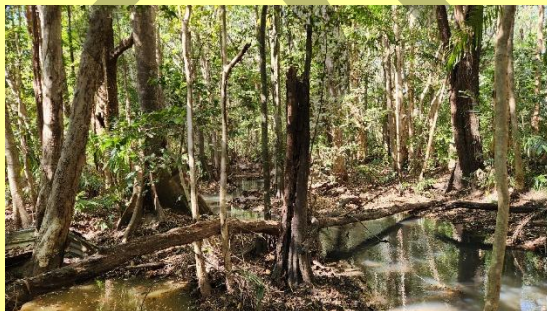


Weed Management Strategy

2026 - 2031

Coomalie Community Government Council



Prepared by: Rowena Eastick (Construction101 Pty Ltd)

Prepared for: Coomalie Community Government Council

Submitted: July 2026

This Coomalie Shire Weed Management Strategy has been prepared by Construction101 with all reasonable knowledge, professional expertise, and diligence, and taking account of the timescale and resources allocated to it by agreement with Coomalie Community Government Council (the Client).

Information reported herein is based on scope of works provided by CCGC, the interpretation of data collected, based on on-ground field surveys and data collected and collated through use of the NT Government WeedMate App. Construction101 makes every effort to ensure that the information is accurate and complete but does not warrant its completeness for a particular use.

Version Control	
Document Title	Coomalie Community Government Council (CCGC) Weed Management Strategy 2026-2032
Contact Details	Rowena Eastick

Version	Title	Date	Author	Changes made
1	CCGC Weed Strategy VLW DRAFT_PE.pdf	9 June 2026	Rowena Eastick	Draft concept document
2	CCGC Weed Strategy V2_LR	17 June 2026	Rowena Eastick	Draft document
2.1	CCGC Weed Strategy V2_LR	7 July 2026	Emma Dunne	Review
3	CCGC Weed Strategy V3_HR	26 July 2026	Rowena Eastick	Final document, incorporate comments from CCGC Emma Dunne (expand Townships and Rum Jungle Lake sections).

Table of Contents

1	Introduction	6
2	Goals.....	11
3	Prioritisation of weed control works	12
	Regulatory Requirements.....	12
	Hierarchy of weed control	13
	Infestation category and management objective	15
	Priority Species.....	17
	Gamba grass	17
	Mimosa	17
	Bellyache bush	18
	Grader grass.....	18
	Neem.....	19
	Perennial mission grass	19
	Olive hymenachne.....	19
	Lantana	20
	Candlebush	20
	Snakeweed.....	21
	Flannel weed, spiny head Sida and sicklepod	21
	Annual mission grass.....	21
	Non-declared weeds.....	22
	Priority Sites.....	23
	Roads.....	23
	Waterways.....	31
	Power lines.....	35
	Township and Amenity Areas	36
	Heritage and Conservation Areas	38
4	Operational	42
	Timing.....	42
	Method	43
	Cultural / Hygiene	43
	Physical	44
	Interaction with Burning	46

Chemical.....	48
Biological	52
Costs.....	53
Data collection and Monitoring	54
5 Five Year Plan and Priority List.....	55
6 Stakeholder engagement	60
7 Limitations and Issues.....	61
8 Conclusions and Recommendations	62
9 References	64
10 Weed List and Maps	65
Weed list.....	66
Maps Area 1. Lake Bennett	68
1A. Gamba Grass	68
1B. Declared Weed Species	69
1C. Non-Declared Weed Species.....	70
Maps Area 2. Batchelor North sub-region.....	71
2A. Gamba Grass	71
2B. Declared Weed Species	72
2C. Non-Declared Weed Species.....	73
Maps Area 3. Batchelor South sub-region.....	74
3A. Gamba Grass	74
3B. Declared Weed Species	75
3C. Non-Declared Weed Species.....	76
Maps Area 4. Adelaide River	77
4A. Gamba Grass	77
4B. Declared Weed Species	78
4C. Non-Declared Weed Species.....	79
Map 5. Photo points in WMS.....	80

Acronyms and Abbreviations	Full form
AROWS	Adelaide River Off-stream Water Storage
CCGC	Coomalie Community Government Council
CLP	Crown Lease Perpetual
FRALT	Finniss River Aboriginal Land Trust
LFW	Land for Wildlife
LNP	Litchfield National Park
NTG	Northern Territory Government
VCL	Vacant Crown Land
WMB	Weed Management Branch
WMS	Weed Management Strategy
WONS	Weed of National Significance

DRAFT

1 Introduction

The Coomalie Local Government Area (the Shire) occupies an area of 2,056 km² between the Adelaide River and Litchfield National Park (LNP), incorporating a number of wards including Lake Bennett, Tortilla Flats, Adelaide River, Eva Valley, Batchelor, and Camp Creek (Figure 1). The region contains the important catchments of Darwin River Dam, Manton Dam, and the proposed Adelaide River Off-stream Water Storage (AROWS). The area encompasses more than 1000 properties, the majority of which are under freehold title, plus other land tenures including Vacant Crown Land (VCL), Crown Lease Perpetual (CLP), Aboriginal Land Trust (ALT), and Coomalie Community Government Council (CCGC) managed land.

Road corridors within the Shire are one of the most significant tenures managed by CCGC, responsible for 202 km of roads (CCGC, 2025). There are also CCGC-managed parcels, mostly parks and gardens, within the Batchelor and Adelaide River townships, and areas of historical and cultural significance including the Rum Jungle Lake area. The CCGC is also responsible for management of the riparian corridors of Snake Creek and parts of the Adelaide River.

The Coomalie Shire Plan 2025-26 (CCGC, 2025) listed development of a Weed Management Plan (WMP) as a priority project. This was aligned with increased resources to weed and fire management, crucial not only for environmental conservation but also to reduce fire hazards and protect the region's unique landscapes.

This Weed Management Strategy (WMS) was commissioned for weed management on CCGC owned and managed land, in consultation with NT Government Weed Management Branch (WMB). An on-ground survey and mapping of weed species on CCGC managed land (Figure 2) was integral to inform the development of this WMS, with more than 5000 weed data points collected. NR Maps was assessed as a precursor to conduct the on-ground survey (e.g. Figure 3).

Gamba grass (*Andropogon gayanus*) is extensive and well-established across the Coomalie Shire, across all land tenures. It is a habitat-transforming weed due to its high biomass and late-season curing, with associated change in the fire ecology in Top End landscapes. The threat this grass weed poses to asset protection, including infrastructure and biodiversity, has been well-documented. This is recognised in a statutory Weed Management Plan (Gamba Grass Weed Management Plan, 2024) under the *NT Weeds Management Act (2001) (the Act)*. The spread and establishment of gamba grass into LNP is a significant concern.

Other weed species are also known to be present in the Coomalie Shire, including the declared weeds mimosa (*Mimosa pigra*), olive hymenachne (*Hymenachne amplexicaulis*), neem (*Azadirachta indica*) and grader grass (*Themeda quadrivalvis*), and the non-declared annual mission grass (*Cenchrus pedicellatus*). Amenity weeds are also found in Batchelor and Adelaide River townships.

Gamba grass management on road corridors is a key component of this strategy. Although gamba grass is widespread across the Shire, there is a range of infestations densities and spread potential (Photo 1.a,b). The on-ground survey also attempted to identify weed management efforts in parcels adjoining the road verges, as this could influence the priority-setting for weed management. This was beyond the scope of the WMS, but was considered where possible as a reflection with stakeholder engagement and enabling of private land managers for more effective cross-tenure weed management.

Batchelor Rd and Rum Jungle Rd are major roads within the Shire, managed by NT Government. These are discussed where applicable, and provide an example of where synergies between CCGC and other land managers within the region, would need to be considered for an effective regional WMP across all tenures. Evidence that the CCGC is fulfilling (or attempting to) their gamba grass management requirements under the Act, would increase transparency of resource allocation to weed management, and reinforce the rationale and demand for other land managers to also meet their obligations.

This WMS outlines priority species and sites for weed management on CCGC owned and managed land, especially road verges, underpinned by regulatory requirements and risk assessment for asset protection, ranging from infrastructure to biodiversity. It proposes a five-year operational plan, encompassing factors such as methods of control, timing and integration of these methods, and resources required. Monitoring and stakeholder engagement are key elements for effective delivery of outcomes over this time period.

Weed management over a large scale such as Coomalie Shire, especially with long-established populations of a habitat-transforming weed such as gamba grass, and with a range of land managers adjoining CCGC managed land and road verges, is not an easy task. Limitations and issues are discussed, including sustained commitment of funding and stakeholder engagement. Conclusions and recommendations are presented, aligned with the proposed five-year operational plan, which will enable progression of activities described in this WMS, for tangible on-ground outcomes in weed management from 2026 to 2031.



Photo 1. There are a range of gamba grass infestation densities across the Shire, from dense extensive monocultures a) Fowler Rd, to b) 'clean areas' such as Marrakai Rd at the end of Heathers Lagoon Rd.

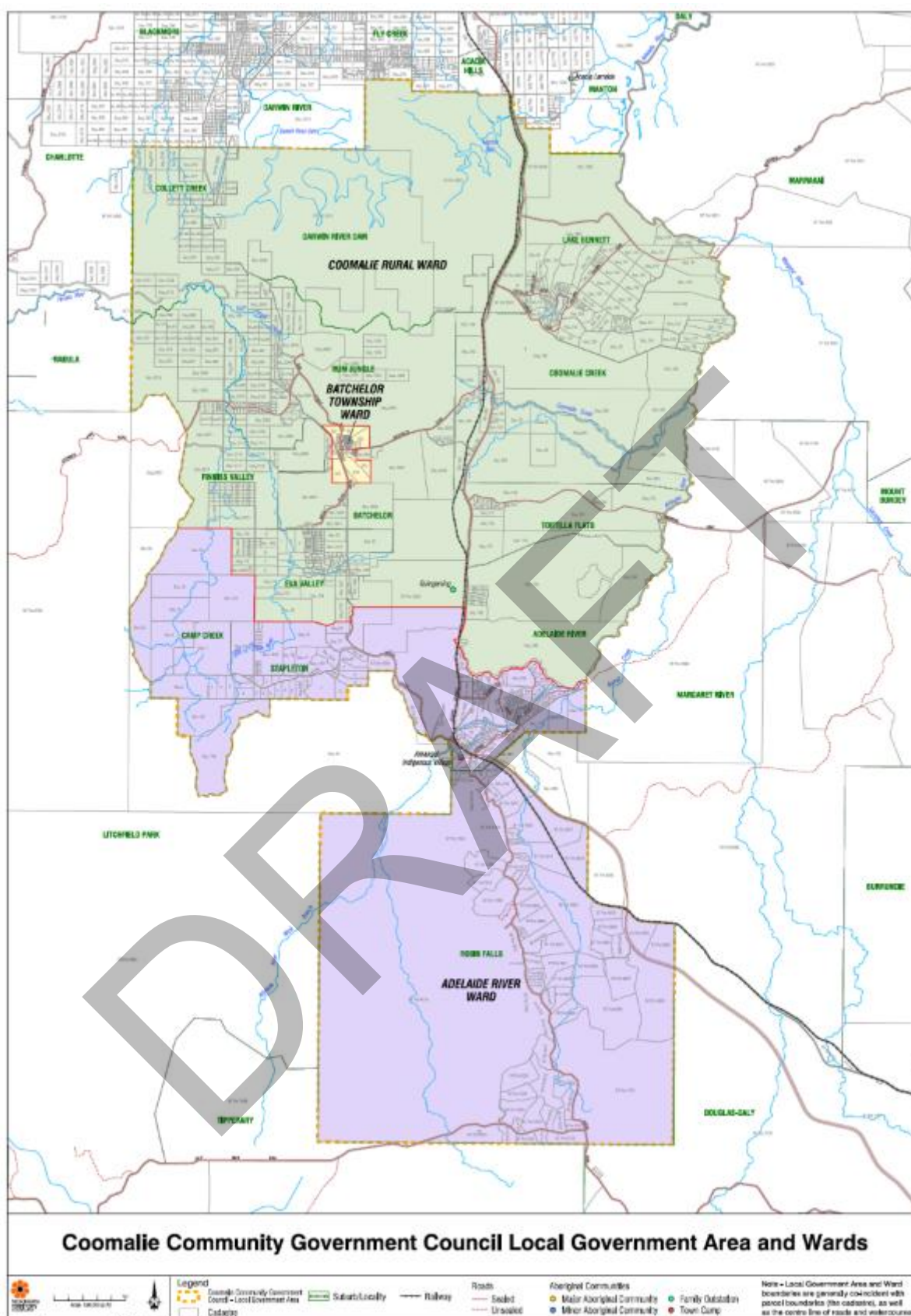


Figure 1. CCGC Local Government Area and Wards (source: NT Electoral Commission).





Figure 2. a-c. Weed Survey Areas – a) Coomalie Shire road network; b) Adelaide River township area and riparian corridors of Snake Creek and part of Adelaide River; c) Batchelor township. Yellow shading indicates a land parcel, additional to road verges.



Figure 3. NR Maps (NT Government) provides a valuable resource to assess historical weed records and land tenure information (e.g. Limited records of gamba grass west of Lake Bennett).

2 Goals

The Coomalie Shire has extensive and long-established infestations of gamba grass, which has been considered a significant issue in the Shire, for more than two decades. A Coomalie Gamba Weed Plan, was developed to address the threat of gamba grass across the region as early as 2005 (NTG and CCGC, 2005). Price & Baker (2003) collated a Natural Resource Strategy for Coomalie Sub-region, in which they stated gamba grass is probably the most serious environmental problem in the Shire. Observations indicate the impact and extent of infestations of gamba grass, and other grassy weeds, has increased substantially over this period.

A weed survey was conducted by Rowena Eastick (Construction101) over May-July 2026. Although gamba grass was the dominant weed concern in the Coomalie region, other weed species were also recorded. These included grader grass, neem, perennial mission grass (*Cenchrus setosus*, previously *C.polystachios*), and bellyache bush (*Jatropha gossypifolia*). Hyptis (*Mesosphaerum suaveolens* previously *Hyptis suaveolens*) and the non-declared annual mission grass were widespread throughout the survey area.

Results from this survey were mapped (provided in Section 10) and used to inform and develop this WMS.

The goal of this strategy is to outline a five-year program to manage priority weeds on CCGC-managed land, encompassing:

- Define priority species
- Define priority sites, especially within the road network
- Comply with all applicable legislation, regulations and regional weed management plans
- Propose a range of cost-effective operational activities to prevent further spread or introduction of weeds
- Inform and enable prioritisation of these operational activities

A complementary outcome of this WMS could be to assist WMB inform progression of goals within Weed Species Statutory Plans at a regional level. E. g. An objective within the Gamba Grass WMP states '*Understand the distribution of gamba grass in the Class B zone*' associated with the strategic action '*The WMB are to undertake an annual assessment of land impacted by gamba grass*'.

This WMS does not intend to provide detailed prescriptive operational activities due to the range of different on-ground weed scenarios, and the management flexibility required season-to-season, but provides principles based on weed ecology and infestation dynamics to help guide management actions and priorities under an over-arching strategy.

3 Prioritisation of weed control works

Regulatory Requirements

Weed management in the NT is regulated under the *Weeds Management Act 2001* (the Act). Weeds species are declared under the Act as either:

- **Class A:** to be eradicated
 - **Class B:** growth and spread to be controlled
 - **Class C:** not to be introduced into the NT
- (Note: Class A and B weeds are also Class C weeds)

Statutory weed management plans, designated under section 10 of the Act, establish the legal requirements and management actions to be undertaken by land managers in the NT, for selected weed species. Statutory weed management plans relevant to this CCGC WMS are for gamba grass, grader grass, mimosa, bellyache bush, and neem.

Nationally, there is a list of 32 Weeds of National Significance (WONS), based on invasiveness, potential for spread, and environmental, economic and social impacts. WONS weeds relevant to this WMS are gamba grass, mimosa, bellyache bush, lantana (*Lantana camara*) and olive hymenachne.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) lists gamba grass, para grass (*Urochloa mutica*), olive Hymenachne, and perennial and annual mission grasses as a 'key threatening process' under the EPBC Act.

Coomalie Shire sits within the Darwin Regional Weeds Area. As such, weed management in this area is guided by the Darwin Regional Weeds Strategy 2021-2026 (NT Government, 2021), in which the following categories apply:

Category 1 – Priority weeds for eradication. No species in this category were in the survey area.

Category 2 – Priority weeds for strategic control. Species found in the survey area in this category were mimosa, gamba grass, grader grass, bellyache bush, olive hymenachne, and perennial mission grass, of which the first four species are subject to statutory management plans.

Category 3 – Weeds of Concern. Species found in the survey area in this category were neem, lantana, para grass, tully grass (*Urochloa humidicola*), annual mission grass, rats tail grasses (*Sporobolus* spp), guinea grass (*Megathyrsus maximus*), curry leaf bush (*Murraya koenigii*), and African mahogany (*Khaya senegalensis*), of which neem is subject to a statutory management plan.

Category 4 – Hygiene and Biosecurity weeds. Species found in the survey area were hyptis, Sida spp (*S.acuta* and *S.cordifolia*), snakeweed (*Stachytarpheta* spp), candlebush (*Senna alata*) and sicklepod (*Senna obtusifolia*). Lions tail (*Leonitis nepetifolia*) was found on the edge of the survey area along Adelaide River corridor.

These regulatory requirements and guidelines underpin the weed species prioritisation and management objectives of this WMS. Recommendations and rankings for priority management actions across weed species and sites are listed as Priority 1 (Very high), Priority 2 (High), Priority 3 (Medium) and Priority 4 (Low).

Hierarchy of weed control

There are a number of basic principles applied for strategic weed management, described below. These are considered in the statutory WMPs and Darwin Regional WMP, and are generally applicable across all weed species.

- Keep clean areas clean
- Prevention of spread. Transport and service corridors, and drainlines are major areas of seed dispersal and also major areas of disturbance.
 - o slashing corridors – operate from clean areas to contaminated areas
 - o culverts – civil works to use clean fill
 - o spoon drains – graders to maintain machinery hygiene
 - o drainlines / creeks – target early stages of establishment / invasion
- Eradication (elimination) in priority areas
 - o High asset value (e.g. threatened species conservation areas)
 - o Low levels of infestation with minimal sources of new introduction (localised eradication)
- Reduction in the extent of existing populations
 - o Cost effective use of public and private purse
 - o Reduce threat to priority assets
- Contain extensive infestations
 - o Long-term goal to restrict impact
- Protection of people and assets
 - o road safety (road visibility)
 - o infrastructure (roadside furniture, property)
 - o conservation biodiversity
 - o heritage/cultural
 - o livestock and agriculture
- Geographic versus species specific
 - o treat ALL target weeds in a defined area, compared to just a single species, (e.g. gamba grass) to avoid controlling one species for invasion by another
 - o enable cross-tenure management
- Agility / adaptive management, informed by weed data and subsequent monitoring process within and between seasons

The principles above support a hierarchy of weed control used in this WMS:

- Prevent
- Eradicate
- Reduce
- Contain
- Protect

Application of these strategic weed management principles, in combination with results from the on-ground weed survey, have formulated the key weed management issues on CCGC managed land.

These are:

1. Gamba grass on non-township road verges and culverts
2. Mimosa in isolated flood-out associated areas
3. Bellyache bush along Adelaide River corridor
4. Grader grass on non-township road verges
5. Gamba grass in Snake Creek and Adelaide River corridors
6. Gamba grass in CCGC easement (parcel off Banyan Rd).
7. Neem in townships and all road verges
8. Candlebush in isolated flood-out associated areas
9. Culvert management for Olive hymenachne, perennial mission grass, and snakeweed
10. Gamba grass, guinea grass and annual mission grass in public use area at Rum Jungle Lake
11. Lantana in townships and road verges
12. Gamba grass near monsoon rainforest on White Rd
13. Opportunistic management of annual mission grass
14. Awareness and diligence for potential weeds including *Distimake* spp and ivy gourd

These separate scenario result in a range of infestation categories and subsequent management objectives, which underpin the five-year plan and desired operational outcomes in this WMS.

Infestation category and management objective

Gamba grass infestation on the road network is the dominant weed management issue for CCGC, with a range of infestation densities recorded in the survey (refer Maps 1A, 2A, 3A & 4A). These were generally associated with either different stages of invasion (e.g. early stages in areas east of Lake Bennett versus long-established populations west of Batchelor township), or historical management (e.g. rigorous versus no herbicide treatment on different road verges).

