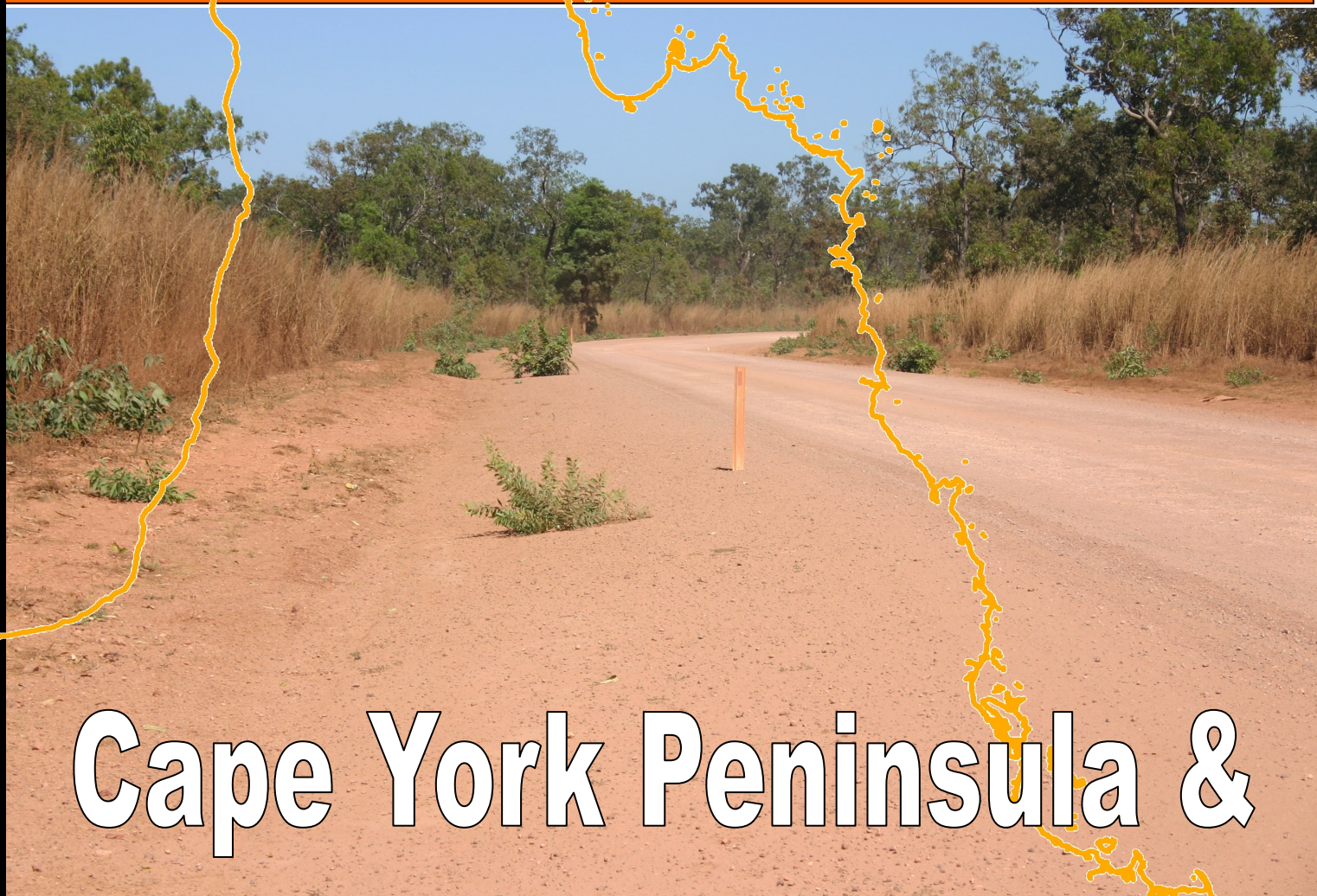


Gamba Grass Management Plan



Cape York Peninsula &

Far North Queensland

Stage two - 2016-20

The first iteration of this plan (Stage I) was developed in a partnership between Cape York Weeds and Feral Animals Program, Far North Queensland Regional Organisation of Councils (FNQROC), Queensland Department of Environment and Resource Management, Queensland Department of Main Roads. Drafted in consultation with the Cape York Pest Management Advisory Group and the Far North Queensland Natural Asset Management Advisory Committee it was adopted in 2012.

This revised version (Stage II) was compiled by FNQROC in consultation with regional stakeholders and the project technical working group. It provides an overview of progress in management to date and outlines Stage II implementation of the plan for management. It follows on from the implementation of Stage I and completion of funded and in-kind works in a cross regional project running from 2012-15.

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Introduction

Gamba grass (*Andropogon gayanus*) is a highly invasive grass which has spread through Cape York Peninsula and Far North Queensland by both deliberate introduction and accidental spread. The first recorded naturalised plant in Queensland was identified in Bamaga in 1992 but it is likely it was already established elsewhere by that time (Csurhes 2005). These sources were previously planted as an improved pasture or sown for commercial seed production. Gamba grass can invade a variety of natural habitats from open savannah woodlands to margins of watercourses and wetlands. It is particularly well suited to the disturbed soils of roadsides and service corridors and this presents one of the key modes of spread. There are three core infestations found across Cape York Peninsula located in the Northern Peninsula Area, Weipa and Cooktown. A further major infestation is situated in the Mareeba area of adjoining Far North Queensland. The infestations range from single plants through to large single species stands.

Gamba grass is Restricted Matter (Category 3) in Queensland and is one of 32 Weeds of National Significance.



A new infestation in the making; scattered Plants along the Weipa Road.

This plan for management outlines Stage II of the implementation of a cross-regional planning approach for Gamba grass and follows on from the implementation of Stage I supported in part through Commonwealth funding under the Land Sector Package, 2012-15. The plan also reports on the progress of management on ground from 2007 - 2016, including the outcomes from funded works.

Impacts of gamba grass

Gamba grass is a serious environmental weed in the Darwin and Bachelor regions of Northern Territory and Venezuela and is a weed of major concern and a priority for management in Cape York Peninsula and Far Northern Queensland. Gamba grass is a highly competitive weed generating up to ten times the biomass of native species. This impacts of is two-fold; out-competing native species, and significantly increasing fuel loads and fire intensity 3-8 times that of native savannah grasses . As a major competitor in native pasture gamba can reduce available soil nutrients (nitrates, Rossiter et.al 2004) and significantly reduce water penetration by intercepting it the soil surface.

