



Arid Lands Region



Northern Territory

# **NATURAL RESOURCE MANAGEMENT PLAN**

2021–2025



# **VISION**

Territorians working together to manage our environment's natural, cultural and economic values for the benefit of all.

## For more information

This publication is available on request through contacting [info@territorynrm.org.au](mailto:info@territorynrm.org.au)

## Acknowledgements

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# Foreword

The Northern Territory NRM plan provides an overarching five year strategy for maintaining and enhancing the condition of our land and water resources, the productivity of our soils and the health of our natural habitats and biodiversity. It has been drafted following extensive consultation to capture community priorities across the Territory and is underpinned by the latest science.

By structuring the plan into four regions we reflect the diversity of the Territory landscapes and give a stronger voice to our regional stakeholders. This is a plan for all Territorians.

The plan builds on upon the legacy of previous Northern Territory NRM plans and the lessons learned from their implementation. It learns from the past but also looks to the future, recognising the newly emerging challenges and opportunities that this new decade brings. As the Territory enters an exciting period of growth and investment, this plan provides an effective framework for engaging new partners into NRM, coordinating action and tracking and adaptively managing our progress towards high level objectives.

With this new plan, Territory NRM aims to strengthen regional leadership and coordination in plan implementation. We will bring together and facilitate diverse regional stakeholders to adaptively manage implementation and find the approaches that work best for them.

As Chair I look forward to playing my part in supporting in this collaborative effort. Working together, we aim to ensure that the health of the Territory's natural resources will underpin its future prosperity and the social and economic wellbeing of all Territorians.

## **Alastair Shields**

Chair of Territory Natural Resource Management



# Introduction

The *Northern Territory Natural Resource Management Plan (2021-2025) Arid Lands Region* (the Arid Lands regional plan) provides a framework for maintaining and enhancing the health and productivity of land, water, soils, terrestrial habitats and biodiversity across the region. While preparation of this plan was coordinated by Territory Natural Resource Management, it is not a plan for Territory Natural Resource Management, it is a plan for the whole Arid Lands NRM community.

This plan has been developed drawing upon the latest available scientific evidence and expert technical knowledge of the natural, social and cultural assets of the region. It further integrates the interests, priorities and goals of a diversity of stakeholders and interest groups from across the Arid Lands including governments, industry groups, Aboriginal landowners, communities, researchers and conservationists. The plan therefore highlights opportunities for strategic collaboration and partnerships between stakeholders working towards shared goals. By identifying regional NRM priorities and formulating strategies for achieving these, the Arid Lands regional NRM plan also constitutes a prospectus for investment.

The Arid Lands regional plan is one of four regional plans that make up the Northern Territory NRM plan. It builds directly upon the structure, outcomes and the lessons learned from implementation of the previous plan, the Natural Resource Management Plan (2016-2020) Arid Lands Region, and the legacy of NRM planning for the Arid Lands since 2005. Each successive plan has refined strategies to best address changing biophysical conditions, a changing policy environment and evolving community expectations across the Arid Lands. Accordingly, in 2021, the Arid Lands regional plan supports and carries forward the good work that NRM stakeholders have been conducting over many years.

In a fast-changing world, this plan also looks to the future and program strategies have been developed anticipating NRM opportunities and challenges that may emerge across the Arid Lands during the period 2021-2025.



## Our Vision

Territorians working together to manage our environment's natural, cultural and economic values for the benefit of all



# The Arid Lands Region

The Arid Lands is a region of iconic landscapes which are internationally renowned for their outstanding natural values, extraordinary geological landforms and living Aboriginal culture which dates back 50,000 to 65,000 years. Both the stunning landscapes and Aboriginal culture of the region are major drawcards for domestic and international visitors to the region.

The climate of the region is characterised by extremes with temperatures ranging from around 40°C in the summer to below 0°C in the winter overnight. Rainfall varies from year to year, but overall, the climate is dry most of the time. There is also a long history of pastoralism in the region. The region is unique in that it has not been subjected to the same development pressure of urban expansion or intensive agriculture as have other parts of Australia and thus the natural landscapes are still largely intact.

The Arid Lands consists of a diversity of habitats including rugged ranges and gorges, woodlands, desert rivers, rockholes, mulga woodland, spinifex grasslands and sand country. The gorges provide important refuges for a collection of plants and animals within some of the least modified deserts in the world. Numerous biologically significant plants and animals are found in the region, 24 Sites of Conservation Significance are listed, of which eight are internationally significant. Exemplary geological features are found in the region, including: Uluru-Kata Tjuta National Park, a World Heritage National Park which is listed for both its outstanding universal natural and cultural values; Tjoritja / West MacDonnell National Park; and Watarrka National Park (Kings Canyon).

The richness of Aboriginal culture in the Arid Lands is demonstrated by the diversity of Traditional Owners living in the region including Pitjantjatjara, Yankunytjatjara, Luritja, Ngaanyatjarra, Arrernte, Pintupi, Warlpiri, Alyawarra, Anmatyerre, Warumungu and Kaytetye people. There are numerous sacred sites listed under the Northern Territory Aboriginal Sacred Sites Act 1989, as well as culturally significant places in the landscape. Indigenous languages are the main language for many Aboriginal people and a vast body of in-depth traditional ecological and cultural knowledge drives ceremonial and cultural practices that continue today.

The environmental and cultural values of the region are under increasing pressure from a number of threats such as wildfires, feral animals including cats, rabbits, camels and introduced plants such as buffel grass. The impact of these threats on culturally significant species for Aboriginal people, as well as the loss of traditional Aboriginal knowledge and threats to culturally significant sites are also significant issues.

There are 75 threatened species listed under NT Government legislation and 50 threatened species listed under Australian Government legislation, including the northern quoll, greater bilby, golden bandicoot and central rock rat.

The productivity of the landscape for pastoralism is also at risk from these threats. The natural values of the Arid Lands underpin the livelihoods of pastoralists and Aboriginal people and the viability of industry and other commercial enterprises in this remote region.



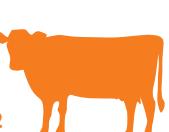
# Arid Lands Regional Profile

## Land

 **49%**  
of NT's land mass  
**685,000 km<sup>2</sup>**

 **26%**  
of land is protected areas

**55%**  
Aboriginal freehold land  
**375,750 km<sup>2</sup>** 

**36%**  
Pastoral lease  
**246,600 km<sup>2</sup>** 

**85%** land classified as  
**VERY REMOTE**  
(ABS)

## People

 **37,368** approximately  
**15%** of the NT's population

 **Alice Springs**  
26,448

## REGIONAL CENTRES

Yuendumu  
Papunya  
Hermannsburg

visitors 2020  
**293,000**  


Majority of population in  
**VERY REMOTE**  
are Aboriginal

## Economy

**\$2.6 million**  
Gross Regional Product  
**10%** of NTs Gross State Product



## Natural resources

 **24** Sites of Conservation Significance

 **14** Nationally listed threatened plant species

 **19** NT listed threatened plant species

 **36** Nationally listed threatened animal species

 **56** NT listed threatened animal species

 **7** Weeds of National Significance

# Social and economic status

The Arid Lands region has unique social, economic and environmental characteristics that raise particular challenges in terms of creating sustainable livelihoods and delivering NRM activities. The link between social and ecological resilience is particularly apparent within Arid Lands groups and communities that depend upon natural resources for their livelihoods. The Arid Lands has one of the lowest population densities within Australia at just one person for every five square kilometres. Over 85% of the region is classified as “very remote” with the remaining area being classified as “remote”, according to the Australian Bureau of Statistics (ABS) because of the extremely large distances needed to travel to access essential services and infrastructure. These factors hold clear implications for the cost and difficulty of providing extension services to build social and economic resilience in support of NRM across the Arid Lands. The economy of the region is sustained by the mining, tourism and primary industries (particularly cattle stations), and is underpinned by government funding for regional service delivery and defence. In 2020 Central Australia contributed 10% (\$2.9 billion) of the NT Gross State Product. Of this, the largest industry sectors are mining (\$552 million), construction (\$313 million) and health care and social assistance (\$240 million). Tourism is also a significant driver of the economy in the Arid Lands region and it influences almost all other industries and infrastructure needs. Uluru Kata-Tjuta National Park draws over 40% of the visitors to the NT every year. The pastoral industry also contributes significantly to the economy in the region supplying both the domestic market and, increasingly, the international market.



## Social indicators

The participatory planning process adopted in 2016 highlighted the role of ‘people’ in natural resource management and the capacity of individuals and groups to implement activities and to coordinate and work together with other individuals and groups.

The 2021-2025 Arid Lands regional plan retains ‘Community Knowledge’ and ‘People on Country’ as key NRM assets. Without motivated and capable people, the programs and strategies set out in this plan could not be achieved. Accordingly, the plan places heavy emphasis upon building and supporting social capacity in natural resource management. Through implementing successive NRM plans there is now an improved understanding of the elements that enable social capacity for natural resource management in the Arid Lands:

- Opportunities to learn new skills and share knowledge
- The recognition, generational transfer and appropriate use of traditional ecological knowledge
- Capacity for ‘two-way learning’ and working productively across cultures
- Meaningful participation and a sense of ownership in NRM planning
- Strong working relationships and active networks across the region
- Ability to plan and coordinate strategically, and manage adaptively
- Effective communications to reach all audiences
- Overcoming resource, logistical and economic barriers to participation.

Each of these elements are recurrent themes throughout the programs of this plan and will contribute to how success in implementation is measured.

# Land tenure

The Arid Lands region is dominated by Aboriginal land, pastoral leaseholds and protected areas. However, there is some overlap between these tenures with some Aboriginal land managed as both protected areas and for pastoral operations.

## Pastoral lease

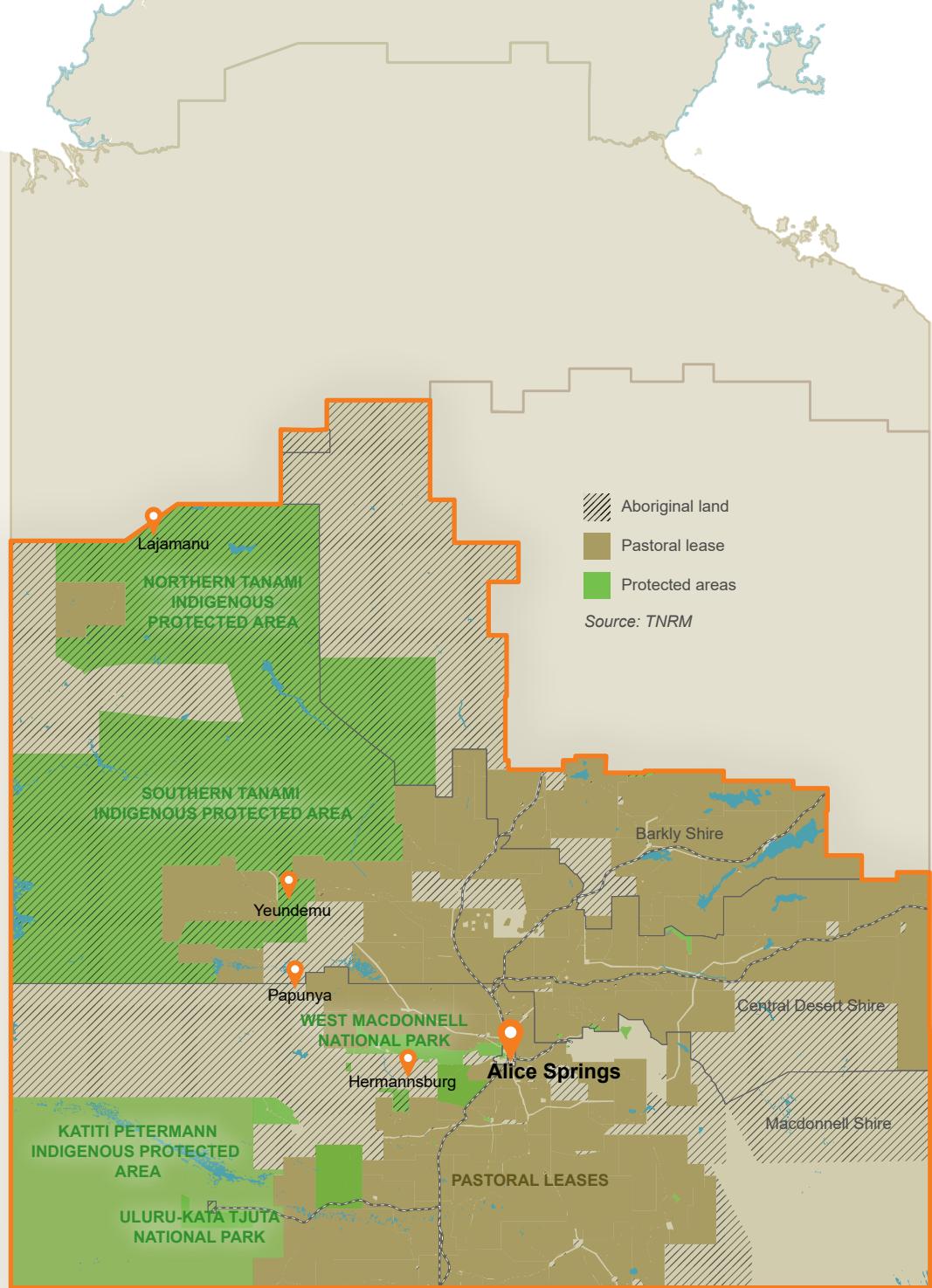
The Arid Lands region encompasses over 60 pastoral leaseholds which make up approximately 36% (246,600 km<sup>2</sup>). The average size of the cattle stations in Central Australia is about 3000 km<sup>2</sup>, many being family owned. The Indigenous Pastoral Program increased the number of pastoral operations being run on Aboriginal land and strengthened ties between the pastoral industry and Aboriginal landowners.

## Aboriginal land

Over 55% of the Arid Lands (375,750 km<sup>2</sup>) is under Aboriginal freehold title, held by Aboriginal Land Trusts and administered by the Central Land Council. Exclusive Native Title is also recognised over sections of Aboriginal freehold title under the Native Title Act 1993. In some areas where freehold title does not exist, Aboriginal people have been granted non-exclusive native title rights or have come to agreements with pastoralists under Indigenous Land Use Agreements.

## Protected areas

Approximately a quarter of the Arid Lands region is under protection. Most of this area consists of Indigenous Protected Areas (IPAs) with the largest being the Southern Tanami IPA (101,600 km<sup>2</sup>). There are also significant parks and reserves within the region managed by the NT Government under the Territory Parks and Wildlife Conservation Act 1976. Most of these properties are managed through joint management arrangements with their Traditional Owners. For example, Uluru-Kata Tjuta National Park is a Commonwealth Reserve on Aboriginal freehold land that is jointly managed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The region also encompasses the Newhaven Wildlife Sanctuary, one of Australia's largest private Protected Areas, covering 2620 km<sup>2</sup>.



# Where does the Arid Lands regional plan fit in?

The Arid Lands regional NRM plan is one of four plans that combine to form the broader *Northern Territory Natural Resource Management Plan (2021-2025)*. It is a non-statutory plan, but it has been developed with reference to broader policy frameworks, Australian Government, Northern Territory Government and local planning initiatives, and local knowledge. The plan aims to provide an overarching framework that integrates this diversity of approaches and instruments into a single coherent agenda for action.

This integrated approach provides a platform to both strengthen existing partnerships and highlight potential new partnerships to underpin NRM collaborations. It recognises that to strategically manage the water, land, soils and biodiversity of the Arid Lands, planning and management action must be inclusive of all stakeholders. The planning process during 2020 and 2021 went through multiple stages to most effectively capture the current and future priorities of all stakeholders.

The Top End regional plan is not only for the Territory Natural Resource Management organisation, rather it is a plan for the whole natural resource management community.



# How did we develop the Arid Lands regional plan?

In 2015 and 2016 the 'Open Standards for the Practice of Conservation' were adopted as a basis for NRM planning. The 'Open Standards' are an internationally recognised planning framework and represent leading practice in participatory planning and adaptive management. Planning for the Arid Lands in 2016 established a framework for ongoing monitoring, review and updating of the plan by stakeholders and transformed the plan into a 'live' document. Reviewing and revising the Arid Lands regional plan in 2018 and again in 2020, most stakeholders reported that the structure of the 2016–2020 plan remained relevant to their needs.

Consequently, in 2021 we are carrying the structure and logical framework established by the 2016 planning process forward. We are updating, reviewing and refining this to meet the evolving NRM environment of the 2020s. This not only ensures continuity and consistency in programming, but also enables review of progress made towards strategic objectives beyond the life of a single planning period.

The development of this plan involved multiple steps, planning workshops, collation and review of relevant data and documentary evidence, community consultations and receipt of written submissions.

The planning approach focuses upon the identified assets of the region and the pressures that act upon them. The 'Theory of Change' (planning logic) suggests that improved management of the pressures acting on assets will promote more sustainable, natural social and economic systems.

The natural, social and cultural assets referenced in this plan were identified by the NRM stakeholders of the Arid Lands through a series of workshops and planning sessions undertaken during the development of the 2016–2020 plan. Arid Lands stakeholders feel this asset structure remains relevant in 2021.

Collectively, the 9 assets identified through the planning process provide Arid Lands stakeholders with resources for their daily lives (such as the air they breathe and the water they drink), and underpin key industries such as pastoralism, crop agriculture and tourism. Natural and cultural assets also support the important customary economy that sustains Aboriginal people and provides for their cultural and spiritual wellbeing.

## 1 Review of the 2016–2020 plan

Arid Lands stakeholder groups were individually consulted to assess progress made towards plan implementation, and then attended a technical review meeting convened in Alice Springs where progress towards implementation and achievement of objectives was assessed.

## 2 Literature and data review plan

An extensive review of published and grey data, publications, research reports and policy documents produced since 2016 was conducted to update asset and pressures descriptions and highlight trends of change.