Where visible, the level of gamba grass infestation behind the road corridor was also recorded, although this was not a formalised process. This was to indicate feasibility of control in the road corridor to reduce spread into adjoining land tenures, and vice-versa. Note, that the delineation between the road corridor and the adjoining parcel, and between adjoining parcels, was not always evident. However, it was noted, and supported by the survey data, that the road verge with relatively small parcels (<20Ha), such as along Miles Rd south of Solomon Rd intersection (Figure 4), had relatively low (= < density 3) density gamba grass infestations.

Similarly, the level of infestation of gamba grass, and other priority weeds, adjoining the creek/river corridors was also recorded where feasible. Again, the delineation between the CCGC-managed corridor, and the adjoining tenure, was not always evident.

A more formal weed survey of non-CCGC managed land could further verify feasibility of cross-tenure management, including engagement with freehold land managers.

Density ratings of 2 or 3 indicate minimal spread, and further engagement could occur with these land managers to ensure further establishment does not occur. Density ratings of 5 on roadsides generally coincided with extensive and non-managed gamba grass infestations on adjoining parcels.

Generally, there were few areas where the infested roadside was impacting on clean adjoining land parcels; most parcels in the Coomalie Shire had gamba grass present, although there were notable exceptions. Conversely, there were numerous scenarios where heavily infested adjoining parcels were a source of continual seed spread onto the road verge, although many properties appeared to have the required firebreak / gamba grass buffer.

Consequently, a scale of associated management objectives for gamba grass on roadsides (and applicable to other land use, such as the riparian corridors, amenity areas, heritage and conservation areas) was developed, based on the above hierarchy of control, and characteristics of adjoining parcels, where possible (Table 1).

These are allocated to the different roads in the CCGC road network, described in the Roads section further in this document.

Table 1. Gamba grass management objectives on CCGC managed land, based on characteristics of the infestation.

Infestation description (on road verge, river corridor, parcel)	Density rating from survey (results presented in Maps 1-4). WMB data collection guidelines. Adjoining infestation description.	Management Objective
Absent	Density = 1 (none present)	Prevent. Prioritise hygiene, awareness, monitoring
Low – individual or a few plants	Density generally 2 (<1%) Little to no gamba grass infestation in surrounding habitats as a source of ongoing re-infestation.	Eradicate. Prioritise treatment of existing patches, monitoring for follow-up treatment.
Low – individual or a few plants	Density generally 2 (<1%) Gamba grass present as low -medium density infestations on adjoining parcels, contributing to ongoing seed source.	Eliminate. Prioritise treatment of existing patches, monitoring for follow-up treatment. Enable management on adjoining parcels to eliminate where possible.#
Medium - isolated small patches (<5m ²), and scattered individual plants.	Density generally 3 (1-10%) Gamba grass present as medium density infestations on adjoining parcels, contributing to ongoing seed source	Reduce. Continued reduction, ensure no spread into clean areas. Feasible to control to full extent of road corridor. Enable management on adjoining parcels to keep 'pushing back' their infestations.
High –	Density generally 4 (11-50%) Gamba grass present as high density infestations on adjoining parcels, contributing to ongoing seed source.	Contain. Growth and spread to be controlled. Isolated sections feasible to control to full extent of road corridor. Enable management on adjoining parcels to keep 'pushing back' their infestations.
Extreme – dense and extensive, a monoculture, or close to.	Density generally 5 (>50%) Gamba grass extensive on adjoining parcels, contributing to ongoing seed source.	Protect. Ensure road safety – line of sight, roadside furniture, reduce biomass to reduce fire/smoke hazard. Grading and timely slashing (and burning where feasible). Enable management on adjoining parcels to maintain firebreaks, buffers. Protect assets (e.g. amenity infrastructure at Rum Jungle Lake)

Consider Parcel size, and differences in management requirements under the Act.

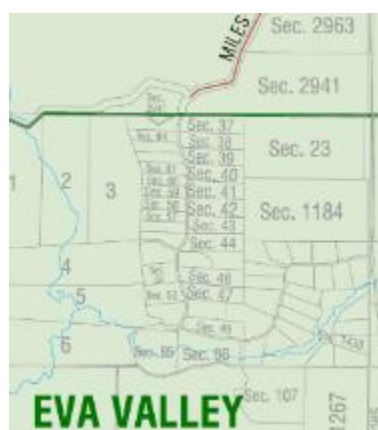


Figure 4. Gamba grass management objectives on sections of road verges traversing through different characteristics of freehold parcels were considered, such as the relatively small parcel sizes on this section of Miles Rd.

Priority Species

As discussed above, gamba grass is the dominant priority weed under this CCGC WMS. However, there were a number of other priority species found in the survey area which will also need to be considered. These are described below, in descending order of priority.

Gamba grass

Gamba grass is declared under the *Weeds Management Act 2001 (the Act)* as a Class A (to be eradicated) and Class B (growth and spread to be controlled) weed in different zones. The different zones represent a defensible balance between the prioritised requirement to eradicate high risk infestations located on the periphery of the range of the species, where feasibility of eradication remains high (Class A), and the lower feasibility of eradication associated with large established infestations (Class B). The Coomalie Shire sits within the B Zone.

Gamba grass is the most significant weed species present in the Coomalie region, with extensive and dense infestations dominant through the majority of the landscape (Maps 1A, 2A, 3A, 4A). It poses the most significant threat to values and assets in the region.

The gamba grass management requirements for land owners and occupiers by parcel size and use which is most applicable to the CCGC WMS, is for Transport Corridors. The Act states *'For all transport corridors, establish and maintain a gamba grass free buffer of 15m in width on both sides of tracks and roads, prior to seeding each year.'* Management is discussed further in the Roads and Waterways sections.

Mimosa

Mimosa is declared as a Class A (to be eradicated) and B (growth and spread to be controlled) weed in all areas of the Northern Territory. Coomalie Shire sits within the B Zone, with requirements including *'maintain a 15m mimosa free buffer on both sides of tracks'* and *'do not allow mimosa infestations to grow in size and spread into new areas'*.

There were only isolated patches of mimosa found in the survey area on CCGC-managed land, including in a culvert off Sargent Rd (Photo 2a, Map 2B), on the bank of Adelaide River, possibly associated with spread from vehicle (Photo 2b, Map 4B), and a creekline on Coach Rd. It was also found on the waterline on the edge of Rum Jungle Lake, and along Meneling Creek, which bisects the Rum Jungle Lake parcel. Note, there was mimosa recorded on adjoining private parcels, such as Lake Bennett shoreline (Map1B) and near Mt. Bundy homestead (Map 4B).



Photo 2. Mimosa was found only as isolated infestations, and should be a priority for control; **a)** in the culvert downstream from sewerage ponds along Sargent Rd, and **b)** on the north bank of Adelaide River.

Bellyache bush

Bellyache bush is declared as a Class A (to be eradicated) and Class B (growth and spread to be controlled) weed in different areas across the NT. Coomalie Shire sits within the Class A zone.

Several infestations of bellyache bush were recorded along the Adelaide River corridor (Photo 3). This should be a high priority for control to minimise continued spread down river, although it is acknowledged that the extent of current spread is unknown. See the Waterways section for more details (Map 4B).



Photo 3. Bellyache bush on the flood-out margin on Adelaide River.

Grader grass

Grader grass is declared as a Class B (growth and spread to be controlled) weed in all areas of the Northern Territory. Management requirements under the Act state that '*for all transport corridors, a grader grass free buffer of 15 m in width on both sides of all roads, from the edge of the road, prior to seeding.*'

Survey data supports that maintenance of a 15m grader grass buffer is being maintained along some sections on roads, with infestations visible beyond the road buffer (Photo 4). It is recommended treatment of these infestations is extended further, with engagement of the adjoining land manager, to minimise continual introduction onto the road corridor, and subsequent potential spread by slashing.

Other areas, the 15m grader grass buffer needs to be yet established, and should be a priority to do so. Although survey data and observations indicated that grader grass was not widespread in the survey area, it was noted that grader grass was spreading in habitats where gamba grass had been managed (Maps 1-4).



Photo 4. Grader grass at the edge of the road corridor along Coach Rd near the Solomon Rd intersection.

Neem

Neem is declared as a Class B (growth and spread to be controlled) weed in all areas of the Northern Territory. The Neem WMP states that land managers must *'take all reasonable and practical measures to prevent the spread of neem, including removing neem seedlings and mature trees where possible'*.

Neem was found as scattered infestations in the Batchelor and Lake Bennett areas, mostly as juveniles in amenity areas in the townships, but isolated plants were also recorded along roadsides, generally associated with spread by birds. These would be feasible to control (Maps 1B, 2B, 3B & 4B). It has the potential for patchy dissemination by birds, into LNP, where it could be problematic if it establishes into riparian areas, to subsequently increase its infestations by water assisted spread.

Neem was more widespread in the Adelaide River corridor, associated with water-flow spread (often with accompanying African mahogany), additional to localised spread by birds. There were well-established larger juveniles and young adult trees, especially along the river corridor, as evidenced where Strickland Road followed the Adelaide River (Photo 5). Feasibility of control in this habitat is low.

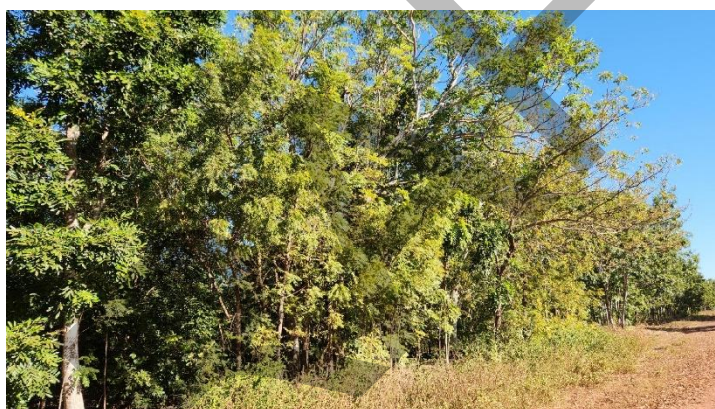


Photo 5. *Neem and African mahogany had established dense infestations along the edge of Strickland Rd next to the Adelaide River.*

Perennial mission grass

Perennial mission grass is a declared Class B weed. There were relatively few infestations of this weed in the Batchelor and Adelaide River areas. Scattered patches were more widespread in the Lake Bennett area, usually associated with the early invasion stage of gamba grass. It would be feasible to target this weed to reduce populations, especially in conjunction with gamba grass management.

Olive hymenachne

Olive hymenachne is a Class B declared weed. In the survey area, it was found only in a few culverts and drains but at a high density, generally as a population extended from the adjoining parcel. It could be a threat to water catchment management for the proposed AROWS area. At sites where it extended into a stocked paddock, cattle (or buffalo) appeared to keep it well-grazed and limited its spread. However, a change in land use could negate this management method. It could be feasibly managed on the road verge culverts in conjunction with gamba grass management (e.g. Photo 6.a,b).



Photo 6. Olive hymenachne **a)** Cadogan Rd, and **b)** Heather Lagoon Rd.

Lantana

Lantana is a declared Class B weed. It was found in Bicentennial Park (Map 2B) in Batchelor township (see Photo 23), and a couple of scattered patches along the Adelaide River corridor (Map 4B), and associated Haynes Rd. Although lantana in the Top End does not appear to be as aggressive as in other regions, these populations are feasible to control at their current level of infestation. They should be managed to avoid further spread either towards LNP, or along the riparian zones.

Candlebush

Candlebush is a declared Class B weed. A scattered patch was found in the riparian area near the Miles / Perreau Rd intersection (Map 3B) where it would be feasible to control, and should be managed to avoid further establishment in this riparian area. A large infestation was found near Rum Jungle Lake, associated with the floodout area of Meneling Creek (Map 2B). A more detailed survey along the creek, both upstream and downstream from the Lake, encompassing non-CCGC managed parcels, would be required to map the full extent of the candlebush infestation. It may be feasible to control within the Rum Jungle Lake parcel, and should be managed to avoid further establishment downstream, although collaboration is required for cross-tenure management.

Snakeweed

Snakeweed is a declared Class B weed, and was widespread throughout the survey area (both white- and purple- flowered species), generally associated with wetter areas. There were relatively low infestations in culverts and drains, generally limited by habitat suitability, but there were dense extensive infestations along the Adelaide River (Photo 7). There is a low feasibility of control for this species across the majority of the survey area, although it should be treated in roadside culverts (opportunity in conjunction with roadside furniture vegetation control) to minimise continued spread.



Photo 7. Dense extensive infestations of snakeweed dominated areas of the Adelaide River corridor, in a defined fringe above the high water line.

Flannel weed, spiny head Sida and sicklepod

These weeds occurred as scattered infestations throughout the survey area. They are considered low priority for treatment, although some control is likely to occur as collateral damage when treating surrounding gamba grass.

Annual mission grass

Annual mission grass is a non-declared weed species, but is listed as a Weed of Concern in the Darwin Regional WMP, with a Very High weed risk. It was found throughout the survey area in a range of densities (Maps 1C, 2C, 3C, 4C), with minimal infestations in areas with dense extensive gamba grass (e.g. Photo 1a). Price & Baker (2003) found that mission grasses were less common than gamba grass, suggesting that gamba infestations repel mission grasses. It is hypothesised here that this may be a combination of competition, but also fire regime associated with gamba grass burning management.

Anecdotally, it appears to spread into areas where gamba grass has been historically treated, in the absence of competition. It is generally not targeted for weed control due to no regulatory requirement to do so, but may be controlled in conjunction with gamba grass, especially during follow-up treatment on roadsides (Photo 8a). It is spread rapidly and easily by slashing, and hygiene practices should be followed to minimise its spread. It had also established widely on flood-out areas along Snake Creek (Photo 8b) (less along Adelaide River). Isolated small patches (e.g. Owen Lagoon Rd) may be an option for herbicide treatment at the time isolated gamba grass plants are treated.



a)



b)

Photo 8. Infestations of annual mission grass were widespread throughout the survey area, and are spread rapidly by slashing at time of seeding, such as along Owen Lagoon Rd (a), and in flood-out areas (b).

Non-declared weeds

A range of non-declared weeds were found across the survey area (Maps 1C, 2C, 3C & 4C). Some of these can be useful agricultural plants, but can be considered environmental weeds, such as para grass, tully grass, guinea grass, calopo (*Calopogonium mucunoides*) and African mahogany. Calopo was established in many of the culverts, but is under-represented here in the data, as it was not considered a priority for survey and subsequent control.

There were a number of amenity weeds found in the Batchelor and Adelaide River townships, including *Eleutheranthera ruderalis*, which was also establishing in pockets along the Adelaide River, Brazilian joyweed (*Alternanthera brasiliana*, Photo 9), and *Distimake* (previously *Merremia*) species (*D. aegyptius* and *D. dissectus*), all of which are spreading rapidly in the Darwin urban region. The latter three species should be a priority for control at this relatively early stage of establishment in the Coomalie region. Ivy gourd (*Coccinia grandis*) should also be on the 'watch' list, as a major habitat transformer in the Darwin urban region also.

Rats tail grasses are an amenity weed, plus a threat to livestock production, and are spread rapidly by slashing. Awareness of these species for targeted herbicide treatment is required to minimise subsequent slashing of seeding plants.

Itch grass (*Rottboellia cochinchinensis*) was recorded only at a few locations across the survey area. This grass is becoming widespread in the Darwin urban and peri-urban area. Although it is not as habitat-transforming as gamba grass, it does dominate suitable habitats, displacing native grasses, and there may be an opportunity to minimise the spread of this species in the Coomalie Shire.



Photo 9. Brazilian joyweed, here in Anzac Park, is invading riparian habitats in the Darwin urban and peri-urban area. Awareness to reduce the threat of spread from amenity areas into native habitats is required.

Priority Sites

The Darwin Regional WMS 2021-2026 outlines priority landscape areas, which includes water courses and NT Parks and Reserves, and priority avenues of spread. Litchfield NP and the numerous water courses within the Coomalie Shire, including the Adelaide and Finnis Rivers and their subsidiaries, are priority landscape areas which can be impacted by weeds. These watercourses are also priority avenues for spread, along with road verges and power lines.

There are microhabitats within sites which are more conducive for weed establishment. Culverts on road verges can be significant habitats for weed seed introduction from contaminated fill, and are aligned as conducive habitats (disturbed, moist, seasonal water flow) for subsequent weed establishment and spread. Similarly, spoon drains are conducive habitats for weed seed introduction and subsequent spread from contaminated machinery doing seasonal maintenance progressing from one drain to another.

Service provider infrastructure is another source of weed seed introduction and spread – power lines were notable corridors of dense weed infestations in the Coomalie Shire. Communication towers within the townships and along Strickland Rd were noted as gamba grass seed nurseries.

Amenity areas are a high priority for weed management, by nature of being valued for public use, as well as a seed source from public use transporting elsewhere. These areas within the Batchelor and Adelaide River townships were generally well-managed for declared weeds, but there were a range of ‘amenity’ weeds present. These were considered low priority for control, generally managed in conjunction with park maintenance (mowing, weeding etc).

Roads

CCGC manage approximately 200 km of road throughout the Shire and within the townships of Batchelor and Adelaide River, primarily for use by its constituents. A list of CCGC road names, hierarchy and lengths is included in Attachment 1. Examples of major arterial roads include Cheeney (Solomon Rd to Milton Rd), Coach, Crater Lake, and Heathers Lagoon roads. Collector roads include Haynes, Poett and Strickland roads, and there are numerous roads designated as ‘property access’ including Cadogan, Echidna, Meneling and Otto Creek roads. There are also the roads and associated verges and residential footpaths within the townships.

The major roads of Stuart Highway, Batchelor Rd, Rum Jungle Rd and Litchfield Park Rd passing thorough the Shire are managed by NTG. These are subject to high traffic, especially in the tourist season, with the latter three servicing traffic into Litchfield National Park. These pose a spread pathway for weeds. The delineation of the road verge and the adjoining property boundary is not always evident (e.g. Photo 11.d).

There are a large range of scenarios for prioritisation of road verge weed management, influenced by a matrix of factors. These include CCGC road hierarchy and corresponding traffic volume, number of properties serviced and associated road safety, current weed density (mostly gamba grass) on the road verge, gamba grass density on adjoining parcels (often associated with parcel size), potential sources of continued and future spread to impact on road verges (usually through slashing), and protection of assets (adjoining parcels, conservation areas).

All these factors could vary along the length of the road. Each road was considered, and divided into sections for management if required, with photos recorded to illustrate management differences.

This information for all roads surveyed is provided at Attachment 1. Examples for Otto Creek, Milton, and Lithgow roads are provided below to illustrate the range of considerations which informed the prioritisation of weed management actions. The Act states that a gamba grass free buffer of 15m should be established and maintained before seeding each year. This requirement was not always obvious at the time of survey on Shire-managed roads. This CCGC WMS aims to address this through prioritised actions over five-year period.

The results for this prioritisation of CCGC managed roads are provided at Table 2. Table 2a summarises the resultant priority and recommended actions across the 'non-township' road network, for which gamba grass management is the most substantial component, with weeds such as grader grass, olive Hymenachne and neem also priorities in some road sections.

Table 2b lists the 'township' road network, where there is minimal gamba grass present, attributed to more intensive mowing / slashing as part of CCGC core business within the townships. There are isolated non-CCGC parcels within Batchelor which have dense gamba grass infestations, which pose a risk for spread, and a collaborative management approach would be beneficial.

Otto Creek Rd

Otto Creek Rd is a non-maintained track connecting Owen Lagoon Rd to Marrakai Rd, and is inaccessible over the Wet season. There were only isolated plants or small patches of either gamba grass (Photo 10.a,b) or annual mission grass along this track, generally surrounded by 'clean' country (except for one borrow pit, heavily infested with annual mission grass).



Photo 10. Otto Ck Rd. **a)** A couple of adult plants, with minimal recruitment observed, provide an opportunity to 'keep clean country clean' (Sec.146); **b)** Gamba grass patch in road corridor, with a small patch establishing in the adjoining private parcel (Sec.195).

Milton Rd

Milton Rd is a long and moderately trafficked bitumen arterial road between Cheeney Rd intersection and Coach Rd intersection (except for short property access section to west of Cheeney Rd intersection, Photo 11.a), with numerous moderately-sized parcels. Consequently, it has a range of management scenarios along its length. The southern edges of some of these parcels, abut onto LNP.



Photo 11. Milton Rd, differences in gamba grass road verge management associated with adjoining tenure management. **a)** West of Cheeney Rd, monoculture; **b)** Road verge (north, LHS) sprayed and slashed, with well-managed gamba grass in adjoining private parcel (Lot 3) and less-managed gamba grass on opposite road verge (south, RHS), some sprayed, some still green; **c)** Well-maintained firebreak (gamba grass buffer) in adjoining private parcel, behind the dense gamba grass infestation on the road verge; **d)** Delineation of road verge spraying, with non-defined boundary of adjoining private parcel (Sec.1384) on north (LHS) side, compared with managed road verge and clear delineation with adjoining private parcel (Lot 1) on the south (RHS) side, which had little to no gamba grass (amazing!) in its wooded habitat.

