which can be fatal if ingested.
- Competes with native vegetation.
- Spread successfully by dumped garden waste.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Survey and map all Environmentally Sensitive Areas for presence.
- Control infestations in riparian areas.
- Encourage community control and awareness through educational material.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Reduce and contain infestations in riparian areas on properties.
- Eradicate residential garden infestations.
- Active control on transport corridors (roads etc).
- Weed hygiene is maintained for machinery.
- Treated infestations are monitored for follow up

Success Indicators:

- Mapping data indicates more detailed extent of infestations.
- Reduced infestations in riparian areas on council owned land and rural properties.
- Prevent further spread in isolated cases.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.
- Education has led to a reduction in the use of declared weeds as ornamental plants across urban properties.

PRICKLY PEAR (*Opuntia spp. other than O.ficus-indica*)

Management Objective: Road reserves have minimal Prickly Pears present and bio-controls are established widespread

Control:	Spread:	Risk category: Medium	Management Phase: Protection of Assets

Description:

- Shallow-rooted perennial forming large, up to 1.5m, clumps.
- Thick and tough drought resistant skin.
- Flattened segments blue-green or green, around. 20cm long, with spines and barbed bristles.
- Large, brightly coloured flowers from Sept-Mar.
- Pear-shaped fruits red/orange/yellow and maturing to purple when ripe. Approx 4-6cm long

Local Distributions:

- Scattered throughout region on road reserves and private property.

Local Impacts:

- Can have a devastating impact on agricultural land and native ecosystems.
- Outcompetes native shrubs and groundcover species.
- Spines can cause injury to native animals, stock animals and humans.
- Provides harbourage for pest animals.
- Seeds remain viable for up to 20 years.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Pest management staff attend training/workshops and develop promotional education campaigns for the community.
- Prioritise control methods on Isaac Regional Council roads, stock routes and public reserves.
- To provide technical support to landholders.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Establish/investigate bio-controls as an integrated management strategy.

Success Indicators:

- Bio-controls established widespread across the region.
- Public spaces and travel corridors are safe for transport, stock movement and public uses.
- Cactus identification and management training events attended.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

ATHEL PINE (*Tamarix aphylla*)

Management Objective: Remaining population is contained and treated

Control:

Spread:

Risk category: Negligible

Management Phase: Prevention

Description:

- Sprawling tree growing to 15m.
- Dull green leaves resembling pine needles.
- Small pink-white flowers growing on 30-60mm spikes from December to February.
- Bell-shaped fruit containing small, cylindrical seeds.

Local Distributions:

- Clermont

Local Impacts:

- Drought resistant and thrives in riparian environments, outcompeting Eucalypt species and other natives for water resources, affecting important native bid and reptile habitats.
- Increases salt concentration of substrate.
- Increases erosion risk.
- Reduces table water and draining waterholes.
- Year-long germination.

<u>Operational Management</u>

Government and Industry:

- Co-ordinate integrated strategies throughout region.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on Isaac Regional Council transport corridors (roads etc).
- Landholders supported by Government, NRM Groups and NGOs for control programs.
- Treated infestations are monitored for follow up.
- Treatment and replacement as part of management plans for public spaces.
- Active control on riparian areas.
- To provide technical support to landholders.
- Encourage community control and awareness through educational material.

Property Owners:

- Weed hygiene is maintained for machinery.
- Active control on infestations in Environmentally Sensitive and high asset areas.
- Active control on transport corridors (roads etc).
- Treated infestations are monitored for follow up.
- Active control and containment in riparian areas.

Success Indicators:

- Increased knowledge about distribution across all localities.
- Gradual reduction and replacement in public spaces.
- Riparian areas infestations are reduced and controlled.
- Residential and business gardens are aware of impacts and presence is reduced in townships.
- Regional mapping indicates infestation is stable or reduced.
- Targeted catchments have reduced infestation densities.
- Funding / project management in collaboration with NRM.
- Property Biosecurity Plans reflects objectives in Isaac Regional Biosecurity Plan.