## 3 Technical working-group planning

Key technical stakeholders were brought together in a planning meeting to discuss and identify current and emerging Arid Lands NRM priorities and the strategies required to address them.

## 4 Individual expert consultations

Following up on the planning meeting select thematic experts were consulted individually for more detailed input to develop the program of strategy activities and interim targets.

## 5 Consultation Draft

The Arid Lands Consultation Draft document was prepared and posted for public comment and submissions. Community presentations and consultation sessions were convened in Alice Springs.

## 6 Final Draft

Community feedback and stakeholder submissions on the Consultation Draft and planning priorities were collated and drawn upon to produce this final draft of the Arid Lands regional plan

The strategies and major objectives identified to protect the assets identified for the Arid Lands NRM Plan 2016–2020 were organised into nine programs. These were:

- Managing fire
- Preventing and managing weeds
- Reducing the impacts of feral animals
- Industry adoption of sustainable practices
- Water resources and soil management
- NRM based economic opportunities
- Minimising the ecological footprints of development
- Managing and protecting key natural and cultural assets
- Knowledge capacity and engagement

In developing the 2021–2025 Arid Lands regional plan, this structure has been carried forward.

# Key assets



## People on Country

Includes remote livelihoods of Aboriginal people, pastoralists and others living throughout the region



## Community Knowledge

Includes Indigenous and non-Indigenous knowledge and skills and scientific knowledge



## Grasslands/Rangelands

Includes spinifex grasslands and associated acacias and desert oak trees



## Cultural Landscapes and Sites

Includes Aboriginal sacred sites, heritage places, cultural landscapes and iconic World Heritage sites



## Freshwater Systems

Includes waterholes, salt lakes, soaks, wetlands, clay pans, temporary lakes, rock holes and small permanent spring-fed streams and aquifers



## Healthy Soils

Includes soil fertility, structure, health and productivity



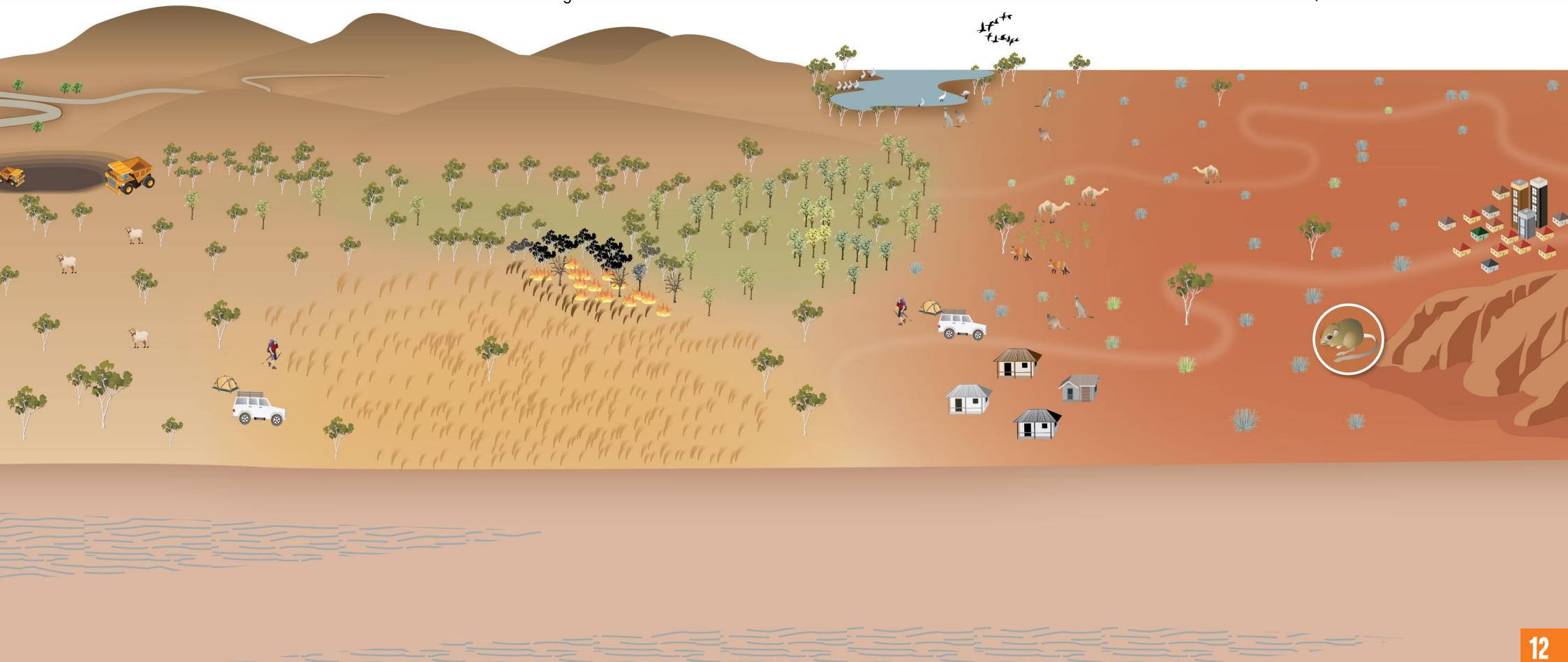
## Biodiversity and Conservation Sites

Includes threatened species, Sites of Conservation Significance, key conservation sites and healthy habitat



## Ranges

All ranges including: Greater MacDonnell Ranges; Uluru and surrounds; the Petermann Ranges; and associated refuge and aquatic habitat



# Assets and pressures descriptions

In describing assets and the pressures that act upon them, there are two qualitative assessments for trends in condition over the last five years (2016-2021).

## Community opinion

This is a subjective collective assessment elicited at community consultation meetings and based upon personal observations or other evidence. As a measure it reflects the community's perception about what is happening to natural assets and the success of NRM.

## Review of secondary data

Available academic papers, data sets, technical reports and policy documents published over the last five years and pertaining to the respective asset in the region were reviewed, noting implications for asset condition. As a caveat, due to delays in publication, some reviewed documents are based upon data collected prior to 2016.



# Assets and pressures descriptions



## Freshwater systems

**Goal:** By 2030 the condition of half of the freshwater systems in the Arid Lands has improved

### Indicators for condition

- Abundance and diversity of birds using wetlands for nesting and breeding
- Seasonal environmental flows
- Rates of water extraction, use and recharge
- Feral animal disturbance of riparian corridors and wetlands
- Water quality
- Rates of water discharge from selected bores
- Presence and distribution of weeds along seasonal water courses

	2016		2021 trend	
	Condition	Trend	Literature/ data review	Community perception
Freshwater systems	Fair			

The Arid Lands supports a restricted but significant range of ground and surface freshwater systems that include water holes, salt lakes, soaks, wetlands, clay pans, temporary lakes, rock holes and small permanent spring-fed streams and aquifers. Permanent water bodies in the Arid Lands support endemic and relict aquatic species. There are no permanently flowing rivers or perennial lakes in the region. Many rivers and creeks remain dry throughout the year and only flow when there is rainfall. Aboriginal people hold extensive knowledge of water sources in the region that was critical for survival in the landscape for many thousands of years and many water sources are now sacred sites.

These aquatic ecosystems support a significant proportion of the aquatic and terrestrial biodiversity in the region and provide restricted habitats for rare and unique plant and animal species that play an important role in maintaining healthy aquatic ecosystems in an otherwise arid landscape. When inundated, inland lakes can hold water for several months and provide critical habitat for waterbirds and migratory shorebirds, as well as drinking water for many birds like the budgerigar and zebra finch. The Arid Lands region has 24 Sites of Conservation Significance, many of which are wetlands. Eight of these wetlands are of international significance and the remainder are of national importance. The NT Government recognises riparian vegetation as sensitive and in need of protection in the Arid Lands. Fresh water provides an important ecosystem service to the people of the Arid Lands region. Residents of Alice Springs are the highest water users in the region and among the highest in Australia. Pastoralism is heavily reliant on the availability of water and freshwater rock holes provide an important drawcard for tourism to the region. Because of the absence of surface water in the Arid Lands, groundwater is the primary consumptive water resource.

# Assets and pressures descriptions



## Freshwater systems

### Pressures and uses



#### Feral animals

Camels, donkeys and horses trample, disturb and damage waterholes and riparian vegetation. They can also foul waterholes making them uninhabitable for fish and other aquatic species.



#### Weeds

Riparian areas and wetlands are subject to invasion by exotic weeds like athel pine, which can disrupt native plants and disrupt water flow, promote erosion and lower the water table in stream beds. When buffel grass establishes in dry watercourses it can increase fire intensity to threaten native vegetation.



#### Residential and commercial development

Growing demand domestic and industrial demand for water in Alice Springs is depleting aquifers as more water is being extracted than is replaced through rainfall. Water levels in many Central Australian bores are declining.



#### Climate change and severe weather

Climate change is likely to impact freshwater systems through increased temperatures and potential periods of drought



#### Inappropriate fire

Fires can disturb and degrade riparian habitats by increasing erosion and the flow of sediments when followed by intense rainfall. Many wetlands plants are fire sensitive and fire can lead to the establishment of weeds.



#### Mining and energy production

As well as water extraction, the impacts of mining may in some areas include hydraulic fracturing. Concerns have been raised about its impact particularly on groundwater levels and primary industries.

Overgrazing and unrestricted cattle access to waterholes can cause degradation, reduce water quality and spread weeds.



#### Recreation and other activities

If unregulated, recreational use and tourism can have a range of adverse impacts on freshwater waterholes including dumped waste, erosion, loss of riparian vegetation and increasing the spread of weeds.



# Assets and pressures descriptions

## Grasslands/ Rangelands

**Goal:** By 2030 Grasslands have a diversity of age structures without an increase in the extent of buffel grass

Condition	Trend	2021 trend	
		Literature/ data review	Community perception
Grasslands/ Rangelands	Fair	↓	↓

### Indicators for condition

- Condition and carrying capacity of native pastures at monitoring sites
- Distribution and density of buffel grass across the landscape
- Area burned under appropriate fire regimes each season
- Health of biodiversity and presence of indicator species at monitoring sites across the arid rangelands

In the Arid Lands region, spinifex grasslands dominate vast areas of sandy deserts forming extensive hummock grasslands. Acacias and desert oak are the dominant trees. River gums and saltbush dominate the floodplains of the inland rivers and saline lakes. A variety of plant species and age structures indicate a healthy rangeland ecosystem that supports a diverse arid ecosystem.

Spinifex grasslands provide habitat for many Arid Land threatened species, several of which have declined to the extent that they are rarely seen. More than 16 types of birds are commonly found in spinifex grasslands. Many reptiles also occur in this habitat including the threatened great desert skink. Of the numerous mammal species found in this area, the brush-tailed mulgara and the greater bilby are classified as Vulnerable.

Maintaining the condition of grasslands and rangelands is important for both biodiversity conservation and pastoral production. Pastoralism relies on productive grasslands and efforts to protect and improve grazing land health will benefit biodiversity.

# Assets and pressures descriptions



## Grasslands/ Rangelands

### Pressures and uses



#### Inappropriate fire

Changes in fire regimes seriously threaten many habitats and species across Arid Lands landscapes, including granivorous birds such as the Gouldian finch and partridge pigeon, and mammals such as the northern quoll and brush-tailed phascogale. The spread of invasive grassy weeds is fuelling hotter fires.



#### Weeds

Buffel grass is an important production grass for pastoralism in the Arid Lands region. However, its introduction to arid rangelands has constituted a threat to native habitats and conservation values. Buffel grass aggressively colonises sites after rain, displacing native vegetation especially along watercourses and then intensifying the subsequent fires due to the increased fuel load.



#### Feral animals

Introduced animals including camels, rabbits, donkeys and horses substantially degrade arid grasslands by adding to total grazing pressure. They often concentrate their impacts on available waterholes and water sources which are also important for many native species on the arid grasslands. They can damage and degrade pastoral infrastructure.



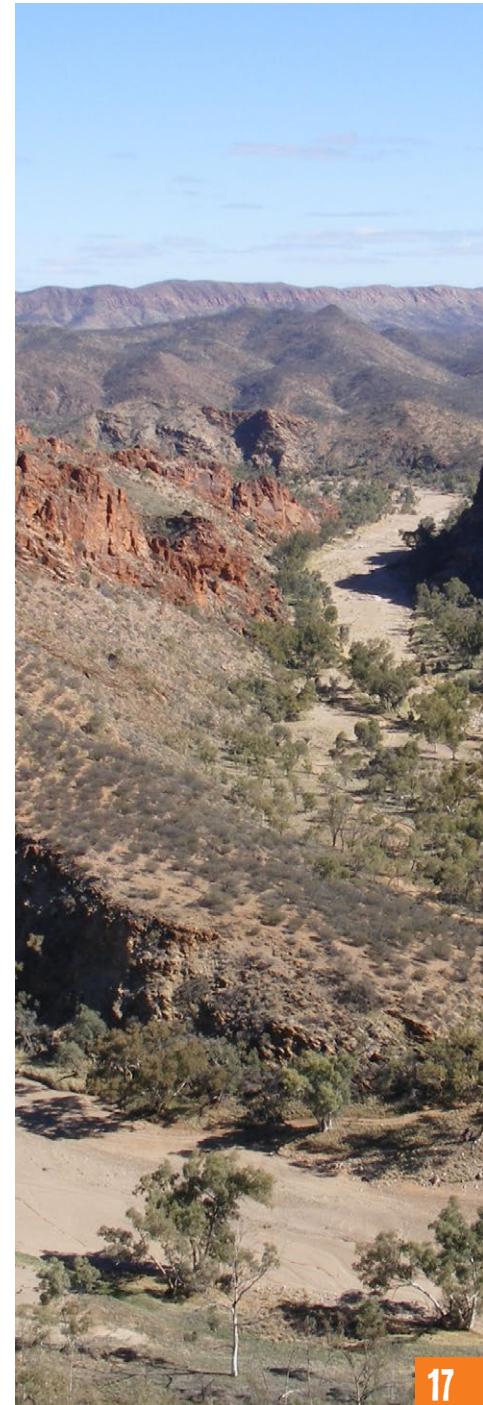
#### Primary Industries

Grasslands in the region are sensitive to overgrazing and some areas have been severely degraded. Pastoralism, by its nature, places pressure on grassland-reliant species as cattle preferentially graze the most palatable species and remove the cover, forage and seed used by native animals.



#### Climate change and extreme weather

With a changing climate predicted to increase mean temperatures, the likelihood of drought-like conditions across the rangelands and severe fires degrading pastures and native habitats increases.



# Assets and pressures descriptions



## Ranges

**Goal:** By 2030 the health of ecosystems including the aquatic areas and diversity of habitat within the ranges is maintained or improved on 2015 levels

### Indicators for condition

- Area of ranges being managed for their conservation values
- Fire extent, frequency and intensity across ranges
- Area of ranges left unburnt over multiple years
- Diversity and abundance of native mammals
- Number of active feral animal management plans on ranges sites
- Health and distribution of threatened species through ranges
- Number of ranges sites controlled for weeds

The ranges of the Arid Lands provide critical habitat and refuges for many species. They contain long-lasting and permanent springs and rock holes that support a wide range of plants and animals that survive only in areas with higher moisture in the otherwise arid landscape of Central Australia. The gullies and gorges in the ranges also provide refugia for plants that are fire sensitive. Species such as the MacDonnell Ranges cycad and black-footed rock-wallaby are only found in ranges.

The ranges are also highly valued for their outstanding scenic values, attracting tourists from all over the world. There are many Aboriginal sacred sites and culturally significant sites associated with ranges in the region. Many of the ranges are listed as either nationally or internationally significant such as the Greater MacDonnell Ranges, Uluru-Kata Tjuta National Park and surrounds and the Petermann Ranges. Other significant range areas in the Arid Lands include Mount Liebig, the Dulcie Ranges and Mount Conner.

	2016		2021 trend	
	Condition	Trend	Literature/ data review	Community perception
Ranges	Fair			

### Pressures and uses



#### Inappropriate fire

Fire is the most significant threat to unique ranges habitats. In January 2019 a devastating fire burned through 100 km<sup>2</sup> of the West MacDonnell Ranges. These fires can occur following high rainfall when fuel loads build up and their impacts can be exacerbated by the presence of buffel grass and other weeds.



#### Feral animals

Camels, horses and donkeys cause significant damage to native habitats and natural values throughout the ranges. Predation by feral cats and foxes also threatens some native vertebrate species.



#### Weeds

Some weeds species are now establishing in the highlands and threatening natural and cultural values, notably buffel grass, athel pine and couch grass.



#### Climate change and extreme weather

Many waterholes and sheltered sections within the ranges provide refugia for species adapted to these microclimates and intensifying climatic conditions will pose a threat to these.



#### Recreational and other activities

Many waterholes and sheltered sections within the ranges provide refugia for species adapted to these microclimates and intensifying climatic conditions will pose a threat to these.

# Assets and pressures descriptions



## Healthy soils

**Goal:** By 2030 soil erosion issues are decreased and soil fertility maintained through the use of Improved practices

### Indicators for condition

- Adoption of best practices in agricultural industries
- Sediment load in watercourses
- Integrated land use plans that address land degradation
- Ground cover % and soil stability
- Productivity and health of soils on farms

Soils in Central Australia are derived from strongly weathered parent material. They are generally shallow, low in fertility and nutrient levels and are susceptible to erosion. The vast majority of soils have limitations regarding productivity that predisposes the land to degradation. Land managers across the Arid Lands face problems of erosion, loss and declining productivity. The management of soil is of vital importance in land management practices. Low nutrients in soils affect the quality of cattle grazing pastures. Consequently, to be economically viable, properties in the Arid Lands need to be very large with some paddocks being hundreds of square kilometres in area.

Under the Soil Conservation and Land Utilisation Act (1984), areas of land that are subject to soil erosion or that are likely to become subject to soil erosion may be declared as Areas of Erosion Hazard, such as the rural area to the south of Alice Springs. As a declared area, there are restrictions to reduce inappropriate land use and activities. In the last five years the Northern Territory Soil Consortium has been actively working with landholders and managers in Central Australia to promote best practice management of soil resources.