Lithgow Rd

This is a long non-contiguous road between Litchfield Park Road and White Road, but traverses a creek crossing, such that access to the northern part of the road, is off Bevan Road. There are a number of smaller parcels with well-managed road verge from the Litchfield Park Road north towards the creek (Photo 12.a), which then changes to a dense extensive infestation (coinciding with FRALT Sec.2104, Photo 12.b). The road verge is well-maintained south of the Bevan Road intersection (Photo 12.c), with extensive gamba grass both sides of the road. The roadside gamba grass infestations decrease heading north along Lithgow Road from the Bevan Road intersection, with evidence of recently treated weeds (Photo 12.d). These dynamics were generally associated with different land management on the adjoining private parcels – intensive farming and/or grazing cleared / non-cleared, with little to no gamba grass evident in the most northern sections (Photo 12.e).



Photo 12. Lithgow Rd. The range of road verge, and adjoining parcel management scenarios.

Table 2a. Weed management priority ranking on roads within the CCGC road network (non-township).

Priority 1 = Very High, 2=High, 3=Medium, 4=Low. CCGC rank is designated hierarchy from CCGC Roads Policy.

Not all roads had a CCGC-designation.

ROAD	SECTION	GAMBA INFESTATION CATEGORY	PRIORITY 1 - 4	OTHER PRIORITY WEED(S)	PRIORITY 1 - 4	CCGC RANK	LOCALE
BANYAN RD	All	Contain	3				
BEVAN ROAD	All	Eliminate; road verge at buffer maintenance	1			Property access	Rum Jungle
BOUNDARY ROAD	All	Protect	4				Collett Creek
CADOGAN ROAD	Chinner to Echidna	Reduce - under power line	2			Property access	Lake Bennett
	Echidna intersection to end	Eliminate Build on LFW parcel management	2	Olive hymenachne	1		
CARR ROAD	All	Contain	4			Property access	Camp Creek
CHEENEY ROAD	North of Solomon Rd Int	Contain	2			Property access	Eva Valley
	South of Solomon Rd Int	Reduce; establish then maintain buffer (follow-up from 2025-26)	1			Arterial	
CHIN WAY	All	Contain	3			Property access	Finniss Valley
CHINNER ROAD	Stuart Highway to HL Rd intersection	Reduce	1	Grader grass	1	Arterial	Lake Bennett
	Heather Lagoon Rd intersection to end	Reduce	2	PMG	2	Collector	
COACH ROAD	Town to Miles Rd intersection	Contain	2			Arterial	Eva Valley
	Between Miles Rd Int & Milton Rd intersection	Protect Gamba grass; push back to buffer maintenance	4				

	Milton Rd intersection to Stuart Hwy	Reduce; establish then maintain buffer (follow-up from 2025-26)	2			Arterial	
CRATER LAKE ROAD	All	Eliminate	1			Arterial	
ECHIDNA ROAD	All	Eliminate	1			Property access	Lake Bennett
FERNEE ROAD	All	Reduce	4			Property access	Stapleton
FINLAY ROAD	All	Eliminate	1	Neem	3	Collector	
FOWLER ROAD	All	Protect Gamba grass; push back to buffer maintenance	3	Grader grass, Eliminate	2		Batchelor
FRED HARDY ROAD	All	Reduce	3			Property access	Adelaide River
HAYNES ROAD	All	Eliminate	1	Lantana	3	Collector	Adelaide River
HEATHER LAGOONS ROAD	Chinner to HL Side Rd	Protect	3	Neem	3	Arterial	Lake Bennett
	HL Side Rd to Marrakai Rd	Eliminate	1	Neem	3	Arterial	
				Olive hymen'	3		
KERR ROAD	All	Reduce	4			Property access	Eva Valley
LITHGOW ROAD	LP Rd to Sec.2104	Eliminate	1			Property access	Rum Jungle
	South of Bevan Rd intersection	Contain	3				
	North of Bevan Rd intersection	Reduce	2				
LITTLE ROAD	All	Reduce	4			Property access	Eva Valley
MENELING ROAD	All	Contain	2			Property access	
MILES	Coach Rd (N) int to Solomon Rd intersection	Contain	2			Arterial	
	Solomon Rd int to Coach	Reduce	1			Collector	

	Rd (S) intersection					
MILTON ROAD	West of Cheeney Rd	Contain	4		Property access	Eva Valley
	East of Cheeney Rd	Reduce	2		Arterial	
MUNZ ROAD	All	Protect	4		Property access	Tortilla Flats
NOLAN ROAD	All	Reduce	4		Property access	Eva Valley
OWEN LAGOON ROAD	Chinner intersection to Otto Ck creek crossing	Reduce	2	Grader grass PMG	1 1	Lake Bennett
	Otto Ck crossing to east end	Eliminate	1			
OTTO CREEK ROAD	All	Eliminate	1		Property access	Lake Bennett
PERREAU ROAD	Cheeney to east end	Reduce	3		Property access	Eva Valley
	Cheeney to west end	Contain	4			
POETT ROAD	All	Protect	3		Collector	Rum Jungle
RUM JUNGLE ROAD	All	Reduce	2			
SARGENT ROAD	Miles Rd to BWMF	Reduce	2		Collector	
	BWMF to Meneling Rd	Protect	4	Mimosa	1	Property access
SCOTT ROAD	All	Reduce	2			Finniss Valley
SILVERTON ROAD	All	Eliminate	1			Adelaide River
SOLOMON ROAD	Miles Rd intersection to Cheeney	Contain	2		Arterial	Finniss Valley
	Cheeney to west end	Protect	3			
STRICKLAND ROAD	Highway to Sec.208/228	Reduce	2		Collector	Adelaide River
	Sec.228 to end	Eliminate	1		Collector	
WHITE ROAD	Mt B to Brown's Oxide Project	Contain	3		Property access	Rum Jungle

	Rainforest patch	Eliminate	2		
WINDMILL ROAD	All	Reduce	2	Property access	Rum Jungle
YOUTH CAMP ROAD	All	Reduce	2	Property access	

Table 2b. Weed management priority ranking on roads within the CCGC road network (within Batchelor and Adelaide River townships). (Discussed further in Township Section).

ROAD	TOWNSHIP	GAMBA GRASS	PRIORITY 1 - 4	OTHER PRIORITY WEED(S)	PRIORITY 1 - 4
AWILLA RD	Batchelor				
BECKER ST	Adelaide River				
CAMERON RD	Batchelor				
CAMPBELL WAY	Batchelor	Gamba grass	2		
CUTLER PLACE	Batchelor				
DOGHERTY	Adelaide River				
FLYNN CRES	Batchelor				
HARDY ST	Adelaide River				
HATT ST	Adelaide River				
HOPEWELL ST	Adelaide River				
HYSE WAY	Batchelor				
KIRRA CRES	Batchelor				
KIRRA WAY	Batchelor				
MARDANGO CRES	Batchelor				
MARDENGO WAY	Batchelor				
MEMORIAL TCE	Adelaide River			Neem	3
NARANGA ST	Batchelor				
NURNDINA ST	Batchelor				
PINAROO CRES	Batchelor				
PINAROO WAY	Batchelor				
SWANNELL ST	Adelaide River				
TARKARRI ST	Batchelor				
TURANA ST	Batchelor				
WANDAREE ST	Batchelor				
WOOLLEY CIRC	Batchelor				

Waterways

Coomalie Shire has numerous waterways within its jurisdiction, including the Finnis and Adelaide Rivers, and Snake, Stapleton, Coomalie and Otto Creeks. A large portion of the Shire is rugged terrain (slopes >9%) and undulating rises (slopes 3-9%) (NT Government, 2020). This combination of waterways and landforms influences the establishment and spread of weeds, both naturally by waterflow, and via man-made avenues such as spoon drains and culverts infrastructure.

Creeks and Rivers

CCGC are responsible for management of two significant waterway corridors in the Adelaide River region. Snake Creek east of the Stuart Highway, encompassing Lots 183 and 184, and Adelaide River north of the township, encompassing Lots 181, 182 and part of 184 at the Snake Creek junction.

The weed dynamics along both these waterways are dramatically influenced by the nature of the surface water flow, especially the high watermark. Generally, gamba grass was established above the high water mark, snakeweed, with scattered Sida, sicklepod and Hyptis, dominated the flood water line, and the main creek / river line was clear of weeds, although bamboo dominated different sections of the Adelaide River banks. Weed management on the adjoining parcels also appeared to influence the weed dynamics, with well-maintained slashed buffers on private parcels (e.g. Photo 13). These buffers may be a risk management action against wildfires coming off the creek corridor.

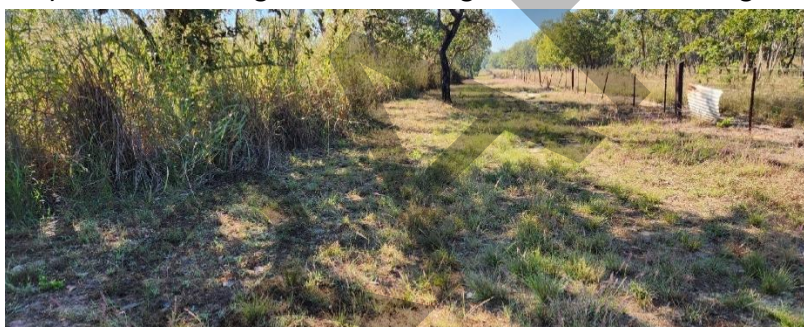


Photo 13. The private parcels adjoining the Snake Creek corridor south bank generally had well-maintained firebreaks and gamba grass buffers; note in this photo the absence of gamba grass in the adjoining parcel (Lot 92).

Snake Creek

Gamba grass generally dominated the habitat above the high water mark along the length of Snake Creek, especially along the north bank (e.g. Photo 14).



Photo 14. Gamba grass dominated the habitat above the high water mark, with differences on the north and south banks of the Snake Creek corridor.

Snakeweed (ironic...) was the dominant weed in the 'flood-out' habitat below the high watermark, with isolated and scattered patches of Hyptis, Sida and sicklepod. There were occasional small patches of annual mission grass on the south bank, but extensive infestations on the north bank. Note, *Hypoestes floribunda* was a prevalent species in the understorey.

There were areas of the creek corridor where gamba grass was absent, which appeared to be associated with adjoining parcels of 'clean' woodland. The main creekline itself was generally free from all weed species (inundated for extended periods) (Photo 15).



Photo 15. The Snake Creek creekline itself was generally clean from weeds, and some areas of adjoining bushland were also clean of weeds. It appears to have been well-protected from fire, and gamba grass on surrounding parcels should be managed to avoid future degradation of this habitat.

The gamba grass infestation on the north side closer to the highway was horrendous. There was no evidence of management from the adjoining land holder either (Lot 154). There was some sign that a firebreak had been installed historically, but this was negligible (Photo 16). It is a requirement for due diligence to re-instate this firebreak / buffer on the parcel boundary. This could possibly enable strategic burning to manage the threat of gamba grass in this area in the future.



Photo 16. Dense monoculture of gamba grass, indistinguishable between the Snake Creek corridor (RHS of photo), and adjoining private parcel (LHS).

Adelaide River

There was little to no gamba grass along most of the Adelaide River corridor managed by CCGC (Map 4A), although it is encroaching from the Snake Creek corridor and northern parcels (Photo 17.a). Interestingly, at the time of survey, there appeared to be a flooding effect on vigour of this gamba grass (Photo 17.b), although this was starting to recover (Photo 17.c). Isolated plants were recorded at the northern extent of Memorial Drive, which appeared to be spreading from a small infestation on adjoining private parcel (Lot 97) (Photo 18).



Photo 17. The main area of gamba grass on the Adelaide River corridor was near the junction with Snake Creek (a), in which areas appeared to be killed by recent flood events (b), although these are likely to recover (c).

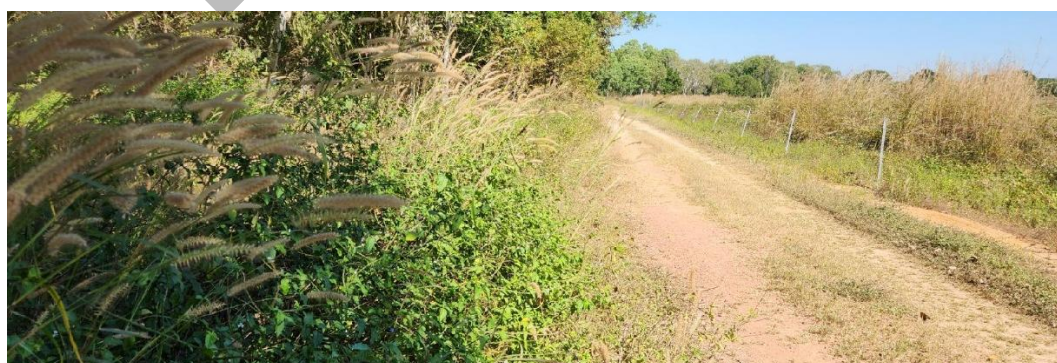


Photo 18. Isolated gamba grass amidst the annual mission grass and snakeweed along the Adelaide River bank at the end of Memorial Tce, with a small infestation in the adjoining private parcel.

A number of bellyache bush patches (Photo 19) were recorded (Map 4B). It is unknown the current extent of spread down the Adelaide River, but control of the patches found on the CCGC managed corridor, in conjunction with the adjoining private land managers, should be a priority.



Photo 19. Several bellyache bush patches were located along the Adelaide River corridor.

Neem was recorded in various densities along the Adelaide River corridor (Map 4B), with generally a low feasibility of control. African Mahogany was also widespread, and in some areas, formed dense thickets, mostly juveniles at this stage (Photo 20). There were also a range of other garden 'escapees' from the township (Map 4C), including Rangoon creeper (*Combretum indicum*), coral vine (*Antigonon leptopus*), mother-in-laws tongue (*Dracaena trifasciata*, previously *Sansevieria* spp) and poinciana (*Delonix regia*).



Photo 20. African mahogany was establishing in many sections along the Adelaide River.

Gullies, spoon drains, culverts

Gamba grass is generally already well-established in these prime microhabitats (disturbed, water flow) throughout the Coomalie region. The intersecting rises in some areas, including along Coach Rd (Photo 21), were relatively free of gamba grass, but these appeared to be getting 'infilled' as the gamba grass continues to spread. In most situations, it is now not feasible to keep gamba grass from invading these rises, but treatment for the extent of the road corridor should occur down the culverts, to prevent spread by subsequent road verge slashing.

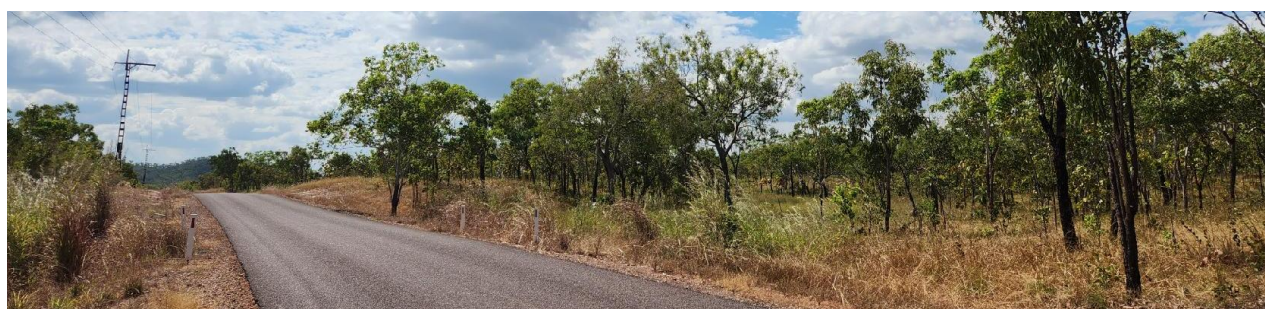


Photo 21. Coach Rd, showing sprayed road edge at a gamba grass infested culvert, with surrounding clean ridge country.

Spoon drains generally have a finite distance from the road verge, and appear to often be initial sources of gamba grass introduction into clean sites (Photo 22). These habitats should be prioritised for treatment to avoid spread not just through the landscape, but from contaminating machinery (graders) doing roadside and drain maintenance along the road corridor.



Photo 22. Expanding infestation from spoon drain, Owen Lagoon Rd.

Power lines

Power lines provide an avenue of linear spread, usually by slashing / mulching as part of their associated ground management. There were distinct sections of road verge where gamba grass infestations from the associated power line easement were impacting on the road side management, including Chinner and Strickland roads (Photo 23a and b respectively). These infestations should be a priority; they appeared to sit within the defined road verge, and they would be a continual source of spread by any subsequent ground maintenance works.



Photo 23. Power line easements can be a source of spread, and should be treated as part of the road corridor in some instances, such as Chinner Rd (a) and Strickland Rd (b), both of which were generally surrounded by 'clean' country.

Township and Amenity Areas

The CCGC is responsible for a number of amenity and public use areas in Batchelor and Adelaide River townships, such as garden parks, sports ovals and surrounds, and the Adelaide River bush cemetery. These were generally free from declared weed species, with the exception of numerous juvenile neem, and isolated lantana (Photo 24). Other 'environmental' weeds including fishtail palm (*Caryota mitis*), *Bauhinia* spp and African mahogany, were also recorded in these areas.

Neem, mostly juveniles amidst other woody amenity plants, comprise the majority of weed species recorded and/or observed within the township road networks and associated road verge and footpaths. These plants should be treated as part of overall town weed management, with no differentiation in priority between the different roads within each of the townships (as indicated in Table 2b).

This may be feasible to minimise neem spread within and from Batchelor township into surrounding woodland and then further to areas such as susceptible habitats of the Finniss River tributaries and also into LNP. However, a reduction in spread from the Adelaide River township to the immediate proximity of the Adelaide River is much less practicable, as neem is already widely established along the river corridor near the town boundaries.

The non-declared African mahogany is already well established in both townships, including as very large mature trees, with some amenity value. Like neem, it is widespread along the Adelaide River corridor; however, survey results indicate mahogany extends farther downstream. This is likely because mahogany seed has been dispersed by floodwaters, while neem tends to be more associated with seed spread by birds (less-so by flood water).

Isolated snakeweed, annual mission grass and herbaceous amenity weeds were recorded within both townships, but appeared to be managed as part of CCGC core business vegetation management.

The bus stop at the end of Chinner Rd (Photo 25) should also be maintained as gamba grass free to minimise spread from a used traffic area.

The CCGC is also responsible for an 'easement' off Banyan Rd (Between Secs 1460 & 1461). There was a medium density of gamba grass within this parcel (Photo 26a) ; the surrounding private parcels appear to be trying to manage their gamba grass, so this easement should be a priority for management.

The @8ha parcel (Lot 124) containing the Adelaide River sports oval also contains non-developed native vegetation on approximately half the area. There are patches of neem and low priority weeds (e.g. snakeweed, spiny Sida and sicklepod) within this area, although there are areas relatively weed free (Photo 26b). This parcel adjoins VCL Lot 174, which appeared relatively clean from weeds, although a comprehensive survey was not conducted. Collaborative management across this area would be beneficial.



Photo 24. Batchelor Bicentennial Park; fishtail palm, African mahogany, lantana and neem.



Photo 25. Bus stop, Chinner Rd. This should be a priority for weed control to minimise spread.



a)



b)

Photo 26. The CCGC manages non-developed land parcels including **a)** The Banyan Rd 'easement' in which the gamba grass should be managed to minimise spread onto adjoining parcels; and **b)** Native vegetation behind Adelaide River sports oval (Lot 124 LHS), adjoining VCL (Lot 174, RHS).

Heritage and Conservation Areas

Rum Jungle Lake

Rum Jungle Lake is a freshwater flooded historical open-cut uranium mine within a CCGC-managed parcel of approximately 375 hectares (LIASkey 315 02830), currently used as a recreational area. Access was limited at the time of the survey (June, then re-visited in mid-July), so detailed weed records across the full extent of the site were not recorded. This included limited access along the riparian corridor of Meneling Creek which bisects the parcel (refer Figure 5). However, general observations are discussed below, and provide a basis for weed management recommendations.

Gamba grass was dense and extensive across the Rum Jungle Lake site (e.g. Photo 27a), and also in adjoining parcels (e.g. Meneling Meats to the east and south (Sec.2894), a Perpetual Crown Lease (Sec.2915) to the south and FRALT to the north (Sec.2966)). There appeared to have been spraying across areas within the site (Photos 27.b-d), including near the borrow pit, and along the north-western boundary (Photo 27d).