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APPENDIX 1: KNOWN PEST FLORA AND FAUNA IN THE ISAAC REGION

Pest Species	Biosecurity Act 2014 status	Other Sate identified significance	Local significance
Pest Plants Known			
African Lovegrass (*Eragrostis curvula*)		Invasive	
African Tulip Tree (*Spathodea campanulata*)	Restricted category 3		
Asparagus Fern (*Asparagus aethiopicus, A. africanus, A. plumosus, and A. scandens*)	Restricted category 3		
Athel Pine (*Tamarix aphylla*)	Restricted category 3		
Bellyache Bush (*Jatropha gossipifolia*)	Restricted category 3		
Broad-leaved Pepper tree (*Schinus terebinthifolius*)	Restricted category 3		
Captain Cook Tree / Yellow Oleander (*Cascabela thevetia*)	Restricted category 3		
Castor Oil Plant (*Ricinus communis*)		Invasive	
Cat's Claw Creeper (*Macfadyena unguis-cati*)	Restricted category 3		
Chinee Apple (*Ziziphus mauritiana*)	Restricted category 3		
Grader Grass (*Themeda quadrivalvis*)		Invasive	
Harrisia Cactus (*Harrisia martinii, H. tortuosa, and H. pomanensis syn. Cereus pomanensis*)	Restricted category 3		

Hymenachne (*Hymenachne amplexicaulis*)	Restricted category 3		
Lantana (*Lantana spp*.)	Restricted category 3		
Leucaena (*Leucaena leucocephala*)		Invasive	
Mesquite / Algarroba (*Prosopis pallida*)	Restricted category 3		
Mimosa Bush (*Vachellia farnesiana*)		Invasive	
Mother-of-Millions (*Bryophyllum delagoense*)	Restricted category 3		
Parkinsonia (*Parkinsonia aculeata*)	Restricted category 3		
Parthenium Weed (*Parthenium hysterophorus*)	Restricted category 3		
Prickly Acacia (*Vachellia nilotica*)	Restricted category 3		
Prickly Pear (*Opuntia spp. other than O. ficus-indica*)	Restricted category 3		
Rat's Tail Grasses (*Sporobolus fertilis, S. jacquemontii, S. natalensis, S. pyramidalis*)	Restricted category 3		
Rubber Vine (*Cryptostegia grandiflora*)	Restricted category 3		
Salvinia (*Salvinia molesta*)	Restricted category 3		
Sicklepod (*Senna obtusifolia*)	Restricted category 3		
Thatch Grass (*Hyparrhenia rufa*)			Local populations
Tobacco bush (*Elephantopus mollis*)	Restricted category 3		

Water Hyacinth (*Eichhornia crassipes*)	Restricted category 3		
Water Lettuce (*Pistia stratiotes*)	Restricted category 3		
Yellow Bells (*Tecoma stans*)	Restricted category 3	Invasive	
Sleeper Populations			
Albizia (*Albizia lebbeck*)			Local populations
Blue Agave (*Agave tequilana*)		Invasive	
Cumbungi (*Typha spp*.)		Invasive	
Duranta (*Duranta erecta*)		Invasive	
Japanese Sunflower (*Tithonia diversifolia*)		Invasive	
Mexican Poppy (*Argemone ochroleuca*)			Local populations
Mother-in-Law's Tongue (*Sansevieria trifasciata*)		Invasive	
Neem Tree (*Azadirachta indica*)		Invasive	
Noogoora Burr (*Xanthium occidentale*)		Invasive	
Snakeweed (*Stachytarpheta jamaicensis*)		Invasive	
Pest Animal Known			
Cane Toad (*Rhinella marina*)		Invasive	Local populations

Dingo/Wild Dog (*Canis lupus dingo/familiaris*)	Restricted 3, 4, 6		
European Fox (*Vulpes vulpes*)	Restricted 3, 4, 5, 6		
European Rabbit (*Oryctolagus cuniculus*)	Restricted 3, 4, 5, 6		
Feral Cat (*Felis catus*)	Restricted 3, 4, 6		
Feral Chital, Red, and Rusa Deer (*Axis axis, Cervus elaphus, Cervus timorensis*)	Restricted 3, 4, 6		
Feral Pig (*Sus scrofa*)	Restricted 3, 4, 6		
Locusts (*Austracris guttolosa, Locusta migratoria*)		Invasive	