### Healthy soils

		2016	2021 trend	Literature/ data review	Community perception
	Condition	Trend			
	Fair	■			▼

### Pressures and uses



#### Feral animals

Grazing and trampling by feral animals like camels, horses and donkeys and rabbits reduces ground cover, compacts soil and causes erosion.



#### Primary industries

Overstocking can reduce ground cover and result in compaction or wind erosion. Poor management of soils in irrigated horticulture can result in increased soil salinity and leaching.



#### Climate change and severe weather

Drought impacts on soil moisture and fertility, while windstorms and flooding can remove soil through erosion.



#### Recreation and other activities

Driving vehicles on unsealed roads can damage vegetation and create deep tracks that contributes to erosion.

# Assets and pressures descriptions

## Biodiversity and conservation sites

**Goal:** By 2030 diverse populations of threatened species are maintained at 2015 levels and Sites of Conservation Significance are maintained in good condition

### Indicators for condition

- Conservation status of threatened species
- Number of different native flora and fauna species -% of expected species within normal ranges of natural variation.
- Presence of viable populations of indicator species
- Number of different regional land forms and their associated biodiversity under active conservation management
- Proportion of region subject to effective fire management to prevent catastrophic wild fires

The biodiversity of the Arid Lands is a broad reaching asset class that focuses mainly on vegetation condition, threatened and susceptible species and landscape function. The Arid Lands region has 24 Sites of Conservation Significance. Eight are of international significance and the rest of national significance. Many of the sites hold water for many months, which is essential for supporting biodiversity in an arid environment. Recognised internationally for its biodiversity values, the Southwest Tanami Desert provides habitat for populations of threatened species such as the bilby, brush-tailed mulgara, Australian bustard and great desert skink and it is a stronghold for these and other rare or declining species in the NT.

Threatened species in the region include 25 plant species, five reptile, 15 mammal, 19 bird and 10 snail species. These include the mallee fowl and night parrot, which are critically endangered in the NT and the Gouldian finch, southern-marsupial mole, crest-tailed mulgara and sandhill dunnart that are endangered on a national level.

	2016		2021 trend	
	Condition	Trend	Literature/ data review	Community perception
 Biodiversity and conservation sites	Good			

### Pressures and uses



#### Inappropriate fire

The spread of buffel grass through the Arid lands accelerates the frequency and intensity of fires across the region and threatens the integrity of biodiversity and conservation sites.



#### Feral animals

Camels, horses and donkeys threaten key natural assets in the region, particularly waterholes and watercourses. Their impacts can facilitate ecosystem change. Cats and foxes distributed across the region have significant impact on native mammals including threatened species such as the bilby, black-footed rock wallaby and mulgara, together with endangered birds and reptiles.



#### Weeds

Buffel grass and couch grass degrade the values of many Arid Lands Sites of Conservation Significance. They alter fire regimes to make fire more frequent and intense, which further degrades vegetation and habitats.



#### Primary industries

If not carefully managed for sustainability, pastoral land use can contribute to the decline of natural habitats and native species across arid rangelands. Similarly, heavy extraction of groundwater for horticultural use can drop the local water table below the root level of adjacent vegetation and so lead to the loss of biodiversity.

# Assets and pressures descriptions



## Community knowledge

**Goal:** By 2030 access to and sharing of local landholder knowledge, data, scientific information and Aboriginal knowledge (where appropriate) has improved and is utilised to make informed NRM decisions

### Indicators for condition

- Number of traditional ecological knowledge projects and the culturally appropriate recording and storing of knowledge
- Number of opportunities for intergenerational transfer of knowledge
- Number of agricultural knowledge-sharing and extension initiatives
- Proportion of properties/ land trusts with property/ NRM plans
- Number of community NRM knowledge sharing events and participants
- Extent of utilization of traditional and Western scientific knowledges in NRM

Cultural and natural resource management requires knowledge and skills to restore biodiversity values, undertake sustainable production or undertake custodial obligations. The diminishment of this has led to a degradation of other assets described in this plan. Loss of community knowledge impedes capacity to manage the environment and operate successful businesses based on natural resources.

Aboriginal people possess a wealth of knowledge about the Arid Lands and associated management practices that have shaped the Arid Lands for many thousands of years. This knowledge has been handed down through generations and today is contributing to the understanding of species declines and extinctions. A critical step to ensure the maintenance of this knowledge is to recognise and support Aboriginal people to be able to share their insights and stories about the landscape through supporting on Country visits. Collaborative projects between Western scientists and Aboriginal people to document traditional knowledge are also of vital importance. Today, Aboriginal ranger groups are also increasingly incorporating Western approaches into their management of country.

The scientific community and community groups hold a wealth of expertise and on ground understanding vital to carrying out NRM work in the Arid Lands region. Further scientific research in partnership with land managers is required to continue building this knowledge base. Pastoral production is based on an extensive body of knowledge about natural resource management that has been developed over the years since cattle livestock first grazed in the area.

It is imperative that the expertise and insight of stakeholders in the region be captured, valued and shared, so practices and decisions are informed by these knowledge systems. As part of this process stakeholders need to share innovation, improved practices and new information. Formal training and education also have a role in ensuring natural resource managers have the understanding they need to manage effectively.

	Condition	2016	2021 trend	
		Trend	Literature/ data review	Community perception
Community knowledge	Fair	—	—	↓

### Pressures and uses



#### Loss of knowledge and lack of access

Traditional ecological knowledge is only constantly reaffirmed by continuously being on Country and the reduction in access into rugged and remote country effects capacity to manage cultural and natural landscapes. Likewise, without opportunities for intergenerational transfer of knowledge, traditional ecological knowledge can be weakened and lost. Similarly, knowledge from Western knowledge systems can be lost or degraded by the turnover, transition or retirement of knowledge holders.



#### Lack of capacity and resources

Lack of funding for research, lack of support for visits on Country and lack of opportunity for recording and sharing knowledge can impact community knowledge. Likewise changing in the status of funding for Landcare and other similar organisations will impact how NRM knowledge is held in the community.

# Assets and pressures descriptions



## People on Country

**Goal:** By 2030 the number of people living in the Arid Lands region has been maintained or increased with well-established viable remote communities gaining livelihoods through the sustainable use of natural resources

### Indicators for condition

- Number of people living outside of urban areas across the Arid Lands region
- Economic status and wellbeing of communities and outstations
- Level of funding for Landcare groups and activities
- Number of Aboriginal ranger groups engaged in cultural and natural resource management
- Number of young people entering agriculture or NRM related industries

People on country refers to the livelihoods of Aboriginal landowners, pastoralists and others in the broader NRM support network. People are integral to the viability and success of NRM programs. This goal is broad and encompasses strategies throughout the NRM plan aiming to strengthen local and regional support networks, government policies and community engagement to support a healthy, thriving, remote population that is well supported by and engaged in economic activities in the Arid Lands region.

People are needed on country to manage fire, weeds and feral animals. Aboriginal people also have customary obligations to care for Country and perform ceremonies. A broad range of socio-economic benefits as well as conservation outcomes are attributed to Aboriginal people living on and managing custodial lands. Aboriginal ranger groups today provide paid employment for many people. The Central Land Council's community ranger program consists of 14 ranger groups and employs more than 90 Aboriginal people as rangers on their country. There is considerable scope to expand the network of rangers and continue to build their capacity in NRM. The pastoral industry has also been an important source of employment on pastoral lands, with responsibilities extending to weed, feral animal and fire management.



### People on country

Condition	Trend	2021 trend	
		Literature/ data review	Community perception
Good			

### Pressures and uses



#### Loss of knowledge and lack of access

Aboriginal people can face difficulties in accessing custodial lands and culturally significant places due to remoteness and lack of appropriate resourcing. Also, unless there is effective intergenerational transfer of knowledge, they can be disadvantaged in undertaking their customary land management responsibilities. Similarly, lack of funding for ranger programs or viable livelihoods for agricultural land managers can also deter new generations from living and working on Country. Owing to high turnover and urban drift, it can be challenging to find staff and experienced land managers for Arid Lands industries.



#### Climate change and severe weather

Extreme weather and climate change will put additional pressure on communities living and working remotely. In the Arid Lands region, raising temperatures, increasing fire intensities and protracted drought or flooding can threaten remote livelihoods.

# Assets and pressures descriptions



## Cultural landscapes and sites

**Goal:** By 2030 culturally significant sites are being managed to reduce the impacts of threats and cultural knowledge is maintained

### Indicators for condition

- Statutory protection and management of sacred sites
- Programs supporting the intergenerational transfer of knowledge
- Condition of sacred sites
- Resources available to TOs and indigenous groups to manage sacred sites
- Access and logistical support to visit and live on country
- Strength and use of Aboriginal languages

The whole landscape of the Arid Lands has cultural significance for Aboriginal people in the region. Traditional Owners refer to the creation period when ancestral beings created the landscape and its wildlife as they travelled. Many important cultural elements manifest themselves in the Arid Lands as identifiable geographic forms, such as the MacDonnell Ranges, which were created by caterpillar ancestral beings. Today, the region remains alive with the spirits of these ancestral beings and traditional law that informs ceremony, songs, stories and dances that guide how country is looked after. Places or sites of cultural significance may also be ceremonial grounds, rock art galleries or pigment deposits used for cultural practices. Uluru-Kata Tjuta National Park is internationally recognised as a World Heritage site, listed for both its natural and cultural values.

An Aboriginal sacred site has particular significance and refers to a place within the landscape that is sacred to Aboriginal people. Sacred sites include places within the landscape such as hills, rocks, waterholes, trees, plains, lakes and other natural features. Sacred sites are connected with creation stories and may have significance to several clan groups across vast areas.



### Cultural landscapes and sites

Condition	Trend	Literature/ data review	Community perception
2016	2021 trend		
Fair	↓		↓

### Pressures and uses



#### Loss of knowledge and lack of access

Loss of knowledge and access is considered one of the main pressures on cultural landscapes and sites. A lack of appropriate resources and support for Traditional Owners to be able to access and manage Country threatens this asset. If custodial land is under different ownership, this may also hinder or prevent access to sites.



#### Recreation and other activities

Sites are threatened by human disturbance by tourism and other recreational activities. Unrestricted access to some Aboriginal sacred sites breaches customary law and can result in the sites being degraded.



#### Feral animals

Feral predators (cats and foxes) and large feral herbivores (camels and horses) can damage cultural sites. Active management of invasive animals and fire management is an important role for site custodians and Traditional Owners.



#### Inappropriate fire

Disruption of Aboriginal fire management has degraded cultural landscapes. Inappropriate fires fuelled by buffel grass can threaten sites such as rock art galleries.

# Overview of asset condition and trends

Available data suggests that there has been little overall improvement in NRM asset conditions in the Arid Lands since 2016, and some key areas of decline.

Many parts of the Arid lands received record low rainfall during the period 2018-2019, which reduced recharge of ground and surface waters, impacted on the health of aquatic systems, and contributed to a reduction in soil moisture. Some rangelands and associated habitats and vegetation remain in recovery following this period of drought. In January 2019 intense fires burned 100 Km through the West MacDonnell ranges. With buffel grass intensifying the fires, much native vegetation was lost including critical habitat for the threatened Central Rock Rat and Black Footed Rock Wallaby. During the same period the profile of feral herbivores in the landscape was raised as they were drawn to available water sources and occupied lands, and feral cat predation has continued largely unchecked over much of the region since 2016.

Despite increasing difficulties faced by those living in remote communities and outstations, important initiatives now aim to support Aboriginal land managers and Traditional Owners to get back on country and manage their natural resources. There has also been a small increase in the number of people working in the agricultural sector.

Given the paucity of reliable monitoring data from the Arid Lands, regional community perspectives on trends of change are important. Pessimism about asset trajectories highlights the need for regular and reliable monitoring.

	Condition	2016	2021 trend	
		Trend	Literature/ data review	Community perception
	Freshwater systems	Fair		
	Grasslands/ Rangelands	Fair		
	Ranges	Fair		
	Healthy soils	Fair		
	Biodiversity and conservation sites	Good		
	Community knowledge	Fair		
	People on country	Good		
	Cultural landscapes and sites	Fair		

# Emerging issues for the Arid Lands region

The Northern Territory Natural Resource Management Plan (2021-2025) Arid Lands Region (the Arid Lands regional plan) has been updated with respect to the prevailing resource conditions, trends and priorities that were identified within the region in 2021, but planning must also anticipate any issues (challenges or opportunities) looking likely to emerge during the implementation period.

For this reason, stakeholders at Arid Lands regional planning workshops were invited to define and discuss major issues that seemed likely to emerge and impact upon the regional natural resources management agenda during the following five years. In the following section, potential emerging priorities are highlighted along with how they have been addressed in the plan.

## Climate change impacts

Arid Lands communities have already been touched by the impacts of climate change and weather extremes during the last five years. These impacts include record temperatures, drought, water shortages, and intensified bushfires. There is an expectation that these impacts will further intensify in coming years.

### Strategy 2025 Objective

- 1.3** Land managers have an increased understanding of the interaction of fire with cultural, biodiversity and production values, and improved risk-management of climatic and other dynamic threats.
- 4.7** Landscape managers have increased understanding of the interaction of fire with cultural, biodiversity and production values and improved risk-management of climatic and other dynamic threats.
- 6.5** Climate adaptation planning by businesses and industries improves risk-management of climatic variability and related dynamic threats.
- 8.3** The renewables and environment sectors are contributing more to the Arid Lands economy than in 2020.

## Sustainable primary industries

Primary industries within the region will require further attention and investment to ensure their ongoing sustainability as grazing businesses emerge from a period of drought that has depleted the productivity and resources of rangelands and as ambitious new plans for horticultural development in the region are implemented.

### Strategy 2025 Objective

- 4.3** Sustainable grazing practices are implemented through the increased knowledge and skills of land managers.
- 4.5** Understanding of ecosystems and sustainable management enhances agricultural production in the Arid Lands.
- 5.4** The development of agricultural and pastoral land is guided by a thorough understanding of the limitations of soil and water resources.
- 6.4** New employment opportunities are created through diverse primary industries and on different tenures in the Arid Lands.

# Emerging issues for the Arid Lands region

## Water demand

Poor rainfall between 2018-2020 highlighted the potential for climatic variability to exacerbate water scarcity across the Arid Lands, just as the region faces unprecedented demands on water resources. Growing demand from extractive and primary industries will pose challenges for the allocation and ongoing management of finite water resources.

### Strategy 2025 Objective

- 5.1** Ground and surface water resources are managed with input from all stakeholders through Water Allocation plans which include monitoring and ensures that cultural, environmental and production values are respected.
- 5.2** Enhanced empirical evidence supports science-based planning and increased water use efficiency and sustainability across major industries and uses.
- 5.4** The development of agricultural and pastoral land is guided by a thorough understanding of the limitations of soil and water resources.
- 5.5** Key aquatic systems and their associated cultural values linked to both surface and ground waters are recognised and protected.

## Development pressures

Ambitious development agendas for the Arid Lands region will be implemented in the next few years. These include major resources and energy projects like the Nolans rare earth project and the Mount Peake project, and further growth and diversification in primary industries like the Ti Tree horticultural precinct. Some see these developments as potentially threatening the natural values of the region through physical disturbance, the spread of weeds or through over-extraction or contamination of water resources.

### Strategy 2025 Objective

- 4.1** Policies and programs for development in the Arid Lands are informed by the best available science and knowledge to ensure the protection of cultural and natural assets.
- 4.3** Sustainable grazing practices are implemented through the increased knowledge and skills of land managers.
- 4.4** Understanding of ecosystems and sustainable management enhances agricultural production in the Arid Lands.
- 4.6** Minerals and resources industries are contributing to the delivery of land management services to protect prioritised habitats and sites of conservation value.
- 5.4** The development of agricultural and pastoral land is guided by a thorough understanding of the limitations of soil and water resources.

