GOVERNMENT OF WESTERN AUSTRALIA

PLAN FOR OUR PARKS
SECURING 5 MILLION HECTARES OVER 5 YEARS

Yinggarda Conservation Estate

draft joint management plan

2026

GOVERNMENT OF WESTERN AUSTRALIA

Conservation and Parks Commission

Department of **Biodiversity, Conservation and Attractions**

Yinggarda Aboriginal Corporation

Parks and Wildlife Service
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Warning: This plan may show photographs of and/or refer to Aboriginal people who have passed away.

Front cover photos
Main Wildflower vistas in Mundatharrda National Park. *Photo – DBCA*

Top left Dawson's burrowing bee (*Amegilla dawsoni*). *Photo – Rennee Turner*

Top right Mulga (*Acacia aneura*). *Photo – DBCA*

Artwork by Yinggarda Traditional Owners will be incorporated into the final plan when it is released.

This document is available in alternative formats on request.

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Conservation and Parks Commission
Yinggarda Aboriginal Corporation RNTBC

Above: Illustration of Kennedy Range by Ruby Penny. Courtesy of Yinggarda Aboriginal Corporation.

Vision

The Yinggarda Traditional Owners and the State of Western Australia will walk together to manage Mundatharrda (Kennedy Range) National Park, Bimbee (Pimbee) National Park, Jiggabiddi (Chinamans Pool) Nature Reserve and Beeirdeegoorah (One Tree Point) Nature Reserve.

Together we will protect and promote cultural, spiritual, educational, biodiversity and recreational values for the benefit and enjoyment of all people and future generations. We will encourage the sharing of research and scientific information and share cultural knowledge for the benefit of the health of our Country and all people.

Contents

Above: Wing-seeded lobelia (*Lobelia heterophylla*). Photo – DBCA

Acknowledgements

The Department of Biodiversity, Conservation and Attractions (DBCA) thanks Yinggarda Traditional Owners for their support, enthusiasm and generosity throughout the planning process. The On-Country trips, yarning and sharing of traditional knowledge and guidance provided by the Yinggarda Aboriginal Corporation through the Interim Joint Management Body, Yinggarda Elders and members of the planning team is greatly appreciated and acknowledged.

Thank you to the dedicated team of DBCA staff from the Gascoyne District and Midwest Region, for their hard work and support in helping to develop this joint management plan and implementing joint management initiatives across the Gascoyne. Thank you also to specialist branches and individuals within DBCA who contributed to the development of this draft joint management plan.

Welcome to Bunnah (Introduction)

The conservation estate sits in a vast, flat sandplain country, except for the prominent sedimentary landform of Mundatharrda (Kennedy Range) National Park and seasonal and permanent wetlands. It is the point where flora and fauna species from the north, south and east meet. Kennedy Range is the traditional landmark meeting place for language groups who came together to share cultural activities, trade, gather medicine and hold ceremonies. This semi-desert and desert country, with its unique flora and fauna, is greatly respected by Yinggarda and they feel a deep sense of responsibility to care for Bunnah (Bun-nah, Country), by visiting regularly so that Bunnah doesn't feel neglected or disrespected. Bunnah revitalises the Spirit and gives back to its people when visited and looked after. Joint management of the reserves provides an opportunity to visit, connect and protect Bunnah and cultural heritage. Bunnah comes alive, particularly after rain, producing spectacular wildflower displays, and the mungurragurra (mun-goor-gurra) or Dawson's burrowing bee (*Amegilla dawsoni*) emerges from its mud burrows in late winter to spring after remaining dormant for 12 months. These reserves also protect significant natural values, especially threatened flora and fauna, priority ecological communities (PECs) and vegetation associations that have little or no representation in other parts of Western Australia's conservation estate.

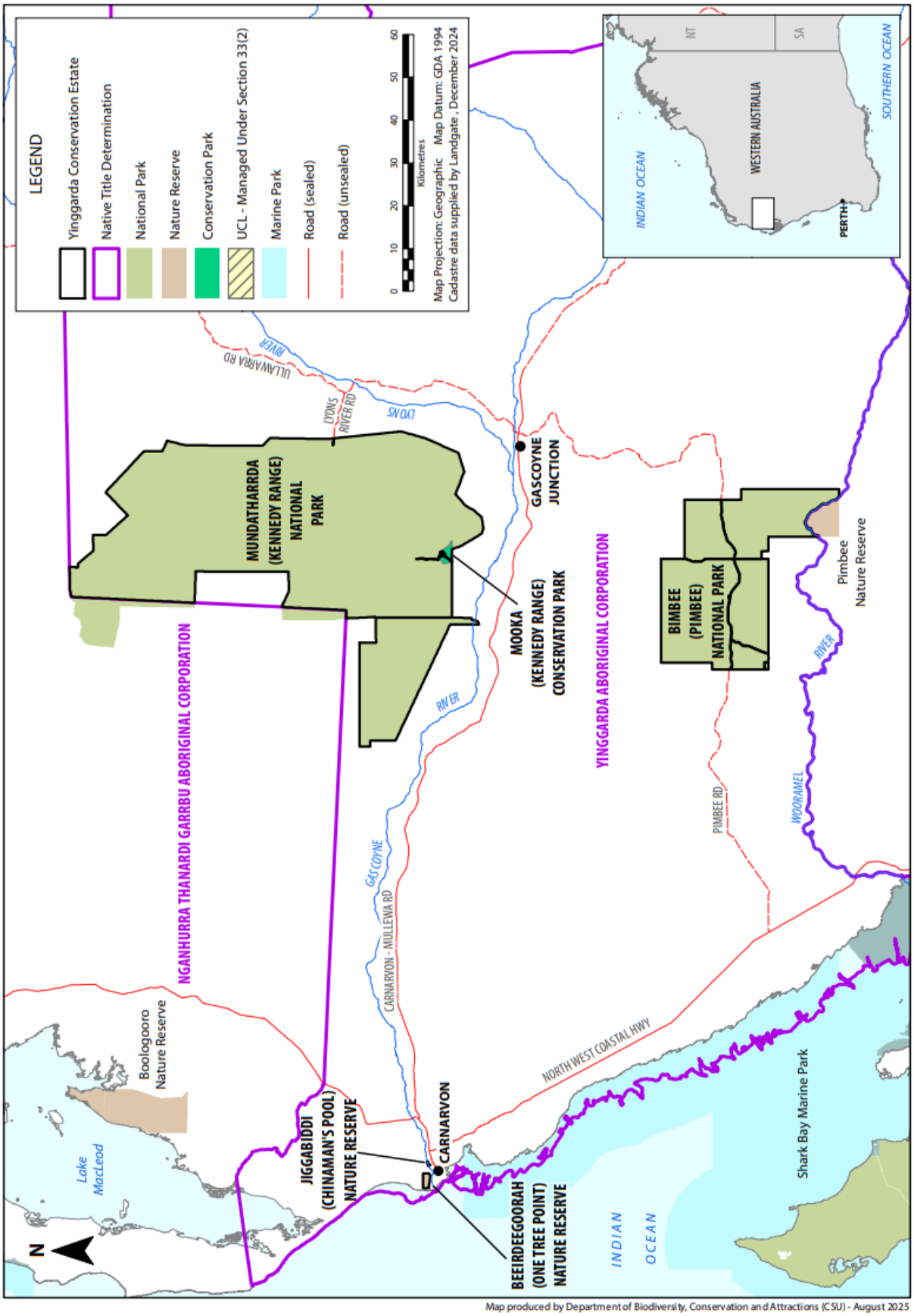
This joint management plan has been prepared by the Yinggarda Aboriginal Corporation (YAC), and the Conservation and Parks Commission of Western Australia (Commission) through the agency of Department of Biodiversity Conservation and Attractions (DBCA). An adjacent area to the north-west of Mundatharrda (Kennedy Range) National Park lies in Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) native title area and is not included in this management plan.

Extensive consultation with the Yinggarda Traditional Owners, and advice and information from Yinggarda Elders, provided important cultural information and a roadmap for reserve management. The planning team included Yinggarda Traditional Owners and staff from DBCA Midwest region in consultation with subject matter experts. Many Yinggarda Traditional Owners have contributed to this plan by generously sharing cultural knowledge, traditional ecological knowledge and giving their time. Decision making for the management arrangements in this plan has been underpinned by traditional knowledge, in conjunction with the latest available information for the reserves. It has been designed to support the values, aspirations and management objectives and priorities articulated in several workshops and on-Country trips.

The Yinggarda parks and reserves have been created as part of the State Government's *Plan for Our Parks* (2019-2024) initiative, which aimed to expand the State's conservation estate by 5 million hectares. In doing so it endeavoured to create opportunities for nature based and cultural tourism, provide enhanced biodiversity conservation and build on Aboriginal joint management throughout Western Australia.

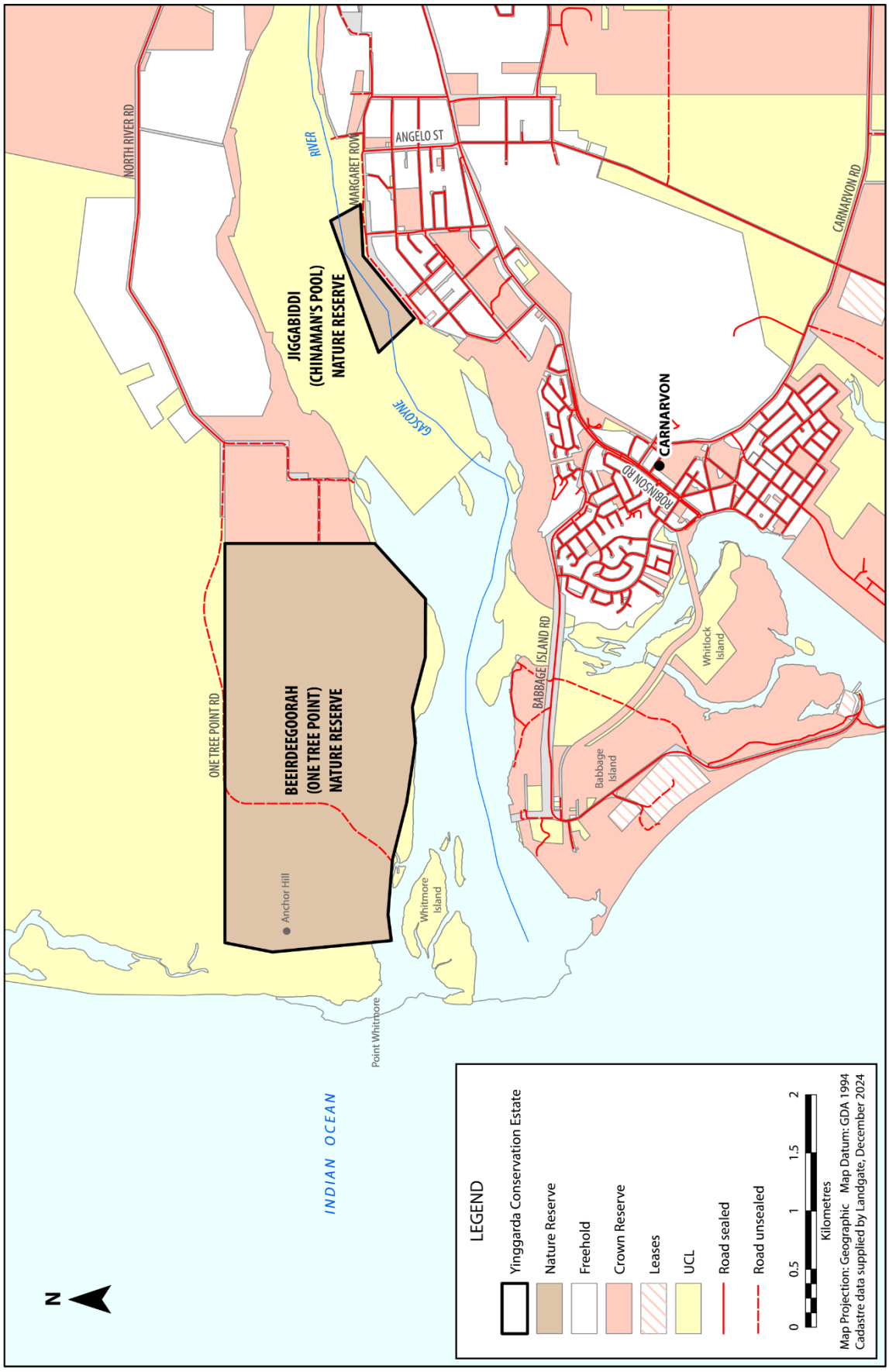
This plan outlines the key values and provides a summary of objectives and strategies that aim to protect and conserve the value of the land to the culture and heritage of Yinggarda Traditional Owners, conserve the natural environment, protect native flora and fauna, and support compatible recreational and commercial activities. Some of the strategies are linked to Key Performance Indicators (KPI).

Map 1: Yinggarda Conservation Estate locality map (with native title boundaries)



Map produced by Department of Biodiversity, Conservation and Attractions (CSU) - August 2025

Map 2: Jiggabiddi Nature Reserve and Beeirdeegoorah Nature Reserve



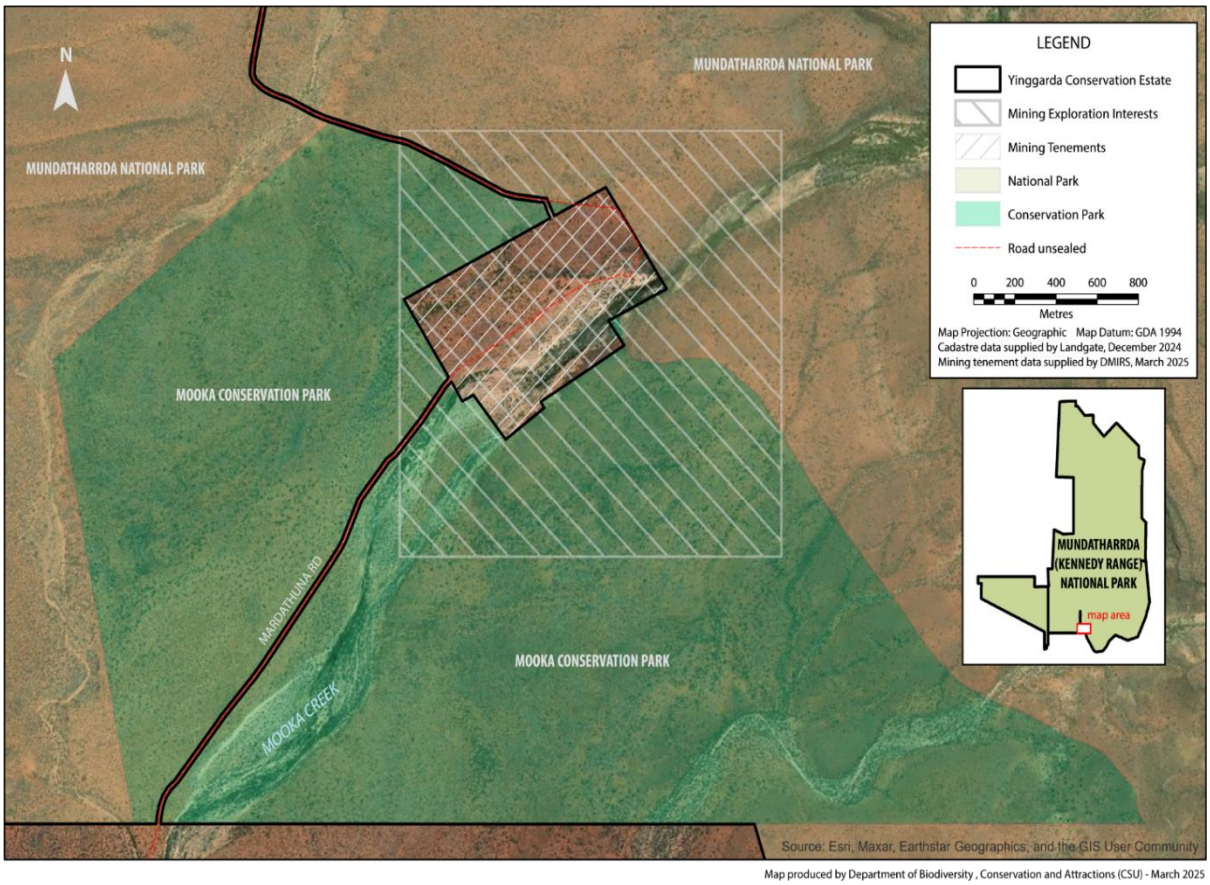
Conservation estate

The conservation estate sits within the Gnulli Native Title claim (registered in 2018) and includes a vast proportion within Yinggarda Country. An additional area to the west of Mundatharrda (munn-dah-tharr-dah) (Kennedy Range) National Park lies within the lands of Baiyungu and Yinnigurrura Traditional Owners (15,424 hectares) and not included in this plan. Both coastal and inland country within the Yinggarda Conservation Estate is included in this joint management plan (Map 1).

This plan outlines the management of five reserves that are jointly vested and will be jointly managed including three existing reserves. They include an expanded Mundatharrda National Park (Kennedy Range National Park, 310 531.4 hectares), Mooka (Mu-ka) Conservation Park (Kennedy Range Conservation Park, 831 hectares), the newly created Bimbee National Park (Pimbee National Park, 93,757 hectares) and two smaller nature reserves located within the Carnarvon town boundary; Jiggabiddi (jig-a-bid-ee) Nature Reserve (Chinamans Pool Nature Reserve, 26.9 hectares) and Beeirdeegoorah (Be-di-gurah) Nature Reserve (One Tree Point Nature Reserve, 483.5 hectares) (Map 2). Mooka Conservation Park surrounds several mining leases extracting mookaite, a semi-precious stone along Mooka Creek (Maps 3 and 4).

