CENTRAL LAND COUNCIL

Cover image: Coral Napangardi walking on her country near Pututu (Mt Theo), Central Desert ALT

NGURRA WALALJA WARRA WARRA KANJAKU LOOKING AFTER OUR COUNTRY Southern Tanami Indigenous Protected Area Plan of Management 2012 Central Land Council Compiled by James Young and Karissa Preuss

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Australian Government

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The Nature Conservancy

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Nungarrayi Egan
Japanangka Lewis
Napurrurla Nelson
Japaljarri Simms
Japangardi Small
Jungarrayi Morris
Jangala Egan

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i Ngurrakungarduyupatu kuja kalu wangka

"Nganimpaju kanalu nyina nguru walalja nyampurlaju ngurraralaju Warlpiri kirlangu-laju IPA-ngkaju. Nyampu ngurrara ngulaju jukurrpa warnu. Kuruwarri manu jukurrpa kuja ka nguna nyampurla ngurrara-la, pirlingka, watiyarla, karrungka manu nyiya kanti-kanti watiya kari panu karirla manu jurlpu pinki nyiya kanti-kanti.

"Ngurrara-kari ngurrara-kari jalanguju ngulaju karlipa manngu nyanyi-juku jukurrpa kurlu palka kurlu. Palka-juku ka karri jukurrpaju nyurru-warnu-juku manu palka-juku jalanguju.

"Ngurrara walaljarluju ngulaju karlipa nyina puntu manu wardinyi manu karlipa nyanu milya-pinyi ngurrara ngula wardingki. Ngurrara walaljarlaju ngulaju karlipa pina jarrimi kuruwarriki manu jukurrpaku walaljaku. Nyarrpa-langu kuja karlipa-jana panu kariki yipilji-kari Yapaku nyinami marda jaja, jamirdi manu nyiya langu marda.

"Ngurrara-kari ngurrara-karirliji ngulaju karlipa mardarni Kirda (ngurrara walalja) manu Kurdungurlu (Ngurrara warrra-warra kanja kurlangu). Jarnku mirni-mirni kalu warrki-jarrimi. Milya-pinyi kalu nyanu ngurrara nyarrpara-ku kalu Kirda marda, Kurdungurlu marda nyina.

"Nyurruwiyi nyurruwarnu patu ngalipaku palangu patu kalalu ngurraraju warra-warra kangu manu mardarnu ngurrjungku pirrjirdirli. Jalangu jalanguju punkulku ngalpa jangkardu kangurnu Kardiyarluju marna Kardiya kurlangu, ngurr-ngurrpa manu warlu wiri-wiri.

"Nyurruwiyi Yapaju kalalu wapaja ngurrara-kari ngurrara-kari, warluju ngulaju kalalu yarrpurnu wita-kari wita-kari yirri-yirrirli. Milya-pungurlpalu ngurraraju kuruwarrilpalu milypungu, manurlpalu milyapungu yulyurrpu, kuluwa, wanta manu karapurda pinki. Milyapungurlpalu nyangurla warlu yarrpinjakuju, mangarriki ngarnti yungu yangka Yapangku, marlungku manu jurlpungku yupuju wardingki ngarni.

Jalangurluju yungurlipa warra-warra kanyi manu nyurruwarnu piyarlu warlu wiri kijaku wita-juku yarrpirni. Warlungku wiringki kajika Sacred sites manu animal wati muku janka kujakujaku.

"Jalangu jalangurlku karlipa milypa-pinyi foxes, cats, camel manu rabbits. Jalanguju camel-ju panu nyayirni ngurrara-kari ngurrara-kari nawu mani kalu warnirri manu mulju, watiya pinki. Ngapa kalu muku ngarni, mangarri yupuju wardingki yakajirr manu wanakiji pinki. Purlurlpa. Yupuju wardingki mangarriji ngulaju yankirri-ki, wardilyka-ku, marlu-ku manu Yapa-ku, nati camel-ku. Nyurruwiyiji kala nagapaju palka-juku ngunaja wanirrirlaju manu muljungkaju, jalanguju ngapangka kalu wapami-warru, ngawu-mani kalu, ngapa kalu muku ngarni manu mangarri-langu. Kurnta-wangurlu.

"Marna Kardiya kurlangu-rlangu Yapa-kari yijala. Pardimi kalu yupujurla ngurrara-kari ngurrara-kari mangarri-irla kankarlumparra. Kalanalu karlaja yarla manangkarra-la manu ngarlajiyi karrungka, kala jalanguju karrungkaju Kardiya kurlangu marna ka pardimi ngarlajiyingka kankarlarni manu jinta-kariji yarlangka kankarlumparra yijala manangkarra-laju, Kardiya kurlangu marnaju.

"Kardiya kurlangu marna manangkarrarlaju panu nyayirni.

"Jalanguju yungurlipa warrki-jarrimi janku mirni-mirni Kardiya manu Yapa way nyarrpangku yurngurlipa ngurrara ngurrjungku warra-warra kanyi.

"Yungurlipa jukurrpa manu kuruwarri pina-jarrimi ngurrara-kurlangu walalja kurlangu manu warrki mani panu kariki yangupala patuku, kamina-kamina-ku, yungurnurnalu panungku warla pajirni nyampu threats kujalu nganpa jangkardu kangurnu. Mardarni kanalu nyanu palkajuku jala Warlpiri kurlangu jukurrpa manu kuruwarriji. Nyampuju jukurrpa manu kuruwarriji mardarni juku kanalu nyanu ngurrara walalja kurlangu. Yungurnalu pirrjirdirli-juku mardarni manu yungurnalu pina-jarrimi nyarrpangku yungurnalu ngurrara ngurrjungku warra-warra kanyi. Nganimpa nyangu IPA-ji ngulaju wiri-jarlu nyayirni, ngula kanalu wangkami yungurlipa warrki-jarrimi jinta warlayi-juku nganimpa nyangu ngurrara warra-warra kanjaku."

i Statement from traditional owners

"We are the traditional owners of country in the IPA. Our land was created by Jukurrpa when our spirit ancestors made everything in the country – everything was created in the Jukurrpa: rocks, trees, creeks, plants and animals.

"Every part of our land is important for us because Jukurrpa is still there today. It was there before us and we were born into it.

"The country makes us who we are and shows us where we come from. The country gives us our laws and shows us how we are related to each other. The country makes us strong inside, spiritually. When we are out in country we know where we belong, the spirit comes inside and we feel strong and healthy.

"Every area of country has Kirda – traditional owners, and Kurdungurlu – guardians. Kirda and Kurdungurlu work together and have important roles and responsibilities to look after country.

"In the past our old people looked after country and kept it strong. Now there are new problems coming in like weeds, feral animals and big wildfires.

"In the past the old people walked all over country; fire was controlled by old people, they were really careful. They knew the land and had knowledge of seasons and they always had good reason to light fire, to regenerate country for food, for Yapa (people) and for animals. Now we need to keep this going to stop big wildfires so they don't destroy sacred sites and kill all animals.

"Until recently we didn't know about fox or cats or camels or rabbits. Now camels are everywhere destroying waterholes, plants and soakages, drinking all the water, eating bush tucker: yakajirri (bush raisin), wanakiji (bush tomato). They're too greedy - bush food belongs to emu, turkey, kangaroo and Yapa – not camels. When we were young there was always water in the soakages and rockholes, today they trample all over them, drink all the water and eat all the foods. They have got no manners.

"There is no Jukurrpa for camel, fox, cat, rabbit – nobody in Australia dances the rabbit story – we don't know these animals.

"Weeds too – they are foreigners. They grow all over bush foods. We used to dig for Yarla, Yams, on creeks but now couch grass and buffel grass have taken over.

"Today we want to work both ways to keep country healthy. We say: 'Ngurra Walalja warra warra kanjaku jarnku mirni mirni, Yapa manu Kardiya jintangka juku,' which means: 'Looking after our country both ways, Yapa and Kardiya people together as one'.

"We want to pass on knowledge about country and create jobs for young people to stop new threats coming in. We've still got Yapa law and culture. This law comes from land and is about looking after land; we want to keep this strong and learn new ways to look after country. Our IPA is a really big area of land and we want to work together with other people, partners, to look after it."

ii Summary of the plan

This document, entitled Ngurra Walalja Warra Warra Kanjaku: 'Looking after Our Country' is the Plan of Management for the Southern Tanami Indigenous Protected Area (IPA).

The IPA program, an initiative of the Australian Government, is directed at supporting Aboriginal people to manage their country for the enhancement of biodiversity and cultural values. Implicit in the protection of these values is recognition of social benefits for participating Aboriginal people and communities, including improvements in employment, health and education outcomes.

The IPA program is based upon traditional owners entering into voluntary agreements to add their lands to the National Reserve System (Australia's system of protected areas). IPAs are classified according to International Union for the Conservation of Nature (IUCN) protected area categories.

Traditional owners of the Southern Tanami IPA have decided to manage their country as an IUCN category 6 protected area, which is defined as:

> *"[An] area containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while at the same time providing a sustainable flow of natural products and services to meet community needs."*

This plan outlines a suite of strategies directed at achieving a management regime consistent with this IUCN definition. Each of these strategies is based upon an appreciation of the central role of Yapa customary knowledge and practices in maintaining a healthy environment. They are also informed by the need to combine traditional ways of managing country with new approaches to address new threats that have appeared since the old people stopped walking their country.

In accordance with traditional governance regimes and to effectively resource and manage the IPA, the plan identifies three management regions centred on the communities of Nyirripi, Yuendumu and Willowra. Each region has its own IPA Management Committee responsible for local decision-making and planning and to which the Warlpiri Rangers are responsible.

An IPA Coordinating Council comprised of delegates from each region is tasked with strategic planning across the entire IPA, information sharing, and advocacy on behalf of traditional owners and local ranger groups. A central resource, logistical and coordination hub at Yuendumu provides an economy of scale for management activities across the three regions.

The management objectives and strategies for Ngurra Walalja Warra Warra Kanjaku are grouped into four themes, which reflect the primary goals of traditional owners and community residents in managing their country. These include discussions of values, issues and opportunities and management strategies related to:

"Keeping Culture Strong"

This theme includes strategies that sustain and strengthen customary management practices and Indigenous Ecological Knowledge (IEK), which are central to maintaining the natural and cultural resources of the region and the social and spiritual wellbeing of the region's landowners. These include:

- A program of Ngurra Walalja Warra Warra Kanjaku country visits
- Customary land management activities
- Transfer of cultural and ecological knowledge
- Cultural mapping
- Management of multimedia data related to IEK and cultural knowledge of country
- Development of infrastructure that supports access to country.