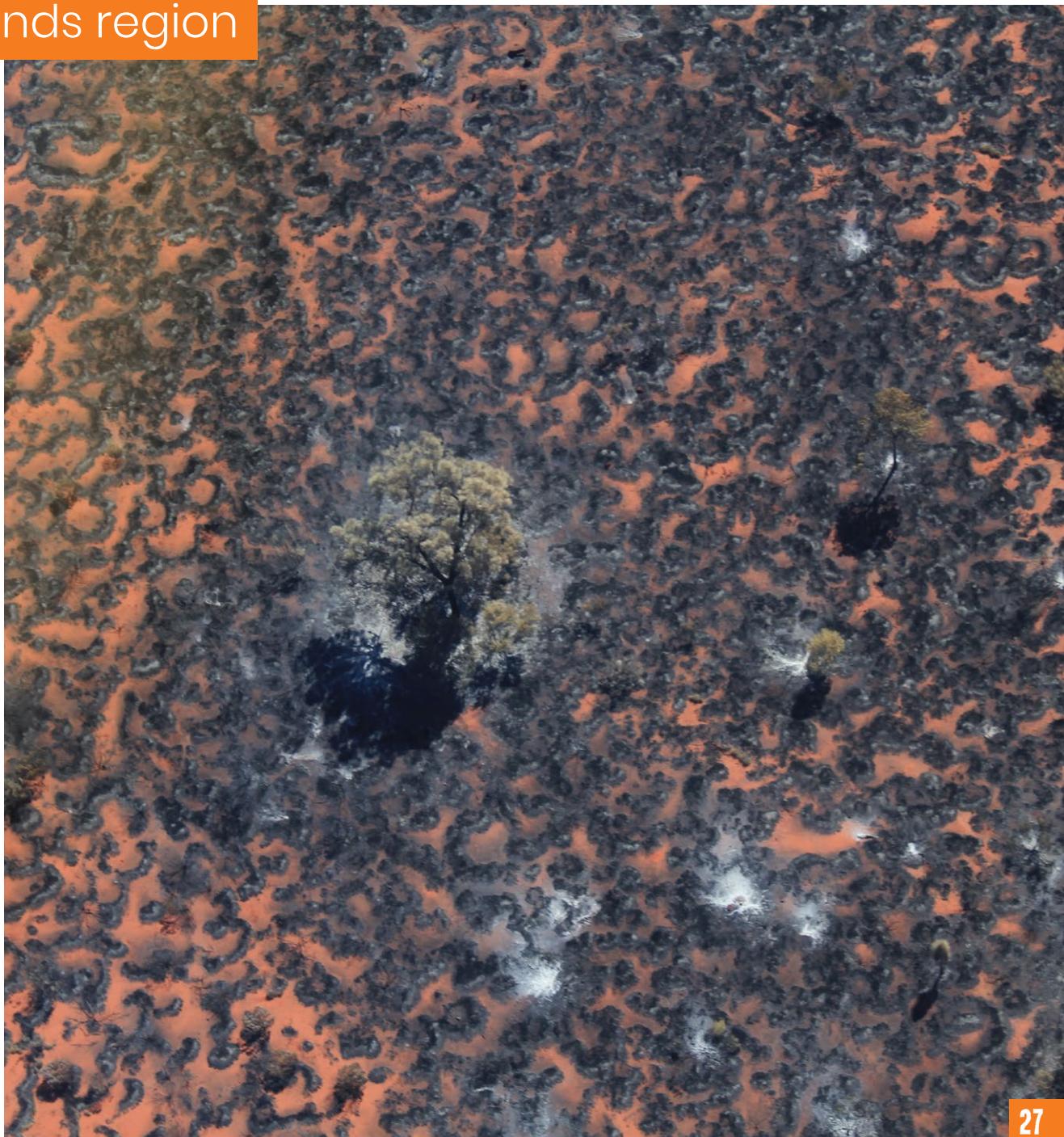
# Emerging issues for the Arid Lands region

## Funding and resources

Community capacity for management of natural resources within the Arid Lands region is linked to the ongoing creation and sharing of knowledge, extension and training and access to country. Some within the region are concerned about the future security of resources to support NRM in the Arid Lands, and the shifting of investments as government priorities change through time.

### Strategy 2025 Objective

- 4.6** Minerals and resources industries are contributing to the delivery of land management services to protect prioritised habitats and sites of conservation value.
- 9.1** Natural resource managers in the Arid Lands are incorporating the best available knowledge, information and data into their management including TEK and community knowledge.
- 9.2** Land managers are provided with increased resources and long-term approaches to manage NRM issues.
- 9.3** Training in the Arid Lands is more easily available and better targeted to relevant natural resource management skills.



# How to read the plan

## Overview

The program overview provides a brief summary of the overall purpose of the program and the issues and challenges in delivering it. It also describes how the program relates to other programs in the plan.

## 2025 Objective

This is a statement of the desired outcome of the strategy, intended to reduce pressures and improve asset condition. The success of the strategy will be evaluated against these objectives.

## Program 5: Water resources and soil management

In 2021, after experiencing two years of drought-like conditions, many in the Arid Lands now have an increased awareness of the limitations of water and soil resources. This awareness has come just as an ambitious development agenda opens the way to new mining and resources sector projects in the Arid Lands. Water resources allocation planning has further highlighted the diverse interests and aspirations within the community, including recent concerns over the potential impact of large

scale irrigated horticulture on regional water resources.

Many are also aware of the increasing pressures upon fragile soil resources on the Arid Lands arising from unsustainable farming practices, grazing pressure and wildfires.

The objective of this program is to increase sustainability in soil and water management through improving the understanding

of resource limitations and opportunities to increase water use efficiency. It supports extension learning to increase understanding of leading practices in resource management and strengthen collaboration in water resource management. The program also promotes robust land capacity studies and assessments to better understand land capability prior to future agricultural developments and ensure that flow regimes maintain healthy aquatic systems.

### 2025 Objective

Ground and surface water resources are managed with input from all stakeholders through water allocation plans which include monitoring and ensures that cultural, environmental and production values are respected.

### Strategy

**HIGH PRIORITY**  
5.1 Water resource planning and management is undertaken in consultation with multiple stakeholders, and underpinned by the best available scientific information

### Key activities

- 5.1.1 Involve multiple stakeholders and users representing a range of interests in transparent water allocation planning for the region
- 5.1.2 Support research and innovation, including on the impacts of climate change, that increase understanding of water resources
- 5.1.3 Support water stewardship through communications materials that engage behavioural change and involve the community in planning and implementing new water monitoring strategies

### 2023 Interim target

The principle of community participation in water resources planning and allocation is well established.

### Assets improved



### Strategy

This is the management approach to the defined objective.

### Priority Activities

These activities should, if implemented, advance and deliver the strategy.

### Interim Target

This is an interim milestone expected to be achieved within two years as the strategy is progressed towards its final objective.

## Key Measures of Achievement

These are the things measured to indicate whether strategies are being successfully implemented within the program. They indicate activity and actions as well as impact and outcome.

## Key Collaborators

This is a listing of the key groups and organisations who will be involved in implementing the program strategies.

## Priority Locations

These are the main geographic areas within the region identified as foci for action. In some cases justifications for the selection are given in brackets.

## Relevant Territory Plans/Strategies

These are relevant regional plans and strategy documents that align with some aspects of the program. In many cases they have been used to inform the development of the program and may provide greater detail regarding targets and activities.

## Relevant National Plans/Strategies

These are high level Australian Government strategies that have provided strategic direction and can provide national context to regional planning initiatives.

## Assets Improved

These are the assets that will be positively impacted or improved through each strategy. Most strategies will positively impact multiple assets. Each identified asset has a goal and delivering this plan also works towards achievement of asset goals.

# Program 1: Managing Fire

Fire is managed in the Arid Lands for different purposes depending on the land use, with different objectives being pursued on pastoral, Aboriginal and conservation land. Fire regimes are mainly influenced by annual rainfall and the buildup of fuel loads through time. However, in 2019, the combination of extreme heatwaves and the widespread establishment of buffel grass precipitated severe wildfires through the ecologically significant West Macdonnell Ranges.

This highlighted the increasing compound threat of invasive weeds and a changing climate on fire regimes.

This Managing Fire program aims to support land managers to improve collaboration in planning and implementing fire management across properties and tenures. It recognises that only collaborative approaches will achieve outcomes at the landscape scale. The key to preventing the spread of large fires and protecting biodiversity, cultural and production

values is by implementing patchy heterogeneous fire regimes and burning strategically to create firebreaks

Specifically, the program supports land managers to acquire the tools, techniques and knowledge they need to protect key values and respond to emerging challenges, while promoting the development of economic and policy incentives to enhance fire management.

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Increased coordination between land managers to promote heterogenous patchy burning and reduce the frequency of catastrophic wildfires across the Arid Lands.	<b>HIGH PRIORITY</b> <b>1.1</b> Extend the use of collaborative approaches to strategic fire management across the Arid Lands region	<b>1.1.1</b> Strengthen the capacity and effectiveness of multi-stakeholder regional fire working groups to undertake annual reviews of, and annually coordinate, fire management <b>1.1.2</b> Build networks that further extend strategic collaboration in the planning and management of fire across tenures and between stakeholders <b>1.1.3</b> Continue supporting the Ten Deserts Initiative and other collaborations in fire planning and burning by Traditional Owners and using traditional knowledge in fire management <b>1.1.4</b> Continue to strengthen the role of Bushfires NT and particularly the support they give to land managers to prevent and control bushfires <b>1.1.5</b> Support tools and communication products to inform community about fire management	More Arid Lands fire managers are collaborating in monitoring fuel loads and fire conditions and are planning fire management across adjacent properties.	   
Access to leading technologies, information and techniques has enabled Arid Lands fire managers to reduce the threat of fire to natural and production values.	<b>HIGH PRIORITY</b> <b>1.2</b> Increase use of spatial fire management tools, knowledge systems, safe burning practices and equipment throughout the Arid Lands	<b>1.2.1</b> Further develop the North Australia Fire Information (NAFI) tool with improvements made to applications for users <b>1.2.2</b> Deliver training and capacity building for NRM practitioners in the utilisation of fire management tools <b>1.2.3</b> Provide additional support to land managers in the form of improved strategic coordination and response planning	Key knowledge and capacity gaps have been identified and programs are being developed to address these.	   

# Program 1: Managing Fire

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Landscape managers have increased understanding of the interaction of fire with cultural, biodiversity and production values and improved risk-management of climatic and other dynamic threats.	<b>MEDIUM PRIORITY</b> <b>1.3</b> Increase application of fire management techniques that promote biodiversity and ecosystem function and minimise risk to infrastructure and human health across the Arid Lands	<ul style="list-style-type: none"> <li><b>1.3.1</b> Research the impacts of fire regimes on ecosystem health to develop indicators for ongoing monitoring and communications between stakeholders to inform land managers</li> <li><b>1.3.2</b> Build the capacity of fire managers to measure the ecological impacts of fire to improve knowledge and introduce fire management goals at a finer scale (i.e. specific to ecosystem type)</li> <li><b>1.3.3</b> Improve understanding of the relationship between climate extremes, fire risks, and their broader ecological and production impacts (including the impact of buffel grass spreading across the landscape)</li> </ul>	Research will be underway to inform the implementation of leading practice fine scale fire management.	  
Policies and market forces promote an integrated approach to fire management across tenures and land uses.	<b>HIGH PRIORITY</b> <b>1.4</b> Promote policies and market forces that support collaborative fire management approaches and provide social/cultural benefit in the Arid Lands	<ul style="list-style-type: none"> <li><b>1.4.1</b> Develop and lobby for clear policies that support market-based approaches to collaborative fire management</li> <li><b>1.4.2</b> Continue researching opportunities linking fire management with carbon initiatives in the Arid Lands</li> <li><b>1.4.3</b> Increase communication of fire management success to funding bodies</li> <li><b>1.4.4</b> Consolidate understandings of fire frequency on species composition, sustainability and production values into policy that improves coordination in fire management</li> </ul>	Research to support development of a carbon methodology for the Arid Lands is underway.	

# Program 1: Managing Fire

## Key Measures of Achievement

- Number of people and organisations involved in collaborative fire management
- Trends in fire extent and seasonality
- Proportion of fire managers applying best practices
- Cultural and economic contribution of fire management within the Arid Lands

## Key Collaborators

- |  |                              |
|--|------------------------------|
| • Central Land Council                   | • DAWE                       |
| • Pastoralists                           | • Territory NRM              |
| • Indigenous Desert Alliance             | • Central Desert Shire       |
| • Centralian Land Management Association | • Macdonnell Shire           |
| • DEPWS (Bushfires NT)                   | • DEPWS (Parks and Wildlife) |
| • Researchers                            |                              |

## Priority Locations

- Macdonnell Ranges (arid shrublands, waterholes, aquatic refugia)
- Petermann Ranges (arid shrublands)
- Northern Tanami (arid hummocks and grasslands)
- Sandover (rangeland, riparian vegetation)
- Finke, Simpson (due for a fire)
- Haasts Bluff ALT (due for a fire)

## Relevant Territory Plans/Strategies

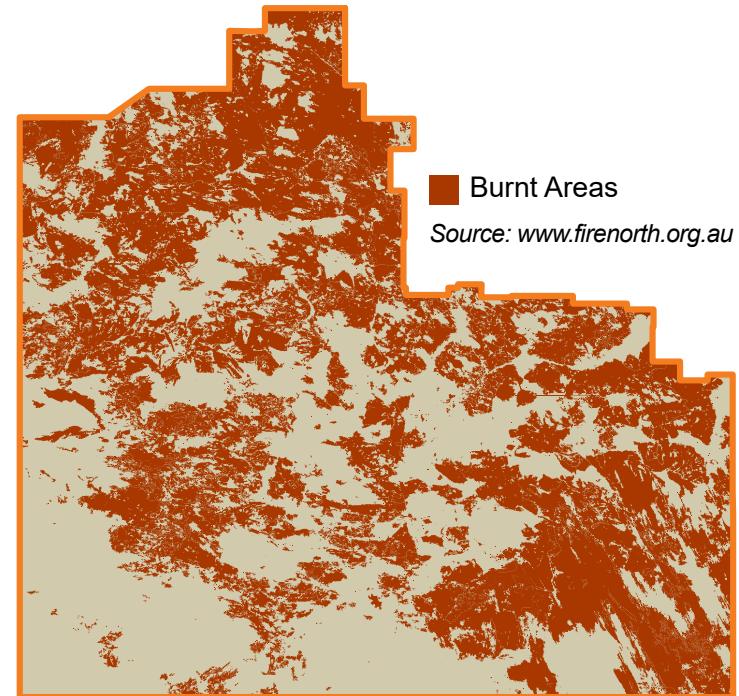
- Alice Springs Bushfires Management Plan (DENR 2018)

## Relevant National Plans/Strategies

- National Bushfire Management Policy Statement for Forests and Rangelands (COAG 2014)

## Fire History for Arid Lands in 2011

This program aims to implement strategies to avoid repetition of the extensive fire that occurred in the Arid Lands in 2011. Fire risk is dependent on rainfall and fuel loads and preparing for high risk seasons could avoid this situation recurring.



Fire is an essential component of the Central Australian landscape and has to be used as a management tool consistently

“

# Program 2: Preventing and managing weeds

The program for managing the impacts of weeds across the Arid Lands builds upon the momentum and the stakeholder capacity developed during the 2016-2020 plan implementation. It also aligns with the new Alice Springs Weeds Strategy 2021-2026.

The program supports partnerships for collaborative action

to strategically manage the spread of 'priority' weeds, such as athel pine, parkinsonia and rubber bush, at a landscape scale. The program outlines the research and trialling of techniques to identify leading practices in weeds management, as well as a commitment to communicating findings to enable an increasingly adaptive management process. Critically, it focuses on developing capacity to

identify and respond to new and 'alert' weeds which threaten to enter the region.

This includes working to raise public awareness through community education and outreach, and coordinating action against non-declared weeds that threaten biodiversity values (e.g. buffel grass).

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Management of 'priority' weeds is planned and implemented at a Landscape scale, engaging stakeholders and land managers from across diverse tenures.	<b>HIGH PRIORITY</b>  <b>2.1</b> Adopt collaborative approaches to the management of 'priority' weeds in the Arid Lands as set out in the Alice Springs Regional Weeds Management Strategy (2021-2026)	<ul style="list-style-type: none"> <li><b>2.1.1</b> Strengthen the regional approach to weed management through improved partnerships between NTG, local governments, Aboriginal rangers, pastoralists, environmental consultants and researchers</li> <li><b>2.1.2</b> Promote the Alice Springs Regional Weeds Reference Group, encouraging collaboration with multiple stakeholders and monitor its management effectiveness</li> <li><b>2.1.3</b> Work to map, control and, where possible, eliminate outliers of 'priority' weeds (athel pine, parkinsonia and rubber bush) from priority landscape areas as defined in the Alice Springs Regional Weeds Management Strategy (2021-2026)</li> <li><b>2.1.4</b> Support and empower Aboriginal rangers and Traditional Owners to undertake surveys to detect new infestations of 'priority' weeds</li> </ul>	Regular meetings, extension activities and field days are building a common understanding of the weeds threat and management responses.	  
A risk-based approach to new incursions and the spread of weeds in the Arid Lands is based upon the best available knowledge and enables timely and appropriate responses.	<b>VERY HIGH PRIORITY</b>  <b>2.2</b> Prevent the introduction and establishment of 'alert' weeds, and the spread of the region's 'priority' weeds	<ul style="list-style-type: none"> <li><b>2.2.1</b> Monitor and manage the spread of 'priority' weeds along pathways identified in the Alice Springs Regional Weeds Management Strategy (2021-2026)</li> <li><b>2.2.2</b> Raise community awareness of, and capacity to, manage the region's 'alert' weeds as defined in the Alice Springs Regional Weeds Management Strategy (2021-2026)</li> <li><b>2.2.3</b> Monitor and control the spread of buffel grass into sites of identified high conservation value throughout the Arid Lands</li> </ul>	Priority pathways for the introduction of 'alert' weeds and spread of 'priority' weeds are being monitored.	   

# Program 2: Preventing and managing weeds

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Leading practices, including new innovative tools, are adopted and delivering improved evidence-based weed management across the Arid Lands.	<b>HIGH PRIORITY</b> <b>2.3</b> Improve adaptive weed management through monitoring, research and utilising data, training and capacity building	<ul style="list-style-type: none"> <li><b>2.3.1</b> Identify knowledge gaps and prioritise future research that will enhance the capacity of weed management stakeholders</li> <li><b>2.3.2</b> Trial new weed management techniques (e.g. remote sensing) and communicate results with land managers</li> <li><b>2.3.3</b> Deliver training to develop skills and tools to record and interpret weed distributions and treatment, utilising a common assessment methodology that allows sharing of data (Weedmate NT)</li> <li><b>2.3.4</b> Implement adaptive management principles to inform the continual improvement of weed management practices</li> </ul>	Research findings, data and knowledge of leading practices is being effectively shared between land managers.	 
An improved common understanding of weed threats, impacts and management options drives collaborations managing the impact of weeds from local to landscape scales.	<b>HIGH PRIORITY</b> <b>2.4</b> Increase the regional public awareness of weeds, their impacts and how to reduce these	<ul style="list-style-type: none"> <li><b>2.4.1</b> Implement education and awareness programs on weed ID for strategic weed management approaches for land managers, contractors and community members in the region</li> <li><b>2.4.2</b> Raise awareness of 'alert' weeds as potential high impact weeds should they become established</li> <li><b>2.4.3</b> Communicate weed management success stories to the wider community to encourage support and further activity</li> <li><b>2.4.4</b> Raise awareness and prioritisation of non-declared environmental weeds (e.g. buffel grass)</li> </ul>	Targeted regional communications materials are raising community awareness of 'priority' weeds.	 