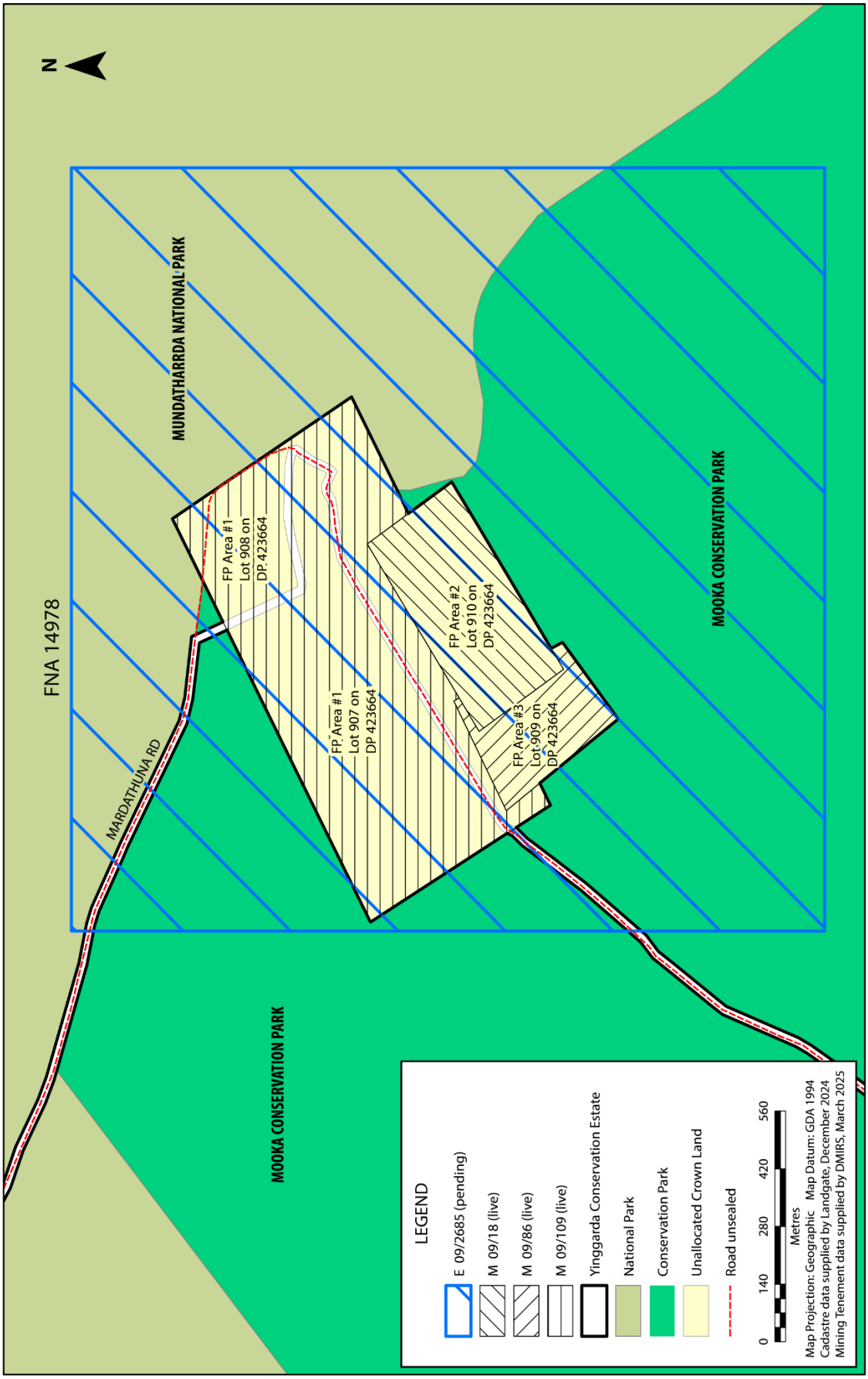
Mundatharrda National Park and Bimbee National Park are both surrounded by pastoral leases. The additional national park areas surrounding the original Mundatharrda National Park are exclusive Native Title (Map 5 and Appendix 1).

Map 3: Mooka Conservation Park and mining interests

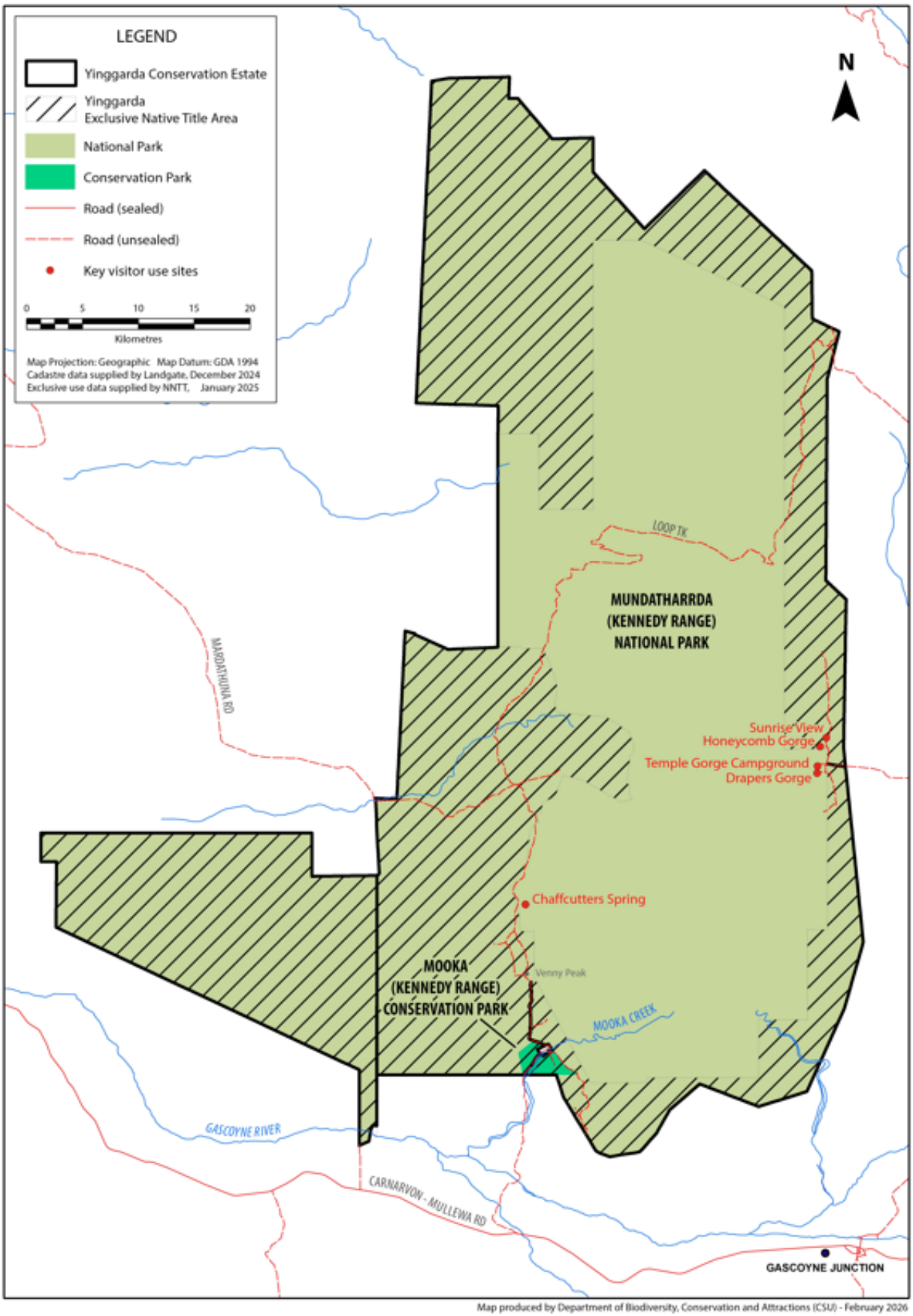


Map produced by Department of Biodiversity, Conservation and Attractions (CSU) - March 2025

Map 4: Mooka Conservation Park – future park areas



Map 5: Mundatharrda National Park exclusive native title areas



Map produced by Department of Biodiversity, Conservation and Attractions (CSU) - February 2026

Above: Examples of seed on Bunnah. Photo – Veronica Newbury/DBCA

Key values

There are several key natural, cultural, heritage, visitor use and economic and resource values within the Yinggarda Conservation Estate and this management plan will focus on those values. They include:

Cultural values

- Spiritually and culturally significant areas within the reserves including springs, creek lines, waterholes, geological formations, caves and other sites already identified and yet to be identified.
- A variety of ceremonial, meeting, camping, hunting, birth and burial places, women's and men's sites, and mythological places.
- Culturally significant flora (e.g. Acacia xiphophylla, Acacia tetragonophylla, Leichhardtia australis) and fauna, particularly totemic species such as the hill kangaroo (Osphranter robustus).
- The area is rich in Dreaming stories passed down through generations that transcend reserve boundaries and connect important places within and outside the reserves.
- Yinggarda Traditional Owners have a responsibility to look after and respect Bunnah.
- Stories of family connections to significant areas within and surrounding the reserve boundaries.
- Speaking to the right people for Country.

Shared heritage values

- Traditional Owners remained on Bunnah, fulfilling their obligations to continue to look after Bunnah.
- Pastoral connections with Afghan cameleers and European settlers that influenced a shared heritage.
- Remnants of pastoral connections such as wells, water troughs, fencing, sheep yards and tracks dating back to early settlement and more recent times.

Natural values

- The reserve sits wholly within the Carnarvon Bioregion.
- 23 vegetation associations occur within the planning area, with four not represented or inadequately represented in the state under the Statewide Vegetation Statistics (formerly Comprehensive, Adequate and Representative or CAR system).
- Two priority ecological communities occur in the planning area, namely
    - Springs of the western Kennedy Range (P4)[1]
    - Plant assemblages (spinifex dominated) of sand dune mesa topping the Mundatharrda National Park (P4).
- Several significant claypans occur within Mundatharrda and Bimbee national parks including Lake Julia. They fill after significant rainfall events, attracting migratory birds.
- Jiggabiddi Nature Reserve and Beeirdeegoorah Nature Reserve provide opportunities for passive recreation such as bird watching and walking.
- A subspecies of white mangrove (*Avicennia marina* var. *marina*) occurs at Beeirdeegoorah Nature Reserve as an isolated community in ephemeral arid embayments. In Western Australia it is mainly found in and around Karratha but also occurs in disjunct populations near Bunbury (Duke 2006).
- Several priority and threatened flora and fauna species, including macroinvertebrates in the creeks and springs.
- Situated at the boundary of northern, southern and eastern distribution of some flora and fauna species.
- Contains unique fauna assemblages only found in the reserves and the region, for example, the Kennedy's lerista (*Lerista kennedyensis*) and Gascoyne broad-blazed slider (*L. gascoynensis*).

Visitors on Country

- Promote cultural values in language and English to encourage visitors to respect and appreciate Bunnah (Country) and to educate them.
- Opportunities for remote experiences including camping, four-wheel driving, wildflower and birdwatching and appreciation of geological features.
- Improved and new visitor facilities at all reserves, with new facilities planned for Bimbee National Park.

Management opportunities

- Support Yinggarda Traditional Owners to visit the reserves to fulfill their cultural obligations.
- Relatively few culturally significant sites and artefacts have been recorded. The location, documentation and management of these sites with Traditional Owners is very important.
- Integrate traditional knowledge and western science in the management of the reserves.
- Undertake surveys of native ecological communities, flora and fauna within the planning area to expand our knowledge and inform management of the reserves. Limited information is currently available to inform management.
- Survey for introduced flora and fauna to determine priorities for future management.
- Review location and need for existing roads and tracks to determine where closure and rehabilitation is required.

[1] Priority ecological communities are those that have been recognised for their conservation significance but may not yet meet the criteria for formal listing as threatened ecological communities (TECs). These communities need further research or protection measures.

Legislation and policy

This joint management plan has been prepared under the provisions of the *Conservation and Land Management Act 1984* (the CALM Act). It will guide management of the conservation reserves for 10 years once this plan is approved by the Minister for Environment and gazetted. It will replace the previous management plan *Kennedy Range National Park and Proposed Additions 2008, Management Plan no 59*. Amendments to this plan may be made during this period under section 61 of the Act, with any proposed changes first released for public comment. If the plan is not reviewed and replaced at the end of the 10-year period, it will remain in force until a new plan replaces it (s55(2) of the CALM Act). Other state and federal government Acts that will determine the implementation of this plan include the *Biodiversity Conservation Act 2016* (BC Act), Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), *Aboriginal Heritage Act 1972* (AHA), *Native Title Act 1993* (NTA) and other relevant legislation and policies mentioned throughout the plan.

The Conservation and Parks Commission is the statutory body responsible for the periodic and final evaluation of the success of this plan as a requirement of section 19(1)(g)(iii) of the CALM Act.

This joint management plan has been prepared with the legislative objective of achieving or promoting the purpose for which the land is reserved[2].

In the case of:

- national parks and conservation parks, to fulfil so much of the demand for recreation by members of the public as is consistent with the proper conservation of the natural environment, the protection of flora and fauna and the preservation of any feature of archaeological, historic or scientific interest
- nature reserves, to conserve the natural environment, and to protect, care for, and promote the study of, flora and fauna, and to preserve any feature of archaeological, historic or scientific interest.

It has also been prepared to:

- protect and conserve the value of the land to the culture and heritage of Aboriginal persons, in particular from any material adverse effect caused by
  - entry on or the use of the land by other persons or
  - the taking or removal of the land's fauna, flora or forest produce but
  - in a manner that does not have an adverse effect on the protection or conservation of the land's fauna and flora.

In any instance where the first two objectives are in conflict or inconsistent with the third objective, the latter prevails.

Several international conservation agreements are also applicable to the conservation estate. Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of national environment significance (threatened species and ecological communities, migratory species) need approval from the responsible Australian Government Minister, in addition to any approval that may be needed in Western Australia.

Australia is signatory to a number of international conservation agreements for migratory bird species, some of which occur in the conservation estate (see *Native Fauna and Habitats*).

Key performance criteria will be used to evaluate the implementation of the plan. Regular review of the plan's implementation will ensure that the management objectives are being achieved through an adaptive management approach.

[2] This is outlined in the CALM Act 1984 S56 (2).

Above: Signing the Yinggarda ILUA at Gascoyne Junction in February 2023. Photo – DBCA

Joint management

The State Government is committed to working with Yinggarda people to ensure the protection of cultural heritage and natural values and for the ongoing use of the land for customary purposes. An Indigenous Land Use Agreement (ILUA) between the State Government and the Yinggarda Native Title holders to enable reservation of the jointly vested and jointly managed Country was registered with the Native Title Tribunal on 8 May 2023 (WI2013/003).

Under section 56A of the CALM Act 1984, a Joint Management Agreement (JMA) between the DBCA and the Yinggarda Aboriginal Corporation will be attached to this plan, enacting a formal arrangement between the Traditional Owners of Country and the department. It outlines the roles and responsibilities of each joint management partner to manage the conservation reserves for cultural and conservation purposes.

The Joint Management Body (JMB) will guide management of the reserves, make decisions based on this plan, provide input into how the management strategies are implemented and monitor the implementation of this plan.

Strategic objectives

This plan follows a number of strategic objectives that provide an overarching broad direction linking the vision statement and key values with the management objectives and strategies. They are to:

- work together to identify, protect, conserve, respect and promote cultural heritage values within the conservation estate for all people and future generations
- work together to identify, conserve and improve the natural landscapes, native flora, ecological communities, native fauna assemblages and water within the conservation estate
- support on-Country activities of Traditional Owners including sustainable customary activities

- determine appropriate visitor access and promote compatible, safe and sustainable recreation and tourism on Bunnah
- in collaboration with research partners, share scientific and cultural knowledge of Bunnah to enhance and improve management.

Performance assessment

This plan will use an adaptive management approach depends on good monitoring of key aspects of management of the reserves. Key Performance Indicators are used to evaluate the effectiveness of management strategies and provide an indication of the success of these strategies to inform any change in management direction.

There is little information available on the reserves, making it important to gather baseline information and data to guide and evaluate future success of the strategies to meet the objectives of this plan. The following areas requiring baseline information include:

- identification and protection of significant cultural places
- distribution of flora, fauna and ecological communities, particularly priority ecological communities (PECs)
- assessment of shared heritage sites for restoration and ongoing management
- locating, restoring and maintaining natural water sources such as springs and soaks
- managing access to culturally sensitive sites and places
- managing visitor access and impact on cultural and natural areas.

Significance of the conservation estate

The planning area lies in the Wooramel sub-bioregion of the Carnarvon Bioregion. The ex-Pimbee pastoral lease and the part leases surrounding the original Kennedy Range National Park were purchased under the Gascoyne Murchison Strategy. The Mooka pastoral lease and parts of eight other leases adjoining the original Kennedy Range National Park were purchased to expand the Comprehensive Adequate and Representative (CAR) system of protected areas (now the Statewide Vegetation Statistics), to bring vegetation communities that were either poorly represented or not represented within the conservation reserve system into the conservation estate. The Pimbee pastoral lease was purchased for the same reason, with a particular focus on bringing ecological communities of the Yalbalgo land systems into the conservation estate.

These reserves are culturally significant in traditional Aboriginal lore, with songs and storylines passing through all the reserves. They include Dreaming stories of serpents that follow the Gascoyne River and frog Dreaming stories that connect Mundatharrda and Bimbee national parks to the Wooramel River. Numerous artefacts are scattered through these areas. Traditional owners were removed from their Bunnah resulting in loss of knowledge of cultural sites. Some cultural sites are registered but many are being rediscovered as Yinggarda walk Bunnah again.

The region contains fauna species not found elsewhere or of limited distribution, such as Kennedy's lerista (*Lerista kennedyensis*) and Gascoyne broad-blazed slider (*Lerista gascoynensis*). Threatened and vulnerable fauna are also found in the region. The additional areas in Mundatharrda National Park and the newly created Bimbee National Park bring five plant communities not represented elsewhere and two plant communities with inadequate representation (<5%) into the reserve system.

Mundatharrda National Park

Significant fossil sites in Mundatharrda National Park include fossilised burrows abundant in the sandstone. These worm-like structures were created by burrowing marine organisms. Fossilised *Banksia* cones found in the Merlinleigh Sandstone are about 50 million years old and represent the earliest known confirmed occurrence of the genus in Australia (Kenneth, McNamara and Scott 1983).

Semi-precious stones, Mookaite and peanut wood (petrified wood), are found on the western side of Kennedy Range. Mookaite is mined in a section of Mooka Creek downstream of Mooka Spring.

Mooka Creek is a significant cultural area for several Yinggarda families and a semi-permanent pool of water in what is otherwise a very dry region. It is fed upstream by the only spring that feeds the Gascoyne River when it is running. Several other springs further north of Mooka Creek are also culturally significant, though these springs are smaller than Mooka Spring.