There were also large infestations of other grassy weeds (non-declared) including guinea grass in the wetter areas, and annual mission grass.

Mimosa was recorded around the Lake edge, and also along Meneling Creek where it crosses the western border of the Rum Jungle Lake parcel into adjoining private land. There are historical weed records (NRMmaps) for mimosa throughout this area, so it is likely that additional mimosa plants would be found along the creek with a more comprehensive survey.

A large infestation of candlebush (>100m² diameter) is well-established on the south-eastern edge of the Rum Jungle Lake parcel, associated with Meneling Creek wetter areas. Candlebush was not detected on-ground where the creek crosses the western border of the parcel, but similar to mimosa, additional plants may be found with a more comprehensive survey along the full extent of the creekline.

Mimosa and candlebush can both be treated using either foliar herbicide application, or a more intensive basal bark method for less dense infestations. It may be feasible later in the Dry season when there is easier access along the creekline, to treat these two species. Collaborative treatment on non-CCGC land upstream would be beneficial.

The integrity of the woodland native vegetation was relatively poor (dead trees, minimal large existing trees, few native perennial grass species) in some areas, either through herbicide application, or wildfire, or a combination of both processes. However, sections of the riparian habitat along Meneling Creek appeared relatively intact (Photo 27e). Mimosa and candlebush management along the corridor should be prioritised.

The CCGC presented a 'Rum Jungle Lake Rehabilitation Project: Community and Stakeholder Engagement Report (https://irp.cdn-website.com/df9c3053/files/uploaded/AG_CCGC_Rum_Jungle_Lake_V3.pdf, August 2024) in which enhancement of the natural amenity area, and establishment of additional recreational facilities, were listed as key priorities.

It is beyond the scope of this WMS to comment on the feasibility of establishing recreational facilities on the Rum Jungle Lake area. However, weed management would need to be focused and targeted, underpinned by a more detailed and site-specific weed management plan (e.g. the immediate Lake surrounds to the south to incorporate biodiversity features associated with Meneling Creek). This would require a long-term resource commitment for weed control actions, to support attractive future recreational activities and amenity values.

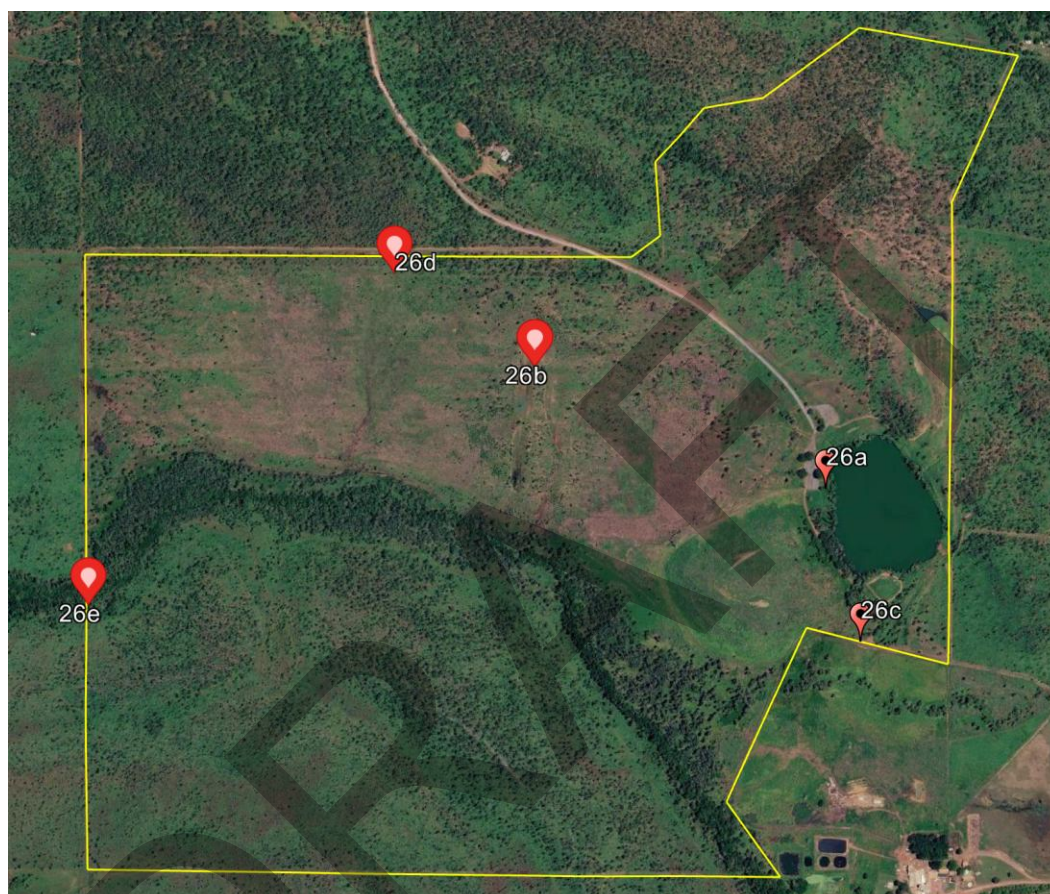


Figure 5. Rum Jungle Lake area (approximate boundaries) with photo points as presented below (Google Earth imagery May 2026).



Photo 27.a) Misty morning at the lake lookout, with gamba grass partly burnt on the bank.



Photo 27. *b) There was evidence of herbicide treatment across the site, with low integrity native vegetation in some woodland habitat; c) The boundary with private parcel (Sec.2894), showing treated and browned-out Rum Jungle Lake area (RHS). Candlebush is in the background; d) The northern boundary of the Rum Jungle Lake parcel (treated, LHS) with FRALT (non-treated, RHS); and e) Riparian habitat on Meneling Creek on western boundary of the Rum Jungle Lake parcel.*

There are numerous WWII heritage sites throughout the Coomalie Shire, although these are not managed by CCGC. The delineation between the CCGC managed road verge and the area of these sites are not always clear, and there may be scope for collaborative management.

There are no designated CCGC-managed conservation areas, although the Shire indirectly impacts on the adjoining LNP. White Rd (further discussed in Attachment 1) passes through a patch of dry rainforest (Figure 6), a relatively rare vegetation type. The dense rainforest appeared to not yet be invaded by gamba grass, but the road verge was heavily infested, and could be a long-term threat for wildfires to impact on the rainforest.



Figure 6. A patch of dry rainforest was obvious on-ground, and supported by data on NRMaps. This section of road verge (inaccessible over the Wet Season) should be a priority for weed control to minimise threat to this vegetation type.

4 Operational

There are many factors which influence operational activities for weed management. A wide range of weed species, across a wide range of sites, were recorded across the Coomalie Shire, each of which have different considerations for management. It is not practical to be prescriptive for each scenario, but principles and examples are provided below. The NT Weed Management Handbook has further details for each species.

Timing

The weed type and its ecology must be considered when deciding on best treatment method. Grasses and some broadleaf weeds will generally be targeted using foliar application of herbicide (e.g. glyphosate), where the plant must be actively growing for most effective results. Whether the grass is an annual (e.g. grader grass, or annual mission grass), or a perennial (e.g. gamba grass, perennial mission grass), will influence timing of herbicide application (e.g. Photo 28 & 29).

Annual species must be treated prior to seed maturity – spraying after the seed sets is a waste of effort, since the plant, as an annual, is going to die anyway as the Dry season progresses.

Ideally, perennial species should also be treated prior to seed maturity. However, treating an established perennial plant at any time while it is susceptible to treatment, will still contribute to management of the infestation. E.g. Gamba grass can be treated while it is green and actively growing, even post-seeding, often in wet areas inaccessible over the Wet season. This means that the adult plant is controlled, and is one less plant/infestation requiring control the next season, although follow-up treatment may be required for any newly establishing plants from the seed bank.

Woody weed species such as neem, can generally be treated using basal bark application anytime during the year. Foliar application is generally more effective over the Wet season, but can be used over the Dry season, depending on growth characteristics of the plant, and habitat conditions.

Timing of other treatment methods (e.g. Wet season versus Dry season burning) are discussed in their relative sections below.



Photo 28. Seed stage mid-May. Annual grasses such as annual mission grass (a) and grader grass (b) should be prioritised for treatment prior to mature seedset by end-April. Gamba grass (c), a perennial species, has a more extended flowering window and later seeding.

Although optimum timing is species-specific, collateral treatment of one species can occur while prioritised treatment is occurring on another species. E.g. Annual mission grass and gamba grass treated concurrently for on-ground effectiveness.

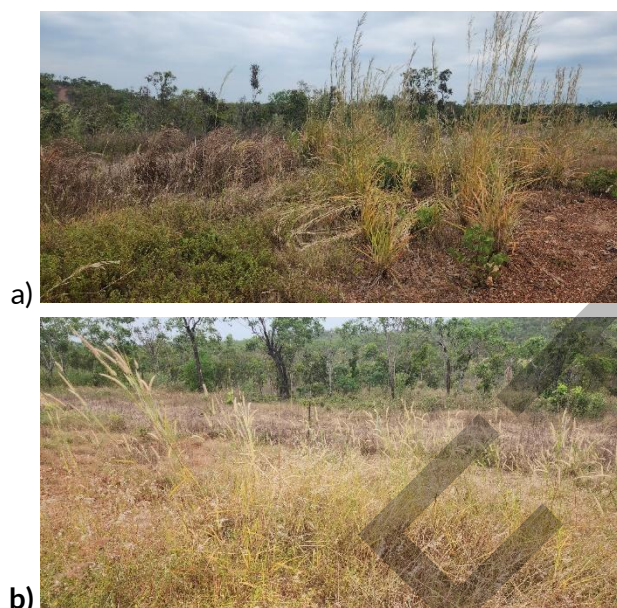


Photo 29. Evidence of herbicide application on Owen Lagoon Rd at time of survey (end-May); a) initial previous treatment (dead browned off gamba grass), and recent 'follow-up' treatment (yellowing), and b) recent treatment of annual mission grass, which may reduce some seed viability on later maturing seed, but is mostly too late.

Method

There are a range of control methods, obviously dependent on weed species and site characteristics.

Cultural / Hygiene

There are minimal areas within Coomalie that are 'clean' of gamba grass, with existing infestations in nearly all landscapes, which pose a source of continual seed spread. However, the basic premise of 'prevention is cheaper than control' should be practiced as much as possible.

One of the key ways is to ensure vehicles and machinery do not act as a vector of spread. Key components of this are:

- civil works contractor management, especially introduction of rock fill from contaminated areas to be used in high risk micro-habitats such as culverts. A 'clean' area should be monitored the subsequent Wet season and treat any newly introduced weeds.
- Roadside slashing practices
- Local community hygiene / awareness – use of informal tracks for pigging, fishing etc
- Tourist hygiene / awareness

A good resource is 'Preventing Weed Spread is Everyone's Business' (NT Government, 2015).

Physical

Physical control methods most applicable to CCGC-managed land are slashing and grading. Both these methods should be done prior to seeding, but seasonal conditions will influence this. A final slash round, and an initial grading of dirt roads, are generally conducted at the early Dry season, coinciding with not getting bogged, and before fire risk.

Slashing

Slashing is a key tool for vegetation management along roadsides, primarily used to improve safety and visibility, and not necessarily with control of weed populations as its prime objective. It should occur prior to seed set, to reduce risk of seed spread along the road corridor. Slashing gamba grass once it has seeded can have the effect of 'broadcast sowing' of seed to germinate the following Wet season (can be less cost-effective to treat multiple small plants compared to low density mature adults). Note that the weedy grasses gamba grass, grader grass, and annual (Photo 30) and perennial mission grasses, may still produce seed heads after slashing, depending on timing. Ideally, slashing should occur at flowering to reduce risk of mature seed spread, and can reduce subsequent seed production and viability.



Photo 30. Annual mission grass can produce seed heads after slashing, as illustrated on the Chinner Rd verge, and subsequent slashing will further spread seeds.

Slashing on roadsides is often prioritised at two key times; early-mid Wet season (1st round slash) and late Wet season (2nd or last-round slash) for vegetation biomass control. First-round slashed areas can be subsequently sprayed once there is enough leaf (>50cm). Later slashed areas can be a priority for earlier-season spraying the subsequent season, utilising new leaf growth and less biomass for spraying effectiveness. Slashed scattered gamba grass tussocks are usually well-evident in native vegetation for easier targeted follow-up spraying and minimising collateral off-target damage.

Slashing for gamba grass biomass control may be the most cost-effective option on some of the lower priority roads in the Coomalie Shire (management action – contain / protect), to enable herbicide application on other higher priority roads (management action – eliminate / reduce).

There were a range of slashing management practices noted across the Coomalie Shire road reserves (e.g. Photo 31.a-i, and refer Attachment 1). Slashing on low priority roads remains a feasible management option, but integration with herbicide application to reduce gamba grass densities longer-term on higher priority roads is required.



Photo 31. Evidence of current on-ground management of slashing road verges; **a)** Poett Rd, late season slashing on non-sprayed gamba grass; **b)** Miles Rd, sprayed historically, now slashed, non-managed behind; **c)** Scott Rd, slashed without spraying, with green gamba grass clumps remaining, sprayed edge behind; **d)** Solomon Rd, evidence of historical slashing, but late slashing risks seed spread; **e)** Miles Rd, Not sprayed, then slashed **f)** Miles Rd, slashed, sprayed prior to seeding; **g)** Cheeney Rd, sprayed at flowering / early seeding, slashed in foreground; **h)** Cheeney Rd, sprayed at flowering / seeding, not yet slashed; **i)** Fowler Rd, no slashing or spraying.

Grazing

Grazing as a management option will have limited applicability to CCGC managed land, but can dramatically influence infestations on adjoining tenures as a source of seed spread. Grazing was observed to be a well-utilised tool on numerous properties in the Coomalie region, with follow-up slashing further reducing gamba grass density (Photo 32a,b).

Integration between grazing, slashing and herbicide application, across adjoining tenures (road verge and private land), can increase overall effectiveness of gamba grass management (Photo 32c).



Photo 32. *a) Grazing can reduce gamba grass biomass, and follow-up slashing can reduce this further (b); Seed production may be reduced (c); d) Integration of road verge spraying, slashing (but not sprayed), and grazing can improve cross-tenure management.*

Interaction with Burning

Burning is a regular occurrence in the Top End. Controlled burns generally occur in the early Dry season (May) to reduce risk of wildfire later in the season. Gamba grass treated with herbicide, then burnt, can effectively eliminate the treated gamba grass (Photo 33). However, non-treated gamba grass will recover after burning, and usually further establish the following Wet season. This is due to a combination of factors, including mature seed falling onto bare ground, and damage to native vegetation enhancing the niche for weeds (Photo 34.a,b).

Wet season burns may be an option in some areas; this could be considered further for the Snake Creek corridor, primarily for protection of the riparian corridor, and adjoining private parcels later in the Dry season (most have good firebreaks for this eventuality). Controlled burns can be used

effectively on road verges, but with caution and collaboration with adjoining land managers, to avoid risk of 'taking-off'.

Any burning program would need to be done in conjunction and integration with Regional Fire Management Plans.

If a gamba grass dominated priority area is subject to a fire (controlled, or wildfire), it should be opportunistically prioritised for follow-up spraying the subsequent Wet season. This requires agility in roadside spraying procurement and contract management.



Photo 33. Milton Rd, 4th June. Gamba grass treated in the foreground on the road verge was eliminated, but the mature non-sprayed gamba grass will regenerate next Wet season as a continual source of seed spread.



a)



b)

Photo 34. The corner of Cheeney and Solomon Rds **a)** 15th May, mature non-sprayed gamba grass (with a well-managed firebreak and grazing on adjoining parcel); **b)** 4th June. Burnt road verge will reduce wildfire risk later in the season (especially onto adjoining grazed parcel), but will regenerate next Wet season.

Chemical

Application of herbicide will be the main method of weed control. These will generally be categorised into non-selective herbicides, such as glyphosate (various tradenames), and broadleaf-specific, such as metsulfuron or fluroxypyr (various tradenames). The main methods of application are as foliar, usually via handgun, boomless nozzles (e.g. Quikspray units), or aerial application, or as basal bark (usually mixed with diesel).

It is important that the appropriate method of treatment is applied, and that this may need to be adapted season to season. Importantly, if boomless nozzles are used for dense gamba grass control on the road verge in one season, it is likely that spot-spraying will be the appropriate follow-up treatment targeting individual plants which may establish the subsequent season. This will be more labour-intensive, but is more strategic, and will minimise off-target damage to better enable native species to regenerate and provide competition. This will avoid bare ground which can then be more susceptible to erosion.

For more information on herbicide application methods, refer to NTG Weed Control Handbook.

Note, there can be a range of tradenames for herbicides with the same active ingredient. E.g. glyphosate (Fig.6.a,b). Note the different level of the active ingredient in the formulations – this will change the mixing rate (Figure 6.c).

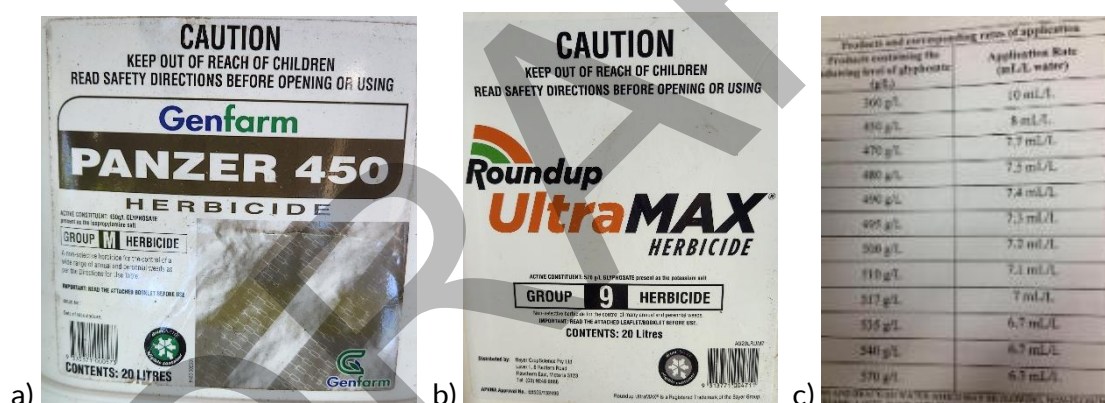


Figure 6. Different tradenames and different levels of the active ingredient glyphosate a) Panzer450, and b) Roundup UltraMax, will require different mixing rates (c).

Chemical control methods for selected species are provided below. The NTG Weed Control Handbook is a valuable resource. Contractors will generally also have experience in which treatments are most cost-effective.

Perennial grasses - Gamba grass, Perennial mission grass and Olive hymenachne

Perennial grasses are generally controlled by foliar application of glyphosate, as typified in the gamba grass and perennial mission grass examples in the tables below. Grass-specific herbicides such as haloxyfop can be an option, but are generally not cost-effective, except in intensive cropping situations.

The use of residual herbicides can be an option in some situations, such as around roadside furniture, where long-term non-selective control may be feasible. These residual herbicides generally need to be integrated with a foliar application program for maximum effectiveness (Luck, et.al, 2019; Murphy et.al, 2021), and are not commonly used in a wide-scale gamba grass management program.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Flowering												
Seed fall												
Germination												
Slashing												
Fire*												
Spraying												

■ Approximate times for reproductive events
■ Months most suitable for control option
■ Control option less suitable
■ Control option not suitable

There are a wide range of products registered for use in the NT that can be used effectively for the management of perennial mission grass in accordance to the land use situation. These products contain active ingredients that include glyphosate, hexazinone, haloxyfop or sethoxydim for example.

Chemical and concentration	Rate	Situation, method and comments
Glyphosate 360 g/L Various trade names and formulations	10 ml / 1L	Seedling or adult (individuals or infestation) Foliar spray - apply when actively growing

Optimum treatment times – Darker colours represent preferred months for foliar treatment											
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec

Gamba grass – *Andropogon gayanus* (Class A and Class B) refer to nt.gov.au/gamba for details)

OPTIMUM TREATMENT TIMES

darker colour indicates preferred treatment times

JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP	OCT	NOV	DEC



Chemical and concentration	Rate	Weed growth stage, method and comments
Glyphosate 360 g/L Various trade names and formulations	10 mL / 1 L	Seedling or adult (individuals or infestation): Foliar spray – apply when actively growing

Effective chemical control of gamba grass relies on spraying the entire plant. For optimal uptake of the herbicide and high mortality rates gamba grass should be sprayed when actively growing and young (leaves should be at least 40 cm long). Spraying plants prior to reaching full height will reduce time and herbicide requirements. Gamba grass is still sensitive to herbicide when flowering. Once gamba grass is seeding and the leaves are drying out herbicide will not be effective.