# Program 2: Preventing and managing weeds

## Key Measures of Achievement

- Number of 'priority' weeds strategically managed at a catchment scale
- Number of groups and individuals involved in weeds spread prevention
- Utilisation of weed spread data by natural resource managers
- Extent of priority landscape areas controlled for 'priority' weeds
- Number of pathways for weed spread successfully monitored
- Community knowledge of weeds issues

## Key Collaborators

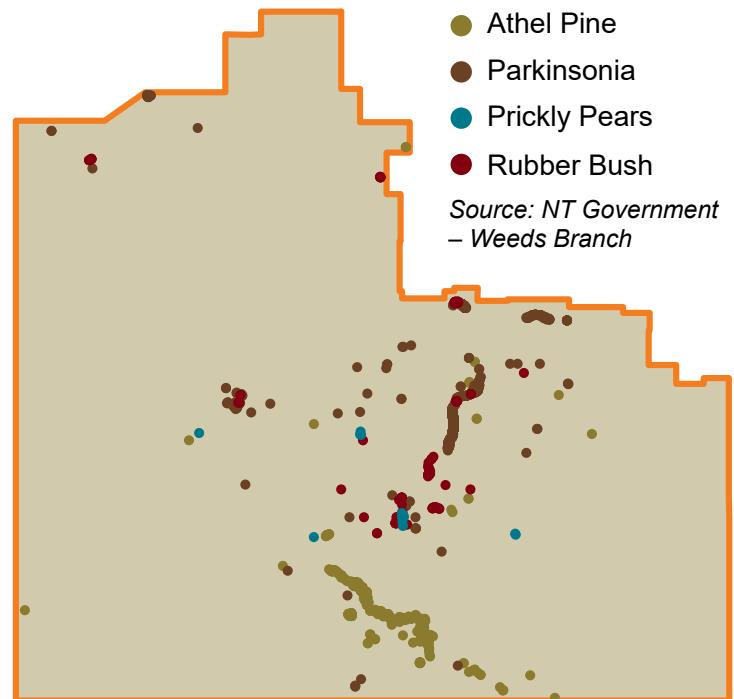
- |  |                              |
|--|------------------------------|
| • DEPWS (Weeds Branch)                   | • Indigenous Desert Alliance |
| • Central Land Council                   | • Central Desert Shire       |
| • Pastoralists                           | • Macdonnell Shire           |
| • Centralian Land Management Association | • DEPWS (Parks and Wildlife) |
| • DAWE                                   | • Contractors                |
| • Territory NRM                          | • Alice Springs Council      |

## Priority Locations

- Alice Springs (buffel, rope cactus, mesquite)
- Tanami (parkinsonia, buffel grass, rubber bush)
- Yeendumu (parkinsonia, prickly pear)
- Finke (athel pine)
- Macdonnell Ranges (buffel, parkinsonia)
- Ntaria, Finke Gorge (buffel, Prickly pear)
- Papunya (rope cactus)
- Sandover (parkinsonia, rubber bush)

## Weeds

Distributions of Weeds of National Significance (WoNS) in Arid Lands.



- Athel Pine
- Parkinsonia
- Prickly Pears
- Rubber Bush

Source: NT Government – Weeds Branch

## Relevant Territory Plans/Strategies

- Alice Springs Regional Weeds Management Strategy 2021-2026 (DEPWS 2021)
- Weed Management Plan for Athel Pine 2017-2027 (DENR 2017)
- Weed Management Plan (ABM resources 2017)
- Weed Management Plan for Mesquite 2012-2022 (DENR 2020)

## Relevant National Plans/Strategies

- Australian Weeds Strategy 2017-2027 (DAWR 2017)

We used to get food like bush tuckers. There were a lot of wild flowers growing. Now they're all gone away because the Buffel Grass has grown on top of them



# Program 3: Reducing the impacts of feral animals

Feral herbivores in the Arid Lands contribute to the degradation of pastures and reduce grazing land productivity. By depleting native vegetation, they also rob native animals of food and shelter and expose them to predation. Often the impact of feral animals is found around waterholes, riparian corridors and sites of ecological value. The impact of damage to these areas can exacerbate the effects of drought by degrading freshwater systems and spreading weeds, as well

as contribute to soil erosion. Camels are widespread across the Arid Lands and some areas can have high densities of horses and donkeys.

Cat and foxes are predators of small mammals throughout the region.

The primary objective for this program is to develop an effective Arid Lands feral animal strategy to coordinate evidence-based action to manage the impacts of feral animals at a landscape scale. The program supports the development of leading practices for the control and management of feral animals and explore opportunities for integrated management of commercial harvest. The program also includes a strong education and awareness-raising component.

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Feral animal control programs are prioritised and targeted through risk-based approaches set out in an Arid Lands feral animal strategy that establishes an agreed understanding of the problem and shared recognition of key values that require protection.	<b>VERY HIGH PRIORITY</b> <b>3.1</b> Strengthen regional feral management programs through coordinated and collaborative action	<b>3.1.1</b> Convene a multi-stakeholder planning workshop to determine a regional approach to managing the impacts of feral animals <b>3.1.2</b> Develop an Arid Lands feral animal strategy that establishes a risk-based approach to the prioritisation and management of feral animal impacts <b>3.1.3</b> Establish a multi-stakeholder group to support implementation of landscape-scale feral animal management approaches <b>3.1.4</b> Plan and undertake regional meetings with key stakeholders leading to effective collaboration between fire, weed and feral animal programs <b>3.1.5</b> Maintain the advances made by the camel management program through the implementation of the Camel Management Strategy, including cross-border and cross-tenure collaborative planning	A regional feral animal strategy is developed.	  
A suite of measures are developed to assess the impact of feral animal control inputs, including measures of cost-benefit which trigger action.	<b>HIGH PRIORITY</b> <b>3.2</b> Use appropriate metrics to monitor, evaluate and report on and adapt the feral animal management program	<b>3.2.1</b> Develop field indicators for land managers to quantify the damage and impact of feral herbivores <b>3.2.2</b> Establish a data management framework and share results through regular reporting to all stakeholders <b>3.2.3</b> Enhance the consistency of messaging on the impacts of feral animals	Work is underway to develop appropriate indicators to support adaptive management of the impacts of feral animals.	  

# Program 3: Reducing the impacts of feral animals

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Land managers will be using the most effective and up-to-date tools to manage the impacts of feral animals.	<b>HIGH PRIORITY</b> <p><b>3.3</b> Support research into development of new techniques and build capacity of land managers to improve management of the impacts of feral animals</p>	<ul style="list-style-type: none"> <li><b>3.3.1</b> Document the impacts of feral predators on native wildlife and convey this information to land managers</li> <li><b>3.3.2</b> Trial cat and fox control measures with emphasis on priority areas</li> <li><b>3.3.3</b> Promote responsible cat ownership with emphasis on priority areas</li> <li><b>3.3.4</b> Integrate Aboriginal cat tracking and control skills into regional feral animal management strategies, creating fee-for-service opportunities</li> <li><b>3.3.5</b> Maintain regional capacity to undertake aerial culling and broadscale population assessment</li> <li><b>3.3.6</b> Support further investigation of control techniques other than lethal control</li> <li><b>3.3.7</b> Demonstrate the benefits of excluding large feral herbivores from sites of high conservation value and communicate the results to landowners</li> </ul>	Leading practice tools and techniques for reducing the impacts of feral animals in the Arid Lands have been identified.	
An integrated approach to reducing feral animal impacts that, where appropriate, includes commercial harvest, has been explored.	<b>MEDIUM PRIORITY</b> <p><b>3.4</b> Examine options for integrated feral animal management and the role commercial harvest may play within this</p>	<ul style="list-style-type: none"> <li><b>3.4.1</b> Consult stakeholders and clarify potential role of feral animal harvest within broader programs of management, including both economic viability and environmental outcomes</li> <li><b>3.4.2</b> Prepare communications materials and ensure all stakeholders have accurate information with regard to the true economic value of feral animals to better inform decision making</li> </ul>	Investigations are underway to assess the potential role of commercial harvest in integrated programs of feral animal management.	 

# Program 3: Reducing the impacts of feral animals

## Key Measures of Achievement

- Adoption and implementation of feral animal strategy
- Number of feral animal reference group meetings
- Number of groups/ individuals involved in feral animal management
- Trends in feral animal distribution and densities
- Monitoring data describing feral herbivore impacts at priority sites
- Effectiveness and adoption of innovative feral animal control programs
- Level of threat to habitats and biodiversity posed by feral animals

## Key Collaborators

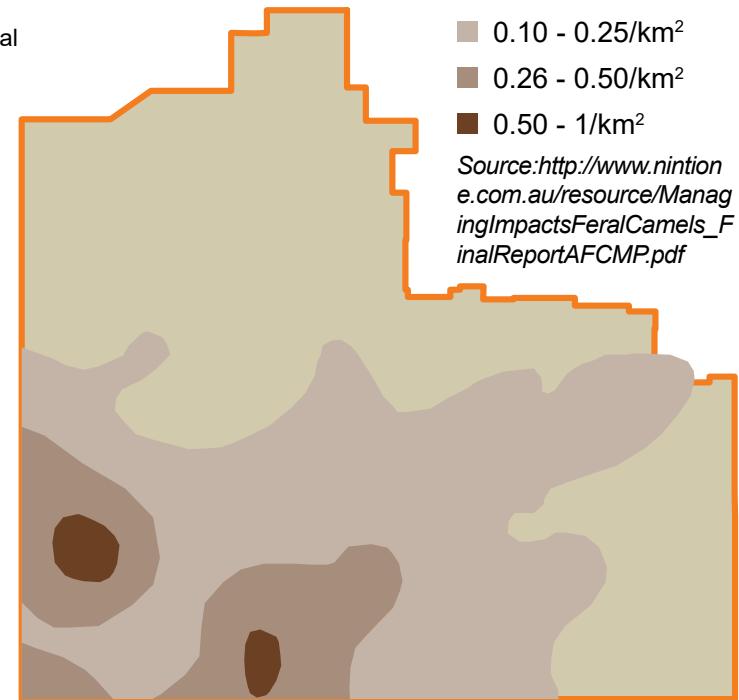
- DEPWS (Fauna Flora)
- Central Land Council
- Pastoralists
- DEPWS (Parks and Wildlife)
- Indigenous Desert Alliance
- DAWE
- Researchers

## Priority Locations

- Petermann ranges (camels, horses, cats, foxes)
- Tanami (camels horses,cats, foxes)
- Macdonnell ranges (cats, foxes)
- Simpson (camels, cats, foxes and wild dogs)
- Finke River (camels, horses and cats)
- Ntaria (horses)
- Sandover (horses)

## Feral Animals

Estimated camel densities after the National Feral Camel Action Plan in 2013.



## Camel densities

- 0.10 - 0.25/km<sup>2</sup>
- 0.26 - 0.50/km<sup>2</sup>
- 0.50 - 1/km<sup>2</sup>

Source:[http://www.nintione.com.au/resource/ManagingImpactsFeralCamels\\_FinalReportAFCMP.pdf](http://www.nintione.com.au/resource/ManagingImpactsFeralCamels_FinalReportAFCMP.pdf)

## Relevant National Plans/ Strategies

- Australian Pest Animal Control Strategy 2017-2027 (DAWR 2017)
- National Wild Dog Action Plan (DAWR 2017)
- National Feral Camel Action Plan (SEWPC 2012)

Given the size of the area and how mobile the camels are we really do need to be all working together



# Program 4: Industry adoption of sustainable practices

Much of the Arid Lands are under pastoral lease with some small but growing areas of irrigated fodder and horticultural development. Demand for agricultural products in 2021 is driving growth in primary industries even as many producers are emerging from the pressures of drought.

Mining and other resources sector industries also make critical contributions to the Arid Lands economy by providing jobs and purchasing goods and services. With the Developing the North agenda now firmly on track there is an opportunity to productively engage across these industry sectors to ensure that development follows a sustainable pathway and secures regional prosperity into the future.

This regional program is focused predominantly on supporting adaptive management within primary industries and extension of leading practices. It is designed to build resilience to climate change and strengthen biosecurity, while fostering relationships with other industry sectors that have critical roles to play in protecting and sustaining natural values through the landscapes of the Arid Lands.

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Policies and programs for development in the Arid Lands are informed by the best available science and knowledge to ensure the protection of cultural and natural assets.	<b>MEDIUM PRIORITY</b> <b>4.1</b> Engage with industry and community to encourage sustainable approaches to Developing the North policies and programs	<b>4.1.1</b> Strengthen linkages between NRM managers, researchers and the government agencies and industry bodies responsible for future strategic economic development in the Arid Lands <b>4.1.2</b> Ensure that relevant and timely empirical data is channelled to inform large scale development planning decisions in the Arid Lands	Effective conduits are established to share knowledge and information between NRM practitioners, scientists and policy makers.	 
The biosecurity system is integrated and risk-based with strong community involvement that minimises the establishment of exotic weeds and diseases.	<b>MEDIUM PRIORITY</b> <b>4.2</b> Ensure resources are increased for biosecurity support services in line with increased agricultural development	<b>4.2.1</b> Implement the 2015-2025 NT Biosecurity Strategy, particularly increasing the NRM community's involvement in biosecurity <b>4.2.2</b> Develop enhanced surveillance and effective capability to detect and respond to biosecurity emergencies <b>4.2.3</b> Build the capacity of Aboriginal ranger groups to undertake biosecurity services	Land managers have the capacity to play an increased role in delivering biosecurity outcomes.	

# Program 4: Industry adoption of sustainable practices

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Sustainable grazing practices are implemented through the increased knowledge and skills of land managers.	<b>HIGH PRIORITY</b> <b>4.3</b> Support best practice grazing management through delivery of regional monitoring programs, and promoting practices that promote both productivity and ecological outcomes	<p><b>4.3.1</b> Develop case studies and demonstration sites showcasing best practice grazing management for biodiversity conservation and production</p> <p><b>4.3.2</b> Facilitate the adoption of new technology to enable producers to more effectively determine sustainable carrying capacities and stocking rates</p> <p><b>4.3.3</b> Draw upon existing national frameworks through complementary/regionally transferable standards to implement annual monitoring programs</p> <p><b>4.3.4</b> Develop local management plans and landholder stewardship programs for high value conservation assets</p> <p><b>4.3.5</b> Develop more information on best practices for more efficient cattle production relevant to the Arid Lands</p> <p><b>4.3.6</b> Encourage diversification of income streams on pastoral land through alternative activities that support sustainable stocking rates</p>	Improved access to new technologies, data and training to enhance land management has increased the number of producers adopting leading practices.	    
Understanding of ecosystems and sustainable management enhances agricultural production in the Arid Lands.	<b>MEDIUM PRIORITY</b> <b>4.4</b> Support best practice horticulture and broad scale agriculture through knowledge sharing, adoption of new technology and training and innovation	<p><b>4.4.1</b> Conduct a mixture of extension approaches targeting improved horticultural practices - one-on-one extension, group training, best practice manuals, knowledge sharing and mentoring within the industry</p> <p><b>4.4.2</b> Attract more workers to the horticulture industry and focus on potential Aboriginal employment opportunities</p> <p><b>4.4.3</b> Improve access to training, especially promoting soil and water management best practice</p> <p><b>4.4.4</b> Increase the use of new and emerging technologies, such as the use of drone aircraft, GIS and remote sensing, for better land-use planning and soil health plans to improve productivity and sustainability</p> <p><b>4.4.5</b> Trial the use of organic farming techniques in a variety of horticultural contexts</p>	Extension activities and field days are helping to build knowledge of leading practices for sustainable horticulture in the Arid Lands.	 

# Program 4: Industry adoption of sustainable practices

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Dingo/wild dogs are strategically managed based on understanding of their impact on both pastoral productivity and biodiversity.	<b>HIGH PRIORITY</b> <b>4.5</b> Reconcile conflicting management objectives for wild dogs and dingoes	<p><b>4.5.1</b> Continue to research the impacts of wild dogs and dingoes on pastoral productivity and biodiversity values, and engage stakeholders in effective and evidence-based management programs</p> <p><b>4.5.2</b> Identify properties on which dingo populations are being maintained and establish demonstration sites to help assess the impacts on productivity and biodiversity</p> <p><b>4.5.3</b> Increase understanding and disseminate knowledge to more clearly define and distinguish between dingoes and wild dogs</p> <p><b>4.5.4</b> Communicate results of research with land managers to foster collaborative action on wild dog management</p>	Land managers have improved understanding of the differences between wild dogs and dingoes and the management implications of these.	 
Minerals and resources industries are contributing to the delivery of land management services to protect prioritised habitats and sites of conservation value.	<b>HIGH PRIORITY</b> <b>4.6</b> Support and promote partnerships between the NRM community and the mining industry regarding mine rehabilitation and offset programs	<p><b>4.6.1</b> Establish a working group or advisory committee that includes key stakeholder organisations to engage with the mining industry to strengthen their links and involvement in NRM activity</p> <p><b>4.6.2</b> Encourage the use of the environmental levy from mining companies to engage NRM stakeholders in legacy mine rehabilitation</p>	The minerals and resources industries are communicating regularly with regional land managers through a working group.	 
Climate adaptation planning by businesses and industries improves risk-management of climatic variability and related dynamic threats.	<b>HIGH PRIORITY</b> <b>4.7</b> Carry out adaptation planning on the likely impacts of climate change with Aboriginal people and pastoralists	<p><b>4.7.1</b> Consult with the community to develop strategies for industry and communities to adapt to likely impacts of climate change</p> <p><b>4.7.2</b> Encourage governments and other stakeholders to develop strategies to adapt to climate change especially in Developing the North considerations</p> <p><b>4.7.3</b> Deliver Commonwealth programs, such as the Future Drought Fund, to explore potential pathways to build resilience, including diversification, increased waters security and production efficiencies</p>	Industries and communities are supported to undertake climate adaptation planning.	 