Environmental

In northern tropical savannah ecosystems gamba grass is identified as a transformer species, a species which structurally alters the species composition and ecosystem function of native woodlands and grasslands. Gamba is a prolific seed producer and is able to actively invade disturbed as well as intact areas quickly becoming the dominant species. This dominance is assisted by increased intensity of fires which can also lead to loss of tree canopy, particularly in late dry season fires. The subsequent impact of these factors on wildlife is significant as species to species dependencies are destroyed when gamba displaces diverse vegetation they utilise on for habitat with single-species grassland.

Social

Fire is an essential component of life and land management within Australia's tropical savannah and communities are well adapted to managing and utilising fire across the landscape. In and around settlements and infrastructure gamba grass fires are a significant threat to life and property, particularly if fuels loads are not managed before the late dry season.

Much of the economic resources of the Cape York Peninsula are derived from dry season tourism based on the rich cultural and ecological landscape. An increasing intensity and scale of dangerous fires coupled with ecological and cultural impacts is direct threat to local industry and lifestyle.

Economic

The increased resources in time and effort required for community brigades and land managers to respond to increased fuel loads as direct consequence of gamba infestations has been well researched in the Northern Territory. Major shifts in fire management resources and skills have had to evolve rapidly with the increasing risk to life and property. Intense fires resulting from infestations require 2-10 times the resources to suppress. The added impost of managing infestations and outbreaks on already under resourced weed management budgets directs resources from other programs.

Cultural

In the Australian tropical savannah the relationship between people, fire and country has evolved over tens of thousands of years. Increased fuel loads and fire intensity will impact on traditional burning cycles and access to country altering the availability of traditional foods and resources.

Aim

This plan is Stage II of a two part management plan which aims to achieve the long term goal of reducing the impact of Gamba grass on the cultural, environmental, social and economic values of Cape York Peninsula and Far North Queensland. The primary aim of the first stage of the plan for management (implemented 2011-15) was to reduce the spread along key pathways and corridors and to direct systematic management effort to isolated and high risk infestations. This was achieved by targeting efforts on publically accessible land and the road networks of Cape York Peninsula and Far North Queensland. This second stage focuses on how to maintain and build on the gains of previous investment through 3 key means; catchment scale planning to reduce impacts and spread on a locality basis; development of code of practice for the containment of infestations or bon-fide intensive production systems on private land (established prior to declaration) and by continuing to ensure risk of spread along key spread pathways is managed through local planning and investment in local government biosecurity plans.



Figure 1. Signage forms part of the communication and management strategy by reducing the likelihood of spread from roadside infestations under management or monitoring

Program logic

In order to guide the practical delivery of this plan and monitor and evaluate its implementation the program logic below was developed. The program logic provides a framework for planning, reporting and communicating management investment in both the biophysical outcomes of management as well as the social, institutional and economic means required to deliver them.

Long Term outcome	Reduce the impact of Gamba grass on environmental, Cultural, Social and economic values of Far North Queensland and Cape York Peninsula		
Intermediate outcomes	<i>Shared Responsibility and commitment is maintained across the regions</i>	<i>Align to one strategic management plan with shared strategic goals</i>	<i>The Impact and extent of Gamba grass is reversed (progressively improved)</i>
Intermediate Actions	Delimit, Prevent, Remove (manage incursions)	Intensive control & impact reduction (manage infestations)	Partnerships and awareness
Planning and Coordination	Sustained management focus on eradication within eradication areas	Sustained management outcomes within impact reduction and containment areas	Maintain and build partnerships and awareness through shared strategic and resource planning
Operational	Rapid response to any new incursions within prevention areas	Establishing and maintaining buffer zones and spread prevention systems and protocols	Clearly communicate management aims through targeted awareness programs
Monitoring and feed back	Active monitoring and surveillance programs within incursion management zones	Monitor management progress within core infested zones areas	Ensure cross regional review and collaboration

Scope

This plan for management covers the combined areas of Cape York Peninsula and Far North Queensland. The administrative areas within the scope of this plan include The Northern Protected Area, Mappoon, Napranum, Lockhart River, Kowanyama, Hope Vale, Wujal Wujal, Tablelands, Mareeba, Cairns, Douglas, Cassowary Coast, Yarrabah, and Hinchinbrook. Within these administrative boundaries the primary focus of the plan is on the bioregions of the Einasleigh Uplands, Northern Gulf Plains and Cape York Peninsula.