Senior traditional owner George Jungarrayi Ryder ("Cowboy") passing on knowledge to younger Kirda and Kurdungurlu (traditional owners and custodians) for the Yinapaka (Lake Surprise) area

"Keeping Country Strong"

This theme includes strategies that marry customary and Western management techniques to enhance the condition of cultural and biodiversity values in the region and mitigate key threatening processes. These include actions directed at:

- Fire management
- Weed control
- Feral animal management
- Soil conservation
- Addressing knowledge gaps.

"Teaching the Right Way"

This theme includes educative processes to strengthen and maintain customary and Kardiya laws, raise community awareness about threats to country, and educate land managers in both traditional and Western approaches to caring for country. These include:

- Development of Warlpiri Ranger skills
- Recording and reporting illegal activities and cultural misconduct on country
- Production of bilingual land management resources and educative material
- Development of education pathways
- Community awareness-raising initiatives.

"Jobs and Economic Development"

This theme includes strategies to deliver employment and economic development outcomes that improve livelihoods and broaden the funding base of the IPA. These include:

- Employment opportunities to implement Ngurra Walalja Warra Warra Kanjaku
- Broadening the funding base of the Warlpiri Ranger program
- Development of employment and management partnerships
- Support for land management enterprise opportunities.

Willowra Warlpiri Rangers, Azariah Martin, Dominic Morton and Nazareth Long, working on the Regional Tanami Biodiversity Monitoring Program at Newmont's Granites mine

iii How to use this plan

Part A BACKGROUND (Chapters 1 and 2)

1. **Ngurra Manu Yapa: Country and People**

Contains introductory information that provides a regional context with regard to land types and ecology, local Aboriginal cultures, social history, demography and infrastructure.

2. **Management Framework**

Sets out the guiding management principles, governance structures and management arrangements, and the roles and responsibilities of respective parties in the implementation of Ngurra Walalja Warra Warra Kanjaku.

Part B MANAGEMENT STRATEGIES (Chapters 3 and 4)

3. **Management Themes**

Describes the four management themes that define the primary aspirations of Yapa in managing country. Background discussions of values and current initiatives relevant to each theme are followed by a description of issues and opportunities, then management objectives and respective strategies related to each.

4. **Monitoring, Evaluation, Review and Implementation**

Management requirements for monitoring, evaluation, reporting and implementation against the four management themes of Ngurra Walalja Warra Warra Kanjaku.

Part C APPENDICES

Contains appendices that provide detailed information related to matters addressed in Parts A and B of this plan.

iv Planning hierarchy

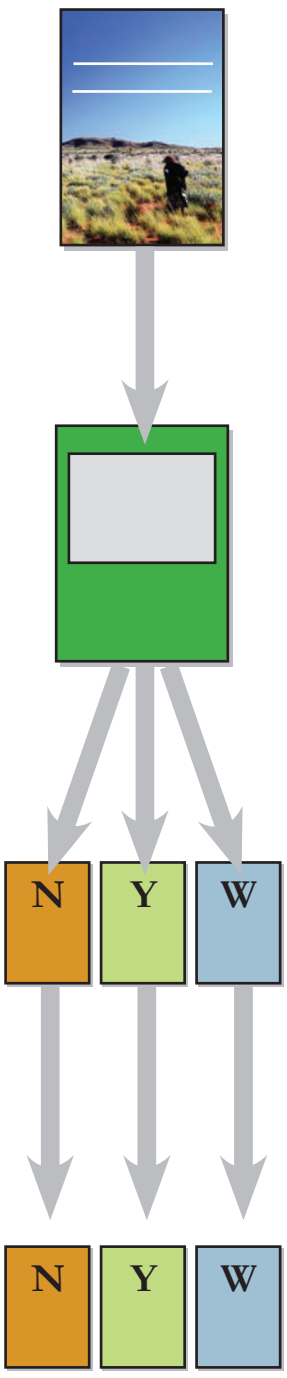
Ngurra Walalja Warra Warra Kanjaku provides overarching management direction and guidance across the entire Southern Tanami Indigenous Protected Area (IPA). A plain English version of the document communicates key elements of the plan to community members.

While conforming to the charter of Ngurra Walalja Warra Warra Kanjaku, the following subsidiary plans provide the local level detail and operational strategies required for on-ground management:

Operational Plans (one each for the Nyirripi, Yuendumu and Willowra IPA management regions). These documents build upon the IPA plan of management and use the same set of management themes to detail specific values and management issues and opportunities as they pertain to each region. Management regions are divided into management zones, each with their own management regime. Management strategies for each region are tabled with reference to corresponding management zones.

Activity Schedules (one each for the Nyirripi, Yuendumu and Willowra regions). These schedules detail management actions that correspond to management objectives set out in the IPA operational plans.

Figure 1 summarises the hierarchy of documents under Ngurra Walalja Warra Warra Kanjaku, including their primary audience(s), respective governance bodies and lifespan.



Ngurra Walalja Warra Warra Kanjuku establishes the overarching charter for looking after country in the IPA.

Primary audience: Funding agencies, IPA Manager, Ranger Coordinator(s), potential investment partners, community organisations, regional stakeholders.

Governance body: IPA Coordinating Council

Lifespan: 5–10 years

IPA Plan of Management (community version) large-format or screen-based summary of IPA Plan of Management, large-format community-use maps to support fieldwork.

Primary audience: Nyirripi, Yuendumu, Willowra communities, Ranger Coordinator(s).

Governance body: IPA Coordinating Council

Life span: 5 – 10 years

IPA Operational Plans (x3) provide high levels of local detail for respective Nyirripi, Yuendumu and Willowra IPA management regions.

Primary audience: IPA Manager, Ranger Coordinator(s), IPA Management Committees, Senior Rangers, technical staff, regional stakeholders.

Governance body: Respective IPA Management Committees.

Lifespan: 5–10 years.

IPA Activity Schedules (x3) informed by operational plans and annual IPA planning cycles and linked to IPA reporting and performance milestones.

Primary audience: IPA Manager, Ranger Coordinators, Warlpiri Rangers.

Governance body: Respective IPA Management Committees.

Lifespan: Annual.

Figure 1 Hierarchy of Planning Documents

v How this plan was developed

The Plan of Management (PoM) for the Southern Tanami IPA is the product of four years of intensive participatory planning directed at the integrated management of the cultural and natural values of the region.

The Central Land Council (CLC) lodged an initial proposal with the then Commonwealth Department Environment Australia to undertake an IPA feasibility project for the Southern Tanami region in 2005. Funding was granted in the following year and the project commenced in mid-2007 when an IPA development officer was appointed.

The IPA development project has involved a range of CLC staff, traditional owners and residents of the region, members of the Warlpiri Ranger groups, and representatives of regional mining, pastoral and conservation interests. Importantly, it has incorporated extensive on-ground natural and cultural resource management work, often undertaken in conjunction with consultation and planning programs.

The IPA development process was undertaken in three distinct yet overlapping phases, which are summarised below (refer to Appendix 2 for a complete summary of consultative and planning activities).

Phase 1 (2007 – 2008)
Reconnecting with country, information sharing, awareness raising and statutory consultations

On-country action planning, the core of the IPA development process, was initiated across the region during this phase. Country trips enabled traditional owners to reconnect with long unvisited areas of ecological and customary significance and establish their priorities in managing country within the context of an IPA. (Refer to Box 1 regarding details of action planning processes.)

On-country planning in the Wativawarnu area

Also during this phase, a combination of formal and informal consultations was conducted with traditional owners through a series of community meetings and small group forums so as to:

- Gauge traditional owner interest and capacity to manage country as an IPA
- Inform traditional owners of the implications of an IPA declaration
- Provide opportunities for people to ask questions and express their concerns.

Phase 2 (2008 – 2009)
Establishing IPA governance arrangements, action planning, natural and cultural values surveys

During this phase, IPA Management Committees were established in Yuendumu, Willowra and Nyirripi to provide local decision-making and governance for IPA management regions centred upon each of these communities. Committee members participated in a series of multi-day planning workshops (refer Box 2).

A number of pilot projects were commenced during this period, which enabled two-way management goals to be established around key issues. Natural and cultural resource surveys were also used to define and explore particular values.

During this phase, the capacity to undertake on-ground works was significantly enhanced through securing supplementary funding for natural resource management and Indigenous Ecological Knowledge (IEK) projects and increased funding for the Warlpiri Rangers, obtained through the Australian Government's Working on Country (WOC) Program.

Willowra-based Warlpiri rangers undertake a tracking survey at Wirliyajarrayi, the Lander River (Photo Desert Wildlife Services)

Phase 3 (2009 – 2012)
Development of an IPA Plan of Management, stakeholder negotiations, ongoing planning and on-ground management

During the final phase of the IPA development project, the findings from the previous years of IPA planning workshops and action planning activities were consolidated under four key management themes and incorporated into the Draft IPA PoM, Ngurra Walalja Warra Warra Kanjaku.

In 2010, an IPA Coordinating Council was established to oversee development of the Draft PoM and undertake higher-level strategic planning on behalf of regional IPA Management Committees. In the same year, an IPA Advisory Committee, comprising representatives of the Coordinating Council and key support staff and funding agency representatives, was also created to review progress and provide advice regarding collaborative management arrangements.

The three IPA Management Committees continued to meet during this period to discuss elements of the IPA PoM, refine subsidiary plans and oversee their respective ranger group activities.

Feedback received from key stakeholder groups on the Draft PoM was considered and changes to the plan were made, as appropriate, in late 2011. The PoM was finalised in January 2012.

Selina Williams, George Ryder and Ritchie Williams, feed back annual activities of the Warlpiri Rangers and traditional owners from the Willowra IPA management region to the Coordinating Council meeting 2010

Box 1 On-Country Action Planning

On-country action planning was at the core of the Southern Tanami IPA development process, particularly in the early phases. Seventeen on-country planning trips were conducted over the four years of the IPA development project. These trips, which ranged from four to ten days in duration, involved some 190 traditional owners, or more than 10 per cent of the Aboriginal population of the Southern Tanami region. Each trip involved CLC land management staff supporting traditional owners to visit and maintain traditional responsibility for their country, as well as providing education and training opportunities in contemporary natural resource management techniques.

Visiting country was an essential first step in the IPA development process given that many Yapa had not visited parts of the proposed IPA for a long time and the significant data gaps regarding natural and cultural resources in the region. Discussing land management issues on- country assisted Yapa and Kardiya CLC staff to gain greater understanding of each other's perspectives of values and threats to country and establish a sense of common purpose.

Mickey Singleton facilitating on-country planning in the Nyirripi region. This meeting was conducted in conjunction with a trip focussed on aerial fire management, camel control, customary land management and IEK transfer

Land management works were undertaken as an essential part of on-country planning to enable both Yapa and Kardiya to understand the practical detail involved in each others land management approaches and to generate mutual respect for both skill sets. Activities undertaken on these trips included:

- IEK recording and inter-generational transfer
- Fire management (ground and aerial)
- Sacred site protection
- Rockhole cleaning
- Cultural mapping
- Ceremonial activity
- Fauna and flora surveys
- Vegetation condition monitoring
- Feral animal baiting
- Weed control.