# Program 4: Industry adoption of sustainable practices

## Key Measures of Achievement

- Number of industry driven extension programs for improving profitability and sustainability
- Level of relevant information available to developers and development decision-makers and the transparency of decision making processes
- Amount of resources directed into NRM by industry partnerships
- Level of consideration of climate change in industry planning
- Engagement of NRM community into biosecurity surveillance

## Key Collaborators

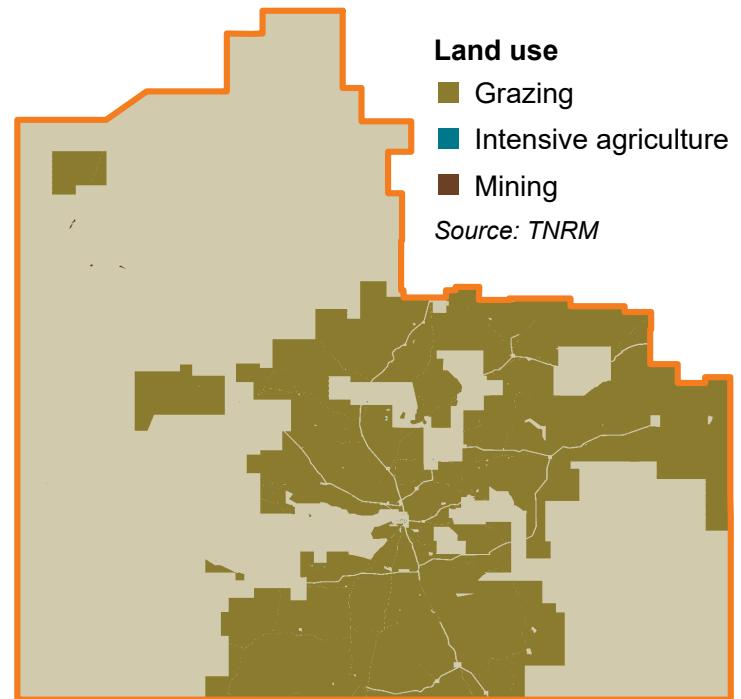
- |  |                                       |
|--|---------------------------------------|
| • North Australia Development Office     | • Indigenous Land and Sea Corporation |
| • DITT (Livestock industries)            | • Centrefarm                          |
| • DITT (Plant industries)                | • Researchers                         |
| • DEPWS (Rangelands)                     | • DAWE                                |
| • Centralian Land Management Association | • Pastoralists                        |

## Priority Locations

- Alice Springs region (pastoral, horticulture, NRM services)
- Ti Tree (agriculture/horticultural development)
- Major mining developments (Mount Peak, Nolans, Ammaroo)
- Plenty (pastoral)
- Sandover (pastoral)

## Land Use

Land use map shows the predominant industry in the Arid Lands is cattle grazing.



## Relevant Territory Plans/Strategies

- Northern Territory Business Innovation Strategy (DITT 2021)
- The Territory Critical Minerals Plan (DPIR 2020)
- Northern Territory Biosecurity Strategy 2016-2026 (DPIF 2016)
- Plant Industries Strategic Plan 2018-2028 (NT Farmers 2018)
- NT Plant Industries Workforce Development Plan (2020-2025)
- Draft Space Strategy 2021-2025

## Relevant National Plans/Strategies

- Australian Beef Sustainability Framework (MLA 2017)
- Delivering Ag2030 (DAWE 2020)
- Developing Northern Australia (ONA 2021)
- Biosecurity 2030 (DAWE 2021)

Farmers are natural resource managers. We manage natural resources for economic ends rather than conservation ends but one is no more or less important than the other – preservation is a critical NRM strategy but equally critical is the ongoing learning process around sustainable development



# Program 5: Water resources and soil management

In 2021, after experiencing two years of drought-like conditions, many in the Arid Lands now have an increased awareness of the limitations of water and soil resources. This awareness has come just as an ambitious development agenda opens the way to new mining and resources sector projects in the Arid Lands. Water resources allocation planning has further highlighted the diverse interests and aspirations within the community, including recent concerns over the potential impact of large

scale irrigated horticulture on regional water resources.

Many are also aware of the increasing pressures upon fragile soil resources on the Arid Lands arising from unsustainable farming practices, grazing pressure and wildfires.

The objective of this program is to increase sustainability in soil and water management through improving the understanding

of resource limitations and opportunities to increase water use efficiency. It supports extension to increase understanding of leading practices in soil management and strengthen collaboration in water resource management. The program also promotes robust land capacity studies and assessments to better understand land capability prior to future agricultural developments and ensure that flow regimes maintain healthy aquatic systems.

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Ground and surface water resources are managed with input from all stakeholders through water allocation plans which include monitoring and ensures that cultural, environmental and production values are respected.	<b>HIGH PRIORITY</b> <b>5.1</b> Water resource planning and management is undertaken in consultation with multiple stakeholders, and underpinned by the best available scientific information	<b>5.1.1</b> Involve multiple stakeholders and users representing a range of interests in transparent water allocation planning for the region <b>5.1.2</b> Support research and innovation, including on the impacts of climate change, that increase understanding of water resources <b>5.1.3</b> Support water stewardship thorough communications materials that engage behavioural change and involve the community in planning and implementing new water monitoring strategies	The principle of community participation in water resources planning and allocation is well established.	  
Enhanced empirical evidence supports science-based planning and increased water use efficiency and sustainability across major industries and uses.	<b>HIGH PRIORITY</b> <b>5.2</b> Increase knowledge and resources available to understand and manage the impacts of minerals and resources, pastoral, agricultural and domestic use of water on ecosystems and groundwater	<b>5.2.1</b> Undertake research to increase understanding of the impacts of the mineral and resources industry on aquifers <b>5.2.2</b> Continue to research the impacts of domestic use, pastoral and agricultural industries on water resources <b>5.2.3</b> Continue to implement more broad water use monitoring on both surface and groundwater (including bore meters) to more accurately assess water use <b>5.2.4</b> Research and trial water efficiency techniques for pastoral and agricultural industries, and promote their adoption <b>5.2.5</b> Monitor water quality and aquatic ecosystem health to maximise early detection of pollution	Systematic monitoring that tracks water consumption in key industries has been implemented.	  

# Program 5: Water resources and soil management

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Soil loss and land degradation are being prevented and soil function, where necessary, is addressed.	<b>MEDIUM PRIORITY</b> <b>5.3</b> Support training and extension services on sustainable soil management	<ul style="list-style-type: none"> <li><b>5.3.1</b> Raise awareness of the importance of soil erosion, soil fertility, soil health and soil moisture for primary industries productivity</li> <li><b>5.3.2</b> Collate existing soil information and develop communications materials that promote improved soil management practices for developments in the landscape and is targeted to contractors</li> <li><b>5.3.3</b> Utilise Rangelands Remote Sensing tools to improve grazing management and enhance production efficiency to minimise soil erosion issues</li> <li><b>5.3.4</b> Continue the requirement for erosion and sediment control plans and adherence for all developments</li> <li><b>5.3.5</b> Continue to review and adapt land clearing guidelines with new information and to deal with increased development</li> <li><b>5.3.6</b> Ensure that adequate expertise and capacity exists to support soil resources management in the Arid Lands</li> </ul>	There is an active program of extension that enhances capacity to sustainably manage soils in the Arid Lands.	 
The development of agricultural and pastoral land is guided by an understanding of the limitations of soil and water resources.	<b>MEDIUM PRIORITY</b> <b>5.4</b> Identify areas with potential for agricultural development through assessments of soil and water resources	<ul style="list-style-type: none"> <li><b>5.4.1</b> Continue research and assessments for areas that are being proposed for new and intensified agricultural development (e.g. Mapping the Future)</li> <li><b>5.4.2</b> Link physical assessments of soil and water resources with crop suitability, land tenure and market considerations in developing new agricultural zones</li> <li><b>5.4.3</b> Conduct transparent risk analyses across all resources and consumptive uses including resources highlighted for new development and those supporting existing demand</li> </ul>	Appropriate assessment programs and monitoring actions to inform sustainable agricultural development have been identified.	  
Key aquatic systems and their associated cultural values linked to both surface and ground waters are recognised and protected.	<b>HIGH PRIORITY</b> <b>5.5</b> Preserve and maintain the health, quality and flow regimes of water resources, aquatic systems and habitats throughout Arid Lands catchments	<ul style="list-style-type: none"> <li><b>5.5.1</b> Identify and promote leading practice in sustainable management for catchments, riparian corridors, wetlands and waterholes across tenures</li> <li><b>5.5.2</b> Identify and apply standardised metrics for monitoring the health and ecosystem functions of wetlands and waterways in the Arid Lands</li> </ul>	Relevant leading practices for the protection and sustainable management of freshwater systems have been identified.	  

# Program 5: Water resources and soil management

## Key Measures of Achievement

- Extent of area subject to, and the number of implemented, water allocation plans
- Number of groups/individuals involved in water stewardship
- Area of natural aquatic systems and flows under protection
- Number of training events and extension programs promoting soil conservation
- Improved soil knowledge among land managers and contractors (survey)
- Proportion of agricultural developments that have undergone leading-practice land capability assessments

## Key Collaborators

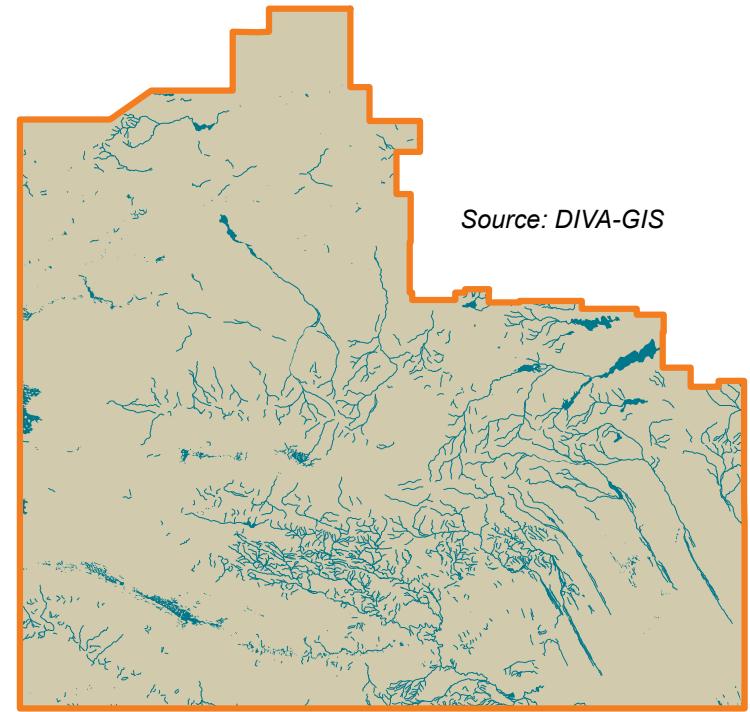
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|--|----------------------|
| • DITT (Plant industries)                | • DAWE               |
| • DITT (Livestock industries)            | • Pastoralists       |
| • DEPWS (Rangelands)                     | • Horticulturalists  |
| • Central Land Council                   | • DITT (Mines)       |
| • Centralian Land Management Association | • Resources Industry |
| • Researchers                            |                      |

## Priority Locations

- Alice Springs region (pastoral, horticulture, water allocation plan)
- Ti Tree (agriculture/horticultural development, water allocation plan)
- Major mining developments (Mount Peak, Nolans, Ammaroo)
- Plenty (pastoral)
- Sandover (pastoral)
- Finke River (environmental flows, waterholes, aquatic refugia)
- Macdonnell Range (water holes and aquatic refugia)

## Water Resources

Water courses in the Arid Lands.



## Relevant Territory Plans/Strategies

- Alice Springs Water Allocation Plan 2016-2020 (DENR 2016)
- Ti-Tree Water Allocation Plan 2019-2029 (DENR 2019)
- Draft Great Artesian Basin Water Allocation Plan 2013-2023 (DENR 2013)
- Northern Territory Strategic Water Plan; Directions Paper (DEPWS 2021)

## Relevant National Plans/Strategies

- Charter National Water Quality Management Strategy (WQA 2018)
- National Soil Research Development and Extension Strategy (Commonwealth of Australia 2014)

If we don't have our soil in check with our Landcare practices there is no point in being here and we want to be able to hand it over to our children in a much better condition than we received it

“

# Program 6: NRM based economic opportunities

This program is intended to help identify and support the development of new economic opportunities arising from the sustainable management of natural resources. Key among these in the Arid Lands are opportunities for diversification on pastoral and Aboriginal lands. There has also been growth in the number of groups and communities benefiting from

NRM related fee-for-service arrangements. These types of economic opportunities are critical to enable people to live on country in the region.

There has been increased interest in exploring options for Emissions Reduction Fund (ERF) carbon projects to the Arid

Lands and some groups are actively working on this.

This program focuses on building regional capacity to take up new opportunities including fostering business and technical skills, as well as promoting the development of governance and policy to support emerging industries.

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
New employment and business opportunities are created based on sustainable harvest of native species.	<b>MEDIUM PRIORITY</b> <b>6.1</b> Support the expansion of, and share local knowledge about, NRM-based economic enterprises based on the harvest of native species	<b>6.1.1</b> Continue to identify markets and opportunities <b>6.1.2</b> Provide institutional and business support for the development of NRM based economic activities <b>6.1.3</b> Simplify systems for permits, monitoring and accreditation	Native species suitable for commercial harvest have been identified.	
Ranger groups and other local NRM enterprises grow more economically viable, supported by a diversity of funding sources and locally-based commercial opportunities.	<b>HIGH PRIORITY</b> <b>6.2</b> Develop capacity for fee-for-service opportunities of Landcare groups, Aboriginal rangers and other NRM groups	<b>6.2.1</b> Develop and incorporate business skills into NRM activities <b>6.2.2</b> Develop linkages between local groups and business opportunities through websites and other networks <b>6.2.3</b> Provide training, business support and mentoring to help establish and manage land management contract businesses <b>6.2.4</b> Support Aboriginal enterprises and land managers to tender for potential contract and fee-for-service opportunities <b>6.2.5</b> Support successful Aboriginal enterprises to share their stories and to provide mentoring for new enterprises.	Aboriginal enterprises engaging in fee-for-service activities have received basic business training/mentoring.	

# Program 6: NRM based economic opportunities

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
NRM stakeholders have increased their participation in carbon market programs.	<b>MEDIUM PRIORITY</b> <b>6.3</b> Support projects and research to develop and participate in national, NT and regional initiatives to develop carbon market programs	<b>6.3.1</b> Continue to communicate information on carbon market developments to the NRM community <b>6.3.2</b> Clarify ownership and governance arrangements around carbon stocks <b>6.3.3</b> Support the development of methodologies for fire, soil and grazing carbon abatement suitable for rangelands/arid areas. <b>6.3.4</b> Establish a pilot carbon farming project and replicate successful models throughout the region	Carbon market opportunities relevant to the Arid Lands have been clearly communicated to stakeholders.	
New employment opportunities are created through diverse primary industries and on different tenures in the Arid Lands.	<b>HIGH PRIORITY</b> <b>6.4</b> Investigate, progress and communicate diverse emerging economic opportunities on Aboriginal and pastoral lands including horticulture, aquaculture and tourism	<b>6.4.1</b> Support the research and development of horticultural projects that enable commercial opportunities on Aboriginal and pastoral land <b>6.4.2</b> Support projects that increase participation of Aboriginal land owners in remote horticultural and tourism projects <b>6.4.3</b> Support emerging and innovative sustainable primary industry activities on pastoral land allowed by the Pastoral Land Legislation Amendment Bill 2017 (NT) <b>6.4.4</b> Assist Aboriginal Territorians to develop business opportunities from Aboriginal water reserves	Opportunities for economic diversification on pastoral and Aboriginal lands have been increased.	 
The renewables and environment sectors are contributing more to the Arid Lands economy than in 2020.	<b>MEDIUM PRIORITY</b> <b>6.5</b> Investigate and support development opportunities from new environmental technologies and renewables	<b>6.5.1</b> Trial emerging technologies that promote waste management, soil rehabilitation and carbon opportunities <b>6.5.2</b> Support the development of new or existing technology for renewable energy, carbon abatement and other initiatives that support sustainable industries in the Arid Lands	The Arid Lands are on track to meet renewable energy and emissions targets.	 
New opportunities and new partnerships between the private sector and NRM stakeholders have been developed.	<b>MEDIUM PRIORITY</b> <b>6.6</b> Link NRM stakeholders to new and emerging opportunities in the Arid Lands	<b>6.6.1</b> Create new links between industry, corporate bodies and NRM stakeholders, particularly to deliver new and innovative approaches to NRM <b>6.6.2</b> Facilitate opportunities for engagement between governments and industry and link these to the delivery of priorities in this NRM plan <b>6.6.3</b> Seek alternative sources of funding for NRM activities through new partnerships with philanthropic organisations and offset arrangements	A portfolio of potential NRM investment opportunities has been developed for the Arid Lands.	 