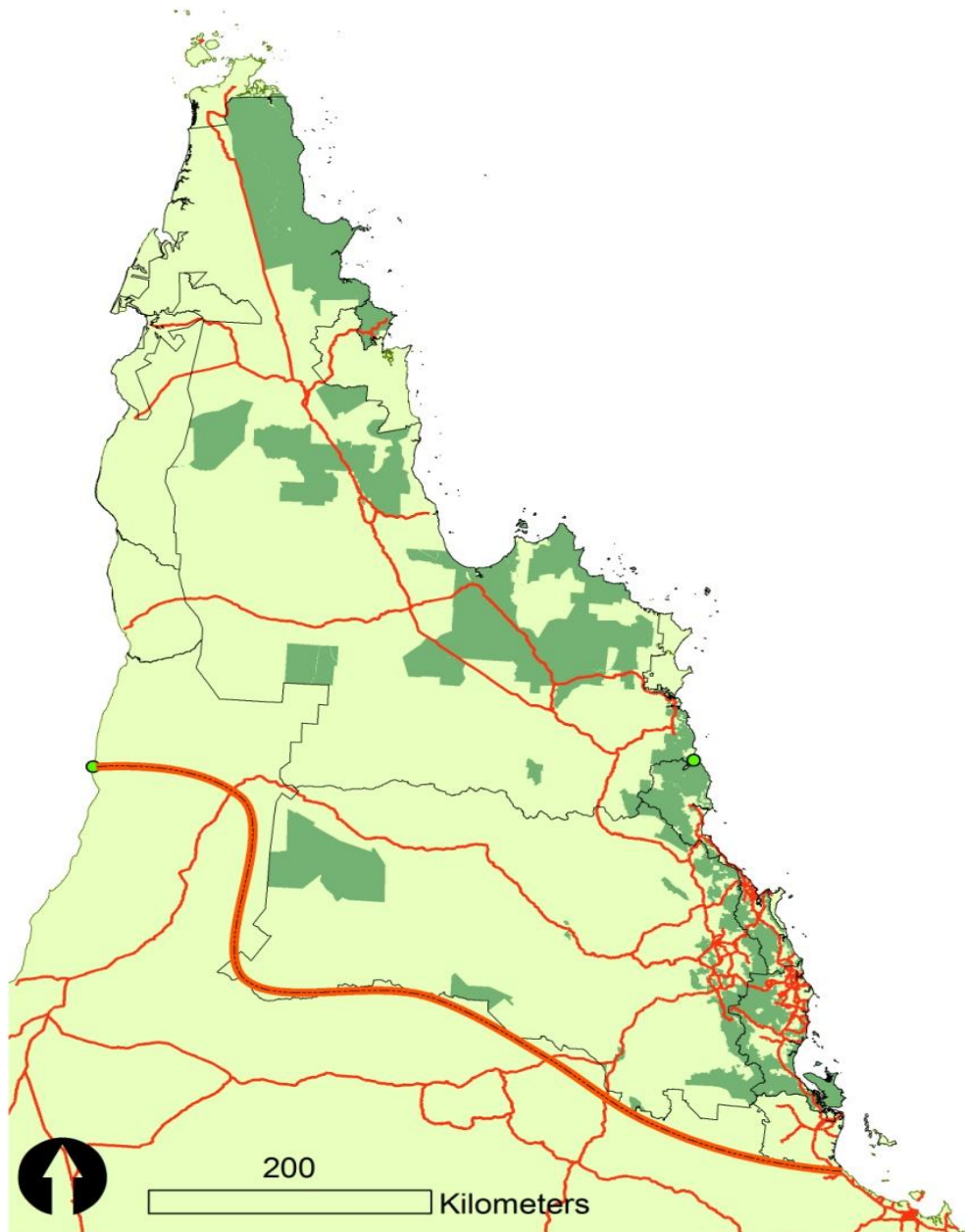


Figure 2 Road network and southern plan boundary

Pathways of spread

Like all high biomass grasses gamba's spread occurs along both natural and man-made pathways. Understanding the nature and risk of spread (figure 1a) and where management can intervene is critical in preventing the exponential spread of an infestation (figure 1b). Major works along transport and infrastructure networks have been the key mechanisms of long-distance spread across Cape York Peninsula and the rangelands of Far North Queensland. Localised spread mechanisms allow existing infestations to consolidate and increase the risk of spread via long distance means requiring management programs to consider both the local and landscape context of the task at hand. The clear communication and understanding of both the mechanisms and risk of spread is essential and requires not just shared operational strategies but also uniform planning, reporting, communication and prioritisation.

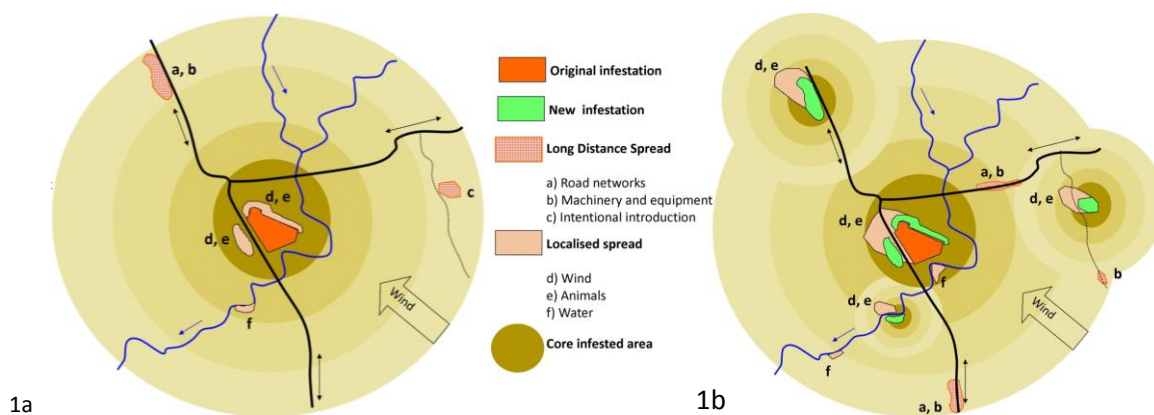


Figure 3a) Gamba grass spreads on both localised invasion 'fronts' (d, e, f) as well as long distance 'spotting' (a, b, c) potentially many kilometres from the source population 1b) Left unchecked gamba will exponentially increase making it increasingly difficult for management to successfully intervene. The abundance of seed produced and the rapid maturation of plants enables core areas to rapidly expand and consolidate further adding to the risk of spread.

Comparative distribution on major road network - 2007-2015

The comparison below provides an overview on the progress of management along major road networks of Cape York Peninsula between 2007 and 2015. The additional infestation areas (highlighted blue) of Northern Peninsula Area, Weipa RTA mine and Silver Plains do not have comparative data included for these timescales. The post 2016 map also includes the north and west infestations from the Cooktown region as this data are not comparative to the other map data and so have been highlighted as a data gap (i.e. should not be read as an absence).

The figures demonstrate the contraction of roadside infestations to those adjacent core infested areas. Implicit in this is the transition of the Musgrave-Bamboo and the Hann River -Kalinga management areas to monitoring toward complete removal. The reduction in the numerous outlier scattered and smaller occurrences and infestations has reduced the workload in these areas of the road network to annual monitoring and maintenance. Careful monitoring of historical treatment sites and monitoring for new incursions will be required into the future to maintain these gains. Ongoing survey and monitoring works will also assist insure against uncertainties in data collection and any anomalies such as climate driven reduction in abundance.