Box 2 IPA Management Participatory Planning Processes

Annual planning workshops for members of the three regional Management Committees were conducted in 2008, 2009 and 2010. Each workshop was held over 2–3 days.

Nyirripi women at the annual Nyirripi IPA management region planning workshop 2008

In total, 76 Yapa participated in these planning workshops. Apart from facilitators, no participants were paid for their attendance, reflecting Yapa's commitment to the IPA development process.
A variety of cross-cultural participatory planning techniques were used in the workshops. These included:

- Semi-structured discussions in a meeting-style format – these assisted in identifying the diversity and breadth of ideas and aspirations regarding looking after country and elucidating and prioritising themes and actions in each management region.
- Separate sessions based on gender and age – smaller group discussions assisted in creating a forum for participants to feel comfortable in expressing issues and aspirations relevant to their gender and age group.
- Ground mapping exercises – these were held in the early phases of the project as ways of identifying the knowledge, values, aspirations and priorities of landowners.
- Mapping sessions – very large (2m x 3m) satellite maps with transparent overlays were used to document specific customary and Western land management values and local knowledge of country.
- Picture cards – these were relied upon throughout the planning process to prompt discussions on aspects of Western and customary land management approaches and to prioritise management actions and work sites.
- Specialist advice – project partners with relevant expertise, such as in fire management, feral animal control, ranger employment, and pastoral issues, as well as anthropologists and IPA neighbours, provided advice at Management Committee workshops.
- Ranger feedback sessions – in the latter phases of the IPA development project, rangers provided feedback regarding the work conducted in the preceding year to the Management Committees. This enabled Management Committee members to better plan activities for the following year.
- Action planning – during and at the end of the meetings, the aspirations and plans were documented on butcher's paper for all to see. This enabled Management Committee members to identify and agree on key themes and particular management tasks.
- Posters and picture books – feedback to workshop participants was provided through various media including posters, picture books and personal discussions.

PART A

BACKGROUND

CHAPTER 1

NGURRA MANU YAPA COUNTRY AND PEOPLE

Michael Watson, Tommy Watson and Neil Cook overlooking a rockhole at Marlujarra Central Desert ALT

1.1 Location and Regional Setting

The Southern Tanami IPA covers some 101,580 km² (10,158,000 ha) of the Northern Territory. Located to the northwest of Alice Springs, the IPA incorporates the heartland of traditional Warlpiri country in the southern portion of the Tanami Desert (Figure 2). The IPA is 30% larger than the state of Tasmania and is Australia's largest terrestrial protected area. It spans approximately 400 km north-to-south and 350 km east-to-west.

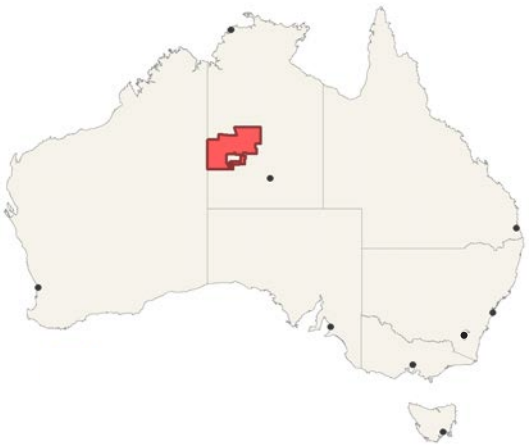


Figure 2 Location of the Southern Tanami IPA

The IPA is located entirely on inalienable Aboriginal Freehold land. It incorporates all of Yiningarra, Wirliyajarrayi, Pawu, Mala, Yuendumu, Yunkanjini and Lake MacKay Aboriginal Land Trusts (ALTs). It also includes the southern half of the Central Desert ALT and portions of Karlantijpa North and Karlantijpa South ALTs (Figure 4).

The IPA shares borders with a variety of land tenures, including adjacent ALTs, Aboriginal Reserves in WA, Newhaven Sanctuary, and numerous pastoral leases south and east of the IPA. A notable inholding within the IPA is Mt Doreen station, which is a privately held 99-year pastoral lease, centred on Pikilyi Springs.

The Southern Tanami region is sparsely populated, being home to approximately 1,600 Aboriginal people, most of whom reside in one of three communities: Yuendumu, Willowra and Nyirripi. Yuendumu, located 300 km northwest of Alice Springs, is the largest of these communities (pop. 1,000) and is the administrative centre of the Tanami region. Nyirripi (pop. 250) and Willowra (pop. 350) are both situated within the southern half of the IPA, 170 km and 150 km by road from Yuendumu respectively. In addition to these three permanently occupied communities, 20 outstations are located within the IPA. The majority of these are centred close to Yuendumu on Central Desert, Mala, and Yuendumu ALTs, though only one is permanently occupied. The Granites gold mine is located in the far north of the IPA. The mine sustains a permanent on-site workforce of 600 personnel who are accommodated at The Granites mining camp.

The Tanami Highway, which links Central Australia with the Kimberly region of WA, is the sole major road in the region. It bisects the IPA in a southeast–northwest direction for a distance of 400 km. Secondary roads link Yuendumu to the major communities of Nyirripi, Papunya and Willowra, and connect Willowra to the Stuart Highway. Minor roads link communities to outstations and bores. Mining exploration tracks penetrate more remote parts of the IPA, are limited in number, and generally do not provide through access. Bush tracks made by repeated vehicle use branch off minor roads and mining tracks linking hunting grounds and traditional estates. All roads within the IPA are unsealed, and only major and secondary roads are maintained on a regular basis.

1.2 *Ngurra* – Country

The Southern Tanami region has a semi-arid climate with a distinctive monsoonal influence. While the northern portion of the IPA receives a mean annual rainfall of 400 mm, this decreases to around 300 mm in the south. Most rainfall occurs over summer months when humid air is pushed in a southeasterly direction by monsoonal cyclonic low-pressure systems over the Kimberly and Arnhem Land regions. A lesser amount of rainfall occurs over winter months. This is generally associated with high-pressure systems that push up from the south.

Yapa recognise four broad, overlapping seasons: *Wantangka* (hot season), *Waklrrkinyl* (green season), *Yulpurru* (cold season), and *Karapurda* (westerly wind season) (see Figure 3). These are not strict seasons fixed in time, rather descriptions of climate and weather that are linked to seasonal indicators and ecological events.

Figure 3 Warlpiri Seasonal Calendar (from Buschenhofen and Robertson 1981)

The region is subject to an irregular cycle of wet years that punctuate long, relatively dry stretches of low or no rainfall. Wet years drive peak periods of biological growth and renewal when vast areas of country may be subject to inundation. At these times, ephemeral lakes and channels may be filled for months or years, groundwaters are recharged and episodic breeding events for birds, mammals and reptiles occur. In wet times, plant life also booms, producing heavy fuel loads.

The southern portion of the IPA is fringed by minor ranges of granite, sandstone and quartzite, most notably the foothills of the Reynolds and Truer Ranges. By contrast, the central, western and northern parts of the IPA are characterised by vast tracts of low-relief spinifex sandplains, linear and reticulate sandhill systems, broad drainage depressions and paleodrainage systems. Changes in these landscape elements are matched by changes in soil types and hydrology with implications for biological resources across the region.

The rocks, soils, plants and animals of the IPA are categorised by Yapa into eight basic land types, as follows. (Figure 5 shows the extent and location of each land type within the IPA.)