# Program 6: NRM based economic opportunities

## Key Measures of Achievement

- Value of social cultural and economic benefits arising from wild harvests
- Amount and value of fee-for-service contracts conducted by ranger/ NRM groups
- Number of new sustainable enterprises based upon Aboriginal and pastoral land
- Number of people employed on Landscape rehabilitation projects
- Value of incomes achieved through sale of carbon and biodiversity market goods and services
- Number of industry/corporate partnerships in the NRM sector
- Number of enterprises supplying and utilising renewable energy

## Key Collaborators

- |                              |  |
|------------------------------|--|
| • Centre farm                | • DITT (Livestock industries)            |
| • Central Land Council       | • DITT (Business Innovation)             |
| • Indigenous Desert Alliance | • DEPWS (Flora and Fauna)                |
| • DITT (Mines)               | • Centralian Land Management Association |
| • DITT (Plant industries)    |  |

## Priority Locations

- Alice Springs Region (small tourism enterprises, NRM services, pastoral diversification)
- Yuendumu (NRM services)
- Ntaria (tourism, NRM services)
- Tanami (NRM services)
- Kalkatjara (NRM services)
- Plenty (tourism, pastoral diversification)
- Ti Tree (horticulture)
- Mutitjulu (tourism and services)

## Relevant Territory Plans/ Strategies

- Northern Territory Aboriginal Tourism Strategy 2020-2030 (Tourism NT 2020)
- Northern Territory Tourism Industry Strategy 2030 (Tourism NT)
- Aboriginal Carbon Industry Strategy (DENR 2019)
- Aboriginal Land and Sea Action Plan (DCM 2019)
- Pastoral Development Strategy 2017-2022 (CLC 2017)
- Economic Development and Tourism Plan (Central Desert Shire 2014)
- NT Offsets Framework (DEPWS 2020)

## Relevant National Plans/ Strategies

- National Indigenous Land and Sea Strategy (ILSC 2019)
- Indigenous Business Sector Strategy 2018-2028 (NIAA 2018)
- Australian Renewable Energy Funding and Investment Plan 2021-2024 (ARENA 2021)



# Program 7: Minimising ecological footprints of development

Australia's National Strategy for Ecologically Sustainable Development (ESD) defines ESD as '*using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased*'.

The Arid Lands region is home to only 19% of the Territory population, but encompasses nearly 50% of its land area. This population lives across regional and remote locations

and, in 2021, some of these remote communities still lack the capacity to sustainably manage waste and have poor energy efficiency. This risks both natural values and community wellbeing.

This program supports the introduction of leading practices in design, planning and construction of infrastructure for future residential and industrial developments. It includes activities to raise community awareness about Ecologically Sustainable

Development and promotes evidence-based management of toxic waste, pollutants and other contaminants that are at risk of discharge into the environment.

The program also aims to harness the potential of Offsets from planned industrial developments across the Arid Lands. This could both protect regional natural assets and create economic opportunities and partnerships within a new conservation economy.

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
The development and management of urban and regional centres in the Arid Lands adheres to the principles of the Ecological Sustainable Development.	<b>MEDIUM PRIORITY</b> <b>7.1</b> Minimise the environmental footprint of the major population centres in the Arid Lands	<b>7.1.1</b> Support urban sustainability initiatives that promote water and energy efficiency and extend these throughout the Arid Lands <b>7.1.2</b> Investigate options to improve the sustainability of waste management in remote towns and communities <b>7.1.3</b> Recognise the importance of the Lhere Mparntwe Management Strategy 2019	The application of principles of ecologically sustainable development for the Arid Lands is understood by development planners and regulators.	
A transparent Northern Territory Offsets Framework is directing Offsets to achieving prioritised NRM strategies in the Arid Lands.	<b>HIGH PRIORITY</b> <b>7.2</b> Strengthen and consolidate environmental offset arrangements to direct offsets where they are likely to achieve the greatest beneficial impact in the Arid Lands	<b>7.2.1</b> Develop a clear direction for offsets and guide offset activities to encourage more investment into NRM priorities <b>7.2.2</b> Develop partnerships between the private sector, government and NRM stakeholders to facilitate the implementation of offsets <b>7.2.3</b> Investigate potential for middle level brokering to identify and coordinate offsets on the ground	The NT Offsets Framework is finalised and has been communicated to all stakeholders.	

# Program 7: Minimising ecological footprints of development

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Impacts from the recreational use of natural resources and visitors to the Arid Lands are minimised by improved public awareness and risk-based management of vulnerable sites.	<b>MEDIUM PRIORITY</b> <b>7.3</b> Minimise the impact of tourism on the environment through the adoption and promotion of sustainability initiatives	<b>7.3.1</b> Develop and support strategies that minimise environmental and cultural impacts of recreational users and visitors to key areas and sites within the Arid Lands  <b>7.3.2</b> Collaborate with key recreational user groups to manage impacts on key areas	Visitor impact management strategies have been developed for sites at risk from disturbance.	  
<b>Key Measures of Achievement</b>			<b>Priority Locations</b>	
<ul style="list-style-type: none"> <li>Trends in per capita water and power consumption</li> <li>Proportion of energy generated from renewable sources</li> <li>Application of sustainability principles to design and planning approvals</li> <li>Value of investments from Offsets into NRM activities</li> <li>Number of priority sites at which visitor or recreational user impact is mitigated by application of management plans</li> </ul>			<ul style="list-style-type: none"> <li>Alice Springs (water and power consumption, renewable energy waste management, Todd River)</li> <li>Remote communities (water scarcity, renewable energy and waste management)</li> <li>Uluru-Kata Tjuta National Park (tourism development and visitor impact management)</li> <li>Targeted Arid Lands Biomes for Offsetting development impacts</li> </ul>	
<b>Key Collaborators</b>			<b>Relevant Territory Plans/Strategies</b> <ul style="list-style-type: none"> <li>Central Desert Regional Council - East MacDonnell-Plenty Highway Region Visitor Experience Master Plan (Central Desert Council 2018)</li> <li>Northern Territory Renewable Energy Implementation Plan 2018-2020 (NTG 2019)</li> <li>Northern Territory Renewable Hydrogen Strategy (DTBI 2020)</li> <li>NT Compact Urban Growth Strategy (NTPS 2020)</li> <li>Environment Strategy (Alice Springs Airport 2015)</li> <li>Alice Springs Town Council - Climate Action Plan 2018-2021</li> <li>Waste Management Strategy (Central Desert Shire 2010)</li> <li>Regional Plan 2021-2022 (Macdonnell Shire 2021)</li> <li>Service Delivery Plan 2021-2022 (Central Desert Shire 2021)</li> <li>Roadmap to a Desert Smart Town (ALEC 2005)</li> </ul>	
			<b>Relevant National Plans/Strategies</b> <ul style="list-style-type: none"> <li>National Waste Policy Action Plan (ALGA 2019)</li> <li>Australian Renewable Energy Funding and Investment Plan 2021-2024 (ARENA 2021)</li> </ul>	

The management of waste in small and remote communities is challenging and many of our communities face barriers when delivering waste management services in small communities



# Program 8: Managing and protecting key natural and cultural assets

Nearly a quarter of the Arid lands are set aside for conservation, mostly as Indigenous Protected Areas. Furthermore, many landholders demonstrate responsibility for maintaining the natural assets of the region, including Aboriginal people and other groups who want to protect natural and cultural values, and producers wishing to ensure their properties remain productive and their rangelands healthy.

The Arid Lands encompass 24 sites of conservation significance, 62 NT listed threatened species and 39 species listed under the national EPBC.

This program encourages strengthened partnerships among landholders across all tenures to better maintain key natural and cultural assets. This is to be done through updating the knowledge of regional conservation priorities and informing land managers of leading practices. In particular, it encourages land managers outside of the conservation estate

to enter into formal conservation/stewardship arrangements. It also includes work to ensure Traditional Owners and Aboriginal land managers are leading the management of key cultural sites.

The Program includes a process to reinvigorate threatened species management with evidence-based initiatives and plans to mitigate the anticipated impacts of climate change on priority areas.

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Indigenous Protected Areas and the expansion of stewardship programs on pastoral land increases the area of land under conservation management outside of National Parks and the Territory conservation estate.	<b>MEDIUM PRIORITY</b> <b>8.1</b> Develop and implement management programs for high priority areas in the Arid Lands	<b>8.1.1</b> Secure resources for planning and management of areas of high conservation value <b>8.1.2</b> Identify, refine and update knowledge of priority areas for protection <b>8.1.3</b> Develop local management plans and landholder stewardship programs <b>8.1.4</b> Partner with land managers in priority areas to negotiate voluntary conservation agreements (e.g. Territory Conservation Agreements, Land for Wildlife)	Knowledge of high priority areas has been updated and sites requiring management programs have been identified.	
Threatened species management is integrated with strong links between research, monitoring and on-ground action showing progress against key indicators in Threatened Species Action Plans	<b>HIGH PRIORITY</b> <b>8.2</b> Implement the National Action Plans for Threatened Species in the Arid Lands, linking on-ground action to the latest knowledge	<b>8.2.1</b> Communicate the National Action Plans for managing Threatened Species in the Arid Lands and support their implementation <b>8.2.2</b> Link threatened species action in the NT to the National Threatened Species Strategy and implement key priorities relevant to the NT	Foundational research and monitoring in support of priority Threatened Species Action Plans is underway.	

# Program 8: Managing and protecting key natural and cultural assets

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
The management of Arid Lands ecosystems is informed by knowledge of climate change processes and impacts.	<b>MEDIUM PRIORITY</b> <b>8.3</b> Develop and implement adaptation plans to address the impacts of climate change on vulnerable ecosystems in the region	<ul style="list-style-type: none"> <li><b>8.3.1</b> Identify sites, design and establish monitoring regimes to inform planning and adaptation in climate change response</li> <li><b>8.3.2</b> Where appropriate, adopt existing climate change adaptation guidelines (e.g. Climate Change Adaptation Guidelines for Arid Zone Aquatic Ecosystems and Freshwater Biodiversity)</li> <li><b>8.3.3</b> Develop management strategies and prioritise actions for vulnerable natural assets that will be affected by climate change</li> <li><b>8.3.4</b> Work with Aboriginal land managers and pastoral landholders to support adoption of land management practices which strengthen climate resilience</li> </ul>	Appropriate monitoring approaches and techniques have been identified.	   
Rangelands condition and trends in productivity are known across the Arid Lands and this knowledge informs management decisions.	<b>HIGH PRIORITY</b> <b>8.4</b> Support ongoing mapping and monitoring of land condition in the Arid Lands using remote sensing and field based surveys	<ul style="list-style-type: none"> <li><b>8.4.1</b> Support availability and utilisation of remote sensing tools to guide and direct fire management activities (e.g. monitor fuel loads), grazing land management and landscape health</li> <li><b>8.4.2</b> Support and encourage the engagement of all stakeholders into the collection of biodiversity and land condition data through citizen science programs</li> </ul>	New rangelands condition monitoring tools are available to Arid Lands land managers.	  
Aboriginal land managers and Traditional Owners are central to the management of culturally significant sites and landscapes.	<b>HIGH PRIORITY</b> <b>8.5</b> Support best practice management of culturally significant Aboriginal sites and cultural landscapes	<ul style="list-style-type: none"> <li><b>8.5.1</b> Support and encourage the mapping, documentation and management of culturally significant sites by Traditional Owners</li> <li><b>8.5.2</b> Increase the awareness of industry and government agencies about Aboriginal sacred sites and their values, and the processes and mechanisms for their protection in proposed development activities</li> <li><b>8.5.3</b> Ensure that the protection and management of Aboriginal cultural sites is identified and prioritised in fire, weed and feral animal management activities</li> </ul>	Traditional Owners are adequately supported and resourced to continue the mapping and recording of culturally significant sites.	 

# Program 8: Managing and protecting key natural and cultural assets

## Key Measures of Achievement

- Land area under active conservation management
- Number of cultural sites being managed by Traditional Owners across all tenures
- Number of people actively collecting biodiversity data
- Progress in delivering milestones and objectives in Threatened Species Action plans
- Progress establishing climate change monitoring sites and raising community awareness
- Proportion of land under conservation outside of the formal conservation estate

## Key Collaborators

- DEPWS (Parks and Wildlife)
- DEPWS (Flora and Fauna)
- Indigenous Desert Alliance
- Central Land Council
- Consultants-contractors
- Researchers
- Territory NRM
- Aboriginal ranger groups
- Parks Australia
- Centralian Land Management Association
- DAWE
- Australian Wildlife Conservancy
- Olive Pink Botanic Garden
- Alice Springs Town Council

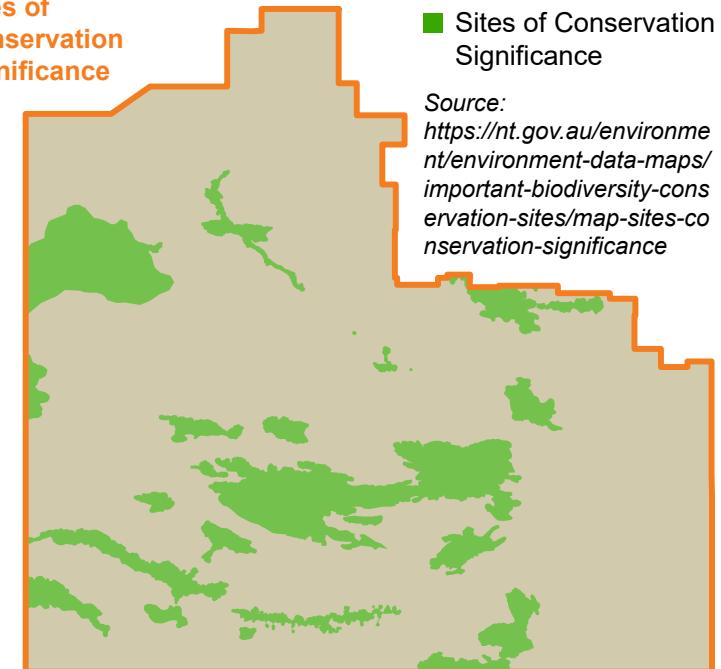
## Priority Locations

- Tjoritja (Park)
- Fink Gorge (Park)
- Indigenous Protected Areas (Northern Tanami, Southern Tanami, Katitit Petermann, Angas Downs)
- Haasts Bluff ALT
- Watarrka (Park)
- Uluru-Kata Tjuta (World Heritage Area)
- Cultural sites (located across the Arid lands)
- Alice Springs Area (Lhere Mparntwe Management, Land for Wildlife)
- Newhaven Sanctuary (threatened species)

## Relevant Territory Plans/Strategies

- Draft NT Parks Masterplan (2022-52)
- Aboriginal Areas Protection Authority Strategic Plan 2017-2021
- Finke Gorge National Park Joint Management Plan (PWC 2011)
- Tjoritja / West MacDonnell National Park (PWC 2018)
- Watarrka National Park Joint Management Plan (PWC 2018)
- Uluru-Kata Tjuta National Park Management Plan 2010-2020 (Director National Parks 2010)
- Trepina Gorge Joint Management Plan (PWC 2010)
- Southern Tanami Indigenous Protected Area Plan of Management (CLC 2012)
- Northern Tanami Indigenous Protected Area Plan of Management (CLC 2015)
- Katiti Petermann Indigenous Protected Area Plan of Management (CLC2015)
- Angas Downs Indigenous IPA plan of Management (AWS 2005)
- Lhere Mparntwe Management Strategy (DENR 2019)

## Sites of Conservation Significance



We want a future for our children on our country... our IPA makes us proud... respects our country, our culture and knowledge... so that our children give a future for their children in our ancestors' country



## Relevant National Plans/Strategies

- Threatened Species Strategy 2021-2031
- Australia's Strategy for Nature 2019-2030

# Program 9: Knowledge, capacity and engagement

This program is designed to support Arid Lands land managers and other stakeholders to more effectively implement regional NRM priorities and strategies.

The work under this program aims to strengthen networks and collaboration across the Arid Lands, fostering new partnerships and building the potential for effective collective action. In particular, it includes seeking additional resources

to support land management groups with the most relevant and up-to-date knowledge. To achieve this the program includes an activity to encourage the capturing, storing and sharing information and data within the NRM community.

The program recognises the need for formal training and skills development within the NRM community and aims to identify priority needs and create opportunities to achieve

skills development, including strengthening the governance of land management groups.

Critically, the program includes continuing to engage across the whole NRM community to support delivery of activities delivering the Arid Lands NRM plan and ensuring that the implementation is adaptively managed.

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Natural Resource Managers in the Arid Lands are incorporating the best available knowledge, information and data into their management including TEK and community knowledge.	<b>MEDIUM PRIORITY</b> <b>9.1</b> Support land managers to record and utilise traditional ecological knowledge (TEK), scientific research and pastoral knowledge in NRM planning and activities.	<b>9.1.1</b> Conduct forums to facilitate knowledge sharing between NRM stakeholders and researchers <b>9.1.2</b> Identify knowledge gaps and research priorities in collaboration with key stakeholders <b>9.1.3</b> Establish knowledge capture, storage and sharing projects by Traditional Owners and Aboriginal rangers <b>9.1.4</b> Develop citizen science programs that facilitate community monitoring of key environmental assets (e.g. adding to the NT species database) ensuring data collection is relevant, efficient and utilised <b>9.1.5</b> Share knowledge through websites, newsletters, fact sheets and other publications	Regular forums and events communicate the latest technical knowledge between knowledge-holders and NRM stakeholders.	  
Land managers are provided with increased resources and long-term approaches to manage NRM issues.	<b>HIGH PRIORITY</b> <b>9.2</b> Strengthen networks and partnerships between NRM stakeholders in the Arid Lands and support the development of new partnerships with industry and philanthropic organisations.	<b>9.2.1</b> Consolidate and extend landscape-level and cross-border partnerships through supporting workshops that bring together stakeholders and share knowledge <b>9.2.2</b> Support groups that provide specialist support and promotion of NRM activities ('NRM stories') in the Arid Lands (TNRM, Landcare NT, 10 Deserts, Indigenous Ranger Network, CLMA, etc.) <b>9.2.3</b> Support collaboration between key technical agencies to provide assistance to local Landcare and other NRM stakeholder groups <b>9.2.4</b> Promote the uptake of online communications platforms and other technologies that can enhance communications and coordination between land managers at a distance	New NRM partnerships have been created.	 