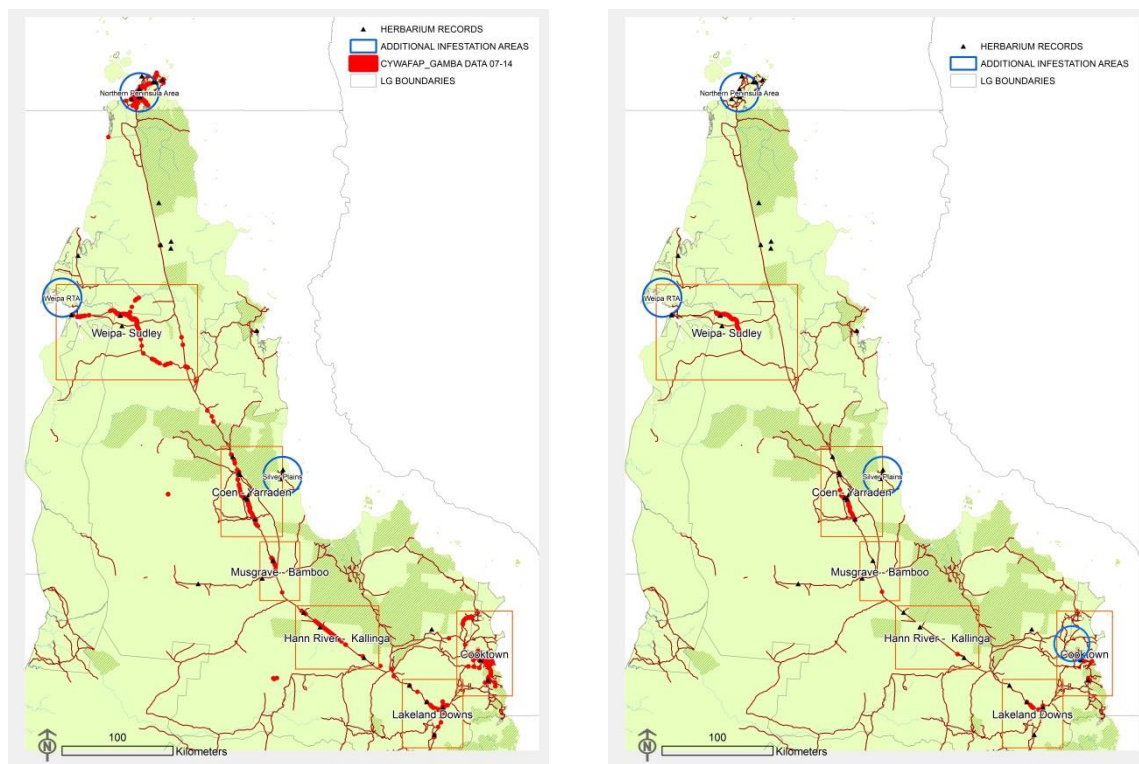


Figure 4 Management data for the main transport and road networks of Cape York Peninsula. pre-2013 (left) and post-2016 (right).

Progress in management

A substantial investment from in-kind and funded sources since 2007¹ demonstrates region wide progress in reducing the impacts and spread of Gamba grass. Incorporation of these strategic aims into local and regional planning instruments will assist to enable the legacy of this investment to be maintained and built on into the future. To this end zone based action plans for Gamba grass have been incorporated into local government biosecurity/pest management plans and regional strategies.



Figure 5 Glen Russell monitoring site 3. A significant investment in change of crop by landholder has worked in with funded works to reduce risk of spread from private to public land. Over 25 hectares have been transitioned from Gamba grass to other crops.

Targeted investment and revisits to publically accessible land adjoining core infestations has significantly reduced the risk of spread from road corridor adjacent to core infestations and removed outlier infestations and incursions. A range of significant outliers have been successfully eradicated during this period whilst others are in monitoring toward that goal. The aims of Stage I of this plan was to remove outlier infestations and push areas of management back core infestations. The primary purpose of this was to prevent outlier infestations establishing new core areas which would more difficult to manage into the future. The following figures and narrative outline the progress at the key management sites associated with the Cape York road network.

Within the Glen Russell management area significant areas of high risk infestations adjoining public roads have been transitioned to alternative crops. The projects site 3 monitoring point captures the transition of over 25 hectares of Gamba grass to other fodder crops. The cultivation area is crossed by a public road so a long term reduction in risk of spread has been achieved.

¹ 2007 marks the beginning of data collection from the then Cape York Weeds and Feral Animals Program (CYWAFAP). Data available prior to this point does not have the coverage to suit analysis across the entire region

Weipa– Sudley core infestation area

Management effort at this location has focused on installing and maintaining a buffer alongside the road corridor and access points. This buffer reduces the likelihood of transmission and spread of seed from vehicles. The area where the core infestation on leasehold land adjoins the road network is clearly identified in this time series. Future works in this location will direct effort to the establishment of containment protocols via a range of tools including a code of practice developed by the National Gamba Grass Taskforce which is able to be implemented under the Queensland Biosecurity Act 2014. Outside of the core infestation area efforts will focus on maintaining monitoring and immediate removal of outliers as a part of routine maintenance.

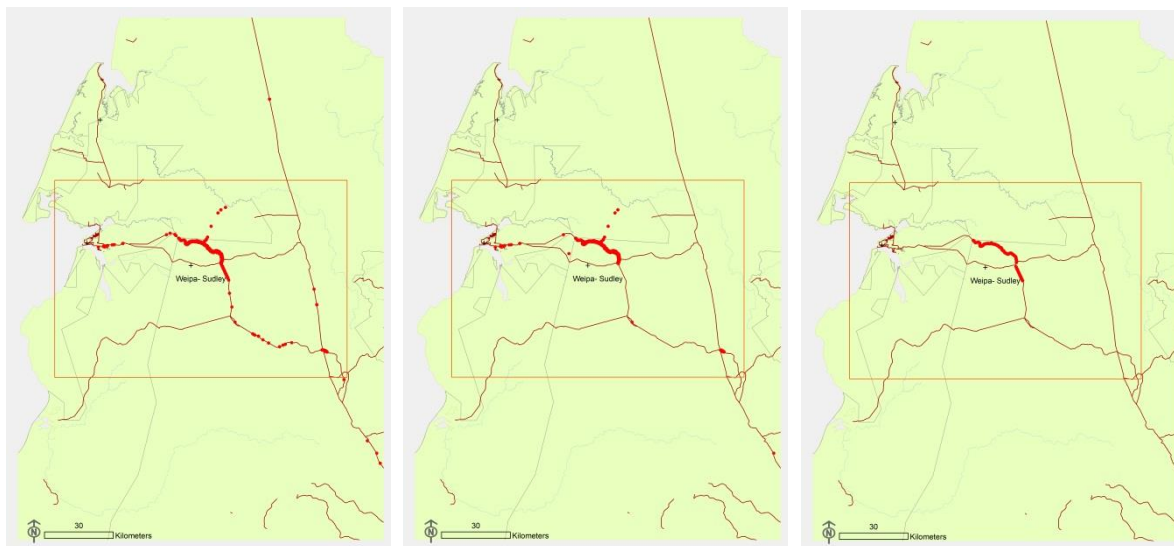


Figure 6 Weipa-Sudley infestation management. 2000-2013 (left), 2013-14 (middle), 2015-16 (right). Black crosses indicate pre 2000 herbarium records

Coen-Yarraden core infestation area

Management effort at this infestation has focused on installing and maintaining a buffer alongside the road corridor and access points. Spread of this infestation was also exacerbated by the lack of weed hygiene measures during the installation of a fiber-optics communication cable. This subsequently led to the spread of Gamba grass to the north and south of the core infestation. The outliers established by this and the spread along roadside have been reduced back to the core area. The roadside buffer in this area also reduces the likelihood of spread east toward Port Stewart (Mojeeba, Silver Plains). The buffer area is set back from publically accessible areas by virtue of the width of the road corridor. Future works in this location will direct effort to the establishment of containment protocols via a range of tools including a code of practice developed by the National Gamba Grass Taskforce which is able to be implemented under the Queensland Biosecurity Act 2014. Outside of the core infestation area efforts will focus on maintaining monitoring and immediate removal of outliers as a part of routine maintenance.