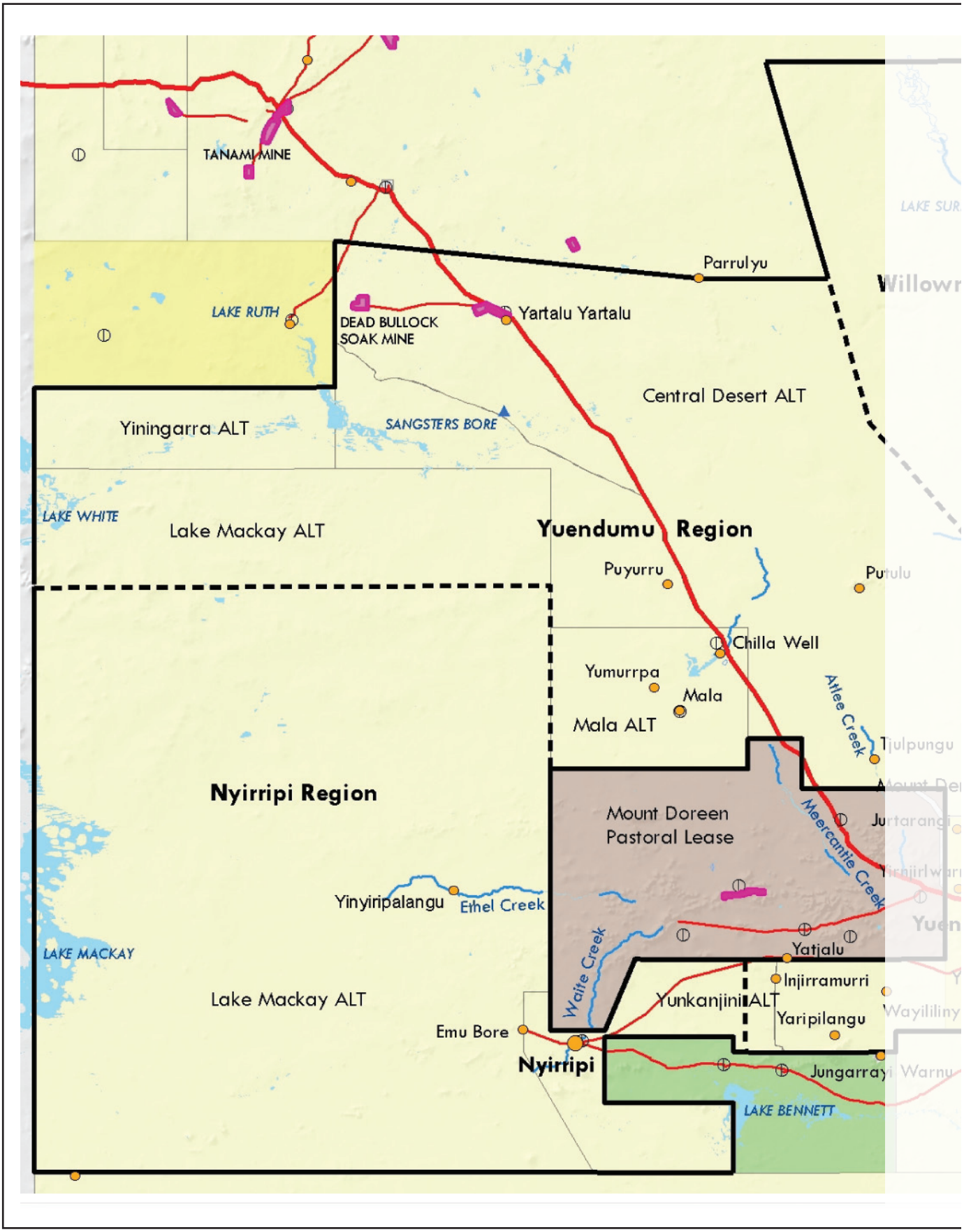
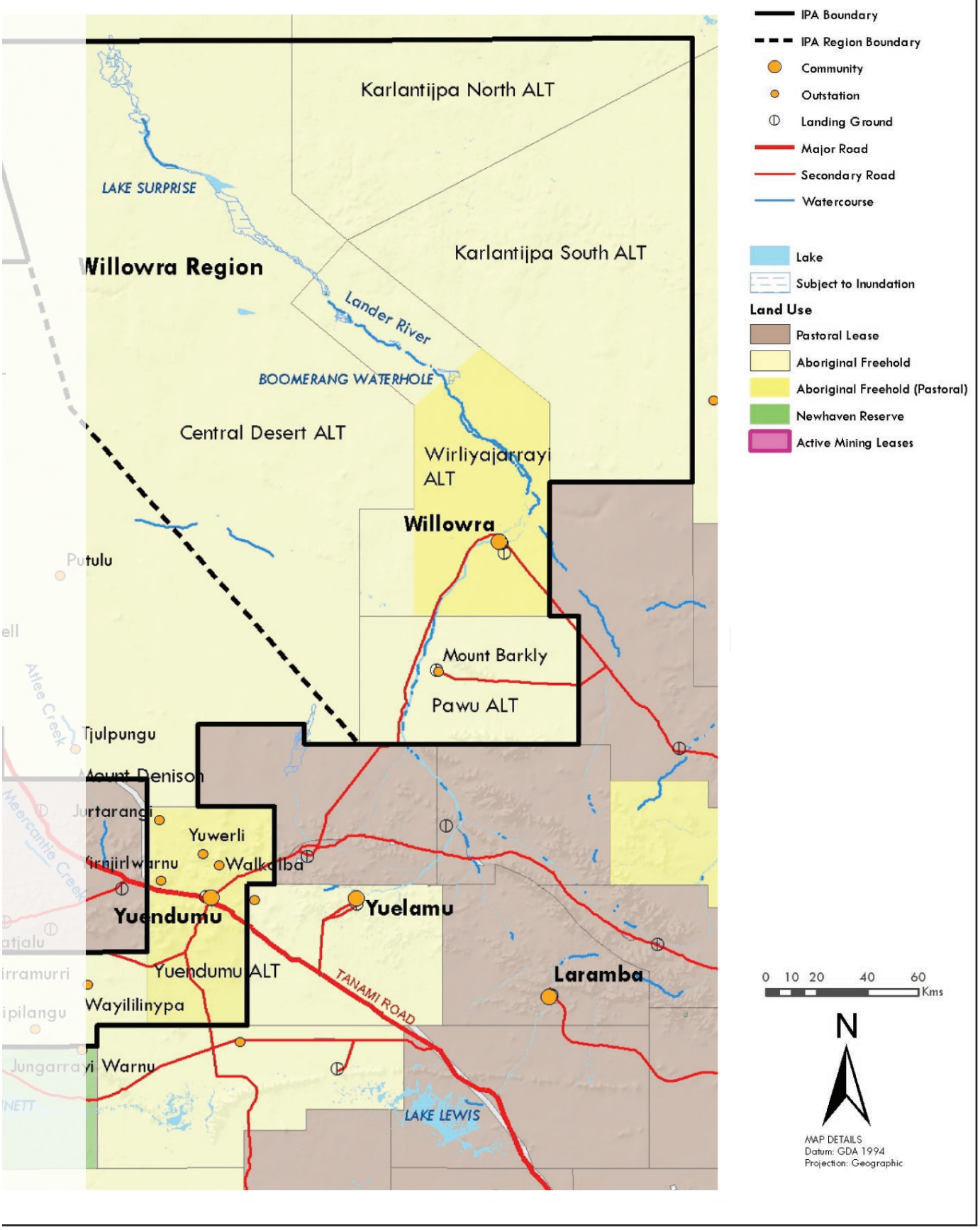


Figure 4 Southern Tanami IPA


IPA Boundary
IPA Region Boundary
Community
Outstation
Landing Ground
Major Road
Secondary Road
Watercourse
Lake
Subject to Inundation
Land Use
Pastoral Lease
Aboriginal Freehold
Aboriginal Freehold (Pastoral)
Newhaven Reserve
Active Mining Leases
Karlantijpa North ALT
Karlantijpa South ALT
Willowra Region
LAKE SURPRISE
Lander River
BOOMERANG WATERHOLE
Central Desert ALT
Wirliyajarrayi ALT
Willowra
Mount Barkly
Pawu ALT
Putulu
Tjulpungu
Mount Denison
Jurtarangi
Yuwerli
Walkatiba
Yuendumu
Yuelamu
Yuendumu ALT
Wayililinypa
Laramba
TANAMI ROAD
Warnu
LAKE LEWIS
0 10 20 40 60
Kms
N
MAP DETAILS
Datum: GDA 1994
Projection: Geographic

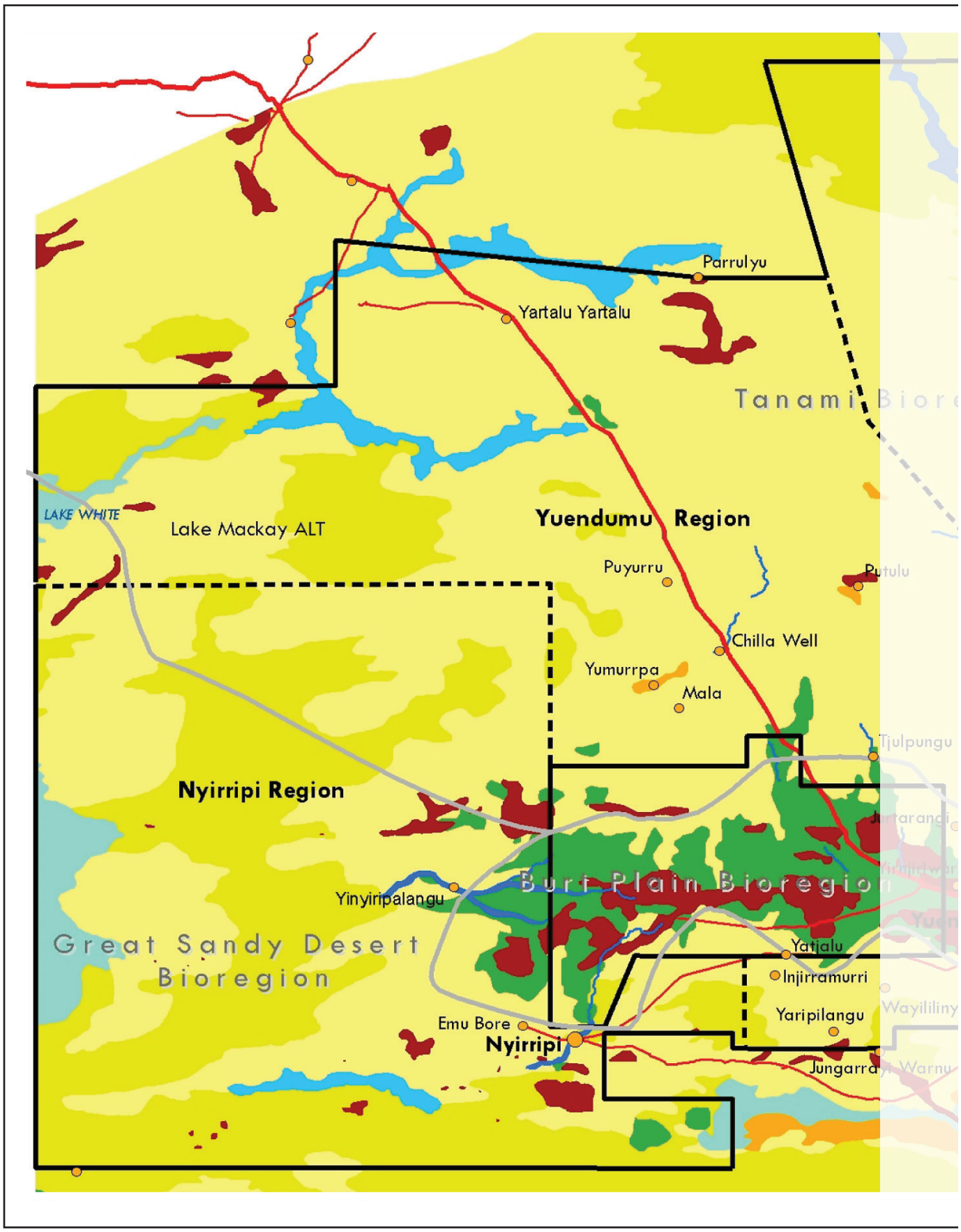
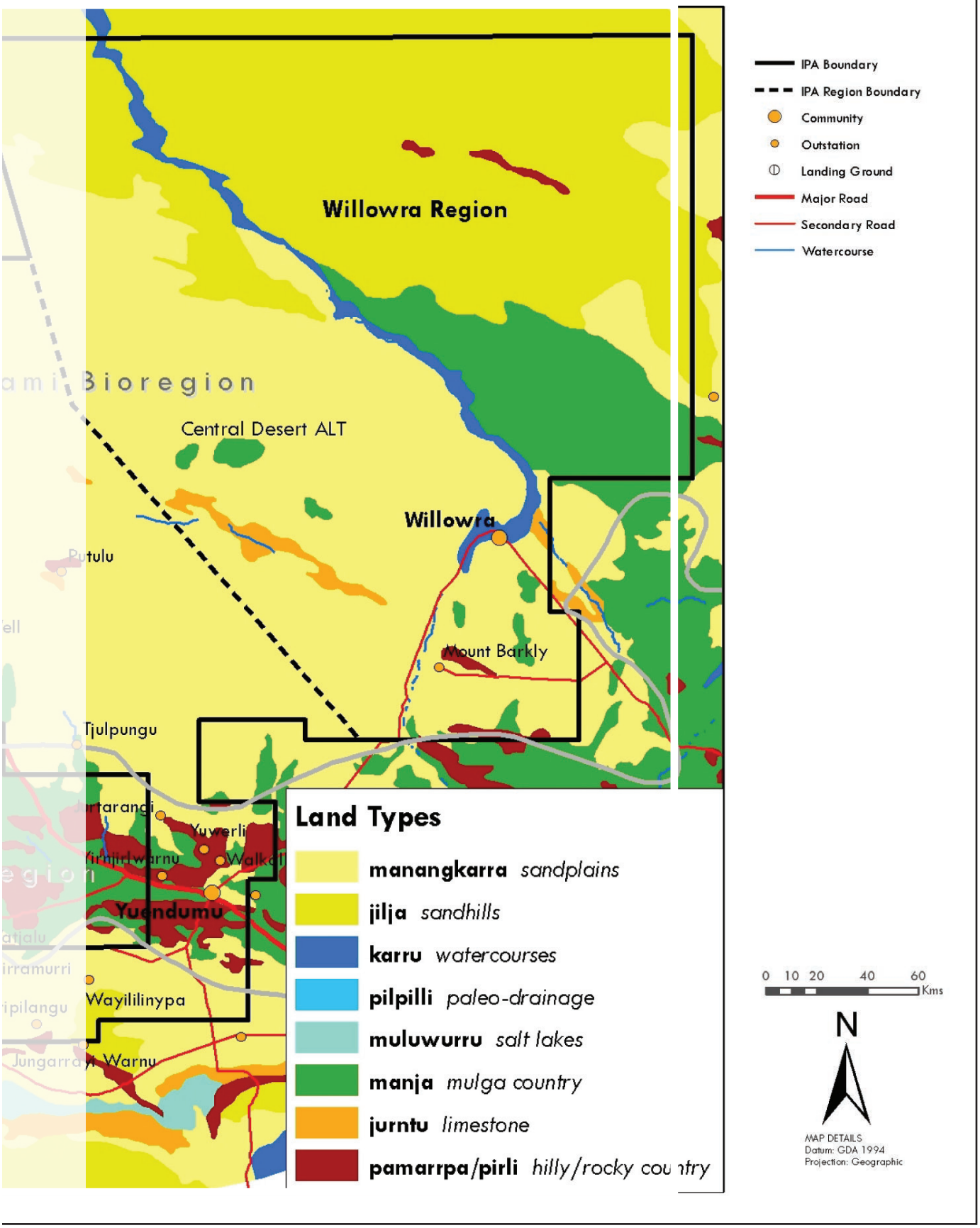