Above**:** *Banksia archaeocarpa* fossil found in Merlinleigh Sandstone in the eastern Kennedy Range. Image courtesy of Boola Bardip (WA Museum).

These springs provide a permanent though small water source for fauna and are surrounded by patches of river gum (*Eucalyptus camaldulensis* subsp. *refulgens*) and silver cajeput (*Melaleuca argentea*) which is at the southern limit of its range (Florabase 2024). Mooka Spring and Creek represents the southern limit of distribution of a few species, which include cadjeputs as an overstorey species, in combination with an intact understorey (often not seen because of grazing pressures). As the spring is wetter and more sheltered than other sites it represents a priority ecological community. It is also a regionally significant wetland type and has been recognised as an ecosystem at risk. Regionally significant wetlands (Springs of the Western Kennedy Range) (P4 community) occur at Mooka Creek and Chaffcutters Springs and both have been recognised as a regionally significant aquatic system and an unusual ecological community. All the springs have a range of tropical emergent aquatic and damp land plants including droseras, sedges and bullrushes. Away from the water the slopes and valleys are dominated by acacia shrublands of mulga (*Acacia aneura*) and currara (*A. tetragonophylla*).

The vegetation of the Kennedy Range consists of four main types:

- vegetation of the dunefields on top of the range
- open shrubland in the gorges
- fringing forest around the springs
- open shrubland on the alluvial plains surrounding the range.

On top of the range, a dunefield with long red dunes about 15-20m high is separated by broad swales. The swales are mostly dominated by spinifex with shrubs and mallees scattered amongst the spinifex, especially where the rock sub-soil is exposed. The dune ridges are quite different floristically and the spinifex is replaced by shrubs, occasional grasses and bare sand. Here, many species represent groups more common in the wetter south-west of the State and will require protection from four-wheel drives. The eastern

escarpment has dramatic sandstone cliffs dissected by steep canyons, which turn into waterfalls after rain. The western slopes, with tall wattle shrublands and stony foot slopes, are lower and not as steep.

Date palms (*Phoenix dactylifera*) planted around springs in the southwest of Mundatharrda National Park had become well established. Although date palms had not spread over extensive areas, they had restricted spring flow due to their vast consumption of water, threatening the ecological values of the aquatic systems. As part of the weed control program for the planning area, all date palms (excluding one palm) have now been felled and poisoned. One male palm was retained at Yenny Spring to reflect the pastoral history of the planning area. Monitoring for germinants and their control will continue to be undertaken as required.

Merlinleigh is an abandoned homestead on the eastern footslopes of the Range. A concrete verandah, a small shed, water tank and fencing are all that remains of the homestead, but these relics provide a poignant reminder of the pastoral history of the area. In the longer term, this site may be developed for camping, as it offers an ideal base for exploring the top of the eastern escarpment, and the varied landscapes around the homestead area.

The drought of the 1930s resulted in many pastoral leases becoming unviable, with some being amalgamated. Wool prices fell dramatically in the early 1970s, and due to increased predation from wild dogs, some pastoralists changed their grazing enterprise to cattle. During this period, in 1974, a ‘Kennedy Range National Park’ was proposed to be created from portions of unviable pastoral leases. The first acquisition was the unviable Binthalya lease, surrendered in 1977. Parts of the lease were allocated to the adjoining Mardathuna and Mooka lease areas. The remaining section was retained as unallocated crown land (UCL) for the creation of the national park in 1993.

Bimbee National Park

The Pimbee pastoral lease was purchased in 2000 under the Gascoyne Murchison Strategy, primarily to protect the Yalbalgo land system of which less than 1% was represented in the conservation estate at that time. The Yalbalgo land system only occurs in the Carnarvon Bioregion and is characterised by gently undulating sandplain with parallel linear sand dunes and interdunal swales, supporting tall acacia shrublands and sparse wanderrie grasses.

Bimbee National Park is surrounded by pastoral leases, including Towrana Station to the east which is held in exclusive native title possession by Mungallah Aboriginal Corporation.

Beeirdeegoorah Nature Reserve and Jiggabiddi Nature Reserve

Beeirdeegoorah Nature Reserve was originally gazetted in 1972 and Jiggabiddi Nature Reserve in 1966. Both reserves were jointly vested in 2023 with the Yinggarda Aboriginal Corporation and the Conservation and Parks Commission as part of the ILUA negotiations with the Yinggarda Aboriginal Corporation.

Both A class nature reserves have very significant habitat, particularly for birds. They are culturally very important due to the snake Dreaming story associated with the Gascoyne River, as well as men’s and women’s sites.

Both reserves are in the town of Carnarvon and are well visited by both locals and tourists.

Management objective: To protect and conserve the Yinggarda parks and reserves under effective joint management arrangements.

Management strategies

1. Jointly manage the national parks and other reserves with the Traditional Owners in accordance with the JMA attached to the final joint management plan.
2. Follow Yinggarda cultural protocols in joint management, with Traditional Owners providing cultural advice and guidance.
3. Ensure that annual work and operational plans are consistent with this management plan.

Key performance indicators

Performance Measure	Target	Reporting
Ability of the JMB to operate effectively and to make joint decisions to manage the estate in accordance with the vision and objectives of this joint management plan.	JMB meetings are conducted in accordance with the objectives and strategies of the Joint Management Plan and the Joint Management Agreement so that effective joint management is achieved. Measurement of achievement includes the number of JMB meetings, Yinggarda participants involved, and resolutions made by the JMB and against the actions implemented and progressed as part of the JMB approved annual works program will inform reporting.	Annual

Above: Jiggabiddi Pool on the Gascoyne River. Photo – Veronica Newbury/DBCA

Connection to Bunnah (cultural values)

Yinggarda lore and culture

Yinggarda are the Traditional Owners of some 36,457 square kilometres Bunnah (Country), stretching from the Carnarvon coast east to Mt Phillip (West Lyons River) adjoining the Wajarri Yamatji (Part A WCD2017/007) Native Title Area to the east and south to the Wooramel River. Native Title was granted in 2019 through the Gnulli Native Title determination (WCD2019/016) recognizing Yinggarda, Baiyungu and Yinnigurrura/Thalanyji people as native title holders.

Individual family groups have cultural authority to speak for different areas on and near the conservation estate and the cultural information and stories in this plan are provided by them. Many Yinggarda people live on Bunnah; families and individuals still retain close personal connections with Bunnah. Both Traditional Owner groups have a rich and long cultural heritage and are passionate and enthusiastic about looking after and managing Bunnah for current and future generations.

Aboriginal connection to Bunnah was affected by early Europeans settling the area and taking up pastoral leases. With settlement came disease, violence and physical separation of families and individuals from Bunnah. This has had a marked effect on the transfer of knowledge to future generations. However, those that remained on Bunnah working for pastoralists as stockmen, domestic help and other jobs maintained their connection to Bunnah, passing on their knowledge and maintaining their responsibilities to look after Bunnah. Yinggarda Traditional Owners are keen to continue to connect with Bunnah and encourage the younger generations to re-connect with Bunnah and provide opportunities to pass on knowledge to the next generation. Traditional lore is based on respect for Bunnah, as healthy Bunnah sustains and provides for its people. They carry the responsibilities of their ancestors to manage Bunnah as they did, so that it always remains alive, healthy and rich. This close connection means that when land is disrespected, damaged or destroyed, there can be serious consequences for Traditional Owners and their families.

We all come as one, Elders, to tell our stories to our next generation (Thomas Dodd, Yinggarda Elder)

A priority in looking after Bunnah is to protect sacred and significant sites to uphold cultural integrity. Many significant sites associated with lore are interconnected through song lines and stories that refer to mythological beings and places further away from the conservation estate. Traditional Owners have a responsibility to make sure that these sites are not damaged by visitors and that all Traditional Owners have knowledge about important places. Some culturally important places have not yet been formally documented and the location of some may have been forgotten. As Traditional Owners walk Bunnah again, these places are being rediscovered. Visiting important places regularly to check that they have not been disturbed and are still healthy is part of their cultural responsibility.

Traditional Owners also have a responsibility to keep visitors culturally safe on Bunnah, as spirits can cause trouble for strangers who visit or camp in the wrong place or visit areas without being properly introduced or welcomed to Bunnah. This includes both Yinggarda

Traditional Owners and other visitors who are not properly introduced or welcomed to Bunnah. Calling out to Bunnah and throwing sand near water is important to ensure safety of visitors and to reassure the 'old people' that no harm will be done. Reconnecting with Bunnah is an important step in passing on cultural knowledge, healing the past, protecting and enhancing important sites and embracing the future.

Mundatharrda National Park

Kennedy Range
You know that big hill up the river? The Kennedy Ranges? There was a lot of old people up there. Up on the top. They lived in big caves. They were wild people. They didn't talk to no body. When he see you, he run away. All the time he carry a spear. I was up there one time with my dad. We stopped to camp and there was one wild fella there. He stared at us, then ran off. He never bothered nobody. *SC. Excerpt from Clark 1992.*

Kennedy Range is an extremely important spiritual place with many Dreaming stories associated with the area, as well as both registered and unregistered sites within the range. It was a meeting place for language groups of the region including Wajarri, Baiyungu, and Yinggarda (YMAC 2015) and an important place for trading. This area continues to be an important part of Yinggarda culture and connection to Bunnah, with visits by families to teach and transfer knowledge through Dreaming stories and cultural ways. Some important cultural sites have been formally recorded in the planning area and there will be ongoing work to identify and record additional sites. All cultural sites are protected under the *Aboriginal Heritage Act 1972* regardless of whether they are registered or not.

Unmanaged visitation is the biggest threat to sites. Visitors may unintentionally damage or visit places where it is inappropriate to go. It is important in traditional lore that Elders who have passed away are not disturbed and their resting places are respected. Cultural sites will be identified and jointly managed with Traditional Owners, to protect and conserve them. Access to sites within the reserves by Traditional Owners for cultural reasons will be a management priority.

Some sites are for men only while others are for women only, where each gathered to pass on information and stories to younger people. Yinggarda Traditional Owners want to ensure that sacred and significant sites are not damaged by visitors with the request

Look with your eyes and not your hands

(Tracy Tonga, Chair Yinggarda Aboriginal Corporation)

Artefact scatters are found throughout the reserves, providing evidence of the long history that Yinggarda people have with the area. Visitors to the popular sites on the eastern scarp, including Temple Gorge, Honeycomb Gorge and Drapers Gorge, among others, are requested not to touch the gorge walls and to leave any artefacts where they find them. Taking artefacts for souvenirs, defacing gorge walls with graffiti or driving on dry clay pans is disrespectful and illegal. There are multiple archaeological and ethnographic sites, both within Mundatharrda National Park and nearby. However, many of the artefacts no longer exist on the ground as visitors have probably taken them as souvenirs over the years. Mundatharrda is itself a classified mythological site registered (Site Id 6701) under the *Aboriginal Heritage Act 1972* and the Department of Planning Lands and Heritage (DPLH).

The physical environment, plants and animals have been inseparable from traditional lore, culture, language and knowledge since creation time and this concept is integral to maintain and protect Bunnah. All Bunnah is interconnected. This management plan will only address those areas within the conservation estate jointly managed by Yinggarda Aboriginal Corporation and DBCA. Where appropriate, references will be made to areas outside the joint management estate for cultural context.

Bimbee National Park

Bimbee cultural lore is strong and is held by family members who speak for Bunnah. There are many scattered artefacts and springs within Bimbee National Park. Many Dreaming stories are connected with the Kennedy Range and the Wooramel River at the southern boundary of Bimbee National Park. Further work is required to identify, protect and manage significant cultural areas, to inform future decisions in the management of this reserve.

The water serpent is very important to Yinggarda Traditional Owners and the water serpent still inhabits water places today. The flora and fauna that live in or around water places are also highly valued as they were placed there by the water serpent. It is of utmost importance to Traditional Owners that water and water holes are respected, well cared for and clean. Yinggarda Traditional Owners have identified a number of significant springs usually in the vicinity of capped bores. The identification and restoration of these is considered a priority by family members who speak for this Bunnah as it is important for the restoration of the health of Bunnah.

While on Bunnah during the planning phase, several untouched artefact scatters and directional sites were identified. It is extremely important that these sites remain undisturbed.

Callytharra Pool at the southern end of the Bimbee National Park on the Wooramel River is a very significant area in Yinggarda lore. Restricted access to this area for management and cultural reasons has been identified by Yinggarda family members who speak for this part of Bunnah.

Jiggabiddi (Chinamans Pool Nature Reserve)

Jiggabiddi is a very significant cultural area. It is the meeting place of the saltwater snake and the freshwater snake. The tussle of the two influencing the water levels, saltiness of the water and extent of the pool. Yinggarda Traditional Owners believe that the location of bulrush along the riverbank indicates the location of the freshwater snake. There are a number of cultural sites on the banks and near Jiggabiddi that are healing places.

There are culturally significant sites within and adjacent to the planning area[3], some of which have gender restrictions. Jiggabiddi Nature Reserve includes part of the island to the north of the main pool and is considered a sacred area for men's business and a healing place.

There are also places that have not been recorded due to their cultural sensitivity but are still protected under the Aboriginal Heritage Act 1972 and as such due diligence should be exercised during project planning and any on-ground works. DBCA and the JMB will work together in project planning to prioritise cultural safety.

School at Chinamans Pool

School was held in a tent, and church was held at Chinamans Pool because all the Yamatjis used to live around there.

SK excerpt from Clark, 1992.

Beeirdeegoorah Nature Reserve (One Tree Point Nature Reserve)

Beeirdeegoorah Nature Reserve sits at the mouth of the Gascoyne River, providing habitat for mangroves and associated species. Several cultural sites occur within and near the reserve, including a women's site. Jiggabiddi and Beeirdeegoorah are connected through the saltwater snake Dreaming associated with the Gascoyne River.

[3] Information on registered Aboriginal Sites and Other Heritage Places (lodged but not yet assessed) is available via the Aboriginal Cultural Heritage Inquiry System at: wa.gov.au/government/document-collections/find-aboriginal-cultural-heritage-wa

Traditional knowledge of flora and fauna

Traditional knowledge of flora, fauna and their uses are held by Elders and emerging Elders. It is shared among family groups and in some cases the wider community. Knowledge of medicinal plants, their processing and use is still valued and practiced. Yinggarda are concerned that Bunnah has changed and flora that was once plentiful is harder to access e.g. wanyu (*Acacia wanyu*) and wanya trees are harder to come by.

The fruit of *Leichhardtia australis* vine is important as this fruit is rich in nutrients.

The young pods of birdflower (*Crotalaria cunninghamii*) taste like broad beans and are full of protein, but parts of the plant are toxic. Aboriginal groups carefully used small portions of the seeds and leaves as a food source in times of scarcity. The fibres from the stems were used to make rope, sandals and shoes and possibly fishing nets.

Bush medicine

When old people's got sick, they had a medicine. It's called bimba. It's gum from a tree. You get it, crush it all up and mix it with water. There's another old medicine I know about. It grows around the springs. There's a lot of different ones. Green ones. You boil it in water and you have a bath in it too.

AR Excerpt from Clark 1992

There are some animals of cultural significance particularly if they are totems. For example, the euro (*Osphranter robustus*) wouldn't be eaten, and the ringneck parrot (*Barnardius zonarius*) is revered. Yinggarda children are given a totem when they are born, and individuals are responsible for the health and wellbeing of their totem.

Above: Bush banana (*Leichhardtia australis*) fruit. Photo – Veronica Newbury/DBCA

Shared heritage

The planning area has been influenced by exploration and pastoralism by people from other nations and has shaped the future of both Aboriginal and non-Aboriginal communities of the region. Yinggarda people continued to maintain their connection to Bunnah while working for pastoralists and the influence these people and activities had on Bunnah is acknowledged by the Traditional Owners. They would like this reflected in the management of the reserves and interpretation for visitors.

Above: Remnants of an old camel trough at Yenny Spring. Photo – Veronica Newbury/DBCA

Francis Thomas Gregory explored the Gascoyne and Murchison regions and recorded his observations and recommendations of the areas he visited. Despite Gregory's unfavourable comments, pastoral leases were taken up within 20 years along the Gascoyne and Lyons rivers. By 1923/24, the Carnarvon Basin carried about 1.065 million sheep (DEC 2008).

The Afghan cameleers were a significant influence on the region, first arriving in the late 19th century carrying wool bales from the stations to Carnarvon for transport and sale. Chaffcutters Spring on the western side of Kennedy Range was used to rest, water and feed the camels (Thomas Dodd, Yinggarda Elder, pers comm).

Above: Camels and their cameleers hauling timber and wool near Carnarvon. Photo – West Australian Museum, and State Library of Western Australia/Mitchell EL (date unknown)

From the 1930s drought onwards, factors such as overstocking, lack of effective vermin control and unpredictable seasons reduced the viability of some leases. Some leases were amalgamated, which reduced grazing pressure (particularly on the Range plateau), as stock was concentrated on the lease areas of the surrounding plains. With the dramatic fall in wool prices in 1970/71, and predation on sheep by wild dogs, some pastoralists changed to production of beef cattle. 'Kennedy Range National Park' was first proposed to be formed in 1974 from portions of unviable pastoral leases. The first acquisition was the Binthalya lease surrendered in 1977. Parts of this lease were allocated to the adjoining Mardathuna and Mooka lease areas. The remaining section was retained as UCL for the creation of the proposed Kennedy Range national park. In 1979, part of Moorgaree lease covering the northern part of the Kennedy Range plateau was also surrendered to form part of the proposed park. The high natural value of this area was intact, due to the virtually waterless plateau being only lightly grazed.

Old pastoral infrastructure within the reserves tells the story of a bygone era and includes the site of the disused Binthalya Homestead, the remains of the old Merlinleigh Homestead, old windmills and associated structures, fencing, machinery, wells and bores, tanks, access roads and tracks and equipment. The historic infrastructure will be assessed to establish

whether any is of heritage significance and worthy of protection. Infrastructure with no heritage significance should be considered for removal.