Source: Gamba grass management Guide, NTG Weed Control Handbook.

Annual grasses – Grader grass and Annual mission grass

Annual grasses, similar to perennial grasses, are mainly controlled by foliar application of glyphosate. However, timing is more critical, as seed set can be rapid, and the annual plant hays off quicker than a perennial plant.

Grader grass – *Themeda quadrivalvis* (Class B)

OPTIMUM TREATMENT TIMES

darker colour indicates preferred treatment times

JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP	OCT	NOV	DEC



Chemical and concentration	Rate	Weed growth stage, method and comments
Glyphosate 360 g/L Various trade names and formulations	10 mL / 1 L	Seedling or adult (individuals or infestation): Foliar spray – apply when actively growing

Mimosa

Mimosa can be controlled by foliar, basal bark, or granular herbicide application, depending on the circumstance. Mimosa is a major weed of floodplain habitats in which timing of access can be a problem, and aerial foliar application is often required. The mimosa patches found during the on-ground weed survey on CCGC managed land, were all associated with drainage features, and could mostly be done by basal bark (or cut stump) application when access is easier in the later Dry season in wetter areas.

Mimosa – *Mimosa pigra* (Class A and Class B) - refer to nt.gov.au/mimosa for details)

OPTIMUM TREATMENT TIMES

darker colour indicates preferred treatment times

FOLIAR SPRAY

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

BASAL BARK

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

PELLET GRANULAR

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC



Chemical and concentration	Rate	Weed growth stage, method and comments
Tebuthiuron Various trade names	1 g / m ²	Seedling or adult (individuals or infestation): Granulated herbicide - ground applied Do not use within 30 m of desirable trees or apply to continuous area > 0.5 ha Do not use if fire is eminent Apply when there is soil moisture or prior to rain
Fluroxypyr 400 g/L Comet™	150 ml / 100 L	Seedling or adult (individuals or infestation): Ground foliar application when actively growing. Wetting agent BONZA required - 500 ml / 100 L
	1.5 L / 60 L water / ha (aerial)	Seedling or adult (infestations): Aerial control - Foliar application when actively growing. Wetting agent BONZA required - 1 L / Ha
Fluroxypyr 333 g/L Starane™ Advanced	180 mL / 100 L	Seedling or adult (individuals or infestation): Ground foliar application when actively growing Wetting agent Uptake® required - 500mL / 100 L
	1.8 L / 60 L water / ha (aerial)	Seedling or adult (infestations): Aerial control - Foliar application when actively growing. Wetting agent Uptake® required - 1 L / Ha for all Starane™ formulations
	1 L / 100 L	Adult (individuals or infestation): Basal bark
Metsulfuron-methyl Various trade names	15g / 100 L	Seedling or adult (individuals or infestation): Ground foliar application when actively growing Non-ionic wetting agent required (Activator® or equivalent) - 100 mL / 100 L
	60 g / 60 L water / ha (aerial)	Seedling or adult (infestations): Aerial control - Foliar application when actively growing. Non-ionic wetting agent required (Activator® or equivalent) - 100 mL / 100 L
Dicamba 500 Various trade names	2-2.4 L / 60 L water / ha (aerial)	Seedling or adult (infestations): Aerial control – Foliar application when actively growing. Use the wetting agent LI700®
	400 mL / 110 L	Seedling or adult (individuals or infestation): High volume foliar application or spot spray when actively growing. Thoroughly wet all leaves and stems of the plant
Glyphosate Various trade names	ratio 1:1 of water	Seedling or adult (Individuals or infestation): Cut stump

Non-chemical applications:

Hand grubbing for single plants or small outbreaks, ensure removal of the root system. Bulldozers can clear debris post-chemical control and fire can be used to kill surface seed or at least break the dormancy stage. Biocontrol options available.

Bellyache bush

The bellyache bush infestations found during the on-ground survey were on the fringe of the Adelaide River banks. They could be feasibly accessed and controlled using foliar application as soon as practical at the end of the Wet season. Basal bark application as the Dry season progresses could be an option, but this can have limited effectiveness depending on the stress of the plant, and is very labour intensive.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Flowering												
Seed fall												
Germination												
Physical/Mechanical												
Foliar spraying (chemical)												
Basal bark/ cut stump (chemical)												
Fire*												

 Approximate times for reproductive events
 Months most suitable for control option specified
 Control option less suitable
 Control option is not suitable

<https://nt.gov.au/media/docs/environment/weeds/bellyache-bush-management-guide.pdf>

Bellyache bush – *Jatropha gossypifolia* (Class A and Class B - refer to nt.gov.au/bellyachebush for details)

OPTIMUM TREATMENT TIMES

darker colour indicates preferred treatment times

JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP	OCT	NOV	DEC

Chemical and concentration	Rate	Weed growth stage, method and comments
Fluroxypyr 200 g/L Various trade names	500 mL / 100 L	Seedlings and young plants (before flower) (individuals or infestation): Foliar spray – apply when actively growing. For boom rate contact WMB
	3 L / 100 L (diesel)	Adult (individuals): Cut stump or basal bark
Fluroxypyr 333 g/L Various trade names	300 mL / 100 L	Seedlings and young plants (before flower) (individuals or infestation): Foliar spray – apply when actively growing. For boom rate contact WMB
	1 L / 100 L (diesel)	Adult (individuals): Cut stump or basal bark
Fluroxypyr 400 g/L Various trade names	250 mL / 100 L	Seedlings and young plants up to flower (individuals or infestation): Foliar spray – apply when actively growing.
Metsulfuron-methyl 600 g/kg Various trade names	10 g / 100 L	All growth stages (individuals or infestation): Foliar spray - apply when actively growing, non-ionic wetting agent required. For broadscale application contact WMB
Aminopyralid 375 g/kg + Metsulfuron-methyl 300 g/kg Stinger™	20 g / 100 L	All growth stages (individuals or infestation): Foliar spray - apply when actively growing, wetting agent required: Pulse Penetrant (200 mL/100 L) For broadscale application contact WMB
Triclopyr 240 g/L + Picloram 120 g/L Access™	1 L / 60 L (diesel)	Seedling (individuals): Basal bark < 15 cm stem diameter
	1 L / 60 L (diesel)	Adult (individuals or infestation): Cut stump > 15 cm stem diameter
Aminopyralid 4.47 g/L + Picloram 44.7 g/L Vigilant™ II	Neat	Adult (individuals or infestation): Cut stump - direct application

Contact the Weed Management Branch for more information on controlling large infestations of bellyache bush.

Non-chemical applications: Individual plants can be removed by hand, however slashing or mulching is more efficient for larger infestations. Mechanical control prior to flowering/seeding will reduce spread, whereas implementation during the dry season, when plants are moisture stressed, will result in a higher kill rate of mature plants. In either instance, follow up control for regenerating plants and seedlings will be necessary. Fire can be used as part of an integrated control program to kill young bellyache bush seedlings and improve access for other control methods, however multiple burns may be required to kill mature infestations. Follow up control may require hand removal.

Source: [NT Weed Management Handbook](#)

Neem

Neem was found to be either in patches along the river corridor, mostly as thickets of juvenile plants indicative of spread by water flow, or as isolated plants on roadsides, associated with spread by birds (and maybe bats). It is feasible to control the isolated plants on the road verges, to minimise subsequent spread across the landscape. However, it is not feasible to control the neem along the riparian habitats.

Neem is not really susceptible to foliar application of glyphosate, so could not feasibly be treated as collateral with grass weed treatment. However, having a backpack in the vehicle to enable basal bark treatment when foliar treating the road verges, is a feasible option.

Chemical and concentration	Rate	Situation, method and comments
Aminopyralid 8 g/L + Triclopyr 300 g/L + Picloram 100 g/L Grazon® Extra	350 ml / 100 L	Seedling (individuals and infestations under 2 m): Foliar spray, apply when actively growing + non-ionic wetting agent required
Triclopyr 300 g/L and Picloram 100 g/L Various trade names	350 ml / 100 L	Seedling (individuals and infestations under 2 m): Foliar spray, apply when actively growing + non-ionic wetting agent required
Triclopyr 600 g/L Various trade names	1 L / 60 L (diesel) 1 L / 60 L (diesel)	Seedling (individuals): Basal bark < 5 cm stem diameter Adult (individuals or infestation): Cut stump > 5 cm stem diameter
Fluroxypyr 333 g/L Starane® Advanced	1.8 L / 100 L (diesel) 1.8 L / 100 L (diesel)	Seedling (individuals): Basal bark < 15 cm* stem diameter, treat up to 45 cm from ground Adult (individuals or infestation): Cut stump > 15 cm stem diameter
Triclopyr 240 g/L + Picloram 120 g/L Access®	1 L / 60 L (diesel) 1 L / 60 L (diesel)	Seedling (individuals): Basal bark < 15 cm* stem diameter Adult (individuals or infestation): Cut stump > 15 cm stem diameter
Picloram 20 g/Kg Tordon® granules	35 to 45 g / m2	Apply granules over an area extending from the main stem to 30 cm outside the dripline to cover the main part of the root system

Optimum treatment times – Darker colours represent preferred months for foliar treatment. Basal bark and cut stump treatment can be carried out all year round.

Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
-----	-----	-------	-------	-----	------	------	-----	------	-----	-----	-----

<https://environment.nt.gov.au/media/docs/weed-note/weed-note/Neem-weed-note-2017.pdf>

Biological

There are multiple biological control agents in the landscape which have been released for mimosa control, some efforts at biological control for bellyache bush, and a current research project to map the DNA of gamba grass to enable subsequent manipulation of its genetics to reduce plant vigour. However, these agents provide relatively low control outcomes, and other methods of control are required.

Costs

It is likely that weed control on CCGC-managed land will be a combination of CCGC staff (salary-based), and procurement of contractors. It is difficult to predict costs due to the variable distribution between these two labour sources, and the range of contractors, and the price they are likely to submit.

For on-ground outcomes and cost-efficiency, it is generally recommended that the task is described in detail in a Scope of Works, and the Request for Quote is based on completing that task, and not a per/hr or per/day rate. It is the expertise of the contractor who estimates time and resources taken, and provides a quote accordingly.

Table 3 below provides an example of recently-awarded contracts available through the NT Government Tenders website. The Scope of Works for these contracts could provide examples of procurement management for CCGC.

Table 3. Weed and vegetation management contracts recently awarded.

Contract Description	Tender No	Awarded value	Who	Date awarded
Katherine – Eastern region – slashing and vegetation control on sealed roads for a period of 36 months	T24-1556A	\$2,417,295	Triple P Contracting	23-Jan-26
Tennant Creek – National Highways and Territory Roads – slashing and vegetation control for a period of 36 months	T25-1035	\$2,750,242	Triple P Contracting	16-Sep-25
Katherine region - Stuart Highway - slashing within road reserves	T25-1208	\$125,829	Katherine Tree Maintenance	4-Jul-25
Darwin region - road reserves - slashing for a period of 36 months	T23-1685	\$6,541,928	AKRON	24-Nov-23
Darwin region - provision of weed control on VCL for a period of 12 months	D22-0149	\$537,600 \$1,543,461	Acacia Land Management Sterling	11-Oct-22
Darwin region - road reserves - weed control for a period of 36 months	T23-1696	\$4,188,106	Sterling	23-Jan-24
Batchelor - weed management services and trainee field program supervision at former rum Jungle Mine site for a period of 36 months	RJP-0057	\$724,500	Northern Reveg	24-Feb-25
Katherine region - eastern and central - weed control and mangement in the road corrior for a period of 36 months	T24-1482A	\$753,460	Katherine Tree Maintenance	24-Dec-25
Darwin (Land Development Corp)- provision of weed control for a period of 12 months	Q24-0131	\$187,000	Practical Land Management	23-Sep-24
Katherine region - weed management on VCL for a period of 12 months	T24-1466	\$136,550	Territory Weed Management	4-Feb-25

Data collection and Monitoring

Basic data on weed control should be collected at/near time of treatment, although it is acknowledged that collecting intensive data at the time of treatment, can limit time efficiencies on-ground. Most contractors will have their own field data sheets, with information required including weather conditions, species treated, herbicide details (tradenname, active ingredient, volumes, additives etc), and area treated. The WeedMate app, managed by the WMB, is a useful tool.

Monitoring determines the effectiveness of weed control treatments, and should be used to help inform subsequent treatment required the following season. It should also be used to validate the work conducted by contractors prior to payment.

Monitoring is generally conducted at the end of the Wet season / early Dry season, although this may be influenced by factors such as timing of treatments by contractors, or site accessibility. This time coincides with the haying-off of most native grass species, so it is possible to see visible treatment effects on weedy grasses – dead or yellow plants, plus, also missed areas to ensure they are prioritised for follow-up next season. This window is also critical prior to initial Dry season fires which make detection of treated versus non-treated plants more difficult.

The use of photo monitoring points can supplement weed data. The photos provided in this WMS (Map 5) are geo-referenced and can be used as a basis to visualise change in weed populations.

DRAFT

5 Five Year Plan and Priority List

The over-arching premise with this aspirational five-year plan is to gradually reduce the incidence and density of gamba grass populations, and reduce or eliminate other priority species, although this will be influenced by the physiology and ecology characteristics of the different species.

This aligns with the hierarchy of control – containing an infestation (growth and spread to be controlled) should gradually lead to a reduction, and then in some cases, elimination (or local eradication) of the infestation.

Table 4 summarises the actions over a five-year management period across weed species. Years 1-3 are generally 'pushing back' dense infestations and strategically treating medium and low infestations. Years 4-5 are approaching the 'status quo', or accepted long-term maintenance levels, with associated reduction in treatment costs. However, it is essential to maintain diligence and not allow infestations to re-establish. Strategic monitoring will help inform actions and agility required each season.

Table 5 lists the priorities across more than 80 identified actions, across sites and weed species. This provides a basis to plan operational activities, acknowledging that there is scope for flexibility and adaptation.

These goals align with regulatory requirements, and subsequently, will facilitate cost-effective management over an extended time period. Establishment and maintenance of the prescribed 15m buffer on roadsides and tracks will essentially reduce gamba grass incidence over time, especially if this gradually extends to the full extent of the road corridor.

If this is aligned with strategic landholder engagement on adjoining tenures, this creates management synergies, where neither land manager is causing weed seed spread onto the other land manager.

Table 4. Five-year plan for priority species across CCGC-managed land

WEED SPECIES	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5		
Mimosa	Eradicate isolated plants			Eradicate isolated plants			Eradicate isolated plants			Eradicate isolated plants			Eradicate isolated plants		
Bellyache bush	Reduce all infestations			Reduce all infestations			Reduce all infestations			Reduce all infestations			Eliminate all infestations		
Gamba grass	Push back (protect) extensive infestations (with aim to establish 15m road buffer)	Contain medium infestations (with aim to reduce in key sections)	Reduce low and isolated infestations (with aim to eliminate from relatively clean areas)	Push back (protect) extensive infestations (with aim to establish 15m buffer)	Contain medium infestations (with aim to reduce in key sections)	Reduce low and isolated infestations (with aim to eliminate from relatively clean areas)	Contain extensive infestations (at 15m buffer)	Reduce medium infestations	Eliminate low and isolated infestations	Contain extensive infestations (at 15m buffer)	Reduce medium infestations	Eliminate low and isolated infestations	Contain extensive infestations (at 15m buffer)	Reduce medium infestations	Eliminate low and isolated infestations
	PRIORITY 1 & PRIORITY 2 ROADS			FOLLOW-UP PRIORITY 1 & 2 ROADS; COMMENCE PRIORITY 3 ROADS			FOLLOW-UP PRIORITY 1 & 2 ROADS; COMPLETE PRIORITY 3 ROADS; COMMENCE PRIORITY 4 ROADS; REVIEW STATUS PRIOR TO YR 4			FOLLOW-UP PRIORITY 1 & 2 ROADS; COMPLETE PRIORITY 3 ROADS; COMMENCE PRIORITY 4 ROADS			FOLLOW-UP PRIORITY 1, 2 & 3 ROADS; COMPLETE PRIORITY 4 ROADS		
Grader grass	Reduce all infestations			Reduce all infestations			Reduce all infestations			Eliminate all infestations			Eliminate all infestations		
Candlebush	Reduce all infestations			Reduce all infestations			Reduce all infestations			Eliminate all infestations			Eliminate all infestations		
Perennial mission grass	Contain dense infestations	Reduce all low-medium infestations	Eliminate isolated plants	Contain dense infestations	Reduce all low-medium infestations	Eliminate isolated plants	Reduce dense infestations	Reduce all low-medium infestations	Eliminate isolated plants	Reduce dense infestations	Reduce all low-medium infestations	Eliminate isolated plants	Reduce dense infestations	Reduce all low-medium infestations	Eliminate isolated plants
Neem	Reduce low infestations (road verge, sections of Riparian corridors)	Eliminate in townships (all juveniles & mature trees if possible)	Contain medium infestations (road verge & riparian)	Reduce low infestations (road verge, sections of Riparian corridors)	Eliminate in townships	Contain medium infestations (road verge & riparian)	Eliminate low infestations (road verge, riparian)	Eliminate in townships	Reduce medium infestations (road verge & riparian)	Eliminate all infestations except dense populations near Adelaide River township			Eliminate all infestations except dense populations near Adelaide River township		
Olive hymenachne	Reduce low and isolated infestations			Reduce low and isolated infestations			Eliminate isolated infestations			Eliminate isolated infestations			Eliminate isolated infestations		
Annual mission grass	Extensive to medium infestations treated as collateral with other grass species		Reduce low infestations	Extensive to medium infestations treated as collateral with other grass species		Reduce low infestations	Extensive to medium infestations treated as collateral with other grass species		Reduce low infestations	Extensive to medium infestations treated as collateral with other grass species		Reduce low infestations	Extensive to medium infestations treated as collateral with other grass species		Reduce low infestations

Table 5. Priority listing for weed control activities across situation and species (actions are for gamba grass unless otherwise stated).