Figure 5 Land Types of the Southern Tanami IPA


Willowra Region
Bioregion
Central Desert ALT
Willowra
Mount Barkly
Tjulpungu
Yuendumu
Wayililinypa
Warnu
IPA Boundary
IPA Region Boundary
Community
Outstation
Landing Ground
Major Road
Secondary Road
Watercourse
Land Types
manangkarra sandplains
jilja sandhills
karru watercourses
pilpilli paleo-drainage
muluwurru salt lakes
manja mulga country
jurntu limestone
pamarrpa/pirli hilly/rocky country
0 10 20 40 60
Kms
N
MAP DETAILS
Datum: GDA 1994
Projection: Geographic

Manangkarra – Sandplain

The characteristic and dominant land type of the region, with vast and unbroken areas extending throughout the central, northern and eastern portions of the IPA. Generally flat or with almost imperceptible (low undulations), a lack of defined watercourses gives rise to local sheet flows. Areas of laterite are found throughout. The intrinsically flammable nature of the vegetation of this land type underpins the ecology of the IPA due to its extent and the lack of physical barriers to wildfire.

Vegetation: low, sparse, open shrub lands of Grevillea, Hakea, Acacia sp. over Triodia-dominated *marna* (spinifex) grasslands.	***Mangarri*** – plant foods: *yarla* (bush potato), *wakalpiri* (dogwood) and *walunarri* (honey grevillea).	***Kuyu*** – game animals: *wardarpi* (goanna), *wardilyka* (bush turkey) and *malilyi* (woma python).

Muluwurru – Salt Lakes

Occur across the IPA ranging from small salt pans to large salt lake systems such as *Yirninti Warrku Warrku* (Lake MacKay) and *Yunkanjini* (Lake Bennet). The lakes fill from a combination of surface flows from surrounding land types and groundwater recharges. These large, ephemeral lakes can hold water for months after peak rainfall events and provide important waterbird habitat.

Vegetation: bare salt pans are fringed by low Chenopod shrublands.	***Mangarri*** – plant foods: *Janmarda* (bush onion).	***Kuyu*** – game animals: waterbirds.

Jilja – Sandhills

Longitudinal dunefields that occur within the southern, central and northeastern portions of the IPA are shaped by the southeasterly to northwesterly winds which characterise the region. Complex reticulate dune systems exist in the vicinity of *Yinapaka* (Lake Surprise) at the confluence of prevailing winds in the northeast of the IPA.

Vegetation: low, sparse, open shrublands of Grevillea and Acacia sp. over Triodia hummock grasslands interspersed with perennial forbs on dune crests and swales. Areas of *wirrkali* (bloodwood) throughout.	***Mangarri*** – plant foods: *wirrpinyarnu* (sandhill grevillea), *yarla* (bush potato).	***Kuyu*** – game animals: *purru-parnta* (burrowing frog).

Karru – Watercourses

These are usually dry. Wirliyajarrayi (the Lander River) is the only major river in the IPA. It extends northwest from the Reynolds Range before flooding out into the heart of the Tanami, where it feeds nationally significant wetlands, including *Yinapaka* (Lake Surprise). Several creeks radiate out from the Truer Range including the *Yinyirapilangu* (Ethel Creek) system, Atlee and Yaloogarrie Creeks. Semi-permanent billabongs provide important drought refugia for birds and important game species.

Vegetation: Eucalypt woodlands *ngapiri* (red gum), *wapilingki* (white-trunked coolibah), *pakarrli* (ti-tree), perennial and annual grass species, *yininti* (bean tree).	***Mangarri*** – plant foods: *ngarlajiyi* (pencil yam), *marnakiji* (conkerberry), *Janmarda* (bush onion), yam species.	***Kuyu*** – game animals: *yankirri* (emu), *ngarlu* (sugarbag), *yurnturrkunyu* (black-headed python), *mulyu-rlinji* (perentie).

Pilpilli – Paleodrainage

Systems Areas of low relief without defined drainage channels occur across the IPA where loose calcrete alluvium has backfilled ancient river channels. Though only represented by subtle surface depressions, high permeability allows rapid recharge of deep sub-surface aquifers. Periodically, they may inundate and large areas become flooded. Pilpilli paleodrainage systems include the Kalipimpa paleodrainage system in the south and the extensive paleodrainage systems across the northwest of the IPA.

Vegetation: *pakarrli* (ti tree) or Chenopod low open shrublands interspersed with *marna* (spinifex) grasslands.

Mangarri – plant foods: *Janmarda* (bush onion).

Kuyu – game animals: *wardilyka* (bush turkey), *walpajirri* (bilby), *warrana* (great desert skink).

Pamarrpa/Pirli – Hilly/Rocky Country

These areas are largely confined to the southern part of the IPA and consist of exposed ancient granites, quartzites and sandstones. This land type includes minor ranges, rocky hills and low boulder-strewn rises. Fire shadow areas associated with gullies, gorges and south-facing escarpments harbour important fire-sensitive vegetation communities.

Vegetation: *Marna* (spinifex) grasses dominate with an overstory of sparse, low, open acacia shrublands interspersed with eucalypts, *wapurnungku* (ghost gums). Fire shadow areas support *wanngardi* (callitris), *winpiri* (spearwood), *karrinyarra* (lemongrass).

Mangarri – plant foods: *wijirrki* (fig), *karrinyarra* (lemongrass).

Kuyu – game animals: *kanyarla* (euro), *yinarlingi* (echidna), *mulyu-rlinji* (perentie).

Manja – Mulga Country

Manja (mulga) and witchetty shrublands occur on richer alluvial soils associated with run-on areas adjacent to *karru* (watercourse) and *pamarrpa* (hilly land types) across the south of the IPA. This habitat type has variable vegetation structure with numerous understories represented. It is significant for hunting and resource harvest.

Vegetation: *manja* (mulga) and *ngarlkirdi* (witchetty) shrublands over perennial and annual grasslands; may be interspersed with *wajarnpi* (ironwood), *wanurkurdu* (whitewood).	***Mangarri*** – plant foods: *yuparli* (bush banana).	***Kuyu*** – game animals: *marlu* (kangaroo), *wardingi* (witchetty grub), *minki* (honeyants).

Jurntu – Calcrete Rises

Low rubbly calcrete rises occur in restricted areas in association with a range of different land types, including *manja* (mulga), *karru* (watercourse) and *manangkarra* (sandplain). *Jurntu* rises often indicate past burrow systems of *purdaya* (burrowing bettong) and, more recently, rabbits that are attracted to the soft sediments for burrowing.

Vegetation: *Marna* (spinifex) and annual grasslands with varied over stories including *manja* (mulga), *wirrkali* (bloodwood).	***Mangarri*** – plant foods: varied.	***Kuyu*** – game animals: varied.

1.3 *Yapa* – People

Yapa is the Warlpiri word for themselves and other Aboriginal people. Yapa have never permanently left their land, and they are fiercely determined to continue looking after it, to pass on knowledge about it to succeeding generations, and to have the final say in decisions impacting upon them and their country.

The majority of the Southern Tanami IPA is Warlpiri country. This is divided amongst four traditional subgroups: the Walmalla, Wanieaga, Ngalia and Yalpari Warlpiri. Each of these groups has a distinct dialect, though these are mostly only spoken by older people. Of these groups, the latter three continue to be central to people's identity and social organisation, and define Yapa's responsibilities for distinct regions within the IPA.

In addition to traditional Warlpiri land, the IPA also contains significant portions of Anmatyerr, Warlmanpa / Warumungu, Kukatja and Pintubi / Luritja country in the east, northeast, northwest, south and southwest respectively.

Yapa have an unbroken history of land use and management reaching back to the period of creation, when the *Jukurrpa* ancestral beings journeyed creating the landscape features, plants, animals – and Yapa. According to Western science, Aboriginal people have lived on their country for up to 40,000 years. Under either belief system, survival in this often harsh landscape has been dependent on sustainable resource management for a very long time. Yapa have maintained the health of country, including the plants, animals and water sources they relied upon, based on culturally embedded knowledge, practices and laws, which remain in use today.

First contact between Yapa and Kardiya (non-Aboriginal people) occurred during the second half of the 19th century when expeditions led by Stuart (1860), Warburton (1873) and Gosse (1873) traversed country now included in the IPA. Beyond these early and fleeting visits, there was very little European interest in the region until gold was discovered at The Granites in 1906, sparking a short-lived gold rush that attracted 500 prospectors and miners to the region. Cattle stations established during the 1920s on the Lander River and at Mt Doreen represented the first permanent Kardiya settlements in the region.

During this early contact period, many Yapa chose to undertake periods of work on stations, at The Granites mine or to assist prospectors, in exchange for clothes, food and tobacco, returning to their homelands for extended periods. Although the early contact years were not characterised by widespread violence, a prolonged drought in the late 1920s exacerbated land use conflicts between Yapa and the newly arrived pastoralists. The Coniston Massacre, the last government-sanctioned killing of Aboriginal people in Australia, occurred in the Southern Tanami in 1928.