Jiggabiddi (Chinamans Pool) Nature Reserve

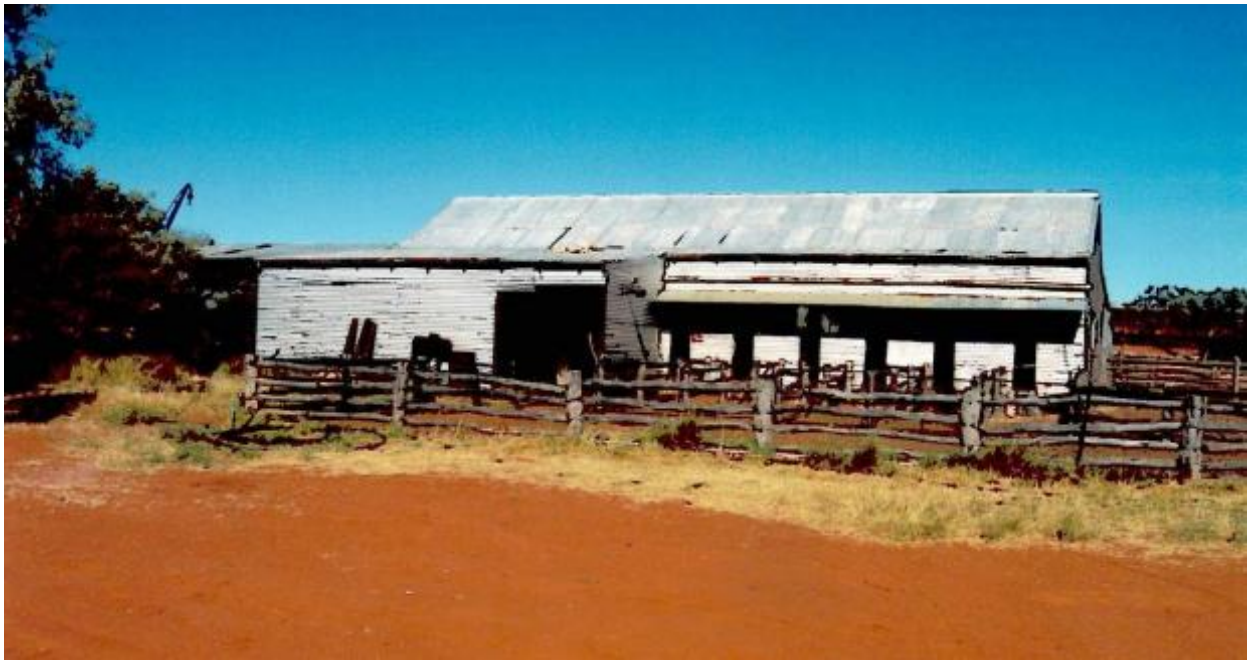
In the ‘early days’ cameleers used Jiggabiddi to water their teams. A local resident concerned about shooting of birds first identified Jiggabiddi as a potential reserve in 1969. The area was then assessed for its suitability as a fauna reserve and at the time was vested as a water catchment area (R24272) with the Public Works Department. After much discussion with the community the nature reserve was excised with a new reserve number (R31444). Jiggabiddi was reserved on 21 July 1972.

During the ILUA negotiations Yinggarda requested that both Jiggabiddi and Beeirdeegoorah nature reserves also be jointly vested and jointly managed. Jiggabiddi was jointly vested with the Yinggarda Aboriginal Corporation and the Conservation and Parks Commission on 20 July 2023.

Beeirdeegoorah (One Tree Point) Nature Reserve

Beeirdeegoorah Nature Reserve, located at the mouth of the Gascoyne River, was acquired by the Crown in 1964 in exchange for other land to combat erosion caused by the flooding of the Gascoyne River (CALM,1976). It was gazetted as an A Class reserve in 1966 for the purpose of conserving only flora. The area had a long history of grazing by sheep, cattle and horses from a nearby abattoir and horse breeders, all of which significantly impacted the vegetation. After a series of investigations by officers of the then Department of Fisheries and Wildlife (initiated by numerous requests for agistment), a portion of the original reserve on the north-eastern corner (39.9ha) was excised and the remaining Beeirdeegoorah Nature Reserve was vested with the WA Wildlife Authority in 1982 with the purpose changed to ‘Conservation of flora and fauna’.

Above: Beeirdeegoorah Nature Reserve at the mouth of the Gascoyne River.
Photo – Veronica Newbury/DBCA



Above: The old shearing shed at Bimbee National Park, now dismantled. Photo – DBCA

Bimbee National Park

Pimbee pastoral lease (Crown lease 2474-96) was issued on 24 November 1922 (140,000 acres) to Leila Maria Lefroy for the term of 30 years and 9 months. The lease was subsequently transferred to Donald Guy McLeod in 1934 and held in the family with various people as joint tenants in common until 1989. The original lease area was added to from the adjacent Towrana Station. Yinggarda people worked on this station and were able to maintain their connection to culturally significant areas such as Callytharra Pool.

Above: Bimbee National Park landscape with sheep yards. Photo – R Morse/DBCA

The Pimbee pastoral lease was purchased under the Gascoyne Murchison Strategy and transferred to the Department of Conservation and Land Management in December 1998. These additions were essential to protect the Gascoyne and Murchison region's unique ecosystems and vegetation communities. Pastoral infrastructure remaining in the national park includes tanks, water troughs, tracks, sheep yards and fencing. It is the wish of Yinggarda Traditional Owners that an assessment be done and that some of this infrastructure be retained to tell the story of the shared history.

Above: Old concrete water tank on Bimbee National Park. Photo – Veronica Newbury/DBCA

Management objectives: To protect and conserve cultural and heritage values and sites within the reserves for future generations and to support customary activities.

Management strategies

1. Support Yinggarda Traditional Owners to identify, record, protect and maintain and/or restore important cultural sites and values within the reserves by implementing a cultural knowledge exchange program (CKEP) for Yinggarda rangers to engage with their Elders to increase opportunities for generational knowledge transfer.
2. Work together to incorporate traditional knowledge and heritage into management activities showing cultural respect in all activities.
3. Work jointly to determine the most appropriate management of cultural and heritage sites, identifying threats and appropriate ongoing management.
4. Support Yinggarda Traditional Owners to identify employment, business and training opportunities for Yinggarda people within the Yinggarda parks and reserves.
5. Support on-Country trips by Yinggarda Traditional Owners to maintain connection and responsibilities to keep Bunnah healthy and conduct customary activities.
6. Work with YAC to engage Yinggarda Traditional Owner businesses to provide cultural awareness training for DBCA staff and other personnel working in the planning area.
7. Ensure that DBCA staff have opportunities to work together on Bunnah with Yinggarda Traditional Owners and gain the cultural authority to undertake land management activities across the planning area.
8. Encourage cross-cultural working together with Traditional Owner Ranger groups within the region where the visiting ranger groups are formally welcomed by the Traditional Owner group on the Bunnah they will be working on.

Key performance indicators: Yinggarda culture and shared heritage

Performance measure	Target	Reporting
Identification and protection of cultural and heritage places.	Stable or increasing number of cultural and heritage places being protected. Determine baseline data in year 1 and continue to record details as more sites are found.	Annually
Condition of significant cultural and heritage places.	As part of the CKEP, Yinggarda rangers monitor and record condition of all visited cultural and heritage sites and report any impacts and changes to the JMB and CPC.	Biennial
Level of Traditional Owner satisfaction that traditional knowledge is being considered and incorporated into management.	Traditional Owners (through the JMB) are satisfied that traditional knowledge is being considered and incorporated as appropriate, that cultural priorities are recorded ahead of and included in the annual works program for management of the planning area.	Annually
Support Traditional Owners to visit Bunnah within the planning area, including for on-Country planning meetings and visiting special sites.	Provide opportunities for Traditional Owners to access traditional lands. Record number of DBCA supported visits.	Annually
Level of Traditional Owner satisfaction that they have been able to continue customary practices and remain custodians of Bunnah and culture.	Traditional Owners (through the JMB) are satisfied that they can access the planning area for the purposes of carrying out customary practices,	Annually

Caring for Bunnah (natural values)

The conservation reserves lie within the southern Carnarvon Basin. Mundatharrda National Park and Bimbee National Park sit within the Merlinleigh sub-basin and Beeirdeegoorah and Jiggabiddi nature reserves within the Gascoyne sub-basin. All reserves lie within the Carnarvon IBRA region.

Geology, geomorphology and land systems

Mundatharrda National Park

The Kennedy Range and the surrounding area has an interesting geological history spanning 250-300 million years when Australia was part of the Gondwanan continent. It is a vast elevated north-south oriented sandstone plateau between 12km and 25km wide and 100km long (Mory and Hocking 2017). It is a reflection of the forces involved in shaping the area including the sea inundating and retreating several times over millions of years, the influence of a major ice age leaving glacial deposits (Lyons Group) and the continental plates colliding. The glacial deposits can still be seen today as boulders and cobbles east of the range (Mory and Hocking 2017). Above the glacial deposits is a fossil rich limestone (Callytharra Formation) on the low ridges.

A warming climate saw the Pilbara icesheet melt and retreat to the south, creating rivers and deltas flushing these areas with sand, mud and pebbles. About 290 million years ago, the sea flooded the Kennedy Range area, and sediment deposition switched from river-dominated to marine. The sea opened into a broad marine shelf that deepened to the north west. At the same time the area steadily subsided (Mory and Hocking 2017).

As the Gondwanan continent broke up and moved further north some 160 million years ago, the initial uplift was gentle. When India finally separated from Gondwana 130 million years ago, movements of the earth’s crust intensified as an opening was formed for the sea to again infiltrate from the west as far as the western Kennedy Range (Lane 2004). The sea again inundated the area some 40 million years ago, forming the sandstone that contains the first known banksia fossils in Australia (Lane 2004). As the Antarctic icecap formed, the sea again retreated. Subsequent mild uplift resulted in the eastern side of the range being eroded to form 100m high cliffs and steep sided gorges.

The central and deepest part of the Merlinleigh sub-basin forms the Kennedy Range. The Kennedy Range now sits in the centre of a syncline and a series of faults extends northwards along the western side of the range (Mory and Hocking 2017).

Five land systems dominate the Mundatharrda National Park, with 19 in total. The Kennedy land system forms the elevated sandy plains on top of the plateau. The Moogooloo land system completely surrounds the Kennedy system and includes the eastern escarpment and the heavily dissected portions of the range, steep foot slopes and dendritic drainage.

The western slopes of the range are lower, less steep and more extensively dissected than the eastern slopes. The Cahill and Billy land systems adjoin the Moogooloo system on the western side and are now well represented within the south-western portion of the

Above: Unprocessed mookaite at Mooka Creek. Photo – Veronica Newbury/DBCA

Mundatharrda National Park. The Cahill land system consists of sandy alluvial plains and channelled flow zones with tall acacia shrublands. The Billy land system comprises low plateaus, mesas and buttes with stony foot slopes and narrow drainage floors, supporting scattered tall shrublands, mulga and other acacias.

The Yalbalgo land system, represented in the national park as a result of the purchase of the Mooka and Pimbee pastoral leases, was not previously included in the reserve system. It is characterised by aeolian sandplains dominated by linear dunes and broad swales. The swales support tall acacia shrublands with an understorey of shrubs or hard spinifex. The dunefield is of similar age to those in the Kennedy Range land system. Vegetation patterns along the dune systems and the sea level stabilised about 8000 years ago.

Mookaite and peanut wood

Semi-precious mookaite mined at Mooka Creek is a popular lapidary stone said to have healing powers. It is primarily red and yellow and was formed when groundwater rich in silica and iron oxide percolated into porous silica-rich siltstone to produce a hard, impermeable opaline or porcelaneous rock with strong colouring occurring in the Windalia Radiolarite.

Peanut wood (silicified wood) was formed when prehistoric conifers died, and were carried by rivers to the deltas entering the shallow inland sea. Marine molluscs known as shipworms ate the soft, water-laden wood. When tiny plankton with siliceous shells, known as radiolarians, died and sank to the sea floor they created a zone of white sediment which filled the holes created by the shipworm, converting the waterlogged wood into a fossil (Hocking et al. 1985).

Above: An ironstone nodule in the eastern Mundatharrda Range shows where the porous sandstone has weathered away. Photo – DBCA

Ironstone formations

Ironstone formations found in the Kennedy Range developed in sedimentary rocks usually by the oxidation of sulphide minerals in porous layers near fractures. These nodules are associated with a frog Dreaming story connecting the Mundatharrda Range with the Wooramel River. They often form open hollows when the sediment within the nodule has eroded away (see photo above).

Sand dunes of Mundatharrda (Kennedy Range)

The red sand dunes, on which the spinifex, wattle and mallee grow, cover much of the range (see section on *Flora*). Unlike the coastal sand dunes which are made up of lime, the quartz sand making up these dunes was weathered from the underlying sandstone. The scree slopes on the eastern side of the range are also the result of sandstone erosion.

Bimbee National Park

Bimbee National Park is mainly a depositional sandplain of aeolian origin of 25 million years ago (Cainozoic) similar to the geology of the south-eastern section of the Kennedy Range. Nearly 90 per cent of the reserve consists of sand dunes and sandy swales of the Yalbalgo land system. The dunes are high in the west and become undulating to flat in the east. The system supports a woodland and sand dune gidgee or, less frequently, a tall shrubland of wanyu and wanderrie grass (*Eriachne benthamii*) (Payne et al. 1987). Lacustrine (associated with lakes) deposits, including lakes, playas and fringing dunes are found in the central portion of Bimbee National Park also from the Cainozoic era perhaps the remnants of an old river system (Payne et al. 1987). The western portion is underlain by Cretaceous marine to coastal siltstone, shale and radiolarian siltstone, and in the eastern part by Permian continental and coastal sandstone and siltstone (Douglass et al. 2019). Sedimentary rocks are exposed where the Wooramel River cuts through the block. The reserve's geology is reflected in the soil types and associated vegetation. Much of the reserve is covered with broad, flat or gently undulating red sand dunes with parallel ridges. The southeastern portion adjoining the Wooramel River is associated with broad plains with few gentle undulations and some small breakaways near drainage lines.

Beeirdeegoorah and Jiggabiddi nature reserves

These coastal reserves are of Cenozoic sedimentary origin over calcareous sedimentary rocks within the Carnarvon Basin. They are made up of Quaternary alluvium, coastal sands and limestone (Payne et al. 1987).

Management objective: To protect and conserve geological features and landforms.
Management strategies 1. Identify geological features vulnerable to environmental damage (e.g. erosion, visitor access, rock collection) and protect these features as appropriate. 2. Monitor the effectiveness of erosion control techniques and incorporate new practices where appropriate. 3. Assess disturbance activities within the reserve for impacts on key values. Any proposed disturbance activities must be approved via DBCA's online Disturbance Approval System.

Hydrology

The conservation estate lies within the Merlinleigh sub-basin of the Carnarvon basin. The Carnarvon basin generally lacks permanent surface water, but the utilisation of groundwater and the presence of springs and soaks has allowed flora and fauna to survive and contributed to the development of the pastoral industry. The Gascoyne River extends about 700km inland from the coast. Its upper tributaries consist of broad flat floodways that drain the arid interior. The Lyons River joins the Gascoyne River near Gascoyne Junction and drains mainly the eastern Kennedy Range area (Hydroconcept 2014).

The western side of the Mundatharrda Range contains several small springs and soaks, and the larger Mooka and Chaffcutters springs. Springs along the western side of the Kennedy Range are situated on the Kennedy Fault System and in the Jimba syncline (Hocking et al. 1985). Generally, the supply of water is small and some springs dry up in summer. Springs also occur throughout Bimbee National Park, usually in the vicinity of capped bores.

On the flats west of the Mundatharrda Range, there are a number of seasonally inundated claypans, including the ephemeral 'Lake Julia' approximately 8km east of the Binthalya Homestead site. Another un-named claypan on the eastern side of the range often supports the mungungurrah when dry. Both claypans support seasonal populations of waterfowl and other bird species while they are wet. Claypans within the reserves are important sites, supporting waterbirds and invertebrates when inundated. Claypans within Bimbee National Park also support a species of samphire.

Mooka Creek sits within an unconfined aquifer with saturated colluvial and aeolian sediments. These sediments overlay a lower permeable surface of Windalia Radiolarite. Recharge of the aquifer occurs through infiltration of surface flow from the drainage lines originating in the Mundatharrda Range. The appearance of springs in the upper catchment is thought to be the result of groundwater seeping through fractures and joints in the granitic rock. The springs are recharged by rainfall. Several significant permanent pools are located upstream of the mining tenements and constitute the largest wetland system on the western side of the Mundatharrda Range. Mining activity and streambed excavations have the potential to breach the banks of the permanent pools and create subterranean links where surface flows may be interrupted or disappear (DPAW 2011).

Like the Gascoyne River further downstream, the Mooka Creek stream bed is shallow and mobile. During flood events the channel may be realigned. The Department of Mines, Petroleum and Exploration (DMPE) requested a hydrology assessment and report of the creek occurring upstream of the mining tenements be provided by the of tenement holder lessee of M109/09 in 2013 if they considered mining above the buffer area (see *Mining* section).

Above: Claypan on the eastern side of Bimbee National Park with low dunes surrounding the area. Photo – Veronica Newbury/DBCA

Erosion and protection

The potential for erosion within the conservation estate is high, though it varies greatly between land systems (DEC 2008). A number of land systems are particularly vulnerable. The Kennedy System encompasses the dunes on top of the plateau which are prone to erosion when the vegetation cover, which is mostly spinifex, is removed. Fire is a risk here and the potential for erosion to impact aquatic systems further downstream (such as Mooka Spring and the associated creek) is high.

The Moogooloo land system surrounding the Kennedy Land system is a harder surface and the steepness of some areas of this system provide inherent protection from the effects of feral grazers.

The Billy land system is characterised by low plateaus and mesa and associated foot slopes of much of the south-western section, containing breakaway areas and channelled flow zones predisposing them to erosion, particularly in high rainfall events. Protecting these systems from feral grazing animals will be important to minimise their impacts.

Inappropriately placed tracks at all four reserves should be evaluated for closure or realignment and subsequent rehabilitation to minimise any potential for erosion. The placement of proposed camping and day use areas will impact the potential for erosion.

Lower Gascoyne River

The lower Gascoyne River flows along a well-defined and confined braided channel between 75m and 1200m wide at various points along its flow. The water flow along the Gascoyne River is often erratic and dependent on rainfall to recharge the aquifer. Fresh water is stored in the sands and gravels of the aquifer (alluvial sands) and only recharged when the river flows, usually after cyclonic events. The large catchment area also determines the flow. Groundwater is stored within the floodplain to a depth of about 60m (Leonhard et al. 2011). The horticultural industry, dating from the 1920s and growing bananas, mangoes, avocadoes and other produce near the town of Carnarvon, relies heavily on the Gascoyne River alluvial aquifer for its irrigation needs. The aquifer is also used for town water supply and scheme water. Water abstraction, particularly in dry years, has the potential to impact water levels at Jiggabiddi.