APPENDIX 2: GENERAL BIOSECURITY OBLIGATION (*Queensland Legislation, 2020*)

The General Biosecurity Obligation requires everyone to; not do anything that exacerbates the biosecurity risk and/or not omitting to do something if omitting to do that thing would exacerbate that risk Under the Act, any person who deals with biosecurity matter or a carrier, or carries out an activity, should know or ought to reasonably know the biosecurity risk associated with the matter, carrier, or activity. The person has a general biosecurity obligation (GBO) to take all reasonable and practical measures to prevent or minimise the biosecurity risk. The person also has a general biosecurity obligation not to do, or omit to do, something that may exacerbate the adverse effects, or potential adverse effects of a biosecurity consideration. An example of an exacerbated adverse effect is failing to manage the impact of invasive plants and animals on a landholder property.

The Act states that the occupier of a place (the person who is effectively in day-to-day control of the place, whether or not the owner) is responsible for management of biosecurity matter on that land.

It is an offence to fail to discharge your general biosecurity obligation, with a maximum penalty of 3000 penalty units or 3 years imprisonment.

It is also an offence to possess prohibited without a permit. Restricted matter is divided into 7 categories defined under the *Biosecurity Act* and it is important to note that some invasive species may be present in more than one category. Current information on prohibited and restricted matter is available on the Biosecurity Queensland website or by contacting Council. (*Queensland Legislation, 2020*)

APPENDIX 3: RISK MATRIX CRITERIA

Criteria 1: Impacts

1a Impact area- Economic scoring criteria

Impact level	*This relates to how invasive plants and animals directly impact on business enterprises, particularly primary industries, or tourism, including losses to production and costs of control. It also considers land management costs to governments and utilities.*	Score
Major	• **Significant reduction in regional primary industries or tourism output.** • **De-evaluation of land use both financial and operational.** • **Control is a significant addition to existing routine management practices.** • **Major disruption to government land and infrastructure management and/or regional business or industry.** • **Major threat of harassment or injury to stock, including displacement from food or water or sufficient stress to result in death.** • **High potential to impact on tourism values.** • **Serious threat of transmission of disease/parasites to livestock.**	**4**
Moderate	• **Moderate reduction in regional primary industries enterprises or tourism output.** • **Invasive plant or animal threat to crop/pasture can be abated as part of routine management practices.** • **Control is a moderate addition to existing routine management practices.** • **Moderate disruption to government land and infrastructure management and/or regional business or industry, or localised major disruption.** • **Pest threats to agriculture, stock or land damage can be effectively mitigated (or partially effective) through concentrated control management.** • **Moderate level of harassment or injury to livestock (impacts may occur at times but only result in moderate injuries).** • **Moderate potential to impact on tourism values.** • **Moderate, indirect threat of disease transmission to livestock.**	**3**
Minor	• **Minor reduction in primary industry or tourism assets** • **Control is a minor addition to existing routine management practices.** • **Minor disruption to government land and infrastructure management and/or regional business or industry, or localised moderate impacts.** • **Pest threats to agriculture, stock or land damage can be successfully mitigated mostly or entirely through concentrated control management.** • **Minor level of harassment or injury to livestock (impacts may occur at times but only result in moderate injuries).** • **Minor potential to impact on tourism values.** • **Risk of slight physical injuries or cause mild illness in livestock.**	**2**

Insignificant	• **Not of concern to primary industries or tourism output.** • **No or negligible disruption to government land and infrastructure management and/or business or industry.** • **Low or no potential to impact on tourism values.** • **Doesn't pose any significant.** • **Non-existent or rare chance of stress, injury, or disease transmission to livestock.**	**1**
Don't know	• **Insufficient knowledge or information to identify an impact category.**	**2***

1b Impact area – Social sustainability scoring criteria.