A second drought in the early 1940s triggered the migration of many Yapa away from their remote homelands to neighbouring stations and settlements. Yuendumu was established as a government ration depot in 1946 to alleviate population pressure on Mt Doreen station and The Granites mine. In the following year, half the Yapa population of Yuendumu was forcibly moved north to the new settlement of Hooker Creek (now known as Lajamanu). During this time, some Yapa continued to live on their home country, moving to and from ration stations as needs dictated.

In 1959, more than one million hectares of the Southern Tanami region were gazetted as the Lake MacKay Reserve for the "use and benefit of the Aboriginal native inhabitants". With the passage of the *Aboriginal Land Rights (Northern Territory) Act 1976* this reserve converted to Aboriginal Freehold land. The remainder of the area now incorporated into the IPA was granted to Aboriginal people through a succession of land claims made under the Act during the 1980s.

During the 1970s, land rights were accompanied by the "homelands movement" which saw the establishment of numerous outstations in the Southern Tanami region, as elsewhere in northern and central Australia. These enabled Aboriginal people to re-establish semi-traditional lifestyles on their home country away from major communities. In 2004 the abolition of the Aboriginal and Torres Strait Islander Commission (ATSIC) saw an end to outstation support funding, making it untenable for many Yapa to continue occupying their outstations.

1.4 Yapa Relationships with Country

Warlpiri culture divides people into different social groups, known as "skin" groups (Figure 6). A person's skin name determines the relationships and obligations they have with individual places and elements of the landscape, all of which share the skin names of those people responsible for them. This kinship system permeates the cultural laws and social institutions that govern how Yapa look after their country. Key components of this cultural framework are:

- *Jukurrpa* (Dreaming, law)
- *Kirda* (landowners) and *Kurdungurlu* (custodians, managers)
- *Milarlpa* (spirits who reside in land to look after it)
- Sacred sites.

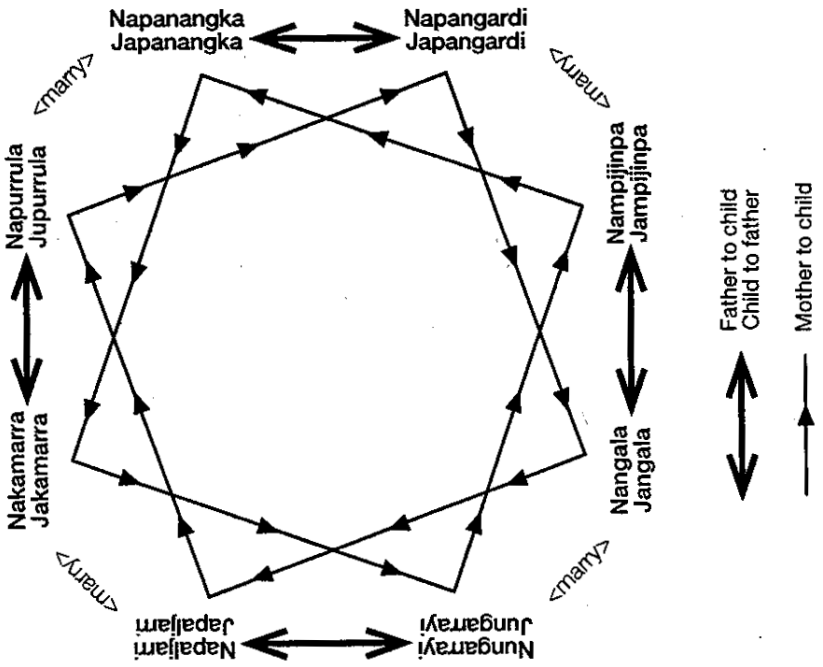


Figure 6 Relationship between Warlpiri Skin Groups (from Laughren et al. 1996)

Jukurrpa

> *"Jukurrpa – it's the law, it's life...everything is in that one."*
> – Johnny Japangardi Miller

Yapa of all ages generally read, understand and interact with country through the lens of *Jukurrpa*. Most simply, *Jukurrpa* refers to the period of time when spirit ancestors emerged from the earth at specific places and created landscape features as they moved. These ancestral beings had the capacity to change from human form into components of the landscape, such as plants, animals, rocks and waterholes, climatic elements such as rain or fire, and celestial bodies like the moon and stars.

Features associated with the travels of ancestral beings are considered sacred places where the spirit ancestors reside, and are referred to as *Jukurrpa* places. The travels and adventures of the spirit beings, including their loves, fights and domestic aspects of life such as gathering food, are believed to have created permanent marks on the landscape.

Alice Henwood with Nyirripi rangers at a *ngarlkity* (whitchetty grub) increase site in the Nyirripi area

Yapa also commonly describe *Jukurrpa* as "the law", since it provides the moral and social rules for life and the guiding principles for interacting with other people and the environment. The health of country today is thought to be reliant upon rightful people maintaining the laws laid out by spirit ancestors for particular places and attributes. Strict protocols govern all human interactions with the land.

Jukurrpa songs, stories and dances also contain sophisticated and detailed environmental knowledge about plants, animals, landforms and climate, and the interactions between these and people.

Kirda and *Kurdungurlu*

> *"...every way in this Yapa society we got two things that keep us safe. We got Kirda and Kurdungurlu. Kirda: we own that land. Kurdungurlu: they teach us the law, they teach us not to do this, even when we're dancing or painting they straighten us, keep us on track. They are like the policeman – they've got to keep us right..."*
> – Lottie Napangardi Robertson

For every part of the IPA there are groups of Yapa who are *Kirda* (owners of land) and *Kurdungurlu* (custodians of land), who have different but complementary rights and responsibilities.

Yapa land ownership is largely based on inherited patrilineal descent with both men and women being traditional owners, or *Kirda*, for land that belongs to their father and paternal grandfather. *Kirda* "own" particular areas of country and have primary economic, social and ritual rights and obligations to maintain that area of land.

Yapa also have rights and responsibilities to land generated from the mother's descent and individuals become *Kurdungurlu* for country belonging to their mother. These people are the managers, guardians or "policemen" for this land and they ensure that the *Kirda* fulfil their responsibilities correctly and that the laws outlined in the *Jukurrpa* are maintained.

> *"Kirda never go without Kurdungurlu. If something needs to be done, they get together. They are witness, Kurdungurlu. Kirda and Kurdungurlu – those two family got to be involved in everything on this land, nobody else."*
> – senior Warlpiri man, Willowra

It is only *Kirda* and *Kurdungurlu* who have the right to "speak for" or make any decisions or undertake actions related to their country.

Milarlpa

> *"We've got our spiritual keepers looking after the country: Milarlpa. Milarlpa belongs to the land and is still in land today. That's why we need young people who go to our country to respect our country and our law."*
> – Lottie Napangardi Robertson

Milarlpa are the spirits of ancestors thought to remain physically present in the land to ensure that country is looked after according to the laws of the *Jukurrpa*. The unseen but powerful and constant presence of *Milarlpa* in the country is believed by almost all Yapa irrespective of age. For Yapa, any activity related to land must take *Milarlpa* into account.

> *"They (young Yapa) really want to come in and work, but they don't want to work on other people's land. Too many ancestors, Milarlpa, there. They get frightened. If our young people want to be rangers they want traditional owners to be there with them. We got lot of ancestors. Traditional owners and Kurdungurlu got to be there to talk to them."*
> – G. Japangardi Small

The concept of *Milarlpa* continues to act as a social mechanism regulating access to land and hence ability to manage country. The senior *Kirda* and *Kurdungurlu* who know the *Jukurrpa* of a place are seen as the only people who can successfully mediate between living Yapa and *Milarlpa*. Yapa see a real danger in going to country if they do not have a sense of belonging to the country, or if they are not in the company of senior people who can mediate between *Milarlpa* and those without an understanding of the *Jukurrpa* concerning that area.

Sacred sites

> *"Its not just a rockhole – it is sacred to us."*
> – Tommy Jangala Watson

Sacred sites are parts of the natural landscape – elements such as hills, rocks, trees or springs that are physical manifestations of the activities undertaken by ancestral beings in the *Jukurrpa*. Sacred sites also include burial grounds, as these are places where people's spirits return after death, and places where particular ceremonies have been held.

There are hundreds of sacred sites in the IPA. They are not necessarily spectacular in appearance, and may not appear significant to non-Aboriginal people. Many sacred sites are considered powerful places to Yapa and violation of their sanctity may be dangerous both to the people who transgress the law and to the custodians of the site.

1.5 Land Uses in the IPA

Customary management

Traditional owners access country in the IPA across all land types to undertake customary management activities. Visitation is governed by access, with the most frequented areas being located in close proximity to major roads, communities and outstations. Activities are conducted in a familial context and include the visiting of sacred sites, conducting ceremonies, maintaining water places, burning country, hunting, harvesting bush foods and medicines, and collecting materials to make traditional artefacts including boomerangs, spears and coolamons for ceremonial uses and sale.

Mining and mineral exploration

In addition to customary activities, the IPA is subject to ongoing mining and mineral exploration. At the time of writing, 74 km² (less than 1% of the IPA) is covered by active mining leases. These are associated with The Granites mine in the far northwest of the IPA (Figure 3). The Granites mine is Australia's fourth largest gold mine by dollar value and employs a permanent workforce of 600 personnel. Exploration licences have been granted over a further 6,577 km² (6.5% of the IPA). Traditional owners have placed blanket moratoriums on mining and mineral exploration activities over some 6,900 km² (6.8% of the IPA) in recognition of outstanding biological and cultural values. Mineral exploration license areas also contain numerous small exclusion zones that have been defined by traditional owners for the protection of sacred and significant sites. (Appendix 3 details mining and mineral exploration activities in the IPA.)

Grazing

Two grazing licenses have been issued by the CLC, under direction from traditional owners, over parts of the IPA. The licences cover portions of the Wirliyajarrayi and Yuendumu ALTs (3,012 km² and 2,199 km² respectively) and are centred on the communities of Willowra and Yuendumu. They occupy a combined total area of 5,211 km², or 5.1% of the IPA. Each grazing license takes in country with a long grazing history; the Willowra area has been grazed since the 1920s, and Yuendumu since the1950s.

1.6 Statement of Significance

The IPA contains a multiplicity of *Jukurrpa* tracks that are populated by sacred sites of immeasurable significance to the region's Warlpiri, Anmatyerr, Warlmanpa/Warumungu, Kukatja and Pintubi/Luritja traditional owners. The stories and knowledge associated with these tracks and sites have governed the conduct of Yapa and their customary land management practices in the region for tens of thousands of years. They continue to do so.

Aboriginal cultures and languages of the region, which are inextricably linked to the country of the IPA, remain strong. The 1,600 residents of the IPA, and many other people who live in neighbouring communities, are spiritually and materially sustained by their country through visiting, hunting, burning, and cleaning and maintaining sacred sites and water places. These activities, and the application of traditional ecological knowledge, continue to influence the biodiversity of the IPA at a variety of scales.