Jiggabiddi is a deep pool along the lower reaches of the Gascoyne River, often having water when the rest of the river is dry. Birds and other fauna depend on this resource, particularly during the hot dry summers. However, the extraction of groundwater impacts water levels within the pool.

Management objective: To protect and conserve hydrological values and processes.

Management strategies

1. Identify and protect hydrological values vulnerable to environmental damage.
2. Support Yinggarda Traditional Owners to restore damage to cultural sites and values and/or undertake appropriate cultural maintenance to important sites and values (such as keeping springs and waterholes clean and free from damage).
3. Protect waterbodies including fringing vegetation and banks, from damage and disturbance from management operations, unauthorised access, unmanaged cattle and feral herbivores.
4. Monitor the impact of mining activities within Mooka Creek to ensure minimum potential impact particularly erosion and sedimentation to ensure the protection of upstream and downstream ecological values.
5. Monitor the health of springs within Yinggarda Conservation Estate.

Native plants and vegetation communities

Mundatharrda is characterised by red sandy plains and stony plains with wattle shrublands and woodlands. The top of the range is mostly a sandy plain of large red sand dunes and wide swales of spinifex grasses and shrubs. Bimbee National Park and the additions to the existing Kennedy Range National Park were acquired under the Gascoyne Murchison Strategy in 2000. It provided for the restructuring of pastoral enterprises across the region and the establishment of the CAR protected area system for nature conservation. The Mooka pastoral lease and part leases surrounding the original Kennedy Range National Park were purchased to buffer it and to add eight plant communities and 13 sub bioregional ecosystems lacking representation in existing reserves into the reserve system. The park protects two listed priority ecological communities and 15 priority flora species.

Four of the 14 plant communities and seven of the 14 ecosystems had no prior protection in the reserve system. Ex Mooka included an extensive part of the Yalbalgo land system (dunes and broad swales with wattles, shrubs and spinifex) that was not represented in the reserve system. The purchase of Bimbee National Park brought additional vegetation in the Yalbalgo land system into the conservation estate.

Mooka Spring (see *Hydrology*) and Mooka Creek and Chaffcutters Spring are within a regionally significant aquatic system and part of a listed priority ecological community; Springs of the Western Kennedy Range (P4). The national park also protects the priority ecological community (P4) spinifex dominated plant assemblages of the sand dunes on top of the plateau.

Mooka Spring is associated with a number of flora species at the limit of their southern distribution, including *Melaleuca argentea* and *M. leucadendra* as overstorey species (often not seen because of grazing pressures) and *Eleocharis geniculata*. Springs by their permanent nature often have outliers, possibly due to long-distance dispersal of seed by birds. There is limited information on the flora values and groundwater-dependent flora within the Mooka Spring and Mooka Creek system.

At least 80 annual wildflower species come to life in spring. Mainly arid and semi-arid species, they include fanflowers, daisies, hibiscus, mulla-mullas, peas and poverty bush.

Bimbee National Park

Bimbee National Park contains eight vegetation types and one additional ecosystem type (claypans). Seven of the eight vegetation types mapped as occurring within Bimbee National Park were inadequately represented in the conservation estate including four that were not represented at all (see Table 1 below).

Table 1. Vegetation types not represented anywhere else in the conservation estate.

Veg code no.	Vegetation description	% in IUCN reserves before acquisition	% in IUCN reserves after acquisition
342	Mosaic: low woodland; waterwood/shrublands; *Acacia sclerosperma* & bowgada scrub.	0	20.6
283	Shrublands; *Acacia sclerosperma*, bowgada and *Acacia victoriae* scrub.	0	12.8
184	Shrublands; mulga and bowgada scrub	0	1.32
349	Mosaic: shrublands; bowgada scrub with scattered mulga/shrublands; bowgada and grevillea scrub.	0	0.32

Above: Everlasting wildflowers. Photo – DBCA

Above: Samphire on a claypan in eastern Bimbee National Park. Photo – Veronica Newbury/DBCA

Above: The Priority 3 listed *Gymnanthera cunninghamii* at a spring in Mundatharrda National Park. Photo – Veronica Newbury/DBCA

Bimbee National Park now offers protection for the alluvial plains, dunes, claypans and tall wattle shrublands of the Yagina land system (about half of which occurs on ex Pimbee pastoral lease) and sand dunes with gidgee woodland and swales of the Yalbalgo land system (Douglass et al. 2019). Three priority 3 plant species occur in Bimbee National Park; *Acacia atopa* (P3)*, Calandrinia rubrisabulosa* (P3)*, Eremophila petrophila* (subsp. *densa*) (P3). Initial survey work carried out in July 1998 gathered preliminary information regarding the vegetation of Bimbee National Park to assist the Department of Conservation and Land Management (CALM) to establish the nature conservation value of the station (CALM 1998). The survey concluded that the major trees were acacia species, with eucalypts being uncommon and mainly present near the Wooramel River. Generally, the shrub flora had low diversity while the herbaceous layers were more diverse. Further detailed survey work is required to accurately determine the boundaries of vegetation communities occurring in Bimbee National Park to inform reserve management.

Mundatharrda National Park

A number of priority species grow scattered throughout Mundatharrda National Park (see Table 2 below).

The previous management plan identified an additional species, *Eremophila phyllopoda* subsp. *obliqua* ms. found on top of the range in rocky soil. This observation was perhaps an outlier.

Table 2. Flora of conservation significance recorded in the conservation reserves
(Common names not available for these species)

Species name	Park where located	WA Priority status[4]	
Bergia auriculata	Mundatharrda NP	2	
Calandrinia rubrisabulosa	Bimbee NP	3	
Calothamnus borealis subsp. *cinereus*	Mundatharrda NP	3	
Calytrix insperata	Mundatharrda NP	2	
Eremophila compacta subsp. Kennedy Range	Mundatharrda NP	2	
Eremophila petrophila subsp. *densa*	Bimbee NP	3	
Goodenia neogoodenia	Mundatharrda NP	4	
Gymnanthera cunninghamii	Mundatharrda NP	3	
Isotropis forrestii	Mundatharrda NP	1	
Exocarpos acerbus	Mundatharrda NP	2	
Ptilotus luteolus	Mundatharrda NP	3[5]	
Rhodanthe frenchii	Mundatharrda NP	2[6]	
Solanum pycnotrichum	Mundatharrda NP	2	
Tephrosia sp. Kennedy Range	Mundatharrda NP	1	
Acacia atopa	Bimbee NP	3	
Ecological community	**Park where located**	**WA Priority status**	**EPBC category**
Dunes on top of Kennedy Range	Mundatharrda NP	P4	Not listed
Spring Communities	Mundatharrda NP	P4	Not listed

[4] Priority 1 (P1): Poorly known species – few locations, occurrences are very small or on lands not managed for conservation.
Priority 2 (P2): Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation.
Priority 3 (P3): Species that are known from several locations and the species does not appear to be under imminent threat.
Priority 4 (P4): Rare, Near Threatened – or species in need of monitoring.
[5] Reference from Dandjoo June 2025.
[6] Reference from Nature Map 2022.

Ecological communities

The planning area contains two priority ecological communities.

- Springs of the Western Kennedy Range priority 4 (P4) ecological community has a rich representative invertebrate community. Mining downstream of Mooka Spring and Mooka Creek is considered a threat, as a rock shelf close to the mining tenements is considered crucial to maintaining Mooka Pool. Mining tenement managers have been requested to provide a hydrological assessment of the area.
- Plant assemblages (spinifex dominated) of sand dune mesa topping the Mundatharrda National Park. (P4)

Management objective: To identify, protect and conserve native plants and plant communities, particularly those of cultural and conservation importance.

Management strategies

1. Identify knowledge gaps and improve baseline data, research and mapping to identify threatened plants, vegetation and ecological communities with a focus on culturally important and conservation significant plant communities and species.
2. Encourage the sharing of this data/information between joint management partners, other State Government agencies and other stakeholders, and use information to adapt management accordingly.
3. Identify culturally important and conservation significant native plants and plant communities; and implement appropriate strategies to minimise impacts from threatening processes, such as climate change, weeds, pest animals, inappropriate fire regimes and unmanaged visitation.
4. Identify and rehabilitate priority areas of degraded habitat.

Key performance indicators: Vegetation communities and conservation significant ecological communities

Performance measure	Target	Reporting
Knowledge of PECs.	Commence mapping of priority ecological communities and priority plant species for all reserves.	10 years
	Commence hydrological assessment of Mooka Spring and Mooka Creek as part of the PEC mapping above.	10 years
	Nominate PEC for listing under the BC Act.	10 years
Priority biological surveys of the estate have progressed in a satisfactory manner.	Priority biological surveys are identified and commenced.	Within 5 years
	Baseline biological surveys have commenced in Mundatharrda and Bimbee national parks and Beeirdeegoorah Nature Reserve.	Commenced within 5 years and completed within 10 years

Above: A mulgara in Mundatharrda National Park. Photo – DBCA

Native animals and habitats

Native animals

A number of fauna species occur at the northern or southern limits of their range including the splendid fairy wren (*Malurus splendens*). A common rock rat (*Zyzomys argurus*) population is near the southern limit of its distribution.

Several bird species are more common in the planning area than in almost all other parts of the Carnarvon Basin, including the rufous-crowned emu-wren (*Stipiturus ruficeps*), slaty-backed thornbill (*Acanthiza robustirostris*) and painted finch (*Emblema pictum*).

Old nests presumed to be of the extinct lesser stick-nest rat (*Leporillus apicalis*) have been found on the Kennedy Range together with old mounds of the western pebble-mound mouse (*Pseudomys chapmani*), a priority 4 species. The Priority 4 brush-tailed mulgara (*Dasycercus blythi*) has been caught on wildlife cameras on the Kennedy Range plateau.

Baseline information is required to inform reserve management. Records available in the wider region in similar habitats could be used until more accurate information is available. Pending effective feral animal control, the planning area has the potential for the reintroduction of several mammals that still occur in other parts of the State whose distribution once encompassed the range. They include the Gould's mouse (*Pseudomys gouldii*), western pebble-mound mouse, Shark Bay bandicoot (*Perameles bougainville*), greater stick nest rat (*Leporillus conditor*), greater bilby (*Macrotis lagotis*), chuditch (*Dasyurus geoffroii*), black-flanked rock wallaby (*Petrogale lateralis lateralis*) and banded hare-wallaby (*Lagostrophus fasciatus fasciatus*). These species (except the western pebble-mound mouse) are all threatened. They have declined in range and abundance because of a range of factors, including predation by foxes and cats, competition by introduced herbivores, and habitat alteration, particularly changes associated with grazing, burning patterns and feral herbivores. Goats, in particular, compete for similar food and habitat resources and cause general habitat degradation. The rock wallabies and banded hare-wallabies are particularly sensitive to this competition (DEC 2008).

Australia is signatory to a number of international migratory bird agreements such as the Japan–Australia Migratory Bird Agreement (JAMBA), China–Australia Migratory Bird Agreement (CAMBA), Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA) and Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention or CMS). Anecdotal evidence suggests that these birds visit during periods when

there has been enough rain to fill Lake Julia and other claypans. Many have been recorded at Rocky Pool, Gascoyne Junction.

Management direction for the conservation of threatened and priority fauna is provided by the department's Corporate Policy Statement No. 35 – Conserving Threatened Species and Threatened Ecological Communities.

Above. Macroinvertebrate survey work in Mundatharrda National Park. Photo – DBCA

Table 3. Fauna of conservation significance

Species name	BC Act[7]	EPBC Act	IUCN Red List
grey falcon (*Falco hypoleucos*)	VU	VU	VU
peregrine falcon (*Falco peregrinus*)	OS[8]	Not listed	Least concern
long-tailed dunnart (*Antechinomys longicaudatus*)	P4	Not listed	Not listed
brush-tailed mulgara (*Dasycercus blythi*)	P4	Not listed	Least concern
western pebble-mound mouse (*Pseudomys chapmani*)	P4	Not listed	Least concern
red-tailed phascogale (*Phascogale calura*)	CD[9]	VU	Near threatened
chuditch, western quoll (*Dasyurus geoffroii*)	VU	VU	Near threatened
common sandpiper (*Actitis hypoleucos*)	MI	MI CAMBA, JAMBA, ROKAMBA, Bonn	Least concern
southern whiteface (*Aphelocephala leucopsis*)	VU	VU	VU
fairy shrimp (*Branchinella wellardi*)	P3		VU
red knot (*Calidris canutus*)	EN	VU, MI JAMBA, ROKAMBA, Bonn	Near threatened
curlew sandpiper (*Calidris ferruginea*)	CR	CR, MI JAMBA, ROKAMBA, Bonn	VU
red-necked stint (*Calidris ruficollis*)	MI	MI CAMBA, JAMBA, ROKAMBA, Bonn	Near threatened
great knot (*Calidris tenuirostris*)	CR	VU, MI, Bonn	EN
greater sand plover (*Charadrius leschenaultia*)	VU	VU, MI JAMBA, ROKAMBA, CAMBA,	
lesser sandplover (*Charadrius mongolus*)	EN	EN, MI JAMBA, ROKAMBA, CAMBA,	EN
Caspian tern (*Hydroprogne caspia* or *Hydroprogne tschegrava*)	MI	MI CAMBA, JAMBA	Least concern
golden gudgeon (*Hypseleotris aurea*)	P2		EN
broad-billed sandpiper (*Limicola falcinellus*)		JAMBA, ROKAMBA, CAMBA, Bonn	VU
bar-tailed godwit (*Limosa lapponica*)	MI	ROKAMBA, JAMBA, Bonn,	Near threatened
far eastern curlew (*Numenius madagascariensis*)	CR	CR, MI CAMBA, JAMBA, ROKAMBA, Bonn	EN
whimbrel (*Numenius phaeopus*)	MI	MI ROKAMBA, JAMBA, Bonn	Least concern
glossy ibis (*Plegadis falcinellus*)	MI	MI Bonn	Least concern
Australian painted snipe (*Rostratula australis*)	EN	EN	EN
crested tern (*Thalasseus bergii*)	MI	MI JAMBA	
common greenshank (*Tringa nebularia*)	MI	EN, MI JAMBA, ROKAMBA, CAMBA, Bonn	
wood sandpiper (*Tringa glareola*)	MI	MI, JAMBA, ROKAMBA, CAMBA, Bonn	
terek sandpiper (*Xenus cinereus*)	MI	VU, MI JAMBA, ROKAMBA, CAMBA, Bonn	

[7] BC Act 2016 Threatened and Priority fauna list July 2025. Threatened and Priority Fauna List July 2025

[8] Species otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Currently only fauna are listed as species otherwise in need of special protection.

[9] Species of special conservation need that are dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Currently only fauna are listed as species of special conservation interest.

Invertebrates

Mooka Spring and the associated Mooka Creek represent a regionally significant aquatic system and an unusual ecological community (DPAW). Based on the flora and aquatic invertebrate species, it represents the best example of this wetland type in the Carnarvon Basin (DPAW, internal report). The smaller springs and soaks contain a discrete invertebrate community that differs from those in larger streams and rivers, and in claypans of the surrounding areas. They support at least 13 invertebrate species that do not occur elsewhere in the region or do so only rarely (DEC, 2008). The biodiversity audit of Western Australia's biogeographical subregions (CALM 2002) described ecosystems at risk in the planning area and placed the 'Invertebrate assemblages of Western Kennedy Range' on the department's Priority 4(ii) Ecological Communities list. It represents the best example of this wetland type in the Carnarvon Basin, based on both plant and a rich invertebrate diversity (DBCA, 2020).

Mooka Spring contains a species-rich aquatic invertebrate community typical of larger streams and rivers in the Carnarvon Basin. While the survey determined that the aquatic invertebrate species recorded were relatively widespread, very few of them tolerate drying and most were freshwater dependent. The permanent freshwater is important in maintaining the regional diversity of aquatic invertebrate species.

Little is known about the frog populations found in the springs and soaks of the conservation estate. These springs could support frog species, particularly as the springs are restored.

Mungurragurra or Dawson's burrowing bee is a large, hairy native bee of the Gascoyne region. One of the world's largest bees, it burrows in open claypans and newly graded roads from July to September. Such surfaces are dotted with thousands of small mounds of dirt excavated by female bees while constructing these burrows (Alcock 2006).

Management objective: To identify, protect and conserve habitats and native animals, particularly culturally important and conservation significant animal species.

Management strategies

1. Undertake or support baseline surveys, research and mapping to identify fauna and habitats with a focus on culturally important and conservation significant species and knowledge gaps. Review their conservation status based on the baseline data.
2. Encourage the sharing of data/information between joint management partners, mining and consulting companies, other State Government departments and other stakeholders and use information to adapt management accordingly.
3. Prepare and implement monitoring plans for key culturally important and conservation significant fauna species such as the mulgara.
4. Protect existing habitats and undertake habitat restoration or enhancement to support culturally important and conservation significant animal species. Ensure firewood is not collected within the estate.
5. Develop, update and implement recovery plans for threatened animals as required.
6. Consider the reintroduction of fauna to areas where they are known to have formerly occurred and where threatening processes have been identified and addressed.

Key performance indicator: Culturally important and conservation significant animals

Performance measure	Target	Reporting
Presence of key culturally important and conservation significant fauna species.	The distribution of key culturally important and conservation significant fauna species is maintained or increases over the reporting period.	Every 5 years, or as per recovery plans if applicable
Extent and condition of habitat for selected threatened animal species.	No decline in extent or overall condition of important habitat for conservation significant animal species.	Every 5 years, or as per recovery plans if applicable

Fire

Fire, both lightning and human caused, has shaped many Australian arid zone ecosystems for thousands of years. Traditional use of fire by Aboriginal people in arid areas was common and widespread, especially in mature, flammable spinifex communities. 'Cultural burning' refers to practices developed by Aboriginal people to enhance the health of the land and its people. It is right fire, right time, right way and for the right (cultural) reasons according to lore (Atkinson 2023). Cultural burning is an ancestral and living practice of land management with a spiritual, holistic nature and place-based approach.