a) Priority 1

SITUATION	LOCATION	SECTION	WEED MANAGEMENT ACTION (Gamba grass unless otherwise stated)
Road verge	Bevan Rd	All	Eliminate; Rd verge at buffer maintenance
	Cadogan Rd	Echidna intersection to end	Olive hymenachne: Eliminate
	Cheeney Rd	South of Solomon Rd Int	Reduce; establish then maintain buffer (follow-up from 2025-26)
	Chinner Rd	Stuart Highway to HL Rd intersection	Reduce
	Chinner Rd	Stuart Highway to HL Rd intersection	Grader grass: Eliminate
	Coach Rd	Culvert	Mimosa; Eliminate
	Crater Lake Rd	All	Eliminate
	Echidna Rd	All	Eliminate
	Finlay Rd	All	Eliminate
	Haynes Rd	All	Eliminate
	Heather Lagoons Rd	HL Side Rd to Marrakai Rd	Eliminate
	Heather Lagoons Rd	HL Side Rd to Marrakai Rd	Olive hymenache: Eliminate
	Lithgow Rd	LP Rd to Sec.2104	Eliminate
	Miles Rd	Solomon Rd int to Coach Rd (S) intersection	Reduce
	Otto Creek Rd	All	Eliminate
	Owen Lagoon Rd	All	Grader grass: Eliminate
	Owen Lagoon Rd	Chinner intersection to Otto Ck creek crossing	PMG : Eliminate
	Owen Lagoon Rd	Otto Ck crossing to east end	Eliminate
	Sargent Rd	All	Mimosa : Eliminate
	Silverton Rd	All	Eliminate
	Strickland Rd	Sec.228 to end	Eliminate
	Townships	All	Eliminate
Parcel	Banyan Rd	All	Eliminate
	Lot 124	All	Eliminate
Riparian	Snake Creek	North side	Contain; reinstate 15m buffer (mechanically)
	Adelaide River	North West side	Eliminate; liaise with adjoining private parcel
	Adelaide River	South side	Eliminate
	Adelaide River	South side	Bellyache bush: Eliminate
	Adelaide River	North side	Mimosa: Eliminate
Heritage	Rum Jungle Lake	All	Mimosa; eliminate

b) Priority 2

SITUATION	LOCATION	SECTION	WEED MANAGEMENT ACTION (Gamba grass unless otherwise stated)
Road verge	Cadogan Rd	Chinner to Echidna	Reduce - under power line
	Cadogan Rd	Echidna intersection to end	Eliminate
	Cheeneey Rd	North of Solomon Rd Int	Contain
	Chinner Rd	Stuart Highway to HL Rd intersection	PMG: Reduce
	Chinner Rd	Heather Lagoon Rd intersection to end	Reduce
	Coach Rd	Town to Miles Rd intersection	Contain
	Coach Rd	Milton Rd intersection to Stuart Hwy	Reduce; establish then maintain buffer (follow-up from 2025-26)
	Fowler Rd	All	Grader grass: Eliminate
	Lithgow Rd	North of Bevan Rd intersection	Reduce
	Meneling Rd	All	Contain
	Miles Rd	Coach Rd (N) int to Solomon Rd intersection	Contain
	Milton Rd	East of Cheeneey Rd	Reduce
	Owen Lagoon Rd	Chinner intersection to Otto Ck creek crossing	Reduce
	Sargent Rd	Coach Rd to end parcel 322	Reduce
	Scott Rd	All	Reduce
	Solomon Rd	Miles Rd intersection to Cheeneey	Contain
	Strickland Rd	Highway to Sec.208/228	Reduce
	White Rd	Rainforest patch	Eliminate
	Windmill Rd	All	Reduce
	Youth Camp Rd	All	Reduce
	Townships	All	Neem; Eliminate
Riparian	Adelaide River	North side	Reduce; establish then maintain buffer
Heritage	Rum Jungle Lake	Public use area	Reduce
	Rum Jungle Lake	All	Candlebush; reduce
Parcel	Lot 124	All	Neem; Reduce

c) Priority 3 & 4

SITUATION	LOCATION	SECTION	WEED MANAGEMENT ACTION (Gamba grass unless otherwise stated)
Road verge	Banyan Rd	All	Contain
	Chin Rd	All	Contain
	Fowler Rd	All	Protect: Gamba grass; push back to buffer maintenance
	Fred Hardy Rd	All	Reduce
	Heather Lagoons Rd	Chinner to HL Side Rd	Protect: push back to buffer maintenance
	Lithgow Rd	South of Bevan Rd intersection	Contain
	Perreau Rd	Cheeney to east end	Reduce
	Poett Rd	All	Protect
	Solomon Rd	Cheeney to west end	Protect
	White Rd	Mt B to Brown's Oxide Project	Contain
	All	All	Neem; Reduce
	All	All	Snakeweed; Reduce
	Boundary Rd	All	Protect
	Carr Rd	All	Contain
	Coach Rd	Between Miles Rd Int & Milton Rd intersection	Protect: Gamba grass; push back to buffer maintenance
	Ferne Rd	All	Reduce
	Kerr Rd	All	Reduce
	Little Rd	All	Reduce
	Milton Rd	West of Cheeney Rd	Contain
	Munz Rd	All	Protect
	Nolan Rd	All	Reduce
	Perreau Rd	Cheeney to west end	Contain
	Sargent Rd	End parcel 322 to Meneling Rd	Protect
Riparian	Snake Creek	South side	Contain; push back from private parcel boundaries
Heritage	Rum Jungle Lake	North of Meneling Ck	Contain
	Rum Jungle Lake	South of Meneling Ck	Protect
All	All	All	Lantana; Reduce

6 Stakeholder engagement

The CCGC liaises with numerous community and business organisations, and a range of NT and Commonwealth Government agencies (refer CCGC Shire Plan 2026). Key stakeholders integral to achieving outcomes with this WMS include the NT WMB, NT Department of Logistic and Infrastructure, who manage numerous parcels of Crown Land and NTG-managed roads in the Shire, and Northern Land Council, who engage with management of the extensive land area of the FRALT. Maybe the most significant stakeholder are the local ratepayers and land managers.

This WMS provides a list of priority species and priority sites, including a ranking of actions for the road network, and uses these as a basis to propose a five-year operational structure, consistent with statutory requirements. This allows for a rational and transparent process to allocate CCGC resources (rate payer's money) to achieve on-ground outcomes in a reduction in weed populations on CCGC-managed land across the Shire.

There is the opportunity to use the transparency and impetus from this WMS, to create synergies with other land managers for more effective cross-tenure outcomes. This will require additional dialogue and communication with the key stakeholders. *"We're doing our bit, we're here to help you do yours"*.

The NTG WMB may play a significant role in determining and enabling actions required from land managers, aligned with weed data and priorities from this WMS. This could range from awareness and extension activities, to orders and compliance under the Weeds Act to enhance cross-tenure management on freehold parcels adjoining the CCGC road network and *'improvement in gamba grass management as evidenced by an improvement in parcel compliance score'* according to the Act.

E.g. Where 'elimination' is recommended for CCGC road verges (e.g. Heather Lagoon Rd, east end), the adjoining private parcels should also be enabled (e.g. awareness of weed presence, assistance programs, compliance etc) to eliminate the priority weeds from their property, leading to a better chance of 'local eradication' if all seed sources are reduced / removed. An example is provided below, but there are many more opportunities to better enable cross-tenure management.

Region	Parcel no	Comment
Lake Bennett	367 00121	NE Cnr Owen Lagoon & Otto Ck Rds
	367 01251	NW Cnr Owen Lagoon & Otto Ck Rds

Another action could be an approval process to enable roadside spraying contractor to treat isolated gamba grass on/near fencelines on the adjoining private parcel.

A communication and engagement strategy could be the next stage after the approval of this WMS.

7 Limitations and Issues

An overall limitation is the balance between an aspirational WMS – a ‘wish list’ of what **could** be done, versus an operational plan – a list of what **can** be done, given finite resources.

Limitations and issues in achieving the desired outcomes of this WMS encompass a range of context, which are generally applicable to any WMS, but need to be considered specific for the CCGC. These include:

- geographic and environmental – the landscape, climate and weed ecology specific to the Shire which impacts the outcomes WMS
- tenure and resource availability – again, specific to the Shire and CCGC
- public and rate payer perception – specific to the Shire and CCGC
- operational – common across any weed control program
- financial

Coomalie Shire has a range of weeds across an extensive area, on mostly freehold land, with some Crown land, and a large portion managed by the FRALT. Gamba grass is widespread and well-established across the region. The road network within this context is a major component of weed management obligations for the CCGC. The other significant component of these obligations is the riparian corridors along Snake Creek, and part of the Adelaide River. Both these components have the added complexity of being linear to manage, and can be significant avenues of weed seed spread.

It is not rocket science to conclude that a major limitation is the scale of the task, given finite resources to allocate to weed control, especially in the context of competing resource allocation priorities such as road civil maintenance. Development of this WMS, with defined listing of priorities, will assist in allocation of resources. This includes at least some acknowledgment and recognition, that largely ‘the horse has bolted’, and there are areas where protection of assets is the most feasible action, compared to unrealistic eradication goals.

Operational limitations encompass issues such as Wet season constraints (rain when you’ve mobilised a team to spray, limited access on dirt roads and creek crossings), availability of contractors (minimal window across multiple contracts), all of which effect timeliness of operations. Other general operational issues include requirements for safety, traffic control, terrain, wildlife, machinery breakdowns, off-target damage, and operator heat stress.

Cost will be a major consideration, aligned with stakeholder perception of preferred use of resource allocation, including differences in amount of investment from CCGC into different areas and subsequent benefits to different adjoining land managers– e.g. Lake Bennett vs Eva Valley. A recurring theme in weed management programs is the viability and longevity of funding commitment. There are many examples where limited tenure projects / programs have not been maintained, and re-invasion occurs. E.g. Gamba Army, Bellyache bush in the Katherine Region.

This WMS outlines a five-year program, but underpinned by this, is the question ‘Where do we want to be in 20 years’ time’?

8 Conclusions and Recommendations

The Coomalie Local Government Area occupies an area of just over 2,000 km². Within this area, the Coomalie Community Government Council (CCGC) is responsible for most of the road network, the riparian corridors of parts of Snake Creek and Adelaide River, and a number of parks and gardens within the Batchelor and Adelaide River townships. Weed management is a significant commitment across these areas.

This Weed Management Strategy (WMS) was commissioned by the CCGC with an aim to reduce fire hazards and protect the region's unique landscapes, by defining priority species and priority sites, and proposing a five-year operational structure for weed management. This is underpinned by regulatory requirements under the *NT Weed Management Act*.

Key principles guide cost-effective planning, investment and weed management actions including evidence-based decision-making, and prevention and early intervention, informed by a risk-based approach, considering feasibility, likelihood of success and impact (IPAC, 2016).

An on-ground survey and mapping of weed species on CCGC managed land was integral to provide data to inform the prioritisation of weed management resources in the development of this WMS.

Gamba grass was extensive and well-established across the Coomalie Shire, with extreme monocultures around the Batchelor area, and less infestations east of Lake Bennett area. Other declared species recorded during the survey included mimosa, bellyache bush, olive hymenachne, neem and grader grass, and lower priority weeds such as candle bush, sicklepod, snakeweed and Hyptis, although these were in high densities in some areas. The non-declared annual mission grass was also widespread.

Gamba grass management on road corridors is the most substantial priority for CCGC, and is influenced by a matrix of factors. These include traffic volume and associated road safety and number of properties serviced, current weed densities on the road verge, and on adjoining parcels, potential sources of spread, and protection of assets. Weed management on CCGC-managed roads was ranked as Priority 1 (Very high) to Priority 4 (low). This was mostly for gamba grass, but other roadside / culvert weeds – mimosa, grader grass and olive hymenachne, were also included.

Mimosa and bellyache bush were recorded along the CCGC-managed riparian corridors. Management of these infestations were ranked as Priority 1.

Neem infestations were established primarily through spread by birds, and then further spread by water flow in the riparian areas. The isolated non-riparian infestations are a priority for control (Priority 3, medium), to minimise subsequent spread. The dense infestations in the riparian areas are now at low feasibility of control, as are the complementary African mahogany infestations in these habitats.

The general premise over a five-year program is that

Year 1:

- Priority 1 actions are completed
- Priority 2 actions are commenced

Year 2:

- Monitoring and follow-up treatments occur on Priority 1 actions
- Priority 2 actions are completed
- Priority 3 actions are commenced

Year 3:

- Monitoring and follow-up treatments occur on Priority 1 and Priority 2 actions
- Priority 3 actions are completed
- Priority 4 actions are commenced

Year 4

- Review status of weed management on all Priority actions; which areas have reached their 'maintenance status'. E.g. Buffer of 15m achieved, local elimination achieved,
- Monitoring and follow-up treatments occur on Priority 1, Priority 2 and Priority 3 actions.
- Priority 4 actions are continued

Year 5

- Ensure 'maintenance status' is achieved for all Priority 1, 2 and 3 actions.
- Priority 4 actions are continued

It is acknowledged there are a number of limitations to achieving the outcomes of this WMS, a major one being costs and continued commitment of funding. Although this WMS proposes a five-year structure, this should align with the question 'Where do we want our weed infestations to be in 20 years' time' and recognise that continued funding is required to build on actions over successive years.

This WMS does not intend to provide detailed prescriptive operational activities due to the range of different on-ground weed scenarios, but aims to guide management actions and priorities under an over-arching strategy. Specific and detailed scopes of works and deliverables aligned to the priorities in this strategy can be developed. This will be critical to the procurement of external contractors who may be required to help delivery of weed control actions in this WMS.

It is also acknowledged that coordination and sustaining capability and capacity amongst landholders, community, industry and government is necessary to manage weeds at a landscape scale. This WMS is limited to CCGC-managed land, but can provide the impetus and transparency for cross-tenure landscape scale weed management. This may be the next step from this WMS, enabled by cross-agency engagement, such as with NT Weed Management Branch, and associated actions with private land managers, including Aboriginal Land Trusts, and NT Dept of Logistics and Infrastructure, and their role in road and crown land management.

The key deliverable within this WMS is a prioritisation of weed management actions across the road network, the riparian corridors, the amenity areas, and easements, managed by the CCGC, within a proposed five-year program. This will allow transparency and planning into resource allocation to these activities, for tangible on-ground outcomes in weed management from 2026 to 2031.

9 References

- Atria Group. 2024. Report commissioned for the CCGC. 'Rum Jungle Lake Rehabilitation Project: Community and Stakeholder Engagement Report'. (https://irp.cdn-website.com/df9c3053/files/uploaded/AG_CCGC_Rum_Jungle_Lake_V3.pdf,
- Coomalie Community Government Council. Coomalie Roads Policy.
- Coomalie Community Government Council. 2025. Coomalie Shire Plan 2025-2026. 52 pp.
- IPAC (Invasive Plants and Animals Committee) (2016). Australian Weeds Strategy 2017 to 2027, Australian Government Department of Agriculture and Water Resources, Canberra. 48pp.
- Luck, L., Bellairs, S.M. and Rossiter-Rachor, N.A. (2019). Residual herbicide treatments reduce *Andropogon gayanus* (Gamba Grass) recruitment for mine site restoration in northern Australia. Ecological Management and Restoration. 20:3 pp.214-221. <https://doi.org/10.1111/EMR.12376>
- Murphy H, Ford A, Bradford M, Vogler W, Setter M, Setter S and Warren C (2021) *Management options for gamba grass (Andropogon gayanus) in conservation areas of Cape York Peninsula*. CSIRO, Australia. 126pp.
- NT Government (2015). *Preventing weed spread is everybody's business.*, Darwin, NT. Available at https://denr.nt.gov.au/_data/assets/pdf_file/0011/257987/preventing-weed-spread.pdf.
- NT Government (2020). Land Capability of the Coomalie Shire – map series.
- NT Government (2021). Darwin Regional Weeds Strategy 2021-2026. <https://nt.gov.au/environment/weeds/how-to-comply-with-the-law/weed-management-plans-regional-strategy>
- NT Government (2021). Weed Management Plan for Grader Grass 2016-2026. 2021 Revision.
- NT Government. (2022). Rum Jungle Rehabilitation Project. Draft Weed Management Plan. 27 pp.
- NT Government (2022). Weed Management Plan for Neem 2015-2025. 2022 Revision.
- NT Government (2023). [Territory Stories - Weed management plan for Bellyache Bush 2023-2033](https://territorystories.nt.gov.au/10070/901901) <https://territorystories.nt.gov.au/10070/901901>
- NT Government (2023). Weed Management Plan for Mimosa 2023 – 2033.
- NT Government. (2024). Weed Management Plan. Gamba Grass 2020-2030 (2024 Revision). https://nt.gov.au/_media/docs/environment/weeds/gamba-grass/weed-management-plan-for-gamba-grass-2020-2030.pdf
- Price, O. & Baker, B. (2003). A Natural Resource Strategy for Coomalie Sub-region. A Report to the Coomalie Community Government Council by the Biodiversity Unit, Dept. of Infrastructure, Planning and Environment (DIPE). 43 pp.
- Sheehan, M, Potter, S. (2024). National best practice management manual for gamba grass (*Andropogon gayanus*). Department of Agriculture, Fisheries and Forestry, Canberra [National-best-practice-management-manual-for-gamba-grass.pdf](https://www.daff.gov.au/national-best-practice-management-manual-for-gamba-grass)

10 Weed List and Maps

Note that Hyptis was generally excluded from the maps, as this is ubiquitous across most of the survey area.

Annual mission grass was also widespread across the landscape, although was less present in areas with dense and extensive gamba grass.

Weed data was also supplied to CCGC as shape files to enable interrogation and more detailed maps if required.

DRAFT

Weed list

Table 6. Weed Species recorded during on-ground survey for CCGC managed land, categorised as Vines, Woody species / palms, Grasses – NT declared and non-declared, and Herbs / shrubs – NT declared and non-declared.

Vines		Woody species / palms		Declared grasses		Non-declared grasses		Declared herbs / shrubs		Non-declared herbs / shrubs	
Common name	Scientific name	Common name	Scientific name	Common name	Scientific name	Common name	Scientific name	Common name	Scientific name	Common name	Scientific name
Calopo	<i>Calopogonium mucunoides</i>	African mahogany	<i>Khaya senegalensis</i>	Gamba grass	<i>Andropogon gayanus</i>	Guinea grass	<i>Megathyrsus maximus</i>	Bellyache bush	<i>Jatropha gossypifolia</i>	Bell weed	<i>Dipteracanthus prostratus</i>
Centro	<i>Centrosema molle</i>	African tulip tree	<i>Spathodea campanulata</i>	Grader grass	<i>Themeda quadrivalvis</i>	Itch grass	<i>Rottboellia cochinchinensis</i>	Hyptis	<i>Mesosphaerum suaveolens</i>	Billygoat weed	<i>Ageratum conyzoides</i>
Coral vine	<i>Antigonon leptopus</i>	Bamboo	<i>Bambusa vulgaris</i>	Mission grass - Perennial	<i>Cenchrus polystachyos</i>	Mission grass - annual	<i>Cenchrus pedicellatus</i>	Lantana	<i>Lantana camara</i>	Brazilian joyweed	<i>Alternanthera brasiliana</i>
*Merremia - hairy	<i>Distimake aegyptius</i>	Bauhinia (Orchid tree)	<i>Bauhinia spp</i>	Olive hymenachne	<i>Hymenachne amplexicaulis</i>	Rats tail grass	<i>Sporobolus spp</i>	Lions tail	<i>Leonotis nepetifolia</i>	Chinese bitters	<i>Andrographis paniculata</i>
Maldonado	<i>Macroptilium gracile</i>	Curry leaf	<i>Murraya koenigii</i>			Red natal grass	<i>Melinis repens</i>	Mimosa	<i>Mimosa pigra</i>	Cobblers peg	<i>Bidens pilosa</i>
Rangoon creeper	<i>Combretum indicum</i>	Fishtail palm	<i>Caryota mitis</i>			Urochloa - Para grass	<i>Urochloa mutica</i>	Senna - Candle bush	<i>Senna alata</i>	Crotalaria (Rattle pod)	<i>C. goreensis</i>
White convolvulus creeper	<i>Distimake dissectus</i>	Golden shower tree	<i>Cassia fistula</i>			Urochloa - Tully grass	<i>Urochloa humicola</i>	Senna - Coffee	<i>Senna occidentalis</i>	Desmanthus	<i>D. pernambucanus</i>
Wild passionfruit	<i>Passiflora foetida</i>	Mango	<i>Mangifera indica</i>					Senna - Sicklepod	<i>Senna obtusifolia</i>	Devil's fig	<i>Solanum torvum</i>

Table 4. cont'd.