The IPA contains numerous sites of historical significance to Yapa and Kardiya, including massacre sites and remnants of early European exploration and mining exploits.

The Southern Tanami IPA is Australia's largest terrestrial protected area. Declaration of the IPA has increased the total area of the National Reserve System (NRS) by 10%. It accounts for 41% of land reserved for conservation purposes in the Northern Territory.

The IPA contains portions of the Tanami, Burt Plain and Great Sandy Desert bioregions. Declaration of the IPA has increased protection of the Great Sandy Desert bioregion to above the 10% conservation target sought for each bioregion, and resulted in a five-fold increase in the proportion of the Burt Plain bioregion that is protected.

The IPA encompasses all or part of two Sites of Conservation Significance (SOCS) of international importance, and three sites of national value. These include waterbird breeding sites, significant wetlands and habitats critical to the survival of a suite of threatened animals and rare, restricted and threatened plants.

Thirteen Sites of Botanical Significance (SOBS) have been identified within the IPA. These places contain a high proportion of plant species that are restricted to particular bioregions, and those that are endemic, rare or threatened.

The IPA links the subtropical savannahs of the northern Tanami to the deserts of Central Australia and includes the southern or northern distribution limits of many species. It provides important refugia for a number of animal species that are now extinct in other parts of their former range including the *walpajirri* (bilby), *warrana* (great desert skink), *jajina* (mulgara) and *pujarr-pujarrpa* (marsupial mole).

The Southern Tanami IPA forms a strategic link between adjacent declared and proposed IPAs and a private conservation reserve to form a much larger matrix of protected areas. It is an important component of the Trans-Australia Eco-Link project. This initiative of the Northern Territory and South Australian governments aims to establish a continental-scale conservation corridor of linked protected areas stretching 3,500 km from Arnhem Land to Port Augusta.

Yinapaka (Lake Surprise), an area of high cultural and biological significance

CHAPTER 2

MANAGEMENT FRAMEWORK

Nyirripi IPA Management Committee members discussing country through a ground mapping exercise at the 2008 annual planning workshop

2.1 Jarnku Mirni Mirni – Two Ways Together

Yapa and Kardiya have very different ways of perceiving, approaching and managing country. Given that Yapa consider country to be alive and comprised of sentient beings, they interact with country as they would relate to another person. For Yapa, managing country is about negotiating with country, and interpreting and responding to the signals that country is making. It is a relationship where people and country play reciprocal and interdependent parts, with management of the land embedded in broad cultural responsibilities.

> *"In the past our old people looked after country and kept it strong. Now there are new problems coming in like weeds, feral animals and big wildfires. Today we want to work both ways (combining Aboriginal and non-Aboriginal environmental knowledge) to keep country healthy. We say "Ngurra walalja warra warra kanjaku jarnku mirni mirni, Yapa manu Kardiya jintangka juku" which means "looking after our country two- ways, Warlpiri and non-Aboriginal people together as one"*
>
> – excerpt from the Statement from traditional owners

Kardiya perceptions and knowledge of country are generally framed within a Western scientific perspective. The use of empirical data to understand ecological systems places a focus on discreet natural elements that are usually isolated from a broader social or spiritual context. With regard to land management, Kardiya generally consider themselves as outside the ecological system, manipulating the environment through a series of deliberate actions to protect and maintain biodiversity, cultural or economic values.

The land is always alive – Jessie Presley and daughter on country around Yinapaka (Lake Surprise)

Despite these differences, Yapa and Kardiya land management approaches share the same goal: to maintain or enhance the health and vitality of country. Traditional owners of the IPA are adamant that they want to manage their country using a two-way approach that recognises and values Yapa perspectives of land and land management in conjunction with a Kardiya scientific framework. They wish to utilise the best of both Indigenous and Western scientific knowledge and management techniques to maintain the health of country, an approach which is now widely accepted as highly beneficial for biodiversity conservation in Central Australia.

This management plan documents a two-way approach to land management. Guiding principles and management themes contained in this plan are explicit in recognising and applying both Yapa and Kardiya values and knowledge systems. The management structure, which is based on traditional governance arrangements, also ensures that the future management of the IPA is undertaken in ways that marry Yapa and Kardiya approaches. (Refer to Appendix 4 for a summary history of biological interest and two-way land management in the Southern Tanami region.)

Yuendumu based Warlpiri Rangers learning "two ways" from consultant ecologist Steve McAlpin and traditional owner Freddy Williams on a warrana (great desert skink) survey

2.2 Guiding Principles

The following set of guiding principles underpins all aspects of IPA management:

***Jukurrpa* underpins all activities on country**
Customary law and cultural protocols as defined in the Jukurrpa govern how country is owned, used and managed by Yapa.

Two-Way knowledge systems are central to managing country
The expert skills and advice of senior Yapa knowledge holders and Kardiya scientists are paramount in ensuring that balanced and informed decisions are made relating to the management of country. Wherever possible, both customary and Western knowledge must be sought to guide land management planning and implementation.

Senior *Kirda* (owners) and *Kurdungurlu* (custodians) are respected
Senior traditional owners are highly respected in Yapa society for their extensive knowledge of customary law and traditional ecological knowledge. Such people should be fully engaged in land management decisions and in work undertaken on their country.

Men and women and elders and young people work together
Both men and women are required to make decisions about country. Each gender is responsible for different kinds of knowledge and has different responsibilities under customary law. Neither group can operate alone. Elders and young people also have a responsibility to work together so that the knowledge and skills for managing country are passed on through appropriate cultural protocols.

All rightful Yapa are involved
It is acknowledged that responsibilities and interests to manage country are held by many traditional owners living outside of the IPA. Similarly, responsibilities to manage country extend beyond the boundary of the IPA into adjacent land trusts and pastoral leases. Every effort should be made to involve rightful traditional owners from adjacent communities to participate in management activities within the IPA.

2.3 Management Regions

The IPA is divided into three management regions that reflect traditional governance arrangements stemming from family-based affiliations to country (Figure 3). These regions are centred on the communities of Nyirripi, Yuendumu and Willowra, ensuring that people with a high level of traditional interest, authority and knowledge to speak for country are available to make decisions and direct on-ground activities.

Other factors that have influenced management region boundaries include:

- The need for a realistic division of biodiversity and cultural assets across the IPA that can be managed from respective communities
- The eventual need for local resource centres to support land management activities at Nyirripi, Yuendumu and Willowra communities
- Community interest in ensuring an equitable stake amongst the three communities in the management of the IPA and associated ranger and community employment opportunities
- The use of significant sites where management interests and responsibilities are shared between residents of more than one community as points of intersection between management regions
- Existing cadastral boundaries
- Estate group boundaries.

2.4 Management Zones

IPA management regions each contain a number of management zones. Zones are used in IPA operational plans to define areas in which varying types and levels of management activity are to be applied. Criteria used to define management zones include:

- Access: the level of vehicular access
- Customary and community use: the frequency with which an area is accessed for recreational, hunting, ceremonial and food harvest activities
- Biological values: the presence of locally, regionally, nationally or internationally significant sites for biological values
- Economic values: the presence of mining, pastoral or other economic land use activities.

(Refer to Appendix 5 for a detailed description of the management zoning scheme.)

2.5 Management Structure

The IPA is a community initiative that is largely managed at the local level. In the management structure adopted for the IPA, three regional IPA Management Committees, which represent traditional owner interests, are overseen by a Coordinating Council. The Council receives advice from an Advisory Committee which includes government agency representatives and scientists.

Warlpiri Rangers are answerable to the relevant regional Management Committee and are employed by the CLC which also administers funding and employment of the IPA Manager and Ranger Coordinators. (Figure 7 shows the relationships between each element of the management structure.)

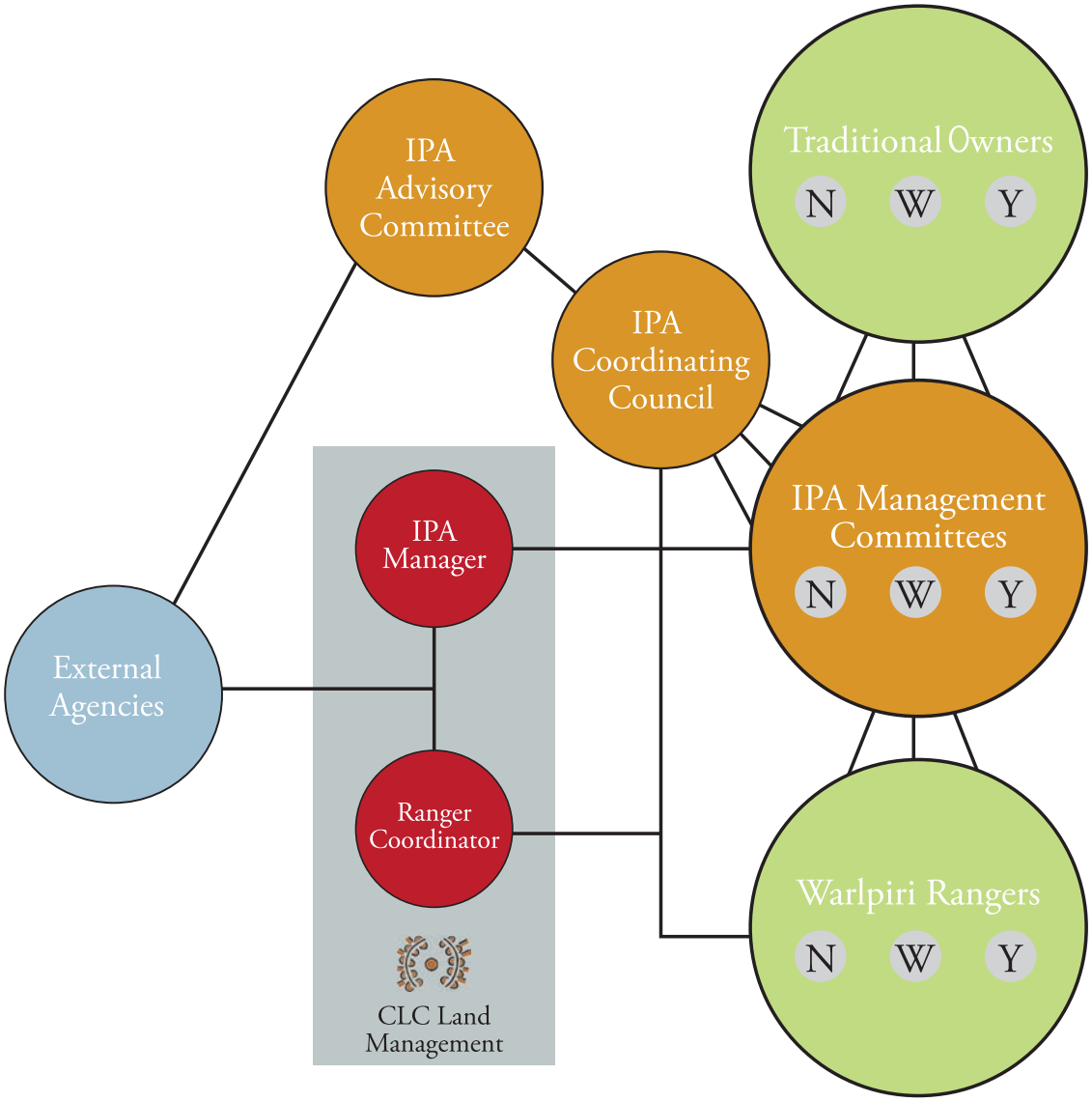


Figure 7 IPA Management Structure

IPA Coordinating Council

The IPA Coordinating Council provides an IPA-wide forum for high-level decision-making, planning, review and information-sharing, involving representatives of all three IPA Management Committees.