'Pink eye' time occurred after spring, when Yinggarda Traditional Owners had time off from the pastoral stations, usually coinciding with the end of mustering sometime between Christmas and Easter during the hot season. They burnt the long grass as they walked either to the coast or to other areas for ceremony and cultural lore before the wet season (often singing for rain). The renewal of green pick for the animals, and food and medicinal plants for Yinggarda Traditional Owners meant ongoing abundance and renewal of Bunnah (K Ryan, Yinggarda Elder, pers. comm.).

The pre-European landscape of Mundatharrda and Bimbee national parks was made up of patches of vegetation of different fire ages due to Traditional Owner fire management and continual lighting of smaller fires. The resulting fine mosaic of vegetation at different stages of recovery following fire encouraged the proliferation and variety of food. The longer unburnt areas provided shelter for small mammals, insects and other fauna. Aboriginal communities used fire for hunting, signalling, to 'clean up' Bunnah, for ceremonies and for fun (Burrows et al. 2006). Fire was also used traditionally to regenerate Bunnah for food and medicines.

The spinifex dunefield of the Mundatharrda plateau is the most fire prone land system in the planning area, with most fires caused by lightning strikes. These fires remain on the plateau and pose little threat to surrounding pastoral activity. The low acacia woodland habitat of Bimbee and Mundatharrda national parks is also prone to fire, but the cliff and gorge habitats of Mundatharrda National Park are less flammable due to their sparse and discontinuous fuel loads and support a number of species less tolerant to fire. Bimbee National Park is prone to fire following high rainfall seasons where annual flora creates continuous fuel.

Spinifex will normally carry fire about 5-7 years from the last fire, though fire intervals could be shorter after prolonged drought periods, or following high vegetation growth after above average rainfall (Burrows 1991). Longer fire intervals of 7-10 years for the spinifex on Mundatharrda plateau may be more accurate, due to slower spinifex growth rates there (C Desmond pers. comm.).

> Yinggarda Traditional Owners put fire into Country as they walked from the inland areas to the coast
>
> (Kath Ryan, Yinggarda Elder)

Many generations burning Bunnah frequently as they moved through the landscape resulted in discontinuous, patchy fuels, ranging from recently burnt to occasional long-unburnt patches (Burrows et al. 2006).

Today, large intense fires dominate the landscape, replacing the regular mosaic burns undertaken by Traditional Owners. This altered fire regime, together with introduced predators, flora and herbivores, has contributed to the decline of arid zone mammals and some plant communities.

The increasing impacts of climate change, and the alternating periods of high rainfall and droughts, mean that fires extend over much larger expanses of Country. These larger, more intense fires threaten habitats, and the reduced vegetation cover increases predation by invasive species, leading to declines in the abundance of many endemic small mammal

populations. The more frequent ENSO and El Nino related sea surface temperature anomalies increase rainfall variability in the region and hence increase fire size. Buffering this variability could reduce mortality through predation and resource limitation, mitigating declines and species extinction among mammals in the critical weight range (50-3000g). (Bliege Bird et al. 2012).

The introduction of buffel grass (*Cenchrus ciliaris*) as a pasture affected the fire regime, as it was burnt regularly to encourage the spread of the grass for pasture. It has lower flammability when green but can still easily carry fire if mixed with dry vegetation or during extreme heat and wind. It rapidly regenerates after fire and is capable of encouraging and carrying wildfires through communities that are not adapted to frequent fires. Buffel grass burns 'hot' compared to native species and may kill soil-stored seed, reducing regeneration of native species. The potential for buffel grass to spread into proposed day use and camping areas on the western side of the range and into the fire-prone Acacia woodland is high as visitation increases.

The historic patterns of traditional burning have not been investigated in the planning area. Yinggarda Traditional Owners are keen to engage with the department to introduce traditional burning practices within the conservation estate to mitigate large scale wildfires, protect cultural areas, protect sensitive species, vegetation communities and structures.

A burn program incorporating traditional fire practices and a collaborative fire planning approach will be prepared, implemented and reviewed. The department will investigate training for Yinggarda Rangers to develop capacity in traditional fire burning practices and to assist with prescribed burns and bushfire response. Yinggarda Traditional Owners are keen to regain their knowledge and experience by inviting other Traditional Owners experienced in right-way fire in similar ecosystems, to teach and support them in their journey.

Strategic fire access for the planning area will be developed and implemented. Track access will be maintained to ensure safe routes for fire fighting vehicles and to permit effective fire management. The *Bushfire Act 1954* applies when access is required in emergency fire situations. The department will develop agreements with neighbours to access tracks and any other required facilities for fire management as required.

Management objective: To manage fire to protect lives, property, and the reserve's cultural and natural values.

Management strategies

1. Develop fire management guidance for each reserve, for inclusion in indicative burn programs for the District and Region considering priorities such as cultural and environmental priorities, asset and safety management, Traditional Owner fire management practices, fire sensitive species and communities and natural values.
2. Identify, map and maintain strategic fire access tracks and low fuel buffers around infrastructure, cultural and heritage sites within the reserves.
3. Consult with key stakeholders, JMB and neighbours on planned fire mitigation, preparedness, response and recovery plans within the reserves.
4. Integrate fire management with weed and pest animal control plans.
5. Establish post-fire monitoring sites to measure the impact of fire and to develop an understanding of ecological fire requirements of native plants and animals within the planning area.

Key performance indicator: Fire management

Performance measure	Target	Reporting
Develop a range of post fire vegetation ages within the reserves.	Develop and maintain a burn program of fine scale mosaic fire ages incorporating traditional fire knowledge and skills.	Every 5 years
Increased Yinggarda Traditional Owner skills in the application of cultural burning and transfer of cultural burning knowledge between Yinggarda and other Traditional Owner groups.	Invite Traditional Owners from similar areas with expertise in right way fire to build skills and knowledge within Yinggarda Traditional Owners and DBCA.	Every 5 years

Weeds and pest animals

Weeds

Within the planning area, weeds occur in disturbed areas, particularly around tracks, infrastructure, watering points, springs and recreation sites. Of particular concern is buffel grass because of its ability to burn 'hot', carry fire efficiently and outcompete native vegetation. Control of buffel grass is complex due to its vigorous response to fire and reproductive capacity, and there is no single method to successfully manage this species on a landscape scale. Given the recreation opportunities and access to and across the top of the range, there is an inherent risk that buffel grass could spread onto the plateau. As the spinifex of the plateau is listed as a priority ecological community and is relatively free of buffel grass, it needs to be monitored, and remedial action taken if buffel grass is detected.

A coordinated approach with neighbours and peak agricultural bodies will be important to manage and successfully control weeds within the planning area and the region. Ongoing partnerships and projects with local government, pastoralists and mining companies to identify, control and/or reduce the spread of weeds is important. Control and eradication of new weed species will be a priority, particularly if they are highly invasive or occur on or near areas with priority species and vegetation communities. DBCA's *Good Neighbour Guideline 34* (2019) and *Good Neighbour Policy No 65* (2019) guide the department's approach to managing cross boundary issues with neighbours.

At Bimbee the doublegee (*Rumex hypogaeus*) is also a concern, particularly around the old homestead site and the water tanks. The fruit is well equipped for dispersal as one spine always points upwards, enabling it to attach to almost anything that passes over it, such as shoes, rubber tyres and animal feet. New infestations are therefore likely to appear near tracks, buildings and stock watering points. Implementing a management control program is a priority.

Date palms (*Phoenix dactylifera*) have been controlled. Only a single male remains for heritage reasons. Staff will continue to monitor areas for germination and undertake appropriate removal.

It will be important to determine and review priorities for weed management regularly, informed by conducting surveys to determine priority weeds and their distribution and abundance as baseline information for future monitoring. Evaluating weed management actions will be crucial to determine the effectiveness of control measures.

Pest animals

Feral goats (*Capra hircus*), cats (*Felis catus*), rabbits (*Oryctolagus cuniculus*), European red foxes (*Vulpes vulpes*) and camels (*Camelus dromedarius*) are found in the planning area. Horses, cattle and sheep also wander in from adjoining stations. Their true extent and numbers are unknown and will require survey work to determine and prioritise control.

Feral camels impact natural and cultural resources and may damage vegetation (trees and shrubs), damage and foul water sources, compete with native animals, damage cultural sites, damage infrastructure and threaten biodiversity (NRMMC 2010). Camels browsing in dryland ecosystems significantly stunt plants and reduce canopy volume, particularly in structurally important species, and therefore threaten ecosystem health (Box et al. 2016). The department will continue to monitor for ingress of camels into the reserves.

Horses and donkeys occur in the southern portion of Mundatharrda National Park, and *Tilapia* fish species may occur in Mooka and other springs on the western side of the range.

Foxes and cats threaten medium-sized ground dwelling mammals and ground nesting birds (Burbidge and McKenzie 1989). The *Western Shield Plan 2017-2026* (DPAW 2017) aims to recover and sustain wild populations of native fauna in Western Australia threatened by

foxes and feral cats but does not extend to the Yinggarda Conservation Estate. Currently there are no landscape-scale introduced predator control programs within the Yinggarda Conservation Estate, though the potential for a program should be investigated.

Feral goats have a major impact on natural values, as they destroy vegetation and inhibit regeneration. The impact of hooves and overgrazing destabilises soils and increases the risk of erosion by rain and wind. This can lead to changes in floral composition and destruction of habitats, as they prefer to graze on shrubs rather than grasses or herbs. Feral goats also outcompete native species for refugia and food. They are attracted to and often foul water sources including springs and soaks. Goats still remain across the planning area, and management is often complex and depends on cooperation with neighbouring landholders.

It is important to develop and implement monitoring programs to monitor the success of pest animal control programs and to detect any new incursions from other pest animals. Any new incursions of pest animals will be managed as a priority.

Stray stock

Most of the planning area directly adjoins pastoral stations that stock cattle. Boundary fencing is not complete around the planning area and requires ongoing maintenance where it exists. Stray stock damage vegetation, foul springs and waterholes, and impact soil.

Management objective: To minimise the negative impacts of weeds and pest animals on the reserves.

Management strategies

1. Continue to collaborate with neighbouring land managers to facilitate effective, coordinated management of weeds and pest animals and evaluate the effectiveness of their control.
2. Liaise with neighbouring land managers and other stakeholders through the JMB to control unmanaged cattle to support more effective control.
3. Monitor condition of boundary fences and maintain and manage them, particularly around water sources and near high conservation areas, in collaboration with neighbouring landholders.
4. Develop and implement monitoring programs for priority weeds and pest animals.
5. Conduct baseline and regular surveys to determine the distribution and abundance of priority weeds to evaluate the effectiveness of control.
6. Investigate the potential for a landscape-scale predator control program on the conservation estate.

Key performance indicator: Weeds and feral herbivores

Performance measure	Target	Reporting
Mapping of weeds	Initiate a systematic program of mapping priority weeds and their spread including density and distribution.	At 5 years
Identify, monitor and control priority weeds within the conservation estate (in conjunction with mapping of priority weeds KPI above)	Reduction or control of spread of priority weeds within the estate.	Every 5 years
Identify, monitor and report the introduction and spread of new high priority weed species infestations.	No new high priority weed species or infestations established in the reserves.	Every 2 years
Presence of feral herbivores and abundance	A reduction in the presence and abundance of feral herbivores (including stray stock) following exclusion or removal.	Every 5 y ears
The improvement in soil and vegetation condition.	Construct a wildlife friendly boundary fence to reduce the impact of feral herbivores (including stray stock) in key areas.	Every 5 years

Climate change

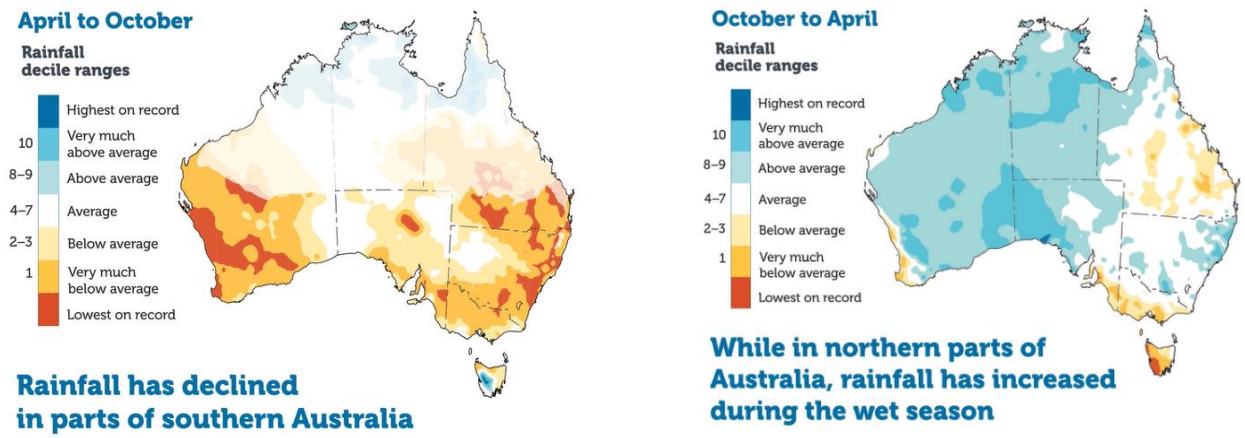
The conservation estate sits within the arid region of Western Australia and experiences a desert climate of hot, dry summers, mild but warm winters with an average annual rainfall of 220mm at Carnarvon airport (site no. 6011), being mostly winter dominant. The area experiences average maximum temperatures ranging from 23ºC in winter to 33ºC in summer (BOM 2024). However, at Gascoyne Junction (site no. 6022) some 200km inland, the area also experiences a winter dominant rainfall averaging 111mm annually. Mean maximum temperatures range from above 40ºC in summer to 24ºC in winter.

The *State of the Climate* report (BoM and CSIRO 2022) draws on the latest climate research to describe continuing trends in Australia's climate. These include:

- Australia's climate continues to warm, leading to increased frequency of extreme heat events.
- Extreme fire weather days and longer fire seasons have increased across Australia since the 1950s.
- Rainfall between April and October has declined in parts of southern Australia, with the Gascoyne region very much below average. However, as the planning area sits on the boundary of the summer and winter dominant rainfall regions, there has been an above average increase in rainfall between October and April, so the region may eventually experience summer dominant rainfall periods in the future (CSIRO 2022).

Climate change predictions for the southern rangelands include:

- Average temperatures will continue to increase in all seasons, with more hot days and warm spells (Climate Change in Australia 2024).
- The risk of both a drier and wetter climate. The increasing trend towards summer rainfall, although with intermittent periods of wetter and drier conditions, is unclear (CSIRO 2022, Climate Change Australia 2024).
- Increased intensity of extreme rainfall events (Climate Change in Australia 2024).
- Harsher fire weather climate in the future (Climate Change in Australia 2024).
- Year to year variability will be strongly influenced by the El Nino Southern Oscillation. Impact and risk assessments in this region should consider the risk of both a drier and wetter climate (CSIRO 2022).
- Australia has seen fewer tropical cyclones since the 1980s, but the ones in the future are predicted to be higher in intensity.



Above: Rainfall observations for Australia. (CSIRO, BOM 2022.)

Above: A male Dawson's burrowing bee. Photo – Rennee Turner

Uncertainty about appropriate responses to the effects of climate change means that removing or minimising other pressures (such as bushfires, weeds and pest animals) is likely to be one of the best available options to conserve biodiversity in the immediate future.

Climate vulnerability assessments and research will be important to better understand climate change impacts at a species and community level, and management of the planning area should be adapted based on up-to-date information.

Management objective: To minimise the effects of climate change on key values.
Management strategies 1. Use updated climate change information as it becomes available and, where appropriate, incorporate this information into adaptive management strategies at the regional, community and species level. 2. Continue fire, weed and pest animal management programs to increase the ability of the reserves to cope with future disturbances, including climate change. 3. Undertake carbon feasibility assessments as required.

People on Bunnah (visitors)

Visitor planning

Regional context

The national parks and conservation park lie in the Australian Golden Outback tourism region and the Beeirdeegoorah and Jiggabiddi nature reserves are within the Coral Coast tourism region. The Australian Golden Outback region has several key iconic holiday experiences applicable to the reserves including remoteness, bush camping, bush walking, stargazing and appreciation of cultural and natural values. A dark sky tourism report (Tourism WA 2021b) explored opportunities where dark sky experiences could be included with other activities such as dining under the stars, viewing wildlife at night and stargazing. The region's lack of light pollution and stable weather conditions are conducive to astro tourism.

Visitors are attracted to the reserves as there is a growing interest in wildflower tourism amongst local, interstate and international visitors with a vast majority of international interest from Malaysia (Tourism WA 2021a). Self-drive and tag along 4WD tours being undertaken in the region provide further opportunity for visitors seeking a more remote experience. Visitors camping at Mundatharrda National Park typically stay one to two nights at Temple Gorge campground to explore the gorges and walk trails and enjoy the wildflowers, birds and historic sites. Most visitors include other destinations during their trip to the park.

DBCA's *Corporate Policy Statement No.18 – Recreation, Tourism and Visitor Services* and related guidelines outline the principles, operational guidelines, procedures and administrative arrangements in relation to facilitating recreation and tourism in the State's conservation reserves.

Visitor safety and information

Yinggarda Traditional Owners consider cultural and visitor safety extremely important. Sharing cultural knowledge with visitors is a priority to keep visitors safe. There are inherent risks in visiting remote areas such as Mundatharrda and Bimbee National Parks. The risks include undercut cliffs edges, and uneven, rocky vehicle tracks and walk trail surfaces pose a safety risk for visitors, vehicle breakdowns, high temperatures and dehydration. Visitor risk information is and will be provided. Personal safety is extremely important and can be addressed by registering the trip with friends and family, carrying appropriate communication devices and adhering to risk warning information. Visitors should be self-sufficient, carrying ample supplies including water and fuel.

The potential introduction of a permit or registration system for the Mundatharrda Loop track will be investigated to help monitor safety, visitor numbers and impact on the environment. There is little to no access to a mobile phone network outside the townships and therefore visitors are encouraged to carry at least one satellite phone in the group for safety.

Corporate Policy Statement No. 53 Visitor Risk Management addresses the management of risks to visitors' safety on CALM Act lands through the implementation of a visitor risk management program. In the event of an incident, the co-ordination of search, rescue or recovery operations is the responsibility of the Police. The department will provide support as required and may organise the initial response that may include neighbours.