	Mussaenda	<i>Mussaenda</i> spp			Sida - Flannel weed	<i>Sida</i> <i>cordifolia</i>	<i>E.ruderalis</i>	<i>Eleutheranthera</i> <i>ruderalis</i>
	Neem (declared)	<i>Azadiracht</i> <i>a indica</i>			Sida - Spiny head	<i>Sida acuta</i>	Gooseberry	<i>Physalis</i> <i>angulata</i>
	Orange jessamine	<i>Murraya</i> <i>paniculata</i>			Snakewe ed	<i>Stachytar</i> <i>heta spp</i>	Jungle flame	<i>Ixora coccinea</i>
	Poinciana	<i>Delonix</i> <i>regia</i>			Star burr	<i>Acanthospe</i> <i>rmum</i> <i>hispidum</i>	Milkweed	<i>Euphorbia hirta</i>
	Tamarind	<i>Tamarindus</i> <i>indica</i>					Mitracarpus	<i>M. hirtus</i>
							Mother-in- laws tongue	<i>Dracaena</i> <i>trifasciata</i>
							Sesame	<i>Sesamum</i> <i>indicum</i>
							Tridax daisy	<i>Tridax</i> <i>procumbens</i>
							Wynn cassia	<i>Chamaecrista</i> <i>rotundifolia</i>

*Merremia - hairy previously *Merremia aegyptia*, now Egyptian woodrose *Distimake aegyptius*