Impact level	***This relates to how invasive plants and animals directly impact on people's use of town, peri-urban and natural landscapes for access, recreation, cultural use, and aesthetics.***	**Score**
Major	• **Potential to form solid stands of invasive plants or dense populations of invasive animals across the region.** • **High potential for altered riparian or aquatic vegetation to reduce water quality that plays key roles in local amenities.** • **High potential to invade communities threatening parks, gardens, urban wildlife, and domestic animals.** • **Major threat to natural areas, nearby creeks, rivers, and bushland.** • **Could impact amenity values or damage social infrastructure.** • **May provide harbourage for vermin and invasive animals.** • **Major potential to affect the liveability of property.** • **Potential to substantially affect or transform environmental vegetation, habitats, or areas important to indigenous heritage, knowledge, and culture.** • **Control is a significant addition to existing routine management practices.**	**4**
Moderate	• **Potential to move into degraded areas in and around townships/communities including into riparian areas, bushland, and gardens.** • **May affect access, appearance, or increase management requirements.** • **High potential for other invasive species to establish following treatment of target species.** • **Moderate potential to affect the liveability of property.** • **Potential to alter some vegetation, habitats, or areas important to indigenous heritage, knowledge, and culture.** • **Requires targeted management but threat to community areas can be responded to as part of regular management.**	**3**
Minor	• **Likely to affect appearance or bring about complaints from residents or neighbours.**	**2**

	• **Minor potential to affect the liveability of property.** • **Impacts caused to some vegetation or native animals that is tolerated on cultural sites and requires small management steps.** • **May impact the function, appearance or use of community and residential areas, and require a low-level maintenance or management response.**	
Insignificant	• **Unlikely to affect cultural aspects, community use and enjoyment of areas.** • **Unlikely to affect the liveability of property.** • **May exist in isolated areas due to release or urban escapees but is not likely to spread or dominate vegetation and gardens in the community.**	**1**
Don't know	• **Insufficient knowledge or information to identify an impact category.**	**2***

1c Impact area – Human health scoring criteria

Impact level	***This relates to how invasive plants and animals may have direct health and safety impacts on people, including injury and infection risks.***	**Score**
Major	• **Severe impacts resulting in serious injuries, severe illness, or death.** • **May include transmission of serious diseases, venomous or dangerous animals, chronic poisoning etc.**	**4**
Moderate	• **Occasionally causing physical injuries (due to spines or barbs), moderate threat of disease transmission and/or illness (poisoning, strong allergies).**	**3**
Minor	• **Slight physical injuries or mild illness with no lasting effects.**	**2**
Insignificant	• **No or extremely insignificant injuries, illness, or discomfort.**	**1**
Don't know	• **Insufficient knowledge or information to identify an impact category.**	**2***

1d Impact area – Environmental scoring criteria

Impact level	***This relates to how invasive plants and animals' impact on biodiversity and the health of natural ecosystems.***	**Score**
Major	• **Highly likely to drastically out-compete native species, transform ecosystems and impact on biodiversity in a broad range of natural areas, including areas of intact high value vegetation.** • **High potential to cause injury, suffocation, illness, diseases or poisoning of already threatened/ endangered native flora or fauna.** • **Major threat of soil erosion or altered soil composition.** • **Where applicable: High potential to disturb the functions of water flow and natural changes of waterways.**	**4**

	• **Severe habitat alterations leading to decline or changes in population dynamics for native flora and/or fauna species.**	
Moderate	• **Potential to invade disturbed systems and impact on ecosystems that may be already degraded.** • **Moderate potential to cause injury, suffocation, illness, diseases or poisoning of native flora or fauna.** • **Moderate threat of soil erosion or altered soil composition.** • **Where applicable: Low potential to disturb the functions of water flow and natural changes of waterways.** • **Moderate habitat alterations leading to small decline or changes in population dynamics for native flora and/or fauna species.**	**3**
Minor	• **Potential to develop a presence in natural areas however will not out-compete native species or alter ecosystems.** • **Minor potential to cause injury, suffocation, illness, diseases or poisoning of native flora or fauna.** • **Presents a threat to soil erosion or composition**	**2**
Insignificant	• **Unlikely to establish in natural areas other than in isolated infestations e.g. dumping or urban escapes.** • **Unlikely to spread or penetrate undisturbed areas.**	**1**
Don't know	• **Insufficient knowledge or information to identify an impact category.**	**2***

Criteria 2: Invasiveness

Invasiveness scoring criteria.