Above: Temple Gorge Photo – Carolyn Thomson-Dans/DBCA

Access

The main access to Mundatharrda National Park camping and day use areas is via Lyons River Road from Ullawarra Road and is currently the only road promoted for visitor use. The Shire of Upper Gascoyne maintains Lyons River Road and Ullawarra Road to unsealed 2WD standard. There are 4WD access tracks to other sections of the park on the west side and over the top of the range, but these are not currently maintained or promoted. One 4WD track into the west side of the park requires permission from the lessee prior to access.

Some visitors traverse the park via a very challenging 4WD track on the west side and over the top of the range (known as the Loop Track), but numbers appear to be low. These are usually in the form small self-drive groups and tag along 4WD tours. These tracks contain significant hazards including alignment, erosion, wildfire risks, and the lack of visitor infrastructure and management capability. The loop track is accessed either from the east off Ullawarra Road or from the west from the Carnarvon Gascoyne Junction Road via a crossing of the Gascoyne River which is accessible only when the water level is low enough to cross. Potential camping and day use areas along the loop track have been considered by the joint planning team and will require further discussion with the JMB to determine future opportunities for visitor access.

The number of vehicles accessing the top of the range in the future should be considered to help manage safety and ensure sustainability in the longer term. The potential for erosion and spread of new and existing weed species increases with visitor use. Several methods to monitor visitor access to the top of the range has been previously suggested, including the use of a permit system. Management of the loop track requires further exploration.

Access to Bimbee National Park is via the unsealed Pimbee Road, which divides the park in two and provides direct access between Gascoyne Junction and the Northwest Coastal Highway. Meedo Road also passes through the southwest section of Bimbee National Park and intersects with Wahroonga Pimbee Road. Assessment of numerous existing tracks which are rough and often overgrown is required, and any tracks no longer needed for management purposes should be closed and rehabilitated to deter unauthorised use.

Roads and vehicle tracks within all the reserves will require maintenance for ongoing access for management purposes and visitors. Any vehicle registered under the *Control of Vehicles (Off-road Areas) Act 1978* is not permitted to operate in the planning area, except under

exceptional circumstances) with lawful authority. Some parts of the estate require adherence to cultural access protocols to ensure cultural safety, respect and protection of cultural places. Access to important cultural areas will be provided where appropriate and in consultation with both Traditional Owners and the JMB.

Visitor numbers and facilities

There are few facilities for visitors in the Mundatharrda National Park and none at the newly created Bimbee National Park. The only formal camping area in Mundatharrda National Park is at Temple Gorge. The campground is basic and caters for 20 campsites with overflow camping provided as needed in day use sites. Informal camping occurs on the western side of the range at several sites. The draft Recreation Master Plan for Kennedy Range National Park requires review and updating within the next five years and a new Recreation Master Plan for Bimbee National Park will be developed. Yinggarda Traditional Owners have indicated appropriate areas for camping and day use on the western side of Mundatharrda for 4WD enthusiasts and suitable areas at Bimbee National Park. Additional options for camping on the eastern side of Mundatharrda National Park should be explored, as well as the north-eastern foot slopes of the range and Chaffcutters Spring on the western side. Traditional Owners will be consulted and cultural requirements included when developing recreation master plans and establishing visitor sites.

Visitation to Mundatharrda National Park has been stable over the past few years though there have been instances when the overflow camping areas have been used. Visitation to the Mundatharrda is increasing steadily (G. Mullan pers. com.) as people seek a more remote experience and are travelling further to achieve it. Accurate numbers of day visitors are not available. Data on visitation to Mooka Spring is unreliable though 400 – 600 people are estimated to visit this area each year (G. Mullan pers.com).

The newly created Bimbee National Park has potential to attract visitors during the wildflower displays in spring and provide a remote site for Yinggarda Traditional Owners to carry out cultural activities. Suitable sites for a campground and other facilities at Bimbee National Park will be investigated.

There is no available data for visitors to Jiggabiddi and Beeirdeegoorah Nature Reserves, but there is anecdotal evidence that both local residents and visitors use these reserves. Jiggabiddi and Beeirdeegoorah Nature Reserves currently have very basic facilities such as picnic tables and unsanctioned walk trails. However, given their proximity to the township of Carnarvon and their historic use as a picnic area, further discussion will be required to establish an interpretive walk trail that promotes Yinggarda culture. Necessary and compatible operations as defined under the CALM Act (1984), is defined under S33A[10] and may allow the above activities to be undertaken.

There is significant opportunity to provide interpretive information on the unique cultural, historic, natural and landscape values on-site, digitally or via printed material. Development of an interpretive plan including dual language interpretation signage is a priority.

Campfires

Collection of firewood from CALM Act land is not permitted. However, under CALM regulation 71, except if there is a sign in the vicinity authorising the collection of firewood and the firewood is intended for use on a campfire or barbeque in the area. Aboriginal people can collect and use firewood for customary activities on Parks and Wildlife – managed lands.

[10] **S 33A.** of the **CALM Act (1984)**
(1) In section 33(1)(cb) and (3)(b), **necessary operations** on land or waters, means those that are necessary — (a) to protect or preserve persons, property, land, waters, flora or fauna; or (b) in the case of land or waters for which a management plan is required but not yet approved under this Act, for the preparation of a management plan for the land or waters; or (c) to protect or conserve the value of the land or waters to the culture and heritage of Aboriginal persons.
(2) In section 33(1)(cb)(ii) and (3)(b) **compatible operations means** — (a) necessary operations as defined in subsection (1); and (b) operations approved by the Minister as being in his opinion compatible with the purposes for which the park or management area is managed under this Act.

Unless there is a total fire ban in place, Aboriginal people can light small fires for cooking, camping or smoking ceremonies in most places. During a total fire ban no one should light, maintain or use fire in the open air, or do an activity that is likely to cause a fire. When lighting a fire, it must be kept under control. It is important that there is a three-metre area around the fire clear of any debris, including logs, stumps, twigs and leaves (DBCA 2022). When leaving a campfire, it should be fully extinguished (DBCA 2022).

Temple Gorge campground permits visitors to use the designated fire pit for communal use. Individual campfires are not allowed, with campers required to bring in their own firewood. The condition of vegetation adjacent to the campsites has declined with bare areas apparent in the immediate vicinity of camping areas and beyond. The clearing of dead vegetation impacts the habitat of ground dwelling fauna particularly insects and reptiles. Fires are permitted from April to October, except when the fire danger forecast issued by the Bureau of Meteorology is 'high' or above (CALM Regulation (2002) r39(1)(e).

Polyphagous shothole borer and firewood

Polyphagous shot hole borer (PSHB) (*Euwallacea fornicatus*) is a serious environmental threat for which the Department of Primary Industries and Regional Development (DPIRD) is leading the management response.

PSHB can travel long distances when people move firewood. A PSHB quarantine area is in place – firewood cannot be removed from this area (for further details and information on how the community can report suspected borer damage see agric.wa.gov.au/borer).

The use of campfires in the Yinggarda parks and reserves is subject to specific conditions, including restrictions on time of year, location, and where firewood is sourced. To protect the values of the Yinggarda parks and reserves from the threat of PSHB, visitors are not allowed to:

- bring in firewood from long distances when camping. The department's website provides further information, including the key communication message 'Firewood – buy it where you burn it'
- burn wood from host trees, especially if it looks like it has borer damage, as PSHB beetles disperse when infested wood is burnt.

Amateur rock collecting, prospecting and fossicking

Yinggarda cultural lore discourages removal of rocks from the conservation estate without permission.

Prospecting and fossicking are not permitted in Yinggarda parks and reserves as the Miner's Right permit issued in Western Australia does not authorise these uses on land reserved for conservation. This activity was popular on unallocated crown land prior to the additional areas being included in the expanded Mundatharrda National Park. Under CALM Act regulations r.31(1) a person must not, without lawful authority damage, disturb or remove naturally occurring features (including mineral specimens and fossils) from CALM Act land.

Fossicking for rocks and gemstones is permitted on mining tenements provided written permission is obtained from the tenement holder together with the required permit (DMIRS, 2025). Section 40E of the *Mining Act 1978* (the Mining Act) allows Miner's Right holders to apply for a permit to prospect on land within a granted exploration licence. A permit does not allow prospecting in national parks, nature reserves or other classified land types. Exploration activities undertaken as part of a live mining exploration tenement is covered under the *Minerals exploration and development* section.

Temporary control areas

Temporary control areas are areas that have been closed to access for specific reasons, either for safety, conservation or customary reasons. This can be because of floods or fires, plant or animal recovery, to protect Aboriginal cultural heritage or because Traditional Owners have requested exclusive use of an area for customary reasons. Temporary control areas can be arranged for up to 90 days.

Written permission may be provided for a Traditional Owner to enter temporary control areas set aside for safety purposes, or for protection of plants and animals. They do not require permission to enter a temporary control area set aside for Aboriginal customary reasons (DBCA 2022).

Dogs and domestic animals

Domestic animals can potentially impact key values, particularly wildlife such as breeding waterbirds and other small fauna. Baits may be used to control feral animals and pose a significant safety risk for all domestic animals.

Domestic animals are therefore not allowed in national parks, conservation parks and nature reserves, with the exception of approved assistance dogs, trained search and rescue dogs and animals used in education or security and feral animal control, which are allowed with lawful authority under the CALM Act.

Commercial operations

Any proposed commercial licences and leases must be consistent with the purpose of the reserve, the protection of its values and the plan's objectives.

Licensed commercial operators can conduct activities such as guided walks and tours, sightseeing, cultural, heritage and nature-based tours. With advice from the JMB, the department may also grant leases to provide facilities and services for visitors. Leases allow the lessee to occupy land for commercial services that need exclusive rights of access and can often include substantial infrastructure. There are no existing commercial leases in the reserves but given the growing interest in outback tourism there may be significant opportunities for developing appropriate commercial leases and tours. These operations could provide additional employment and enable Traditional Owner families to remain on Bunnah.

Contamination and waste management

There is one site within Bimbee National Park with signage that alerts visitors to buried asbestos within the area. This site is subject to the *Contaminated Sites Act 2003* and the *Contaminated Sites Regulations 2006.* Any contaminated sites must be reported.

Illegal dumping of rubbish is a significant management issue in the reserves, particularly those within the Carnarvon town boundary. Management of rubbish and waste will focus on:

- the enforcement of the *Litter Act 1979* or CALM Act and regulations relating to rubbish dumping
- providing visitors with appropriate information and education about waste management, and encouraging them to take their rubbish home where bins are not provided
- minimising unmanaged access to the parks through the maintenance of boundary fencing, particularly in reserves within the Carnarvon town boundary.

DBCA promotes the seven principles recommended by Leave No Trace Australia, which encourage visitors to minimise the impact of their visits to natural and cultural heritage areas.

Firearms

Any land to be used for hunting within Western Australia must be approved by the Commissioner for Police as suitable for that purpose. The land needs to be registered by an authorised person with WA Police Force Licensing Services.

The *Firearms Act 2024* and its *Regulations* replaced the Firearms *Act 1973* and Firearms *Regulations 1974* on 31 March 2025. Aboriginal customary hunting, invasive animal control, fauna taking, euthanasia of compromised fauna and other related firearm activities are administered or managed by DBCA under the CALM Act.

Hunting licences, land registration and hunting permissions are needed in addition to any approvals required under the CALM Act (e.g. CALM Regulation 4 written notice) or BC Act (e.g. fauna taking licence).

Management objectives: To enhance visitor experience and enjoyment while respecting cultural protocols.

Management strategies

1. Enhance visitor experience by developing and implementing an information and interpretation program that enriches visitor experiences and develops an understanding and appreciation of cultural, natural and historical values and their protection.
2. Identify location where cultural access protocols apply and inform visitors.
3. Ensure that Yinggarda Traditional Owners have an active role in communicating culture and heritage.
4. Collect visitor data regularly to improve planning at key sites in the reserves.
5. Identify locations where it may be appropriate to manage or restrict public access to protect culturally and ecologically sensitive sites.
6. Map and assess existing access tracks and determine their priority for management, customary activities and public access. Those that are not required should be closed and rehabilitated.
7. Identify and rehabilitate eroded sections of tracks, cleared areas and water points that are located outside.

Key performance indicator: Visitors on Bunnah

Performance measure	Target	Reporting
Assess existing tracks in all reserves.	Assessment to be completed.	Within 5 years
Visitation in Yinggarda reserves.	Establish vehicle and pedestrian counters to inform visitation use across all reserves.	Within 2 years
Level of Traditional Owner satisfaction of public access and behaviour to sensitive cultural sites.	Through the JMB, Traditional Owners are satisfied that an appropriate process and adequate consultation is occurring to manage public access to culturally sensitive sites.	Annually
Explore opportunities to involve Yinggarda PBC rangers in reserve management.	Commence dual programming with PBC and joint ranger teams.	Within 1 year

Above: Kennedy Range escarpment. Photo – DBCA

Using resources from Bunnah (sustainable economic resource use)

Mineral exploration and development

There are several tenements, an exploration lease, and a prospecting lease within the Mooka Conservation Park adjacent to Mundatharrda National Park. File notation area (FNA 14978) surrounds these mining areas and any applications for mining within or adjacent to the reserve will be assessed/processed under the Mining Act and *Environmental Protection Act 1986* (EP Act) and the Environmental Protection Amendment Act 2020 and various State Agreement Acts.

Mining, exploration and rehabilitation activities on jointly managed land is subject to the Mining Act, the *Petroleum and Geothermal Energy Resources Act 1967*, *Petroleum Pipelines Act 1969*, the EP Act, BC Act, and various State Agreement Acts. Mining projects that potentially may cause significant environmental impacts can be referred to the Environmental Protection Authority (EPA) under section 38 of the EP Act by the proponent, the Conservation and Parks Commission, the department, Joint Responsible Bodies, and individuals. These take precedence over the governance and management provisions of CALM Act. Under the EP Act, all mineral and petroleum activities require a permit for clearing except where granted an exemption.

Under the Mining Act, the specific processes for approval of mining proposals on land managed under the CALM Act depend on the classification of the reserves under the *Land Administration Act 1997*.

Existing mining tenements and future park areas

There are several mining tenements located along Mooka Creek for mookaite, a semi-precious mineral found in specific locations in the region. There are also two prospecting licences and one exploration licence within the Mooka Conservation Park. A File Notation Area (FNA 14978) identifies Yinggarda Native Title over the area. It is intended that if, sometime in the future, a Future Park Area is no longer subject to mining tenements or any other interest, and the necessary approvals are obtained for the Future Park Area to be added to the Conservation Estate, that FP Area #1 (Lot 907 and Lot 908 on DP 423664) form part of the Mundatharrda National Park and FP Area #2 (Lot 910 on DP 423664) and FP Area #3 (Lot 909 on DP 423664) form part of the Mooka Conservation Park or the Mundatharrda National Park, if possible (ILUA 2023). If sometime in the future the conservation park may be reserved as national park, then the conservation parties will support this in principle. See Map 4.

In 2013, the DMPE requested the tenement holder of M09/109 to submit a hydrological assessment of Mooka Creek prior to the commencement of mining within the Mooka Creek and associated floodplain to the north-east (upstream) of a buffer line (GDA94 Zone 50, 293694E 7245728N and 293800E 7245577N) and to the satisfaction of the Environmental Officer of the Department of Mines and Petroleum in consultation with relevant government agencies. The purpose of the hydrological assessment was to determine whether mining may have adverse effects on permanent upstream water pools which constitute the Mooka Springs Priority Ecological Community (PEC). As these areas are isolated and rarely visited by the DMPE, rangers are well positioned to notice any breaches of conditions. Should there be a suspected breach, DMPE should be informed.

Management objective: To minimise the impact of mineral exploration and development on the reserves' key values.

1. In consultation with the JMB, liaise with DMPE to monitor existing and proposed mining leases and tenements and request they take any necessary action where conditions are suspected to be breached.
2. Commission a hydrological assessment of Mooka Creek to inform management decisions related to the priority ecological community. *(See KPI* under *Hydrology*)
3. Where appropriate, support industry operators and regulators to implement environmental management plans/programs, mine closure plans and related documents.

Use of native flora and fauna

Taking of flora and fauna is not permitted within the conservation estate unless it will be used for customary purposes or authorised under the CALM Act and approved by the JMB. Flora and fauna may be taken by commercial cultural (Traditional Owners) tour operators for activities that are consistent with protecting and conserving the value of the land to the culture and heritage of Aboriginal persons and does not have any adverse effect on the conservation of the area.

Bush plants and medicinal plants

Traditional Owners have the right to use plants and animals for cultural purposes such as bush tucker and natural medicine.

There is a need to protect the traditional knowledge and plant resources associated with bush plants in the light of the demand in biotechnology and genetic engineering, hospitality and health industries and as researchers, universities, companies and scientists seek to experiment and innovate using plants. Any use of traditional knowledge and /or plant resources (including genetic material) from the planning area will require approval from DBCA and the knowledge holders prior informed consent with a continuing sharing of benefits to the traditional knowledge holders.

Firewood collection

Firewood collection is not allowed within the reserves (unless for customary purposes). All firewood must be brought in by visitors, or visitors can bring and use their own gas fuel cookers, unless a total fire ban has been declared (see *'Campfires' and 'Polyphagous shothole borer'* for further information).

Wildflowers and other native plants

Taking of native plants (including flowers, seeds, whole plants, timber) from the reserve for other than cultural purposes is not permitted, unless done under a lawful authority. Licences are required to supply, process and deal native flora. Various licences apply, depending on purpose, including for commercial purposes or inventory work (collect specimens for identification purposes).

The collection of native seed may occur within the reserve with an appropriate flora licence, where Traditional Owners, community groups, farmers, mining companies and nurseries use native seed for revegetation, rehabilitation and propagation projects.

Flora bank's *Guidelines* are the Australian benchmark for best practice for seed collection and use, and associated *Model Code of Practice*, if adopted, assures responsible and sustainable seed collecting practices, such as, no more than 20 per cent of the fruit on any individual plant is collected and no more than 10 per cent of plant material on any individual plant is removed.

Beekeeping

There are no registered apiary sites within the planning area. There are over 35 species of native bees and 'pollen' wasps recorded in the region. Amongst these is one of Australia's largest bees, mungurragurra, (Dawson's burrowing bee), an active nesting colony may contain up to 10,000 burrows. These bees are native to WA and forage on poverty bushes (*Eremophila* spp.) and rough bluebell (*Trichodesma zeylanicum*).