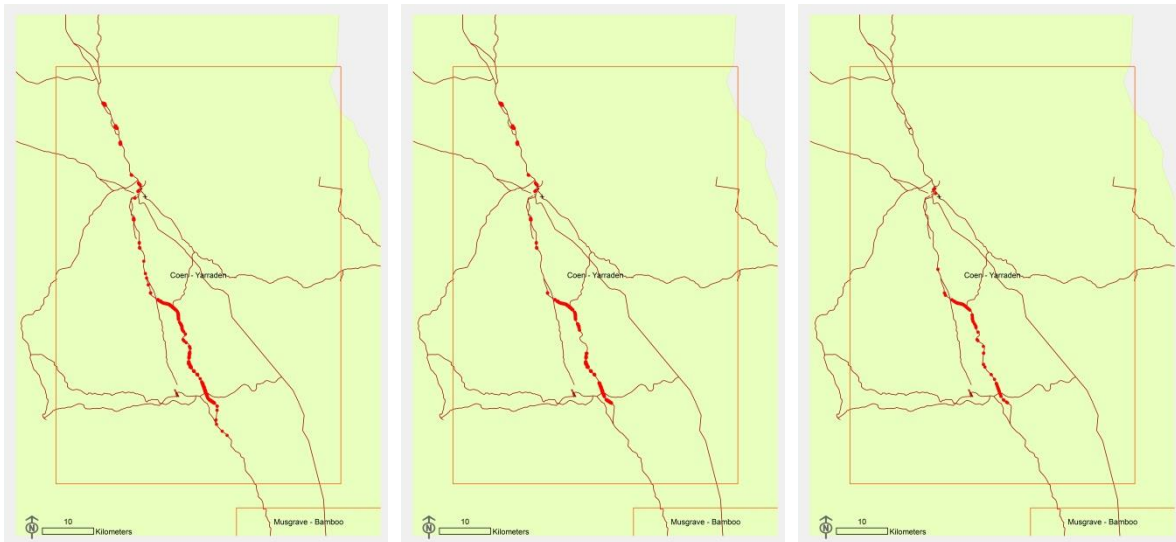


Figure 7 Coen-Yarraden infestation management. 2000-2013 (left), 2013-14 (middle), 2015-16 (right). Black crosses indicate pre 2000 herbarium records

Musgrave- Bamboo outlier infestation

Management effort at this outlier infestation have focused on removal and monitoring of isolated clumps and individual plants. Future works will focus on monitoring of treatment sites for re-emergence from seed and fresh introductions.



Figure 8 Musgrave-Bamboo infestation management. 2000-2013 (left), 2013-14 (middle), 2015-16 (right). Black crosses indicate pre 2000 herbarium records

Hann River – Kallinga core infestation

Management effort at this infestation has focused both on management of the core infestation and the road network. A significant reduction in isolated and clumped plants on the roadside has been aided by the management of the core infestation on private lands adjoining. Queensland Parks and Wildlife Service has maintained a detailed management brief on this site to remove the threat to adjoining Rinyirru National Park which is downstream on the Hann River. Future works will monitor management sites for re-emergence from seedbank and any remove any fresh introductions.

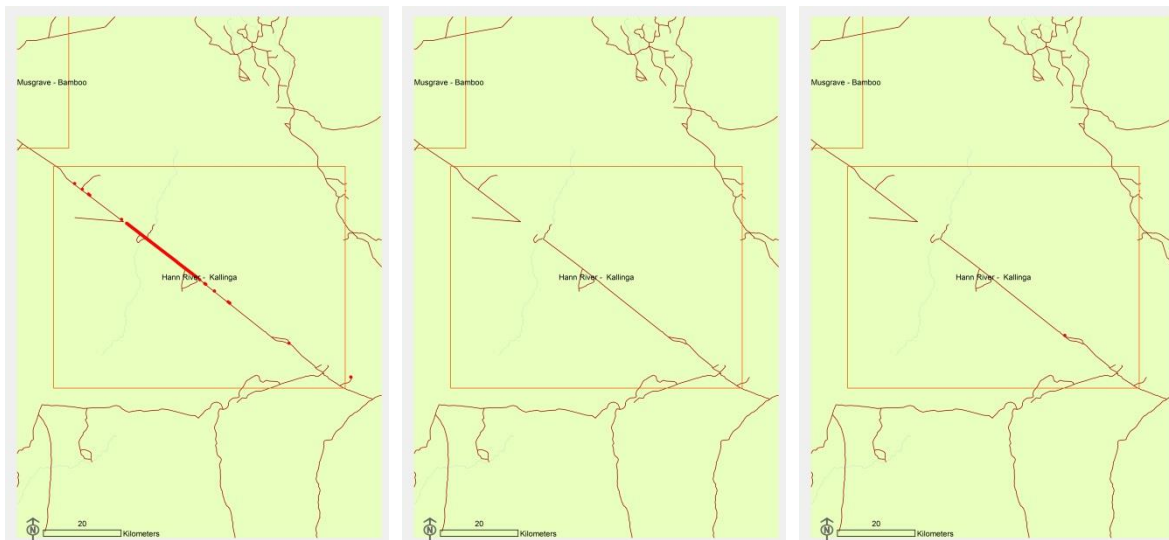


Figure 9 Hann River - Kallinga infestation management. 2000-2013 (left), 2013-14 (middle), 2015-16 (right). Black crosses indicate pre 2000 herbarium records

Lakeland Downs core infestation

Management effort at this infestation has focused on removal of outlier single plants and clumps and clean-up of roadside infestations which present a risk of spread. Future works in this location will direct effort to the establishment of containment protocols via a range of tools including a code of practice developed by the National Gamba Grass Taskforce which is able to be implemented under the Queensland Biosecurity Act 2014. Outside of the core infestation area efforts will focus on maintaining monitoring and immediate removal of outliers as a part of routine maintenance.



Figure 10 Lakeland Downs infestation management. 2000-2013 (left), 2013-14 (middle), 2015-16 (right). Black crosses indicate pre 2000 herbarium records

Cooktown core infestation

Management effort at this infestation has focused on removal of outlier single plants and clumps and clean-up of roadside infestations which present a risk of spread. Major access roads and publically sites south of Cooktown will be subject to monitoring of treatment sites for re-emergence from seed and fresh introductions.