Invasiveness level	**Ability to spread and establish (invasiveness)**	**Score**
Very high	Invasive plants: • **Can easily establish within dense vegetation, or amongst thick infestations of other invasive plants.** • **May produce seeds within one year or less, produce high amounts of seeds and/or spread by vegetative means including fragments, runners, or bulbs.** • **Are commonly dispersed >100m by natural means (e.g. birds, other animals, water, wind).** • **Are commonly dispersed by people (e.g. fodder contaminant, hitchhiker, garden plant).** • **Is tolerant to changing conditions and can establish well in variable habitats.** Invasive animals: • **Very high potential for dispersal (highly mobile, commonly dispersing more than 3 home ranges).** • **Very high likelihood of deliberate or accidental human aided movement.**	**4**

	• **Dispersal and/or establishment not impeded by geographic or climatically unfavourable conditions.** • **Reaches reproductive maturity quickly (e.g. within 6 months).** • **Can reproduce many times during lifespan or has to capacity to have large numbers of offspring.**	
High	Invasive plants: • **Easily establish within more open vegetation, or amongst average infestations of other invasive plants.** • **May produce seeds between 1-3 years, produce moderate amounts of seeds and/or spread moderately/frequently from plant parts.** • **Can be frequently dispersed by more than 1 dispersal methods (e.g. birds, other animals, water, wind).** Invasive animals: • **High potential for dispersal (highly mobile, occasionally dispersing more than 3 home ranges).** • **High likelihood of deliberate or accidental human aided movement.** • **Dispersal and/or establishment is not impeded by geographic or climatically unfavourable conditions.** • **Reaches reproductive maturity in a short period (e.g. 6 - 12 months).** • **Can reproduce several times over life span.**	**3**
Medium	Invasive plants: • **Mainly establish when there has been moderate disturbance to existing vegetation, which substantially reduces competition (e.g. intensive grazing, mowing, raking, clearing of trees, temporary floods, or summer droughts).** • **May produce seeds after 3 years, produce low amounts of seeds, and/or spread slowly/infrequently by plant parts.** • **Are occasionally dispersed >100m by at least 1 dispersal methods (e.g. birds, other animals, water, wind).** Invasive animals: • **Moderate potential for dispersal (moderate mobility).** • **Can disperse to a limited area of localised and ecologically suitable habitat.** • **Reaches reproductive maturity in a moderate period (e.g. 1-3 years) and only has broods of 1-2 offspring.**	**2**
Low	Invasive plants: • **Mainly needs bare ground to establish, including removal of stubble/leaf litter (this may occur after major disturbances such as cultivation, overgrazing, hot fires, grading, long-term floods, or long droughts).** • **Invasive plants do not produce seeds; are spread by plant parts; are not usually dispersed >100m.** Invasive animals: • **Low potential for dispersal (only found in specific localities)**	**1**

	• **Requires specific and uncommon means of dispersal and/or is sedentary.** • **Low tolerance to environmental variation.** • **Reaches reproductive maturity over a long period (e.g. > 3 years) and only has broods of 1-2 offspring.**	
Don't know	• **Insufficient knowledge or information to identify an impact category.**	**2***

Criteria 3: Potential distribution

Potential distribution scoring criteria

Distribution level	Score
• **The species has the potential to spread to more than 70% of suitable habitat within the area and has a widespread distribution over multiple localities or bodies of water.**	**4**
• **The species has the potential to spread to between 30-70% of suitable habitat within the area and has a common distribution over multiple localities or bodies of water.**	**3**
• **The species has the potential to spread to between 10-30% of suitable habitat within the area and is found over a few local habitats or bodies of water.**	**2**
• **The species has the potential to spread to between < 10% of suitable habitat.**	**1**
• **Insufficient knowledge or information to identify a potential distribution category.**	**2***

APPENDIX 4: RISK SCORE CALCULATION

APPENDIX 5: RISK MATRIX RESULTS

Pest Animal	Total Impact (Average)	Invasiveness	Potential distribution	Total Risk Score	Risk category (R)
Feral Pig (*Sus scrofa*)	3.75	4	4	60	Very High
Feral Cat (*Felis catus*)	3.5	4	4	56	Very high
Dingo/Wild Dog (*Canis lupus dingo/familiaris*)	3	4	4	48	Very High
Feral Deer (*Axis axis, Cervus elaphus, Cervus timorensis*)	2.5	3	3	22.5	High