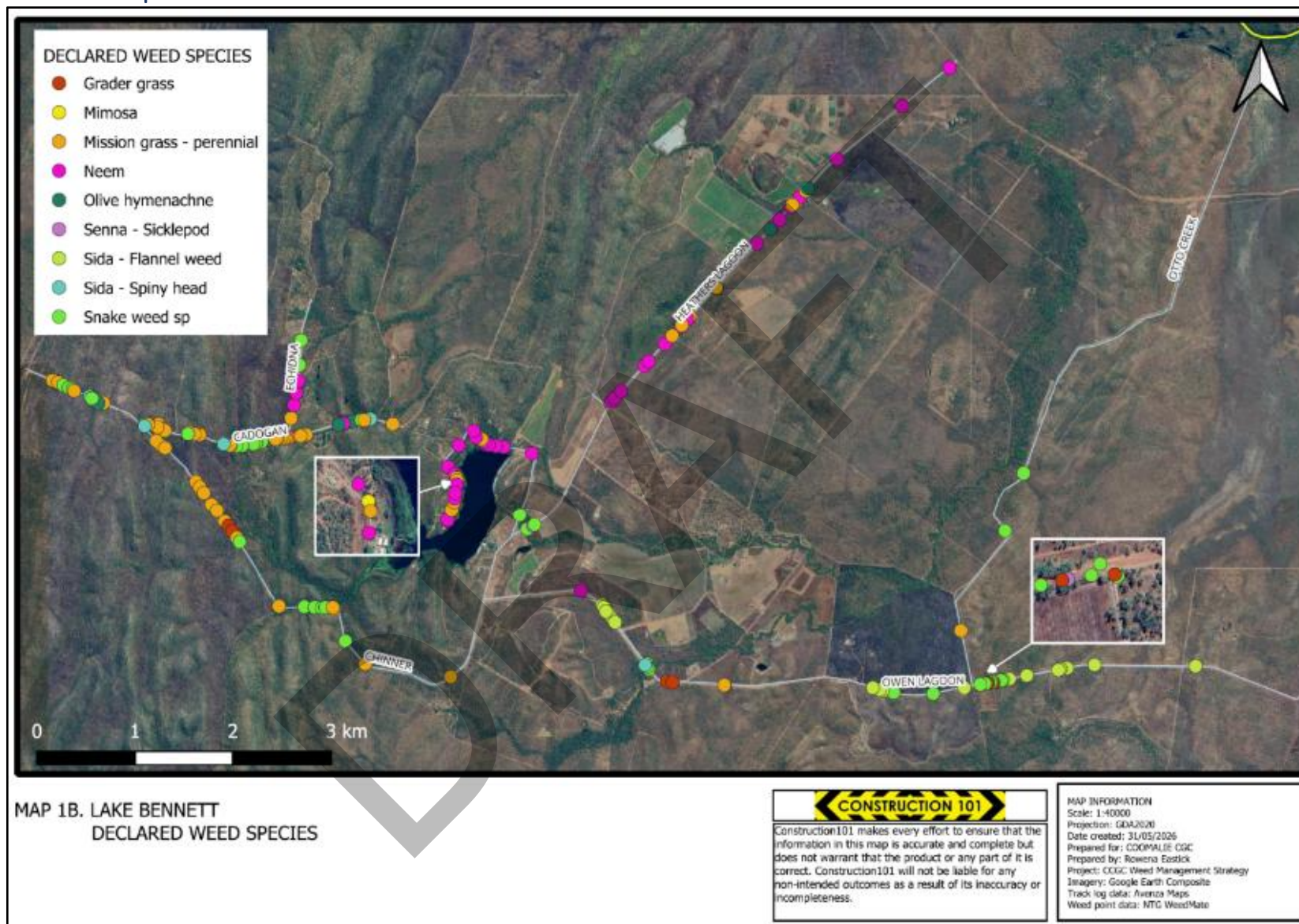
** Now *Cenchrus setosus*

Maps Area 1. Lake Bennett

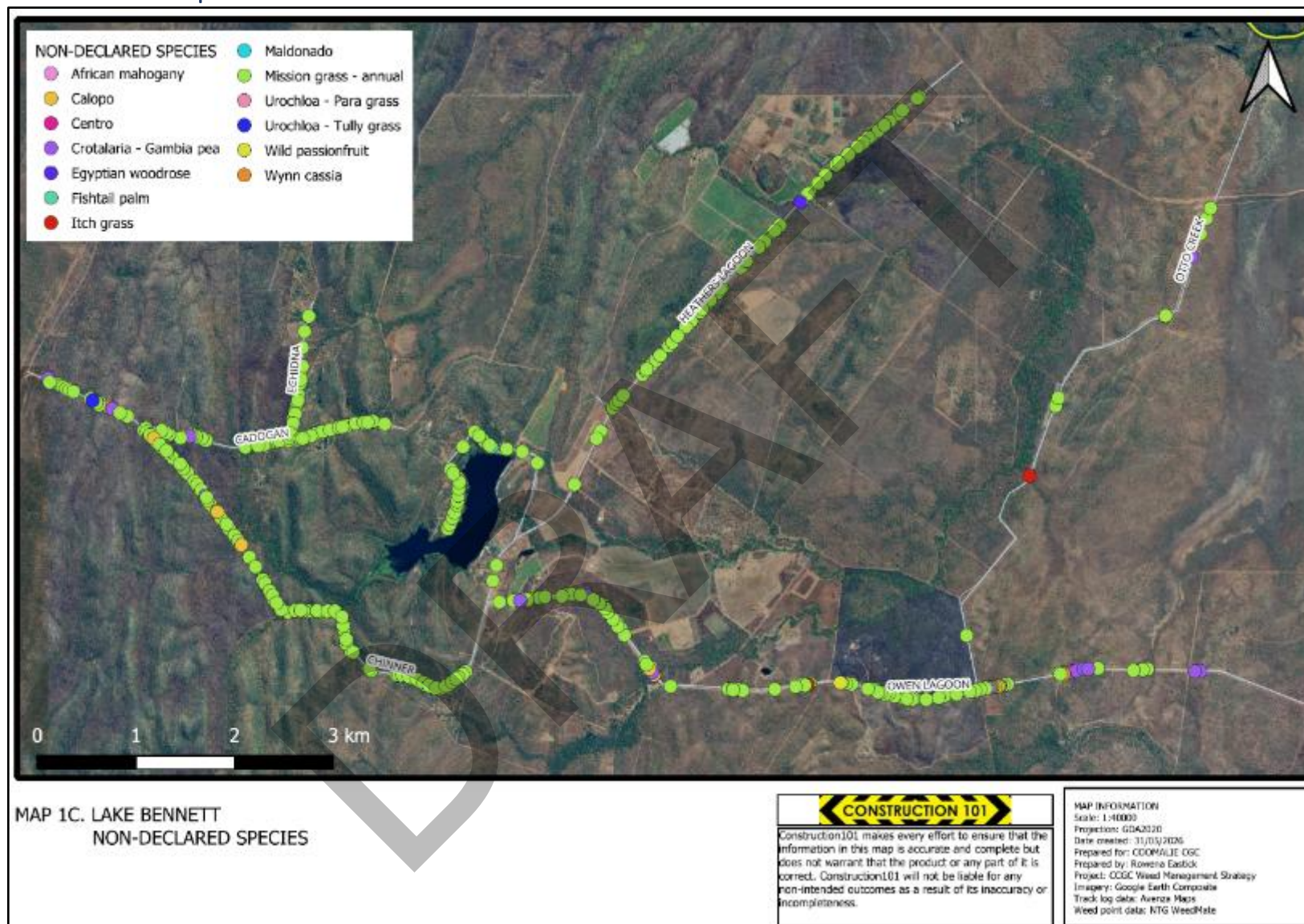
1A. Gamba Grass



1B. Declared Weed Species

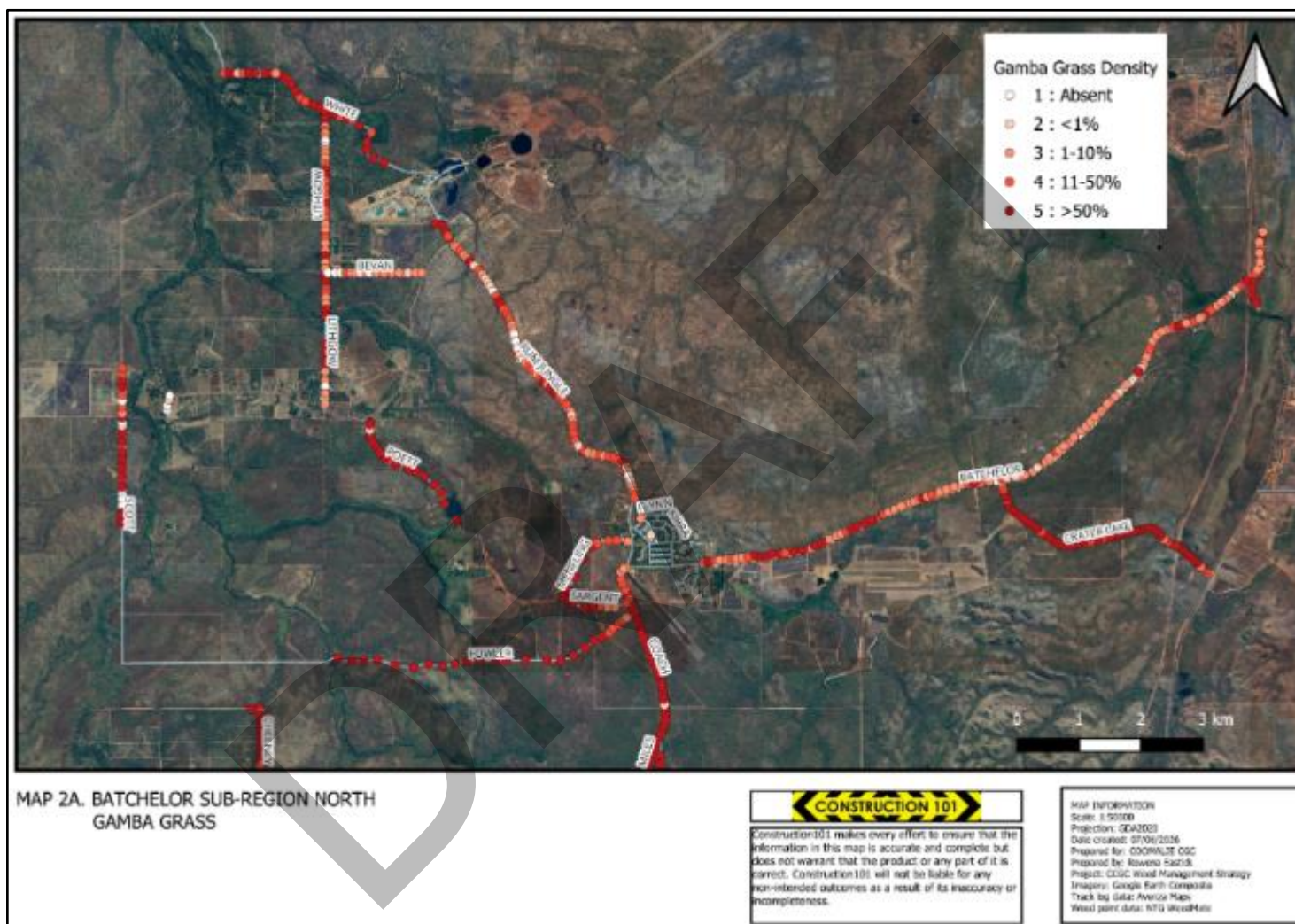


1C. Non-Declared Weed Species

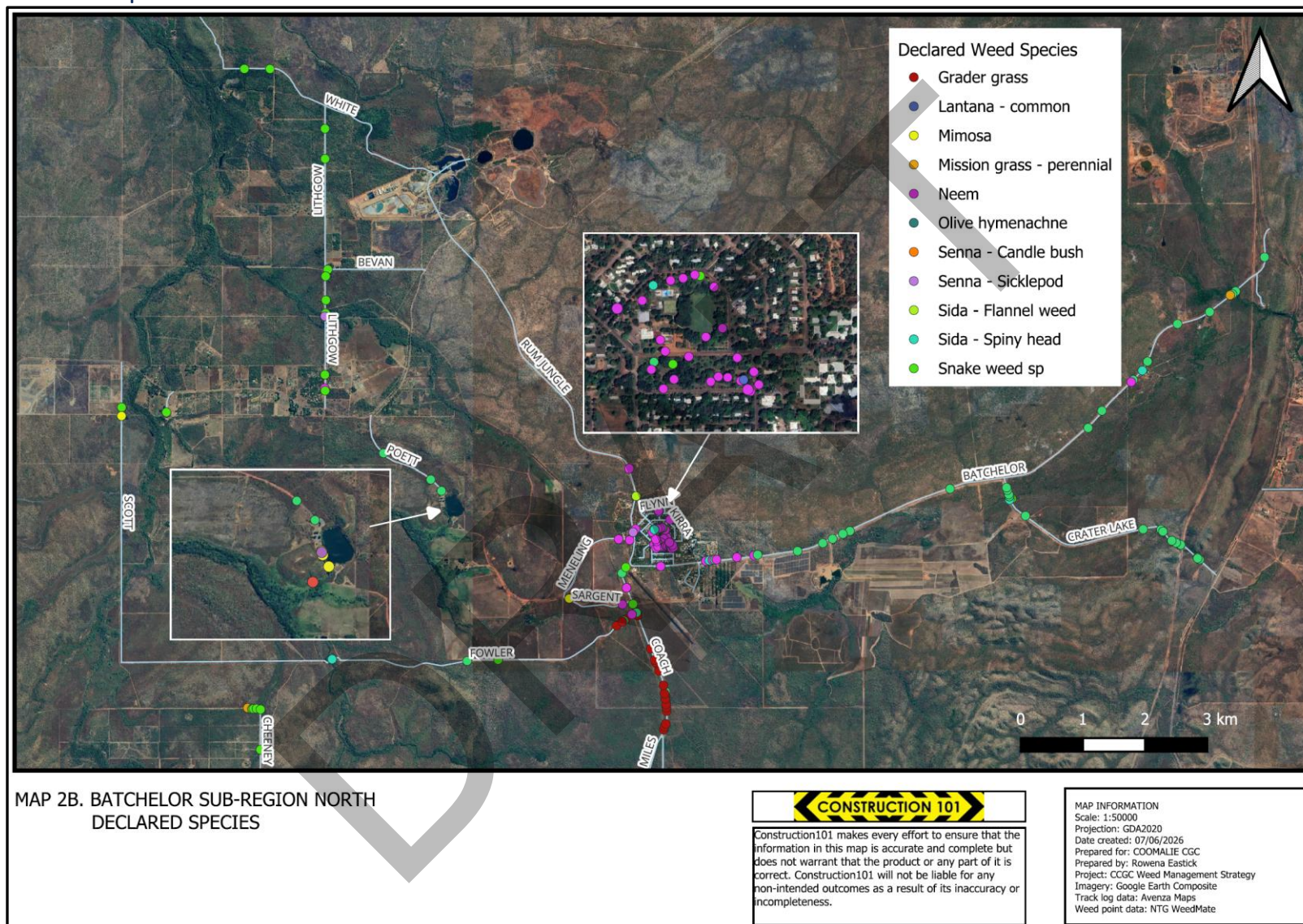


Maps Area 2. Batchelor North sub-region

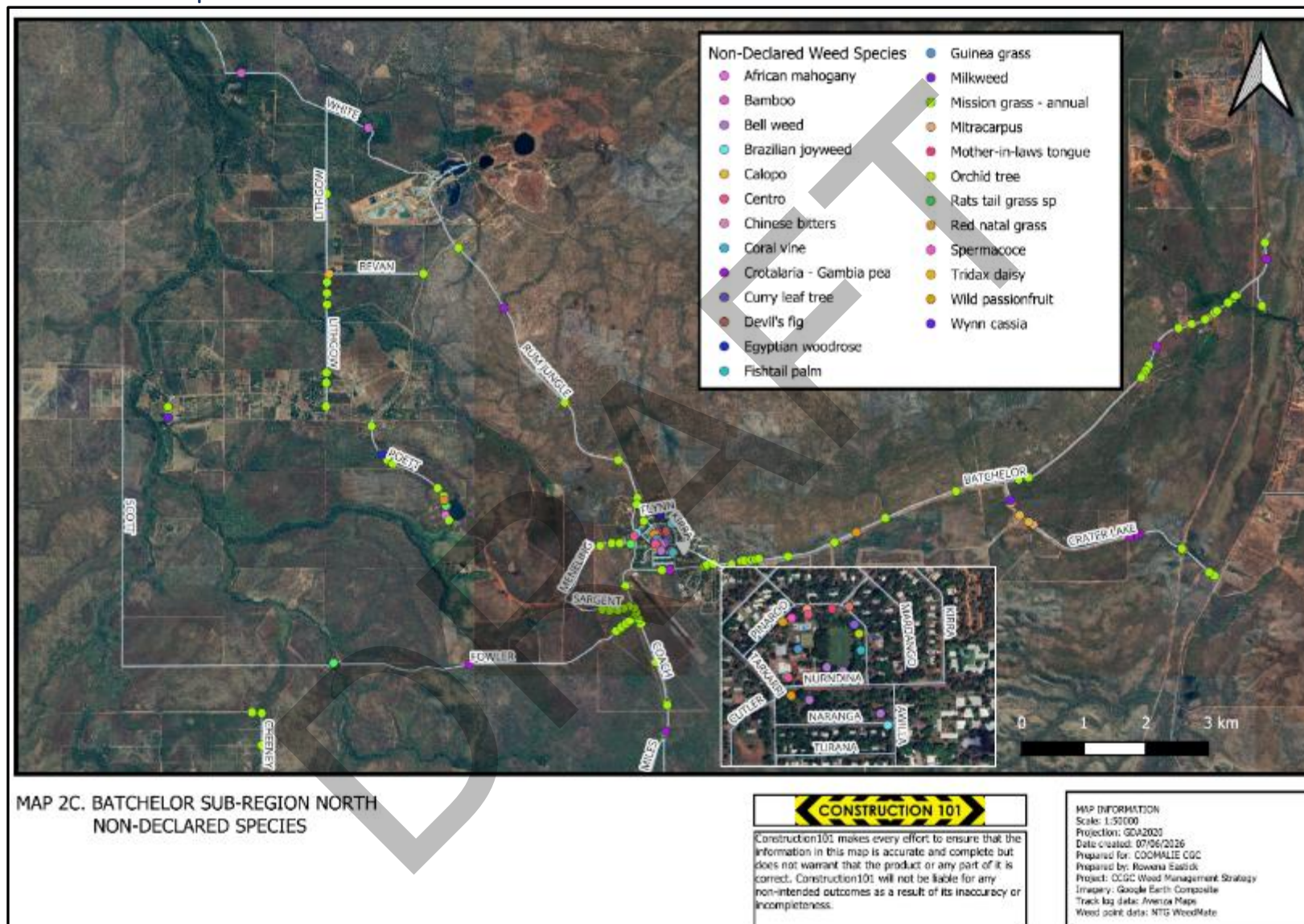
2A. Gamba Grass



2B. Declared Weed Species

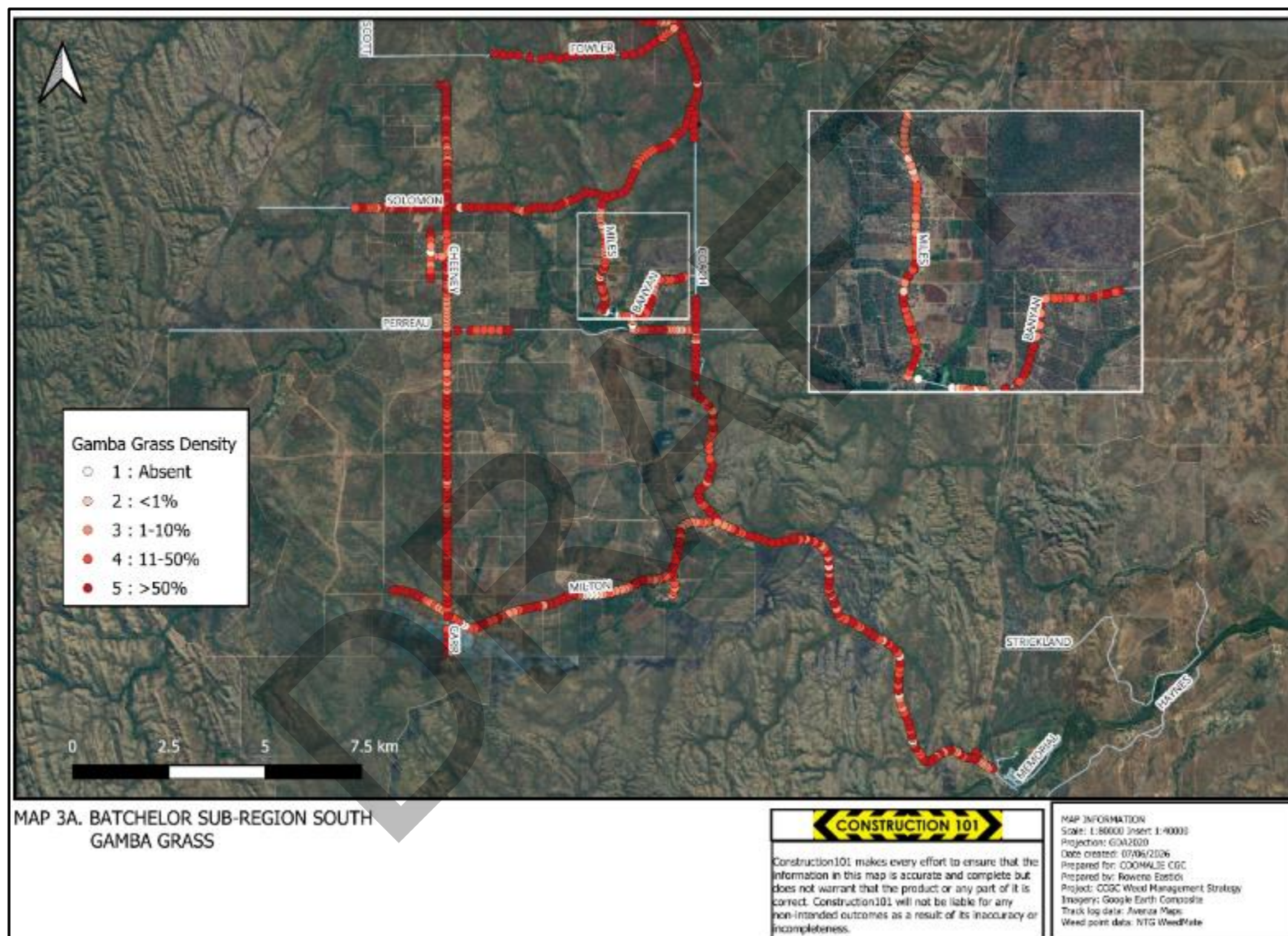


2C. Non-Declared Weed Species

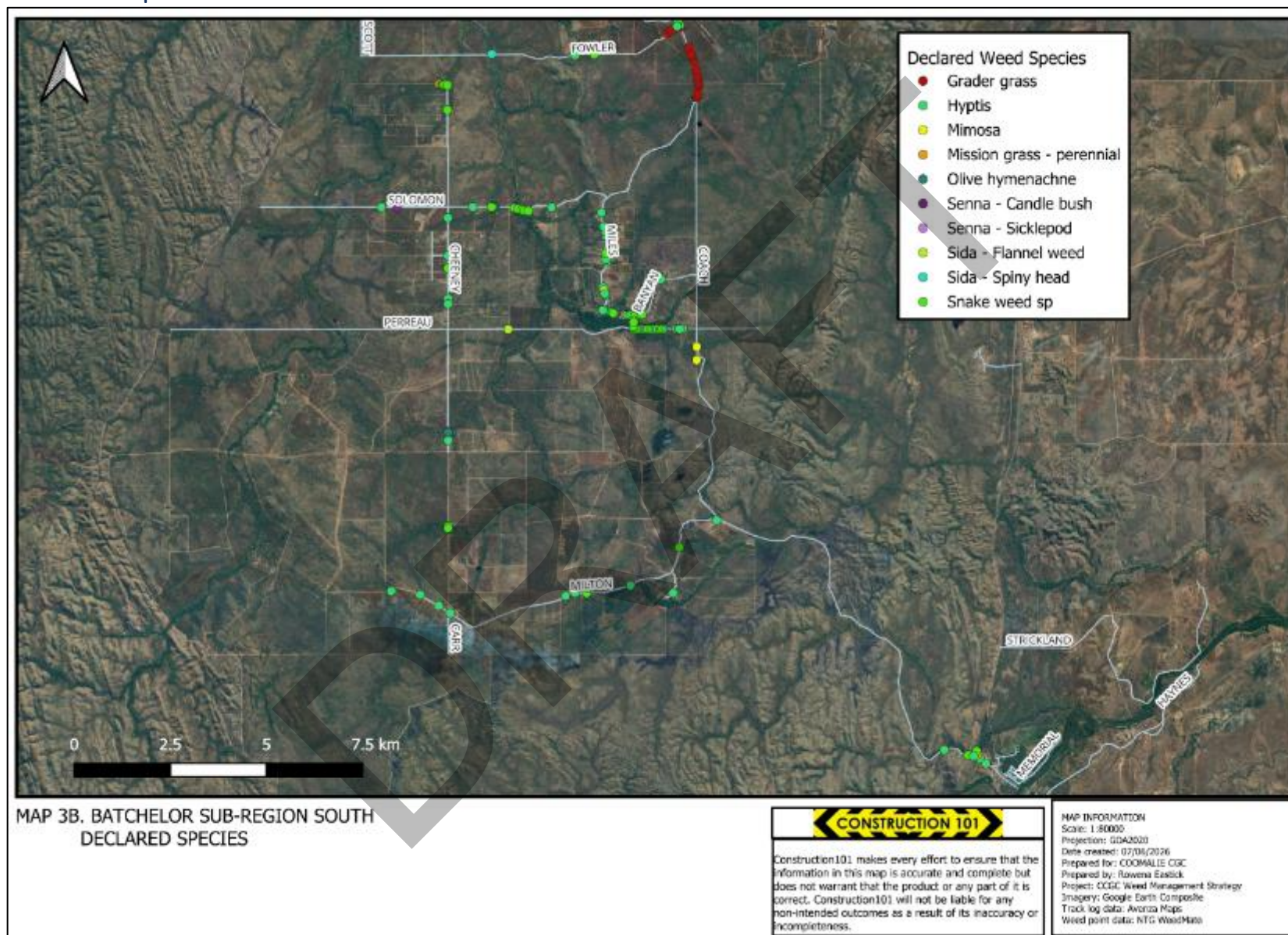


Maps Area 3. Batchelor South sub-region

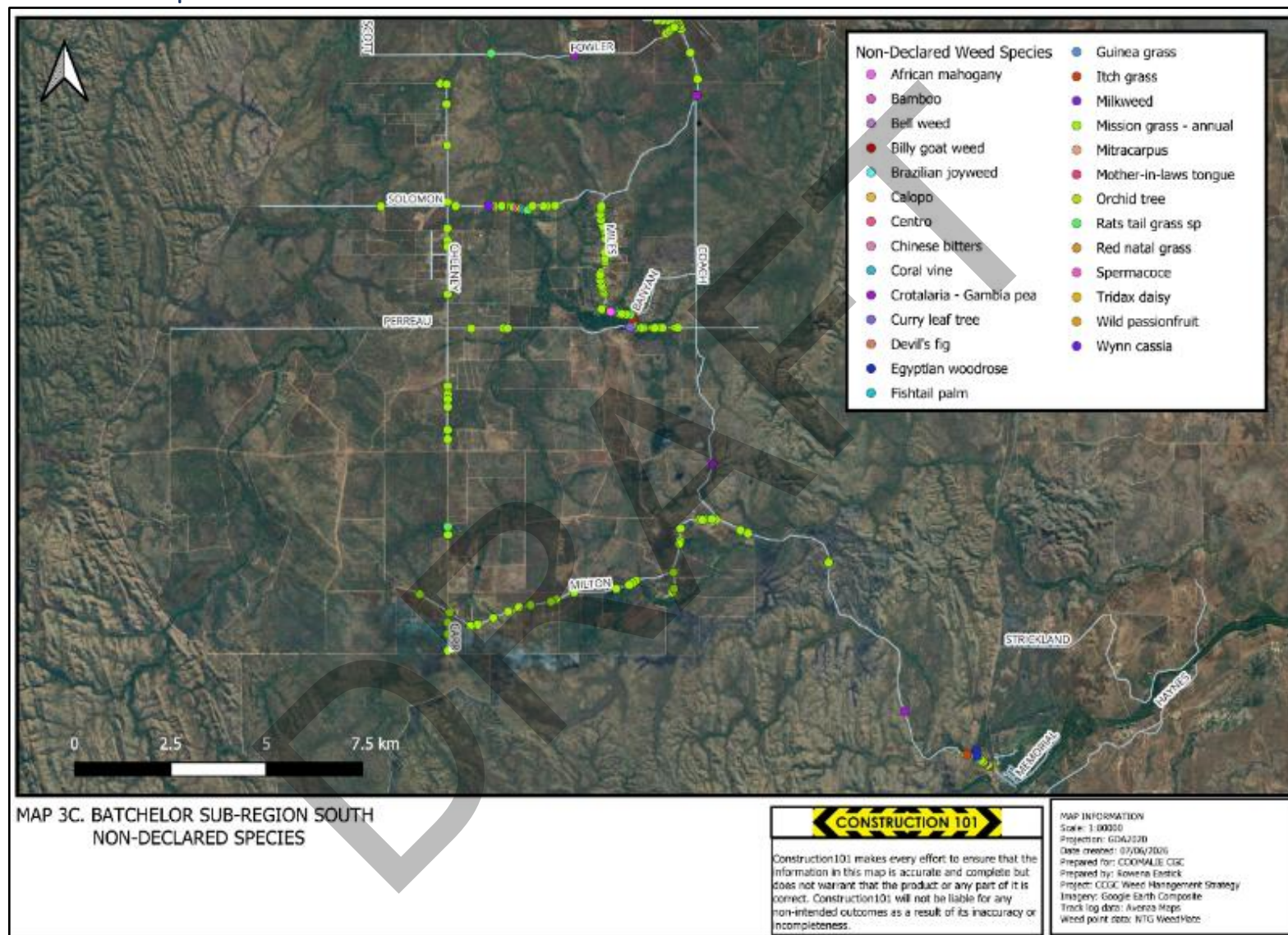
3A. Gamba Grass



3B. Declared Weed Species

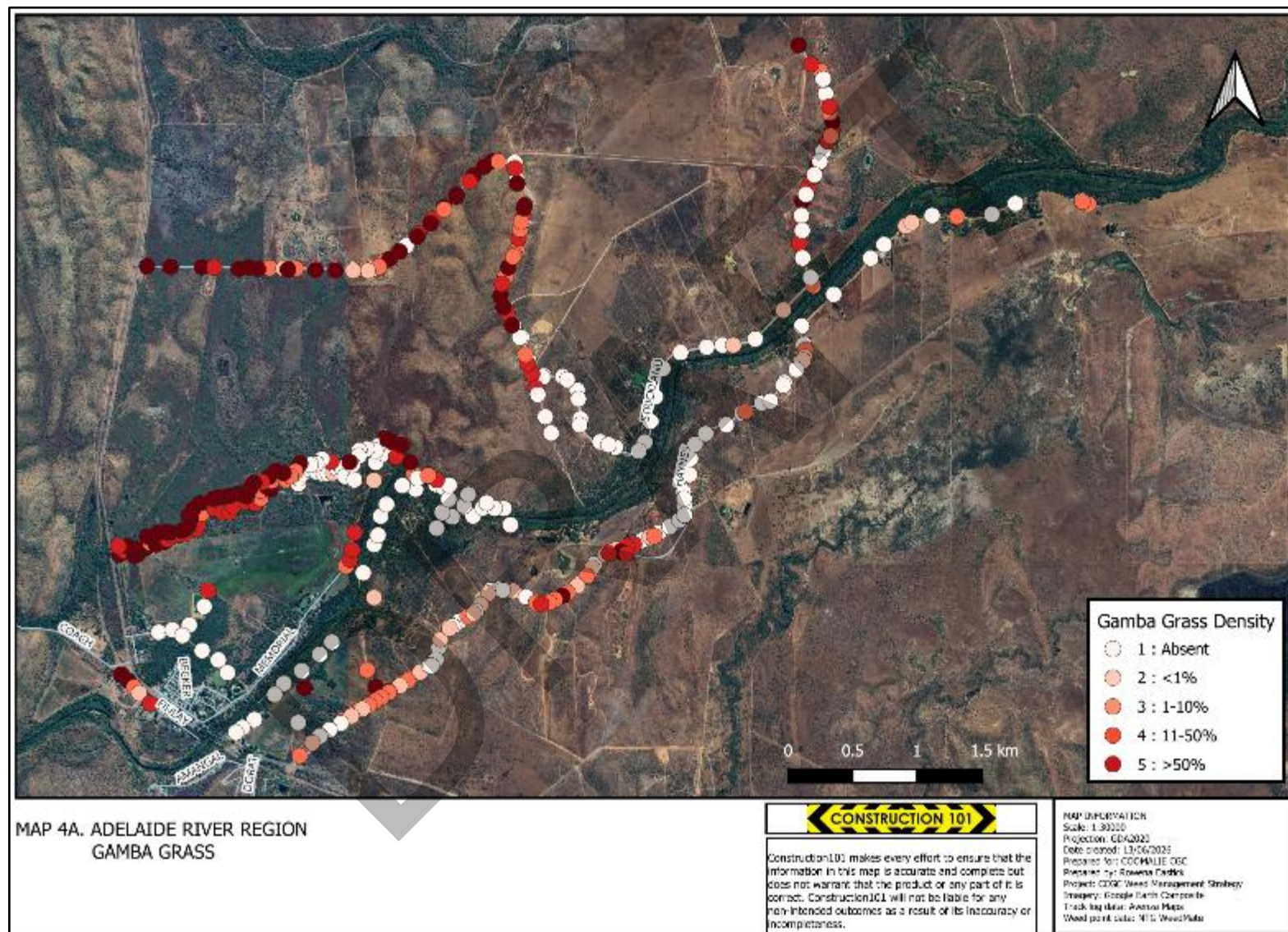


3C. Non-Declared Weed Species

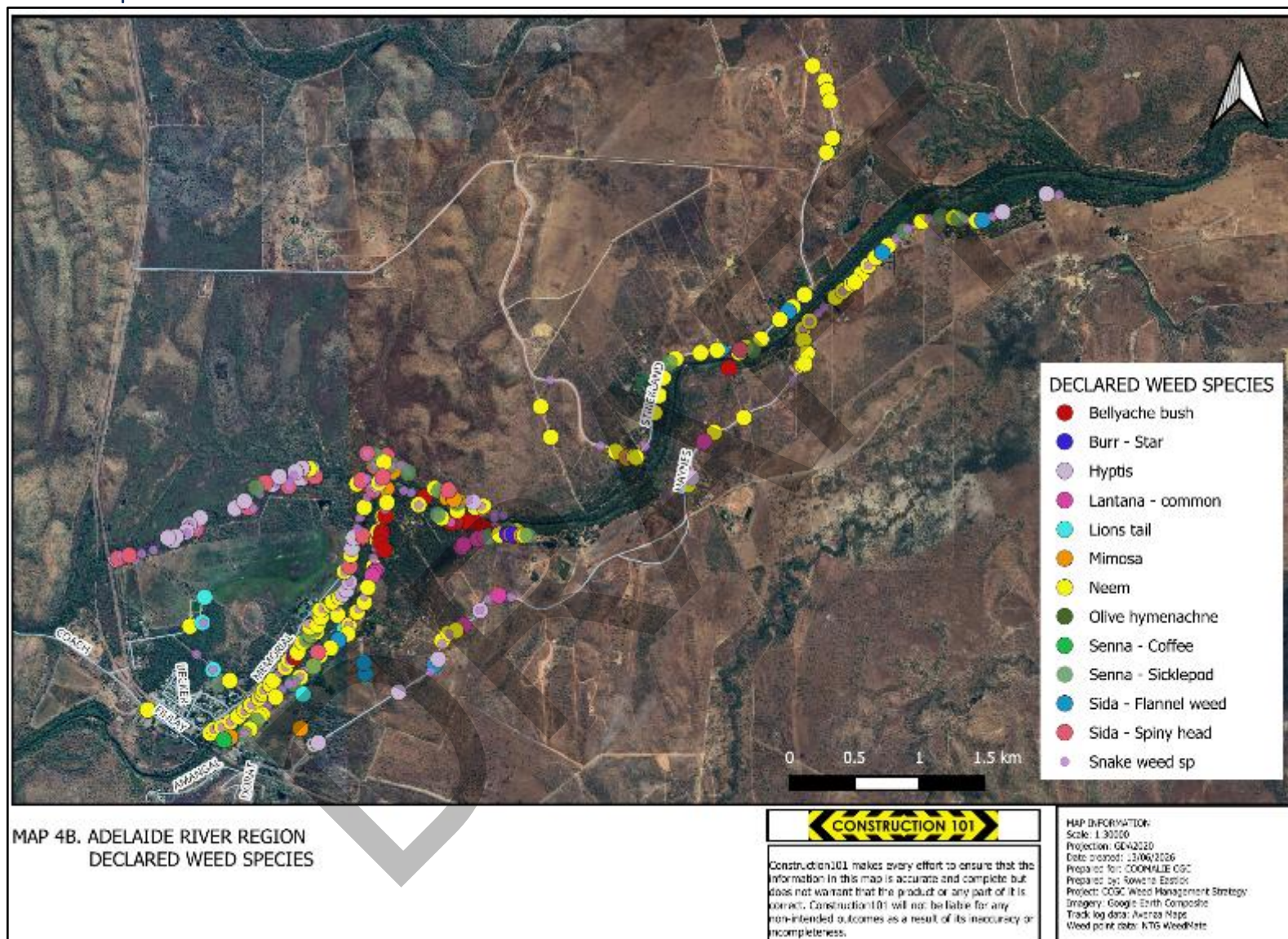


Maps Area 4. Adelaide River

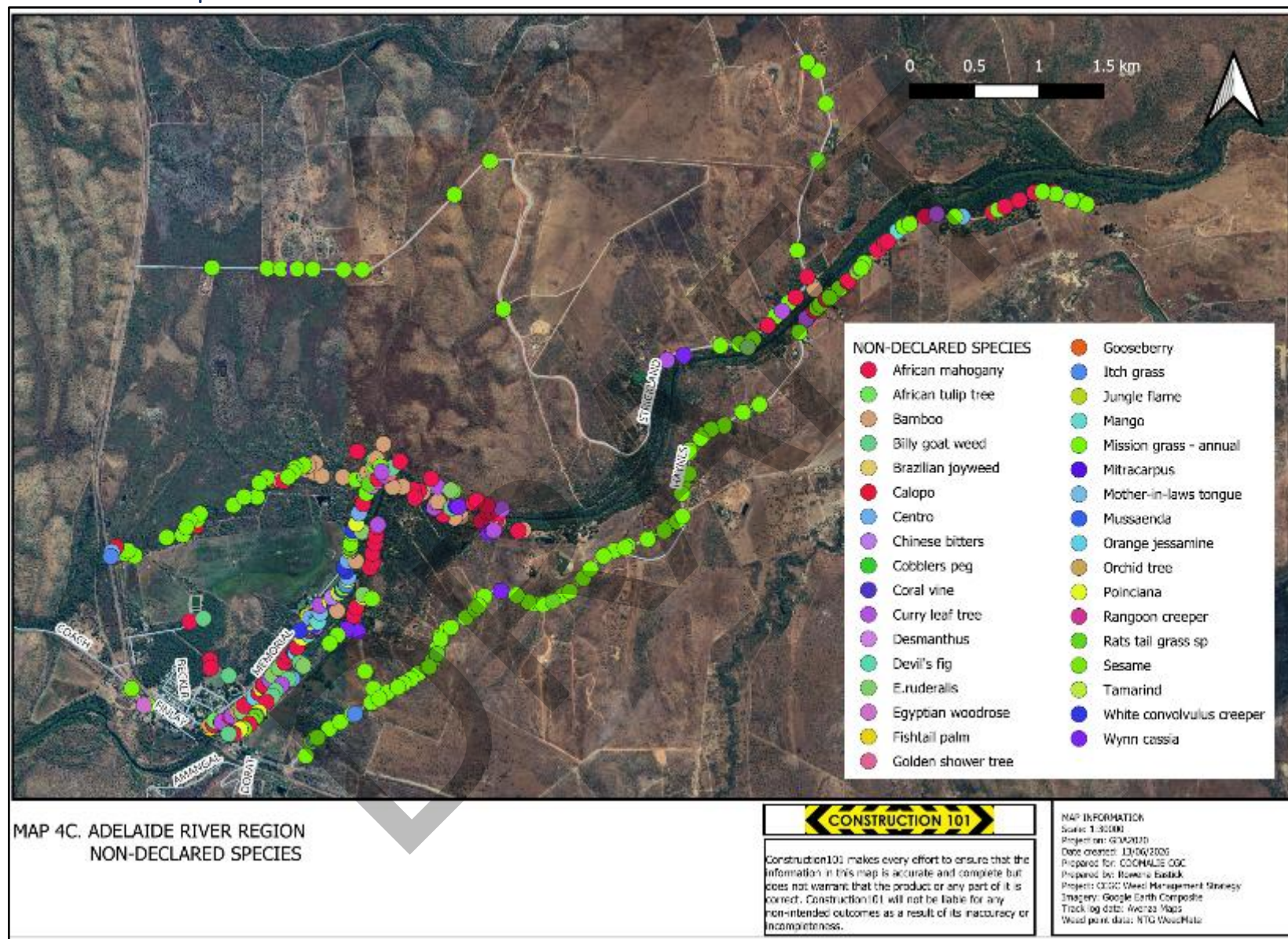
4A. Gamba Grass



4B. Declared Weed Species



4C. Non-Declared Weed Species



Map 5. Photo points in WMS