The core infestation to the west and north of Cooktown is complex due to numerous smaller land parcels and will be the subject of landholder engagement and education activities which will be delivered by the Cook Shire Biosecurity Plan. Fire management and safety along other significant high biomass grass issues will be components of this management approach.



Figure 11 Cooktown infestation management. 2000-2013 (left), 2013-14 (middle), 2015-16 (right). Black crosses indicate pre 2000 herbarium records

Management zones and local government planning

A management zoning approach has been developed to communicate the management aims of this plan across the range of stakeholders. The zoning approach is essentially a graphics based hierarchy of management actions based on the invasion curve that clearly identifies the management and biological target for each management area. It is crucial that stakeholders understand both their role and their responsibilities in regard to reducing the impacts of gamba grass. The implementation of the management zoning in this plan is delivered through actions plans within local government biosecurity/pest management plans. The processes and decision support tools used are drawn from the Regional Pest Assessment and Prioritisation Framework, coordinated by the FNQ Natural Asset Management Advisory Committee.

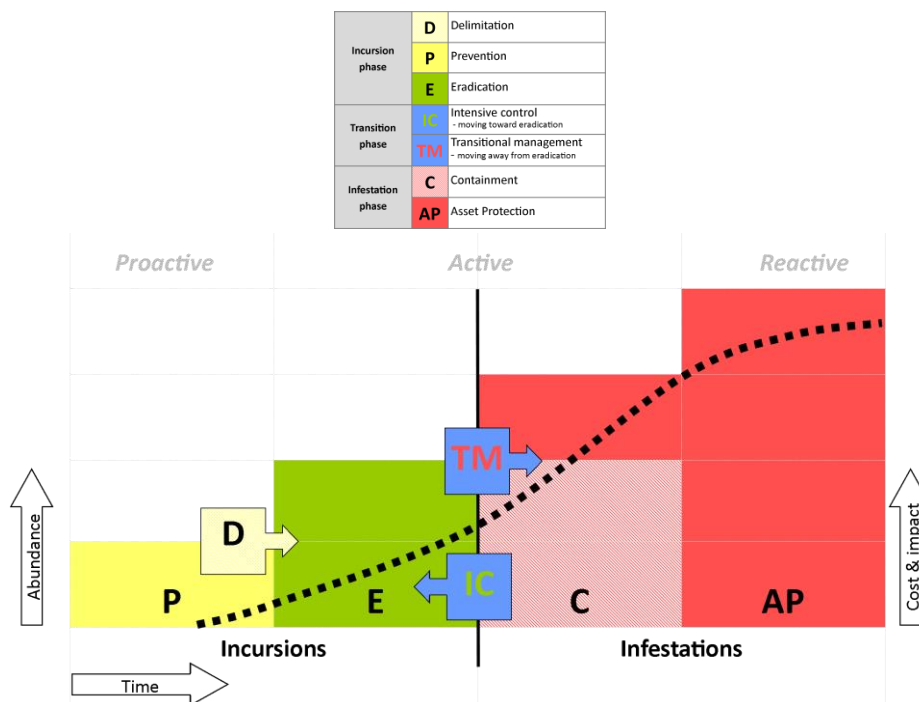


Figure 12 Management zones from delimitation through to asset protection guide management actions on the ground.

During the first phase of this management plan a zoning system was used to guide management targets within zones based on segments within the built road network. These segments, from intersection to intersection of the road network were each assigned a management target to be incorporated into the relevant operational works program. In this second stage of this plan this has been expanded to a sub/catchment scale and incorporated into the relevant local government biosecurity/pest management plans. These statutory plans guide and communicate the local implementation of the Queensland Biosecurity Act 2014.

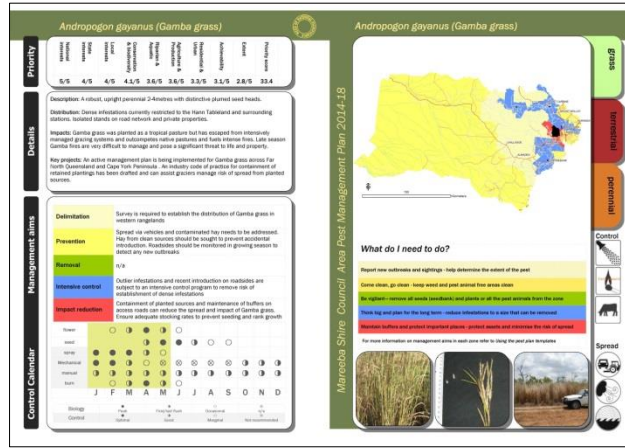


Figure 13 Management zones designate the management and biological target within each sub-basin planning unit. The zones relate to the invasion curve. This is example is from Mareeba Shire Councils Local Area Pest Management Plan.

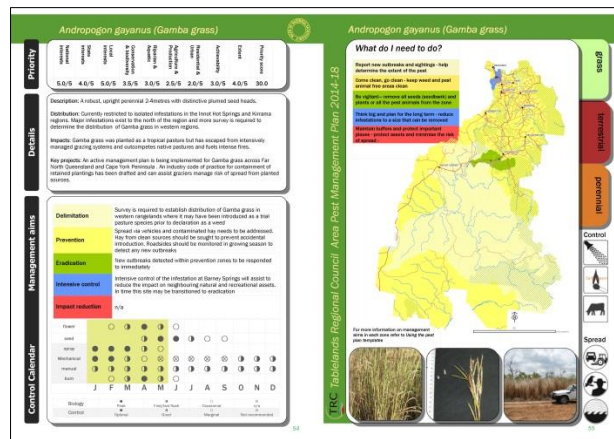


Figure 14 Management zones designate the management and biological target within each sub-basin planning unit. The zones relate to the invasion curve. This is example is from Tablelands Regional Councils Local Area Pest Management Plan.

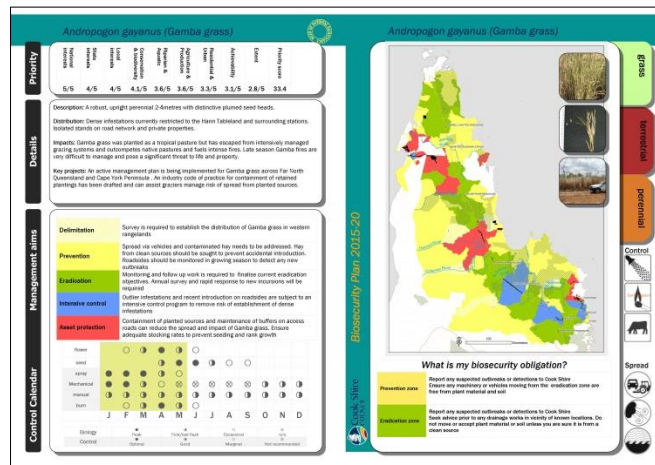


Figure 15 Management zones designate the management and biological target within each sub-basin planning unit. The zones relate to the invasion curve. This is example is from Tablelands Regional Councils Local Area Pest Management Plan

Guidelines for the management of Gamba grass

Control options

Manual Removal

Isolated plants should be manually removed using a mattock and bagged for disposal at a secure site.