# Program 9: Knowledge, capacity and engagement

2025 Objective	Strategy	Key activities	2023 Interim target	Assets improved
Training in the Arid Lands is more easily available and better targeted to relevant natural resource management skills.	<b>MEDIUM PRIORITY</b> <b>9.3</b> Support accredited and informal training in land management and sustainable industry practices in the Arid Lands.	<b>9.3.1</b> Assess training needs (non-accredited and accredited) for NRM stakeholders and support the delivery of appropriate training where needed, particularly supporting skills linked to employment <b>9.3.2</b> Assess the efficiency of training and improve where necessary <b>9.3.3</b> Introduce stronger mentoring programs in the NRM sector <b>9.3.4</b> Support governance and leadership training of locally-based NRM groups and establish clearer career pathways in NRM	The number of available training courses and opportunities to build NRM skills has increased on the Arid Lands.	
A multi-stakeholder review processes in the Arid Lands informs adaptive management, improved practices and cooperation.	<b>HIGH PRIORITY</b> <b>9.4</b> Continue to review NRM outcomes, facilitating adaptive management	<b>9.4.1</b> Facilitate multi-stakeholder annual reviews of progress against the NRM plan <b>9.4.2</b> Support a multi-stakeholder approach to adaptive management to help prioritise funding, resources and effort in areas of highest need	The Arid Lands NRM plan has been reviewed.	 

# Program 9: Knowledge, capacity and engagement

## Key Measures of Achievement

- Number of accredited and non-accredited training opportunities offered to stakeholders in the Arid lands
- Number of active ranger and Landcare groups
- Number and quality of multi-stakeholder workshops for knowledge exchange and networking
- Level of skills and capacity held by land management groups
- Levels of engagement and participation in citizen science programs
- Participation in NRM plan review and other adaptive management processes

## Key Collaborators

- |                        |  |
|------------------------|--|
| • Landcare NT          | • Centralian Land Management Association |
| • Central Land Council | • Arid Lands Environment Centre          |
| • Batchelor Institute  | • Indigenous Desert Alliance             |
| • Training providers   | • Territory NRM                          |
| • Landcare groups      |  |

## Priority Locations

- Alice Springs region (CLMA and Landcare groups, Arid Lands Environment Centre, Land for Wildlife, Batchelor Institute)
- Arid Lands (CLC rangers, IDA groups, NPY community development)

## Relevant Territory Plans/Strategies

- Landcare NT Strategic Plan 2018-2021
- Northern Territory NRM Plan 2021-2025
- Strategic Plan 2016-2020 (CLMA 2016)

As a pastoral Landcare group, it reflects the energy and determination of a small group of land owners, land managers and residents committed to monitoring, maintaining and improving its natural values whilst promoting and overseeing a sensible and considered approach to development



# Taking this Plan Forward

This plan was collaboratively developed to build upon the current momentum in collaborative NRM and address emerging natural resource management opportunities and challenges (2021-2025). The planning process has represented another stage in the ongoing collaboration between regional NRM partners.

Implementing this plan, reviewing progress and that then adaptively managing it will require regional coordination to be continue and be further strengthened.



Follow regional NRM plan implementation status online on the Regional NRM plan dashboard



# Threatened plant species of the Arid Lands

Plant	Scientific name / Common name	EPBC Act Status	NT Conservation Status
Apiaceae	<i>Actinotus schwarzii</i> / Flannel flower	VU	VU
Araceae	<i>Typhonium sp.</i> Sandover	-	VU
Arecaceae	<i>Livistona mariae</i> / Red cabbage palm	VU	EN
Asteraceae	<i>Minuria tridens</i>	VU	VU
Asteraceae	<i>Olearia macdonnellensis</i>	VU	EN
Cycadaceae	<i>Cycas armstrongii</i>	-	VU
Cyperaceae	<i>Baumea arthrophylla</i>	-	EN
Cyperaceae	<i>Bolboschoenus caldwellii</i>	-	EN
Cyperaceae	<i>Carex fascicularis</i>	-	VU
Cyperaceae	<i>Eleocharis papillosa</i> / Dwarf desert spike-rush	VU	VU
Cyperaceae	<i>Schoenus centralis</i>	-	VU
Eremophila prostrata	<i>Eremophila prostrata</i>	VU	-
Euphorbiaceae	<i>Amperia spicata</i> PDF / Glory of the centre	-	VU
Euphorbiaceae	<i>Ricinocarpos gloria-medii</i> / Glory of the centre	VU	-
Fabaceae	<i>Acacia latzii</i> / Latz' wattle	VU	VU
Fabaceae	<i>Acacia peuce</i> / Waddy-wood	VU	EN
Fabaceae	<i>Acacia pickardi</i> / Birds Nest Wattle	VU	-
Fabaceae	<i>Acacia undoolyana</i> / Undoolya wattle	VU	VU
Lamiaceae	<i>Prostanthera schultzii</i> / Wrixonia schultzii	VU	VU
Myoporaceae	<i>Eremophila prostrata</i> / Rainbow Valley Fuschia Bush	VU	-
Myrtaceae	<i>Babingtonia behrii</i>	-	VU
Myrtaceae	<i>Melaleuca fulgens</i> subsp. Corrugata	-	EN
Ranunculaceae	<i>Clematis decipiens</i>	-	VU
Zamiaceae	<i>Macrozamia macdonnellii</i> / Macdonnell Ranges cycad	VU	-

CE - Critically endangered

EN - Endangered

VU - Vulnerable

Sources: [www.environment.gov.au/cgi-bin/sprat/public/sprat.pl](http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl)  
[www.nt.gov.au/environment/native-plants/threatened-plants](http://www.nt.gov.au/environment/native-plants/threatened-plants)



# Threatened animal species of the Arid Lands

Sources: [www.nt.gov.au/environment/animals/threatened-animals](http://www.nt.gov.au/environment/animals/threatened-animals)  
[www.environment.gov.au/cgi-bin/sprat/public/sprat.pl](http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl)

Scientific name	Common name	EPBC Act Status	NT Conservation status
<b>Birds</b>			
<i>Acanthiza iredalei</i>	Slender-billed thornbill	VU	Regionally Extinct
<i>Amytornis modestus indulkana</i>	Thick-billed grasswren (north-western subspecies)	VU ( <i>A. textilis modestus</i> )	CE
<i>Amytornis modestus modestus</i>	Thick-billed grasswren	VU ( <i>A. textilis modestus</i> )	Extinct
<i>Calidris canutus</i>	Red knot	EN	VU
<i>Calidris ferruginea</i>	Curlew sandpiper	CE	VU
<i>Calidris tenuirostris</i>	Great knot	CE	VU
<i>Charadrius leschenaultii</i>	Greater sand plover	VU	VU
<i>Charadrius mongolus</i>	Lesser sand plover	EN	VU
<i>Erythrotriorchis radiatus</i>	Red goshawk	VU	VU
<i>Erythrura gouldiae</i>	Gouldian finch	EN	VU
<i>Falco hypoleucus</i>	Grey falcon	VU	VU
<i>Leipoa ocellata</i>	Malleefowl	VU	CE
<i>Limosa lapponica</i>	Bar-tailed godwit	-	VU
<i>Pedionomus torquatus</i>	Plains wanderer	CE	-
<i>Pezoporus occidentalis</i>	Night parrot	EN	CE
<i>Polytelis alexandrinae</i>	Princess parrot	VU	VU
<i>Rostratula australis</i>	Australian painted snipe	EN	VU
<i>Strepera versicolor</i>	Grey currawong	-	CE
<i>Tyto novaehollandiae kimberli</i>	Masked owl (mainland Top End)	VU	VU
<b>Fish</b>			
<i>Chlamydogobius jalpalpa</i>	Finke goby	-	VU

Scientific name	Common name	EPBC Act Status	NT Conservation status
<b>Invertebrates</b>			
<i>Basedowena squamulosa</i>	Land snail	-	VU
<i>Bothriembryon spenceri</i>	Spencer's land snail	-	VU
<i>Dirutracchia sublevata</i>	Land snail	-	VU
<i>Divelломелон hillieri</i>	Land snail	-	VU
<i>Granulomelon arcigerens</i>	Western Macdonnell's land snail	-	VU
<i>Granulomelon gilleni</i>	Gillen creek land snail	-	VU
<i>Granulomelon grandituberculatum</i>	Land snail	-	VU
<i>Ordtrachia australis</i>	Land snail	-	EN
<i>Ordtrachia septentrionalis</i>	Land snail	CE	EN
<i>Pillomena aemula</i>	Land snail	-	VU
<i>Semotrachia caupona</i>	Land snail	-	VU
<i>Semotrachia elleryi</i>	Ellery gorge land snail	-	VU
<i>Semotrachia emilia</i>	Emiles land snail	-	VU
<i>Semotrachia esau</i>	Land snail	-	VU
<i>Semotrachia euzyga</i>	Land snail	EN	EN
<i>Semotrachia filixiana</i>	Land snail	-	VU
<i>Semotrachia huckittana</i>	Land snail	-	VU
<i>Semotrachia illarana</i>	Land snail	-	VU
<i>Semotrachia jessieana</i>	Land snail	-	VU
<i>Semotrachia jinkana</i>	Land snail	-	VU
<i>Semotrachia rossana</i>	Land snail	-	VU
<i>Semotrachia runutjirbana</i>	Runut jirbana land snail	-	VU
<i>Semotrachia winneckeana</i>	Winnecke land snail	-	VU
<i>Sinumelon bednalli</i>	Bednall's land snail	EN	-
<i>Vidumelon wattii</i>	Watt's land snail	-	VU

CE - Critically endangered

EN - Endangered

VU - Vulnerable

# Threatened animal species of the Arid Lands

Sources: [www.nt.gov.au/environment/animals/threatened-animals](http://www.nt.gov.au/environment/animals/threatened-animals)  
[www.environment.gov.au/cgi-bin/sprat/public/sprat.pl](http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl)

Scientific name	Common name	EPBC Act Status	NT Conservation status
<b>Mammals</b>			
<i>Bettongia lesueur</i>	Burrowing bettong	Extinct	Extinct
<i>Bettongia penicillata</i>	Brush-tailed bettong	Extinct	Extinct
<i>Chaeropus ecaudatus</i>	Pig-footed bandicoot	Extinct	Extinct
<i>Dasyurus blythi</i>	Brush-tailed mulgara	-	VU
<i>Dasyurus cristicauda</i>	Crest-tailed mulgara	-	VU
<i>Dasyuroides byrnei</i>	Kowari PDF	VU	Extinct
<i>Dasyurus geoffroii</i>	Western quoll	VU	Extinct
<i>Isoodon auratus</i>	Golden-bandicoot	VU	EN
<i>Lagorchestes asomatus</i>	Central hare-wallaby	Extinct	Extinct
<i>Lagorchestes hirsutus</i>	Mala	EN	Extinct in the Wild
<i>Leporillus apicalis</i>	Lesser stick-nest rat	Extinct	Extinct
<i>Macroderma gigas</i>	Ghost bat	VU	-
<i>Macrotis lagotis</i>	Greater bilby	VU	VU
<i>Macrotis leucura</i>	Lesser bilby	Extinct	Extinct
<i>Myrmecobius fasciatus</i>	Numbat	EN	Extinct
<i>Notomys amplus</i>	Short-tailed hopping-mouse	Extinct	Extinct
<i>Notomys cervinus</i>	Fawn hopping-mouse	-	Extinct
<i>Notomys fuscus</i>	Dusky hopping-mouse	VU	EN
<i>Notomys longicaudatus</i>	Long-tailed hopping-mouse	Extinct	Extinct
<i>Notoryctes typhlops</i>	Southern marsupial mole	-	VU
<i>Onychogalea lunata</i>	Crescent nailtail wallaby	Extinct	Extinct
<i>Petrogale lateralis</i>	Black-footed rock-wallaby	VU	-
<i>Phascogale calura</i>	Red-Tailed Phascogale	VU	Extinct
<i>Pseudomys australis</i>	Plains mouse	VU	EN
<i>Pseudomys fieldi</i>	Shark bay mouse	VU	Extinct
<i>Rattus tunneyi</i>	Pale field-rat	-	VU
<i>Sminthopsis longicaudata</i>	Long-tailed dunnart	-	VU
<i>Sminthopsis psammophila</i>	Sandhill dunnart	EN	-
<i>Zyzomys pedunculatus</i>	Central rock-rat	CE	EN

Scientific name	Common name	EPBC Act Status	NT Conservation status
<b>Reptiles</b>			
<i>Liopholis kintorei</i>	Great desert skink	VU	VU
<i>Liopholis slateri</i>	Slater's skink	EN	VU
<i>Ophidiocephalus taeniatus</i>	Bronzeback snake-lizard	VU	EN
<i>Varanus mertensi</i>	Merten's water monitor	-	VU
<i>Varanus panoptes</i>	Floodplain monitor (fmly)	-	VU
	Yellow-spotted monitor)		

CE - Critically endangered

EN - Endangered

VU - Vulnerable

# Sites of conservation significance in the Arid Lands

Site name	Significance	World heritage area	Ramsar	% Protected
Andado and Snake Creek lakes	International			0.7
Anmatyerr North	National			-
Beddome Range and Wilyunpa Tablelands	National			-
Cleland Hills and surrounds	National			-
Dulcie Range and surrounds	National			6.3
Elkedra River floodout swamps	National			-
George Gill Range and surrounds	International			48.0
Greater MacDonnell Ranges	International			11.6
Karinga Creek paleodrainage system	International			1.7
Lake Amadeus and Lake Neale	National			-
Lake Lewis and surrounds	National			-
Lake MacKay	International			99.9
Lake Surprise and the Lander River floodout swamps	National			-
Mount Conner and surrounds	National			-
Mount Liebig and surrounds	National			-
Mud Hut Swamp	National			-
Newhaven Lakes	National			77.0
Petermann Ranges and surrounds	National			-
Rodinga Range and adjacent ranges	National			-
South-west Tanami Desert	International			55.3
Uluru and surrounds	International	Uluru-Kata Tjuta National Park		50.1
Waterhouse Range	International			89.9
Wood Duck Swamp	National			-
Davenport and Murchison Ranges	National			11.9



# Weeds of the Arid Lands

**Category 1 - Priority weeds for eradication - widely considered feasible to eradicate, very high risk with isolated/restricted distributions**

Scientific Name	Common Name	Declared NT	WoNS
<i>Astrocytindropuntia</i> spp.,	Rope cactus	A	Yes
<i>Cylindropuntia</i> spp.			
<i>Opuntia</i> spp.	Prickly pear	A	Yes
<i>Prosopis</i> spp.	Mesquite	A	Yes

**Category 2 - Priority Weeds for strategic control - high impact on land managers, economic/environmental values - typically have statutory weed management plan**

Scientific Name	Common Name	Declared NT	WoNS
<i>Calotropis procera</i>	Rubber bush	B (zoned)	-
<i>Cenchrus ciliaris</i>	Buffel grass	-	-
<i>Parkinsonia aculeata</i>	Parkinsonia	B	Yes
<i>Tamarix aphylla</i>	Athel pine	A/B	Yes

**Category 3 - Weeds of concern - have been identified by stakeholders as posing a threat, but without Territory plans or strategies for control**

Scientific Name	Common Name	Declared NT	WoNS
<i>Acestris vesicaria</i>	Ruby dock	-	-
<i>Aerva javanica</i>	Kapok	-	-
<i>Argemone ochroleuca</i>	Mexican poppy	B	-
<i>Arundo donax</i>	Giant reed	-	-
<i>Carthamus lanatus</i>	Saffron thistle	B	-
<i>Cyperus eragrostis</i>	Umbrella sedge	-	-
<i>Dalbergia sissoo</i>	Himalayan rain tree	-	-
<i>Datura ferox</i>	Thornapple, longspine	A	-
<i>Dicranthium annulatum</i>	Sheda grass	-	-
<i>Introduced Eragrostis</i> spp. <i>including E. cilianensis, E.</i> <i>barrelieri, E. cylindrica, E.</i> <i>minor</i>	African lovegrasses	-	-

Scientific Name	Common Name	Declared NT	WoNS
<i>Leptochloa fusca</i> ssp. <i>Uninervia</i>	Brown beetle grass	-	-
<i>Melia azedarach</i>	White cedar	-	-
<i>Neurada procumbens</i>	Neurada	-	-
<i>Senna occidentalis</i>	Coffee senna	B	-
<i>Vachellia farnesiana</i>	Mimosa bush	(native)	-
<i>Xanthium strumarium</i>	Noogoora burr	B	-

WONS - Weed of National Significance  
  
 Class A - Eradicate  
  
 Class B - Control  
  
 Class C - Prevent entry (Note: All Class A and Class B weeds are also considered to be Class C weeds.)

**Category 4 - Hygiene and biosecurity weeds - low risk, but have local impacts, so it is important for landowners to control these species**

Scientific Name	Common Name	Declared NT	WoNS
<i>Acanthospermum hispidum</i>	Star burr (Goat head burr)	B	-
<i>Alternanthera pungens</i>	Khaki weed	B	-
<i>Cenchrus echinatus</i>	Mossman River grass	B	-
<i>Cenchrus setaceus</i>	Fountain grass	B	-
<i>Emex australis</i>	Spiny emex	B	-
<i>Leucaena leucocephala</i>	Coffee bush	-	-
<i>Macroptilium atropurpureum</i>	Siratro	-	-
<i>Schinus terebinthifolius</i>	Brazilian pepper	A/B (zoned)	-
<i>Tribulus cistoides</i>	Caltrop	B	-

**Category 5 - Alert weeds for eradication on detection - potential to have a high level of impact should they become established**

Scientific Name	Common Name	Declared NT	WoNS
<i>Parthenium hysterophorus</i>	Parthenium weed	A	Yes
<i>Vachellia nilotica</i>	Prickly acacia	A	Yes

# Feral animals of the Arid Lands

Category	Animal
Amphibians	Cane toads
Bird	Barbary dove
	Common Starling
	House sparrow
	Rock Dove
	Spotted turtle-dove
Mammal	Black rat
	Brown rat
	Feral camel
	Feral cat
	Feral cattle
	Feral donkey
	Feral fox
	Feral goat
	Feral horse
	Feral pig
	Feral rabbit
	House mouse
Reptile	Asian House Gecko

Source: [nt.gov.au/environment/animals/feral-animals](http://nt.gov.au/environment/animals/feral-animals)