Invasive Weed					
Parthenium (*Parthenium hysterophorus*)	3.75	4	4	60	Very high
Parkinsonia (*Parkinsonia aculeata*)	3.75	4	4	60	Very high
Prickly Acacia (*Vachellia nilotica*)	3.75	4	4	60	Very high
Castor Oil Plant (*Ricinus communis*)	3.75	4	4	60	Very high
Mimosa Bush *(Vachellia farnesiana)*	3.5	4	4	56	Very high
Salvinia (*Salvinia molesta*)	3.25	4	4	52	Very high
Chinee Apple (*Ziziphus mauritiana*)	3.25	4	4	52	Very high
Rat's Tail Grass (*Sporobolus fertilis, S. jacquemontii, S. natalensis, S. pyramidalis*)	3	4	4	48	Very high
Hymenachne (*Hymenachne amplexicaulis*)	3.5	4	4	48	Very high
Mother-of-Millions (*Bryophyllum delagoense*)	3	4	4	48	Very high
Lantana (Lantana spp.)	3.75	4	3	45	Very high
Bellyache Bush (Jatropha gossipifolia)	3.5	4	3	42	Very high
Feral Leucaena (*Leucaena leucocephala*)	2.5	4	4	40	Very high
Water Lettuce (*Pistia stratiotes*)	3.25	4	3	39	Very high

Harrisia cactus (*Harrisia martinii, H. tortuosa, and H. pomanensis syn. Cereus pomanensis*)	3.25	2	3	19.5	High
Rubber Vine (Cryptostegia grandiflora)	2.5	3	2	15	High
Broadleaved Pepper Tree (*Schinus terebinthifolius*)	1.5	3	3	13.5	Medium
Opuntioid Cacti *(Austrocylindropuntia, Cylindropuntia and Opuntia species)*	2.25	2	3	13.5	Medium
Captain Cook Tree (*Cascabela thevetia*)	3	2	2	12	Medium
Athel Pine (*Tamarix aphylla*)	1.5	1	3	4.5	Negligible

APPENDIX 6: MANAGEMENT FEASIBILITY CRITERIA

Criteria 1: Current Distribution

Rating	Current Distribution	Score
None	• **The species is not present in the area but has the potential to occur.**	**0**
Low	• **Infestations or populations only occur in a small part of the area.** • **Invasive plants or animals occur as isolated outbreaks or individuals.**	**1**
Moderate	• **Infestations or populations occur in less than half of the management areas.** • **Invasive plants or animals occur scattered or clumped in small populations.**	**2**
High	• **Infestations or populations occur in more than half of the area.** • **Invasive plants or animals form dense infestations or populations.**	**3**
Very high	• **Infestations or populations occur in most of the area.** • **Invasive plants or animals form dense infestations or populations.**	**4**

Criteria 2: Control Costs

Category	Cost of control	Score
4	• **Where costs (including chemicals, labour, and equipment if necessary) are greater than $3000 per hectare.**	**4**
3	• **Where costs (including chemicals, labour, and equipment if necessary) are between $1500 and $3000 per hectare.**	**3**
2	• **Where costs (including chemicals, labour, and equipment if necessary) are between $250 and $1500 per hectare.**	**2**
1	• **Where costs (including chemicals, labour, and equipment if necessary) are below $250 per hectare.**	**1**

Don't know	• **Insufficient knowledge or information to identify a category.**	**2***

Criteria 3: Control Effectiveness

Rating	Effectiveness of control	Score
Very high	• **Control options are available and are highly effective, and/or** • **Very low to no likelihood of the invasive plant or animal being reintroduced into the area under management.**	1
High	• **Control options are available and are effective, and/or** • **Low likelihood of the invasive plant or animal being reintroduced into the area under management.**	2
Moderate	• **Control options are available and are moderately effective and/or** • **Some likelihood of the invasive plant or animal being reintroduced into the area under management.**	3
Low	• **Control options are ineffective or non-existent and/or** • **High likelihood of the invasive plant or animal being reintroduced into the area under management.**	4
Don't know	• **Insufficient knowledge or information to identify a category.**	2*