Herbicide

Plants should be controlled when actively growing, prior to seed development. The ideal time is when leaves are around 40cm long. This will mean a smaller area to be sprayed and prevention of seeding. Follow up spraying should be conducted within a month when possible. New herbicide tools using residual and dry season applications of non-foliar (root uptake) formulations are in development.

Site preparation

Slashing

Slashing can be used to prepare an infestation for control by stimulating growth. Slash young plants prior to seed production. Care should be taken to thoroughly clean down all management vehicles and machinery to ensure spread of seeds is prevented.

Burning

Burning can also be used to prepare an infestation for control and can be used to stimulate growth for herbicide control either side of the peak growing season. Gamba grass fires are a major hazard and as a general guide burning is best conducted in the early dry or late wet season. Burning of herbicide controlled plants may be possible before other grasses have hayed off. Care should be taken to thoroughly clean down all management vehicles and machinery to ensure spread of seeds is prevented.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Growing	●	●	●	●	●						●	●
Flowering			●	●	●							
Seed fall					●	●	●	●	●			
Germination	●										●	●
Spray	●	●	●	●	●					●	●	●
Slash	●	●	●	●	●	×	×	×	×	●	●	●
Burn		●	●	●	●	●						

For more detailed information on control refer to the documents listed within the references

Code of practice

The following is an extract from the National code of practice developed by the National Gamba Grass Taskforce in 2013. The principles of the Code of Practice (CoP) are able to be applied in conjunction with local government biosecurity plans under the Biosecurity Act 2014. In the planning approach used by local governments in this plan, a property based approach guided by the underlying catchment based management objectives is recommended.

Scope and Aims

The code is applicable to parts of the Northern Territory and Queensland where genuine Gamba grass based grazing systems occur. In all cases these systems are within areas where widespread infestations (including some historical plantings) are present and/or where containment is being sought.

The code is not applicable to other areas where eradication or exclusion goals are an objective.

The aims of the code are to:

- provide a means of complying with State and Territory legislation to prevent the spread of Gamba grass
- ensure no new plantings of Gamba grass anywhere in Australia
- enable existing genuine Gamba grass based grazing systems to operate subject to the requirements of the code and relevant legislation
- advise expectations for containment of Gamba grass to existing grazing systems within defined containment zones
- prevent spread within or from infested properties
- facilitate eradication or containment of 'escaped' infestations

While it is noted that legislative requirements ultimately take precedence, the primary aim of this code is to complement existing statutory arrangements by providing a set of practical and reasonable measures to manage Gamba grass.

Principles of the Code

- No new plantings
- Existing plantings used in genuine grazing systems contained to existing areas
- Containment protocols implemented
- Commercial off-property use of Gamba grass is regulated through permit systems (where applicable)

Code – in Practice

- No new plantings anywhere in Australia
- Eradicate outlier infestations
- Contain Gamba grass through intensively managed grazing systems
- Contain Gamba grass to existing grazing systems, by means such as, but not limited to:
 - Preparing and implementing a management or control plan
 - Identifying spread pathways and implementing appropriate preventative actions
 - Maintaining a buffer zone of a sufficient width to prevent seed spread along property boundaries and in association with riparian areas
 - For properties in containment areas that adjoin eradication or Gamba free areas, the buffer zone should be at least 40m on external boundaries.
 - Encouraging alternative grass/legume pastures (no KTP grasses) in buffer zones and other parts of the property
- Regularly and following rainfall and flooding events, as access permits, monitor outlier sites for new growth of Gamba grass and containment sites for escapees.

- Spray any Gamba grass plants growing outside designated grazing systems, with the aim of treating plants prior to seed set
- Manage stock grazing intensity or mechanically slash within grazing systems to reduce seed set
- Promote and acknowledge responsible pasture management in accordance with this code
- No deliberate movement of Gamba grass (i.e. plant material, hay bales and seed) unless appropriate permits have been obtained and permit conditions are adhered to.

Review

This code may be reviewed upon change to relevant legislation or policy, research outcomes or when best practice management developments occur.

In particular, further research may be required on the parameters required for effective and efficient buffer zone implementation and methods to contain invasive grasses.

Definitions

1. *Contain*: infestations of Gamba grass are not to expand beyond their current geographic extent (current extent at the time this Code was endorsed).
2. *Eradicate*: to remove all Gamba grass plants and seeds from a designated area.
3. *Outliers*: infestations which are geographically isolated and limited in size that usually have an eradication objective
4. *Escapes*: any plants growing in buffer zones or otherwise outside the extent of the production system.
5. *Genuine grazing system*:
 - a. Are properties in which grazing production is the primary form of income; and,
 - b. Restricted to those pastoral properties in the Northern Territory and Queensland that undertook plantings of Gamba grass prior to its declaration; and,
 - c. The property is within an area where containment is being sought or a permit has been obtained; and,
 - d. The Gamba based grazing system forms a key component of cattle fattening or breeding enterprises
6. *KTP grasses*: The five high biomass grasses listed as Key Threatening Processes under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The five grasses being: Gamba grass (*Andropogon gayanus*), para grass (*Urochloa mutica*), olive hymenachne (*Hymenachne amplexicaulis*), mission grass (*Pennisetum polystachion* syn. *Pennisetum polystachion*) and annual mission grass (*Cenchrus pedicellatus* syn. *Pennisetum pedicellatum*).

Delivery, reporting and review

Delivery

The successful delivery of this plan will require a united effort across all stakeholders. It is important to understand what management task is required. Local government Biosecurity Plans guides the delivery of the plan on the ground. Partnerships and strategic planning

Reporting and review

A watching brief and revision of this first stage of implementation will be conducted by the Cape York Pest Management Advisory Group in collaboration with Cape York Weeds and Feral Animals Program (incorporating Cook Shire Council), Tablelands Regional Council, Queensland Parks and Wildlife Service, Queensland Department of Transport and Main Roads and Far North Queensland Regional Organisation of Councils.