As the planning area contains a large suite of native insects including bees, wasps, beetles, flies, moths and butterflies, all of which may be put at risk by competition for floral resources, beekeeping may not be permitted. This is consistent with DBCA's *Corporate Policy Statement No. 41 Beekeeping on Crown Land* and *Corporate Guideline No. 21 Beekeeping on Crown Land*, which allows, through the management planning process, for areas of the conservation estate to be kept free of apiary sites. An assessment of the suitability for apiary sites in the planning area is based on appropriate ecological and management criteria set out by DBCA.

DBCA administers an apiary authority system that allows professional and recreational apiarists to gain access to land managed by DBCA under the CALM Act and certain other Crown lands (UCL and pastoral leases) for the purpose of beekeeping activities. However, the JMB should also assess any application for apiary sites within the planning area.

Management objective: To facilitate the sustainable use of native plants and animals and ensure that the use is consistent with maintaining the cultural and natural values of the reserve.

Management strategies

1. Ensure any use of traditional knowledge and/or plant resources (including genetic material) is only by lawful authority and prior informed consent from the traditional knowledge holders with continuing sharing of benefits.
2. Prohibit firewood collection within the planning area, unless for customary purposes.
3. Prohibit the removal of any native plants within the planning area for commercial use without lawful authority. Manage the taking and public use of native plants in accordance with relevant legislation, policies and guidelines, codes of practice and licensing systems.
4. Exclude new beekeeping activities from the reserves if determined as unsuitable.

Water resources

Through the *Water Agencies (Powers) Act 1984*, the Department of Water and Environmental Regulation leads water resource management in WA by coordinating cross-government efforts to protect and manage water resources and water quality. Other water legislation also supports the sustainable management of water resources.

Water abstraction

The *Rights in Water and Irrigation Act 1914* provides for the regulation, management, use and protection of water resources through a licensing system for taking water and a permit system for activities that may damage, obstruct or interfere with water flow or the beds and banks of watercourses and wetlands in rivers, surface water management areas and irrigation districts. (See *Utilities and Services* for more information).

Proposals for water abstraction from surface and ground waters need a licence from DWER. To be licensed, the proponent also needs approval to access the land for abstracting water. For access to CALM Act lands, DBCA may, after consultation with the JMB and the Commission and approval from the Minister for Environment, issue a permit to authorise access. Where infrastructure is needed, a lease may also be issued. One licence for water abstraction occurs adjacent to Jiggabiddi Nature Reserve, with pipe and electrical infrastructure on an easement within the nature reserve (see *Utilities and services*).

Management objective: To support a catchment management approach to maintain and protect natural surface and groundwater regimes and the hydrological values of the planning area.

Management strategies

1. Assess, collate and incorporate research and monitoring findings relating to the hydrology of the planning area into the operational management, performance assessment against the objectives of this plan and adapt future management where appropriate.
2. Support the continued monitoring by key stakeholders (e.g. mining companies, DWER) of surface water flow and water quality within and adjacent to the reserve.
3. Liaise with relevant water resource stakeholders and monitor activities.

Above: Section of private pipeline through Jiggabiddi Nature Reserve. Photo Veronica Newbury/DBCA

Utilities and services

Utility sites and corridors are sometimes requested through conservation estate so that services such as electricity, communications and water can be provided. Utilities, infrastructure and services required in the public's interest and when there are no other viable alternatives, may be supported. The provision of new services and infrastructure has the potential to impact the natural and cultural values of the planning area depending on their location and type can result in several significant management problems. These may include the clearing of vegetation, introduction of weeds and disease, increase susceptibility to fire, visual impacts and the destruction of important habitats and sites.

This plan does not restrict access for providers to maintain existing utilities and services or associated infrastructure; however, permission is needed for access. Access to, and maintenance of existing infrastructure must consider the reserve's cultural and natural values. Access can lead to the spread of weeds and disease and therefore appropriate hygiene practices must be undertaken.

The Dampier to Bunbury Natural Gas Pipeline (DBNGP) is located to the east of Mundatharrda and Bimbee National Parks, and tall towers are located at substations along the pipeline to the east of Mundatharrda National Park. They can be seen from most viewing points along the eastern range.

Jiggabiddi Nature Reserve

A historic prolongation[11] on the western side of Jiggabiddi Nature Reserve and a 'local agreement' with the property owner to access water from the Gascoyne riverbed and floodplain was converted to an easement which was supported by the Conservation Commission and approved by the Minister for Environment in 2016. The infrastructure (water pipeline and electrical cable) services a pump north of the river to supply water for a property and was in operation prior to the reserve being vested as an A class reserve.

The water pipe runs underground for about 300m within a 5m easement including the electricity supply. Several conditions are attached to the agreement, and any breach will result in cancellation of the easement.

As the existing infrastructure ages, forward thought and planning should be given by the property owner to relocate the pipeline, electrical cable and any other infrastructure outside the reserve to ensure continual access to water.

Management objectives:
To ensure water resource use has minimal impact on key values of the reserves.
To support a catchment management approach to maintain and protect the natural surface and ground water regimes and the hydrological values of the planning area.

Management strategies
1. Develop and implement research and monitoring plans to monitor aquatic health.

Bimbee National Park

A small parcel of UCL approximately 200m² (Lot 592 on DP 29783) associated with the DBNGP sits on the northern extent of the Pimbee Road. It is not included in Bimbee National Park. The vermin proof fence (R16454) intersects Bimbee National Park and runs virtually north/south along the western portion of Mundatharrda National Park. Currently much of it is in disrepair (see photo) and access through the national parks may be required.

Above: Vermin proof fence on a claypan at Bimbee National Park. Photo – Veronica Newbury/DBCA

Management objective: To minimise the impact of utilities and services in the reserves on values of the reserves and provide safe, cost-effective services.

Management strategy
1. Through the JMB contribute to planning, assessment and implementation of utilities, infrastructure and services proposals to ensure that impacts on the values of the Yinggarda parks and reserves are minimised; including ensuring departmental licence or lease arrangements with appropriate conditions are in place.

[11] A prolongation is an extension of a grower's property into the middle of the Gascoyne River bed.

Pastoralism

Except for Beeirdeegoorah and Jiggabiddi nature reserves, most of the planning area adjoins pastoral stations. The boundary fencing is in various states of disrepair and requires assessment and ongoing repair and maintenance. Areas near watering points (bores and tanks) and springs and soaks are vulnerable to stray stock. Working with neighbouring properties to repair and maintain fencing to prevent stray stock accessing the national parks and reserves is a priority. Stray stock damages vegetation, contributes to erosion and spreads weeds. Care should be taken to maintain appropriate fencing so as not to exclude native species from accessing water.

Wild dogs and dingoes

Dingoes hold special cultural significance for Traditional Owners. They have been part of traditional Aboriginal society for thousands of years, for companions, protection, and even extending women's contribution to food supply and traditional economy (Phillip 2017).

Dingoes are recognised as native species under the BC Act. An exemption under section 271 of the BC Act allows control without a fauna licence or to take them as part of pest control activities for agricultural protection purposes.

Wild dogs and dingoes are declared pests for the whole of Western Australia under section 22 of the *Biosecurity and Agriculture Management* Act *2007* (BAM Act). DPIRD (2025) defines wild dogs as free roaming dogs including pure bred dingoes, dingo hybrids and domestic dogs that have escaped or been deliberately released and now live in the wild.

Importantly, recent genetic research indicates that dingo hybridisation with feral dogs in Western Australia is significantly lower than previously thought, with 98% of the individuals tested having at least 80% dingo ancestry and 69% having at least 90% dingo ancestry (Stephens et al. 2023). It is therefore important to acknowledge that control activities are almost certainly targeting dingoes as opposed to feral dogs and hybrids.

Management of wild dogs within the conservation reserves needs to balance the cultural importance of dingoes and their beneficial ecological function as predators with the need to support protection of livestock in neighbouring pastoral operations from wild dogs. There is concern about the non-selective nature of baiting and trapping techniques as well as the potential for secondary poisoning when undertaking customary hunting activities.

Further consideration and discussion with relevant stakeholders are required to determine a suitable strategy for wild dog management in the conservation reserves, where it is considered necessary.

Management objective: To protect the values of Yinggarda parks and reserves

Management strategies

1. Where control is required, liaise with biosecurity groups, DPIRD and neighbours through the JMB to determine an appropriate wild dog management strategy and methodology that:
   a. is consistent with the protection of natural and cultural values
   b. is best practice for wild dog control
   c. does not cause secondary impacts particularly during the taking of fauna for customary activities.
2. Investigate research opportunities to assess range movement of dingoes.

Key Performance Indicator:

Performance Measure	Target	Reporting
Determine need for a control method to reduce the numbers of wild dogs.	Evaluate the abundance of wild dogs within the conservation estate. If required determine the best control method for wild dogs without secondary impacts.	Within 5 years. Within 5 years.

Understanding Bunnah (research and monitoring)

Research and monitoring are essential components of management. Adaptive management informed by research and monitoring will be critical to successfully implement this plan.

Research

There have been few biological surveys in the conservation reserves and there are significant gaps in knowledge about their values and threats. Gathering baseline information to inform adaptive management will be important to determine the success of ongoing management. In implementing this plan, the department will collaborate with other agencies, universities, and other research organisations to address these gaps, prioritising the gathering of baseline information and strategic research that informs and improves management of the parks and reserves. Priorities will be determined by the JMB guided by existing knowledge, evaluating gaps in knowledge and available funding.

Cross-cultural, collaborative research provides an opportunity for western scientists to play a role in supporting and following indigenous research partners and engaging in right-way research or science (McKemey 2022). This is defined as a collaborative process of bringing indigenous and western scientific knowledge and methods together to create ethical, productive and mutually beneficial research (McKemey 2022).

Collaborative research that provides valuable scientific knowledge to inform and improve management of the reserve will be prioritised. Information and knowledge gaps include (but not limited to):

- the collection of traditional ecological knowledge to inform management
- ecological water requirements of significant flora and vegetation communities particularly Mooka Creek and significant springs on the western side of Mundatharrda and Bimbee national parks
- vegetation distribution and mapping of ecological communities
- density and distribution of priority weed species
- systematic fauna surveys
- floristic information including accurate ecosystem mapping
- fire ecology and management including traditional knowledge and right way fire
- monitoring of priority ecological communities including the invertebrate assemblages of Mooka Spring and the spinifex dominated assemblages
- climate change and its potential impact on key habitats
- visitor use of the planning area and its impact.

Management objective: To increase knowledge and understanding of the reserve's key values and management issues to inform and improve management.

Management strategies

1. Identify research and monitoring priorities for conservation parks and reserves and continue to update this over time.
2. Subject to available resources, conduct integrated research and monitoring programs that implement components of research priorities identified for the parks and reserves.
3. Wherever possible, encourage, support and involve external agencies and individuals whose research is focused on research priorities identified for the conservation estate.
4. Ensure that traditional knowledge about Bunnah informs research and monitoring programs so they are culturally appropriate.
5. Ensure Traditional Owners are included in the research and monitoring carried out in the parks and reserves and are approved by the JMB. The YAC will determine the right person for that Bunnah.
6. Ensure relevant information gained through research, monitoring and experience is available to the JMB and the department in regional and district office libraries/databases.
7. Update management strategies in response to key findings from research undertaken in, or relevant to the parks and reserves.

Monitoring

Long-term monitoring should inform adaptive management and performance assessment against the management objectives and strategies defined in this plan. Outcomes and performance of the plan are monitored using Key Performance Indicators (KPIs). The KPIs (comprising target, performance measure, and reporting requirement) have been identified for selected key values and management issues and are presented throughout this plan. The KPIs reflect the highest conservation and management priorities.

The JMB will provide strategic input into how management strategies are implemented and monitor the implementation of the plan. Monitoring and evaluating the outcomes of management strategies and reporting against KPIs allows management effectiveness to be assessed. This outcome-based approach provides a robust framework to support adaptive management of the planning area.

Monitoring should also include measurement of threats, so that the condition of the value can be linked to impacts from natural or human influences.

The Commission is responsible for conducting the periodic assessments of this plan in accordance with section 19(1)(g)(iii) of the CALM Act. Joint management partners will provide information to the Commission on request to enable assessment of the plan's implementation as well as assessment of how the plan is performing against the management objectives. Assessment is an important component of an adaptive management framework and can identify opportunities for improvement and signal where management may need to be altered if it is not successfully meeting the management objectives. A portfolio of evidence (such as quantitative data, photographs or imagery which show any spatial and temporal changes, or other written documents) will be maintained to help demonstrate management implementation and outcomes.

Management objective: To increase knowledge and understanding of the reserve's key values and management issues to inform and improve management.

Management strategies

1. Support, encourage, record and where necessary undertake research that facilitates management, establishes baseline information and contributes to management objectives, and adapt future management where appropriate.
2. Work with other organisations to facilitate greater sharing of research data about the planning area between the joint management partners, mining and consulting companies, State Government agencies and other stakeholders, and to provide data to centralised databases or data platforms where appropriate.
3. Develop partnerships and programs with universities, and other external researchers and research organisations to encourage research projects that fill priority knowledge gaps.
4. Ensure relevant information gained through research in the planning area is available for management purposes.
5. Develop and implement a research program that:
    a. provides for the implementation of research priorities identified in this plan
    b. standardises data collection methods and mapping to help identify trends
    c. specifies outcome-based evaluation methods
    d. uses appropriate control sites
    e. communicates the outcomes of high priority research projects to external groups and organisations.
6. Explore opportunities to integrate traditional knowledge with contemporary science programs and encourage the uptake of traditional management knowledge.

Management objective: To monitor and report on the implementation of this plan to track its effectiveness in meeting its objectives.

Management strategies

1. Monitor the KPIs and collate and report findings to the Joint Responsible Body (Conservation and Parks Commission Yinggarda Aboriginal Corporation).
2. Assess and report on the overall effectiveness of the management of the reserves.

Above: Thorny devil. Photo – Rennee Turner

Appendix 1: Conservation reserves tenure information

Reserve name	Reserve number	Lot number	Deposited Plan	Area (ha)	Native Title Exclusivity
Beeirdeegoorah Nature Reserve 483.5 ha	R28220	196	161670	483.47	Non-Exclusive
Jiggabiddi Nature Reserve 26.9 ha	R31444	1176	91927	26.88	Non-Exclusive
Bimbee National Park 93 756.6 ha	R54303	501	423662	36678.78	Non-Exclusive
		502	423662	3900.01	Non-Exclusive
		503	423662	130.94	Non-Exclusive
		504	423662	15508.2	Non-Exclusive
		505	423662	12297.7	Non-Exclusive
		506	423662	25238.68	Non-Exclusive
		507	423662	2.31	Non-Exclusive
Mooka Conservation Park 831.3 ha	R54302	1005	423664	306.26	Exclusive
		1006	423664	0.37	Exclusive
		1007	423664	524.70	Exclusive
Mundatharrda (Yinggarda) 310 531.4 ha	R42474	462	240384	142274.19	Non-exclusive (original KR National Park area)
		509	194239	11006.66	Exclusive
		511	194241	66.23.00	Exclusive
		512	194280	5636.60	Exclusive
		572	26040	6713.00	Exclusive
		315	71104	15134.30	Exclusive
		1008	423663	29642.92	Exclusive
		1009	423663	3514.03	Exclusive
		1010	423663	75.16	Exclusive
		1011	423663	20070.03	Exclusive
		1002	423664	52661.43	Exclusive
		1003	423664	22953.08	Exclusive
		1004	423664	849.98	Exclusive
Adjacent area (Baiyungu and Yinnigurrura) not included in this plan 15 423.8 ha	R54560	906	423664	3607.93	Exclusive
		911	423663	2246.01	Exclusive
		912	423663	9491.29	Exclusive
		914	423663	78.59	Exclusive

Above: An important, life-giving spring on the western side of the Kennedy Range. Photo – DBCA

Appendix 2. Vegetation communities within the Yinggarda Conservation Estate

Veg association	Description	Location
129	Bare areas; drift sand	Mundatharrda NP
49	*Atriplex* spp. *Maireana* spp. communities on alkaline soils	Beeirdeegoorah & Jiggabiddi
158	Hummock grasslands, shrub steppe; kanji over *Triodia basedowii*	Mundatharrda NP
160	Shrublands; snakewood and *Acacia victoriae* scrub	Mundatharrda NP
162	Shrublands; snakewood scrub	Mundatharrda NP
182	Low woodland; mulga and bowgada (*Acacia ramulosa*)	Mundatharrda NP
184	Shrublands; mulga & bowgada scrub	Bimbee NP
244	Shrublands; *Acacia sclerosperma* & *A. victoriae* scrub	Mundatharrda NP
264	Low woodland; *Acacia victoriae* & snakewood shrubs	Mundatharrda NP & Mooka CP
283	Shrublands; *Acacia sclerosperma*, bowgada & *A. victoriae* scrub	Bimbee NP
301	Hummock grassland; shrub steppe; mixed scrub; hard spinifex (*Triodia basedowii*) with dwarf shrubs	Mundatharrda NP
303	Sparse succulent steppe; bluebush with very sparse snakewood shrubs	Mundatharrda NP
307	Low woodland; bowgada & *Acacia subtessarogona*	Mundatharrda NP
308	Mosaic: shrublands; *Acacia sclerosperma* sparse scrub/succulent steppe; saltbush and bluebush	Mundatharrda NP
320	Shrublands; bowgada & *A. victoriae* scrub	Mundatharrda NP
321	Mosaic: shrublands*; Acacia sclerosperma* and bowgada scrub/succulent steppe; saltbush and bluebush	Mundatharrda NP
342	Mosaic: low woodland; waterwood/shrublands; *Acacia sclerosperma* & bowgada scrub	Bimbee NP
349	Mosaic: shrublands; bowgada scrub with scattered mulga/shrublands; bowgada & grevillea scrub	Bimbee NP
205	Shrublands; *Acacia sclerosperma* & bowgada scrub	Bimbee NP
676	Succulent steppe; samphire	Bimbee NP
1271	Bare areas; claypans	Bimbee NP
2081	Shrublands; bowgada and associated spp. scrub	Bimbee NP & Mundatharrda NP
Adequate protection in existing conservation reserves (>15%)		
206	Shrublands; bowgada & grevillea scrub	Bimbee NP

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Above: The track into Jiggabiddi Nature Reserve. Photo – Veronica Newbury/DBCA