APPENDIX 7: FEASIBILTY SCORE CALCULATION

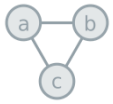
APPENDIX 8: RESULTS OF FEASABILITY OF CONROL AND CORRESPONDING MANAGEMENT OBJECTIVES

Pest Species	Current Distribution	Control Costs	Control Effectiveness	Feasibility Score	Feasibility of Control Category (FoC)	Risk Category (R)	FoC x R = Management Objective
Pest Animal							
Feral Pig (*Sus scrofa*)	4	4	3	48	Negligible	Very High	Asset based protection
Feral Cat (*Felis catus*)	4	3	4	48	Negligible	Very High	Asset based protection
Dingo/Wild Dog (*Canis lupus dingo/familiaris*)	4	3	4	48	Negligible	Very High	Asset based protection
Feral Deer (*Axis axis, Cervus elaphus, Cervus timorensis*)	3	4	4	48	Negligible	Very High	Asset based protection
Invasive Weed							
Parthenium (*Parthenium hysterophorus*)	4	4	4	64	Negligible	Very High	Asset based protection

Parkinsonia (*Parkinsonia aculeata*)	4	3	4	48	Negligible	Very High	Asset based protection
Prickly Acacia (*Vachellia nilotica*)	4	3	4	48	Negligible	Very High	Asset based protection
Castor Oil Plant (*Ricinus communis*)	4	2	3	36	Negligible	Very High	Asset based protection
Mimosa Bush *(Vachellia farnesiana)*	4	3	3	36	Negligible	Very High	Asset based protection
Salvinia (*Salvinia molesta*)	4	4	2	32	Negligible	Very High	Asset based protection
Chinee Apple (*Ziziphus mauritiana*)	3	3	2	18	Low	Very High	Asset based protection
Rat's Tail Grass (*Sporobolus fertilis, S. jacquemontii, S. natalensis, S. pyramidalis*)	4	4	3	64	Negligible	Very High	Asset based protection
Hymenachne (*Hymenachne amplexicaulis*)	3	4	3	48	Negligible	Very High	Asset based protection
Mother-of-Millions (*Bryophyllum delagoense*)	4	2	4	32	Negligible	Very High	Asset based protection
Lantana (Lantana spp.)	4	4	4	64	Negligible	Very High	Asset based protection

Bellyache Bush (Jatropha gossipifolia)	4	2	4	32	Negligible	Very High	Asset based protection
Feral Leucaena (*Leucaena leucocephala*)	4	2	4	32	Negligible	Very High	Asset based protection
Water Lettuce (*Pistia stratiotes*)	3	4	4	48	Negligible	High	Asset based protection
Harrisia cactus (*Harrisia martinii, H. tortuosa, and H. pomanensis syn. Cereus pomanensis*)	4	2	3	36	Negligible	High	Asset based protection
Rubber Vine (Cryptostegia grandiflora)	4	3	4	48	Negligible	High	Asset based protection
Broadleaved Pepper Tree (*Schinus terebinthifolius*)	2	1	1	2	Very High	Medium	Control
Opuntioid Cacti *(Austrocylindropuntia, Cylindropuntia and Opuntia species)*	3	2	1	6	Medium	Medium	Asset based protection
Captain Cook Tree (*Cascabela thevetia*)	2	3	1	6	Medium	Medium	Asset based protection
Athel Pine (*Tamarix aphylla*)	1	3	1	3	Very High	Negligible	Prevention

APPENDIX 9: CONTROL STRATEGIES AND METHODS OF SPREAD (LEGEND FOR OPERATIONAL PLAN)

Management Approach		
Integrated 	Biocontrol 	Chemical 
Mechanical 	Grazing 	Fire 
Methods of Spread		
Birds / Animals 	Livestock 	Wind 
Water 	Machinery / Vehicles 	Animal Feed 
Garden / Ornamental / Aquarium Escapee