This plan will be implemented for a period of three years from the date of adoption. A review of the plan and the potential expansion to a catchment scale plan beyond the road network will be determined at this time.

Watching brief

A watching brief on the management program will be maintained in order to keep stakeholders in communication with each other and the progress/regress of management on ground. Hectares and kilometers will be approximated. The watching brief will be maintained by project coordinators in consultation with stakeholders through existing advisory groups.

Management Zone	Hectares	Kilometres	Localities	Positive	Negative
DELIMITATION	500	1,200	Northern Bypass, Palmer River, Captain Billy	20 ZONES	2 ZONES
PREVENTION	75,000	1,500	Almaden, Chillagoe, Frenchmans track	31 ZONES	10 ZONES
REMOVAL	30	150	Mitchell River, Kowanyama	11 ZONES	5 ZONES
INTENSIVE CONTROL	60	60	Wolpa approaches, Archer crossing, Lookerbie	1 ZONES	3 ZONES
IMPACT REDUCTION	300	180	Batavia turnoff, Seisia	10 ZONES	5 ZONES

Figure 16 Basic template for a watching brief on the delivery of zone based management targets

Stakeholder roles and responsibilities

What is my role in reducing the impact of gamba grass and what do the zones mean to me?	Delimitation	Prevention	Eradication	Intensive control	Impact reduction
<p>Project coordination</p> <p>FNQROC (TRC, MSC, CSC)</p> <p>Maintain collaborative partnerships, advocacy and coordination of universal action across stakeholders.</p> <p>Maintain management data. Report on and promote program</p>	<p>Compile and distribute GIS data and maps for survey targets</p> <p>Report on secure sites and schedule revisit</p>	<p>Collate management targets and distribute GIS.</p> <p>Deploy early intervention to new outbreaks</p> <p>Deliver extension and communication</p> <p>Deliver disaster weed spread prevention protocols when required</p> <p>Report on progress</p>	<p>Collate management targets and distribute GIS.</p> <p>Maintain operational works programs</p> <p>Report on progress</p>	<p>Collate management targets and distribute GIS.</p> <p>Cost and develop long term operational works program</p> <p>Negotiate management programs with road and fire management agencies</p> <p>Maintain operational works programs</p> <p>Liaise with research organisations and programs</p>	<p>Collate management targets and distribute GIS.</p> <p>Negotiate management programs with road and fire management agencies</p> <p>Deliver education and awareness programs for tourists and recreational users</p> <p>Liaise with local, state and commonwealth government</p> <p>Liaise with research organisations and programs</p>

<p>What is my role in reducing the impact of gamba grass and what do the zones mean to me?</p>	<p>Delimitation</p>	<p>Prevention</p>	<p>Eradication</p>	<p>Intensive control</p>	<p>Impact reduction</p>
<p>Pest management staff (local government, parks, indigenous and community rangers)</p> <p>Deliver on ground control, weed hygiene activity, awareness and data collection</p>	<p>Actively search to make sure the area is free of gamba</p> <p>Report any outbreaks immediately</p> <p>Record surveyed areas</p>	<p>Ensure clean equipment enters clean zones</p> <p>Report any outbreaks immediately</p> <p>Record surveyed areas</p>	<p>Control all plants prior to seed set, or bag and remove seed. All dormant seeds in the soil monitored and controlled until gone.</p> <p>Record control and survey actions</p>	<p>Reduce the size of targeted infestations to a scale where a removal management approach can begin</p> <p>Record control actions</p>	<p>Work with fire and road management agencies to maintain buffers and protect important locations</p> <p>Record control actions</p>
<p>Road construction and maintenance staff (TMR, Council, contractors)</p> <p>Ensure best management practice from operations.</p> <p>Allocate appropriate resource</p>	<p>Actively search to make sure the area is free of gamba</p> <p>Report any outbreaks immediately</p>	<p>Ensure clean equipment enters clean zones.</p> <p>Time operations to coincide with control programs</p> <p>Report any outbreaks immediately</p> <p>Adjust maintenance and design practices where possible</p> <p>Allocate resources to prevention activities</p>	<p>Engage contractors to manage removal targets on road estates</p> <p>Engage with neighboring land owners in joint management programs</p> <p>Allocate resources to removal activities</p> <p>Maintain GIS data for operational and design activities</p>	<p>Engage contractors to manage intensive control targets on road estates</p> <p>Engage with neighboring land owners in joint management programs</p> <p>Allocate resources to prevention activities</p> <p>Maintain GIS data for operational and design activities</p>	<p>Work with pest management staff and contractors to maintain buffer areas.</p> <p>Adjust maintenance and design practices where possible</p> <p>Maintain GIS data for operational and design activities</p>

<p>What is my role in reducing the impact of gamba grass and what do the zones mean to me?</p>	<p>Delimitation</p>	<p>Prevention</p>	<p>Eradication</p>	<p>Intensive control</p>	<p>Impact reduction</p>
<p>Fire management agencies (QFRS, DERM)</p> <p>Promote management program within community engagement programs</p>	<p>Report any outbreaks immediately</p>	<p>Maintain distribution data in operations data base</p> <p>Report new outbreaks</p>	<p>Work with permitting and burning operations in collaboration with pest management staff</p>	<p>Work with permitting and burning operations in collaboration with pest management staff</p>	<p>Work with permitting and burning operations in collaboration with pest management staff</p>
<p>Natural Resource Management Bodies</p> <p>Engage stakeholders</p> <p>Distribute information and facilitate the securing of resources for management</p>		<p>Promote prevention areas across stakeholder networks and</p>			<p>Facilitate education and awareness programs for tourists and recreational users</p> <p>Liaise with local, state and commonwealth government</p>
<p>Landcare, Catchment & Community groups</p> <p>Distribute information and facilitate the securing of resources for management</p>	<p>Actively search to make sure the area is free of gamba</p> <p>Report any outbreaks immediately</p>	<p>Ensure clean equipment enters clean zones.</p> <p>Collaborate with management agencies where possible</p> <p>Report any outbreaks immediately</p>	<p>Collaborate with pest management staff on management programs</p>		

Data collection and collation

Based on the Spatial Pest Attributes Standards the following data will be collected for all survey and control actions across the management area. It is vital that absence as well as presence information is collected.

Record ID

Genus

Species (Alternatively the species code – ANDGAY can be used as a singular record as per the SPAS)

Location

Date

Name of operator

GPS coordinates/or polygon

Comment – treatment or management action

Area surveyed/treated

Density

More information on minimum data collection standards can be found at http://www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Spatial-Pest-Attribute-Standards-2010.pdf

References and further reading

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Gamba grass

Andropogon gayanus