The Coordinating Council is comprised of one male and one female delegate, elected by each IPA Management Committee for a three-year term, and a senior ranger from each IPA management region. Proxy members are nominated in the advent that delegates are unable to attend meetings.

The IPA Coordinating Council is convened on an annual basis. Delegates are paid to undertake a range of functions on behalf of their respective Management Committees. These include:

- Ongoing identification of regional values, threats, and management priorities to inform work planning and resource allocation
- Annual monitoring, review and information-sharing between IPA Management Committees
- Representation of respective IPA management regions at CLC-mediated mining meetings to promote environmental considerations and negotiate moratorium zones to protect sites of biological significance from mining exploration
- Representation of the IPA at regional and national forums including the Warlu (fire) Committee and at IPA conferences and workshops
- Information-sharing back to IPA Management Committees regarding the status of the broader issues, achievements and initiatives concerning the IPA
- Providing representation on recruitment panels for IPA Managers and Warlpiri Ranger Coordinators.

IPA Management Committees

IPA Management Committees have been established at Nyirripi, Yuendumu and Willowra communities to provide local decision-making, planning and management direction for each management region.

The committees are comprised of nominated male and female representatives for major traditional estates within each management region. In the interests of broad community and traditional owner engagement, the Management Committee may nominate additional members or invite additional persons to participate in planning meetings from year to year.

A valid quorum for decision-making is designated as half the committee members plus one. Committee membership is for a five-year term, with membership nominations called at the expiry of this period.

IPA Management Committees are convened annually for an intensive on-country planning and review forum to make decisions regarding the use and management of the land within each management region in line with the adopted IPA decision-making model (refer to Section 2.7).

In addition to formal planning and review cycles, IPA Management Committees meet throughout the year in conjunction with management activities to undertake ongoing planning and decision-making. Committee members may also be consulted periodically on a needs basis.

The key roles and responsibilities of the Management Committees include:

- Overseeing implementation of Ngurra Walalja Warra Warra Kanjaku and respective regional IPA operational plans and activity schedules
- Ongoing identification of local values, threats and management priorities
- Annual planning for all IPA projects within their region
- Annual ranger work plan development

- Oversight of the functioning of the Warlpiri Ranger program
- Collaborative work planning with regional stakeholders and IPA neighbours (adjacent IPAs, pastoral, ALTs, private conservation entities and others)
- Providing representation on recruitment panels for Warlpiri Rangers.

Warlpiri Rangers
The Warlpiri Rangers based at Nyirripi, Yuendumu and Willowra and associated Ranger Coordinators are directly responsible to the CLC Ranger Program Coordinator, the respective IPA Management Committees and ultimately the IPA Coordinating Council.

IPA Manager
The IPA Manager is responsible for overseeing the implementation of the IPA management plan, supporting the Warlpiri Ranger program and coordinating IPA governance arrangements. The manager is answerable to both the CLC and the IPA Coordinating Council.

IPA Advisory Committee
The IPA Advisory Committee is composed of:

- Coordinating Council members
- IPA Manager
- CLC Coordinator of Regional Land Management
- A representative of the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPAC)
- A representative of the NT Department of Natural Resources, Environment, Tourism, the Arts and Sport (NRETAS)
- Other experts as required.

The Committee meets annually to review IPA management work progress, funding arrangements and partnerships, and to provide technical advice to Yapa and Kardiya IPA personnel.

Central Land Council
The CLC administers the funding, resourcing and staffing required to implement the PoM, including the Warlpiri Ranger program. It also provides specialist support to the IPA program through the involvement of land management, anthropologist, legal, community development and mining section staff.

2.6 Governance Cycles

A structured cycle of annual planning, implementation, monitoring, evaluation and review is required to ensure that IPA governance bodies are able to maintain strategic direction and deal with arising issues and opportunities in a timely fashion. By necessity, the planning and review cycle must involve all parts of the IPA management structure as described in Section 2.5. (Appendix 6 summarises key elements of IPA governance as undertaken by the IPA Coordinating Council and respective IPA Management Committees.)

2.7 Decision-Making Model

A defined decision-making process is necessary to ensure that appropriate, adequate and efficient consultation is conducted with all rightful traditional owners regarding IPA management activities. The following four-tier model provides a transparent and consistent means of tailoring the scope of consultations to suit individual proposals and ensuring that activities prescribed in this plan conform to the statutory requirements of the *Aboriginal Land Rights (Northern Territory) Act 1976* (ALR Act). The model divides the likely kinds of decisions and activities that will need to be made in the IPA into four levels and identifies the appropriate decision-making parties or forums for each.

Level 1 Activities requiring CLC-mediated consultations with broad traditional landowner group:

1. Commercial ventures (where profits, dividends or royalties will be generated)
2. Systematic feral animal control (eg. for horses, donkeys, cattle, camels); principally aerial operations involving a government agency
3. Cultural site protection or maintenance; any activities that may permanently alter or interfere with a cultural site
4. Activities that may adversely affect land or land owners outside the IPA
5. Any change to the area of the IPA or to alter the role of the Coordinating Council and/or Management Committees.

Level 2 Activities requiring the approval of the IPA Coordinating Council:

1. Decisions regarding the annual resourcing of local land management initiatives across the IPA in response to primary and supplementary funding sources
2. Major one-off capital works, infrastructure provision, plant or operational purchases
3. Establishment of formal collaborations and partnerships with non-government and government organisations
4. Strategic decision-making related to the implementation of landscape-scale management activities such as aerial incendiary burning
5. Recruitment of Ranger Coordinators and the IPA Manager.

Level 3 Activities requiring the approval of appropriate IPA Management Committees:

1. Ratification of annual ranger and IPA work programs and priorities for respective IPA management regions, within the context of the PoM and relevant operational plan(s), including:
   - Approving community and family-based customary activities including country visits
   - One-off collaborative work with external agency staff, eg. collaborative wildlife surveys
   - Collaborative work involving neighbouring stakeholders, eg. pastoral enterprises, non-IPA Aboriginal lands, private conservation organisations, Aboriginal pastoral companies
   - Ground-based prescribed burning
   - Small-scale feral animal control projects, including mustering, ground-based shooting and commercial harvesting
   - Weed control work
   - Soil conservation work.
2. Minor plant or operational purchases
3. IPA activities not included in annual work programs that are confined to a particular management region
4. Recruitment of Warlpiri Rangers.

Level 4 Activities also requiring consent of individual key land owner(s):

1. Work on or at outstations, such as infrastructure repair, protective burning and weed control
2. Land management activities at sacred sites and at other culturally sensitive places.

Customary land management – cleaning rockholes

2.8 Resourcing of the IPA

Central to the resourcing of the IPA is the development of an operational and coordination hub at Yuendumu, which is the base for the IPA Manager, Ranger Coordinators and a pool of permanently employed Warlpiri Rangers. Casually employed rangers at Nyirripi and Willowra communities are supported by Yuendumu-based staff.

Key benefits of resourcing the IPA from Yuendumu include:

- An existing CLC office, regional officer and Warlpiri ranger base
- Yuendumu approximates the geographical centre of the IPA and is equidistant from Nyirripi and Willowra
- Removing the immediate need for independent resourcing of stand-alone ranger groups at either Nyirripi or Willowra
- Permanent rangers at Yuendumu provide a skills pool to support on-ground works across the IPA
- Improved social services and larger community size provides a more attractive and socially stable environment for IPA personnel
- Pooling of managerial and coordination staff (including Senior Rangers) at a central location allows a cohesive and dynamic work environment with shared coordination duties across the region.

Additional operational, logistical and technical support from partner organisations and the CLC promises to further enhance the resourcing of the IPA. (Refer to Appendix 7 for a summary of the resourcing strategy of the IPA.)

2.9 Management Partners

> *"Our IPA is a really big area of land and we want to work together with other people, partners, to look after it."*
> – excerpt from the Statement from Traditional Owners

Community Partner Organisations

There are a number of government and non-government organisations currently operating within the Southern Tanami region that undertake projects that have clear linkages with the charter of Ngurra Walalja Warra Warra Kanjaku. Collaboration with these organisations has the potential to create enhanced outcomes for Yapa and all partner organisations.

Key community partner organisations include:

- Aboriginal Pastoral Companies
- Bushfires NT
- Granites Mine Aboriginal Affected Areas Committee (GMAAAC)
- Mt Theo Program – Warlpiri Youth Development Aboriginal Corporation (WYDAC)
- Newhaven Sanctuary – Australian Wildlife Conservancy (AWC)
- Newmont Tanami Operations (NTO)
- NT Department of Natural Resources Environment and the Arts (NREATAS)
- Pintubi Anmatyerr Warlpiri Media (PAW)
- Community-based schools
- Warlukurlangu Artists Aboriginal Corporation
- Warlpiri-patu-kurlangu Jaru (WpkJ)
- Warlpiri Education and Training Trust (WETT).

(Refer to Appendix 8 for a description of partner organisations, communities of operation and current/potential areas of collaboration.)

Financial Contributors

The implementation of this plan is financed through core and supplementary funding from a number of government and non-government organisations. These include:

- The Department of Sustainability, Environment, Water, Population and Communities programs (SEWPAC), though Indigenous Protected Areas funding, and through Working on Country (WoC) programs
- The Indigenous Land Corporation (ILC)
- The Nature Conservancy.

PART B

MANAGEMENT STRATEGIES

CHAPTER 3

MANAGEMENT THEMES

Duncan Gallagher undertaking fire management to protect rock wallaby habitat at Karrku (Mt Stanley), Lake Mackay ALT

Introduction

Through the IPA development process, four management themes have been identified that define the broad aspirations of traditional owners in managing country in the IPA.

Management themes are non-exclusive. In a practical context, individual projects or work trips carried out under this plan will necessitate the integration of management strategies and actions corresponding to more than one theme.

The four management themes are:

1) "Keeping Culture Strong"

The continuation of customary practices on country and the passing down of ecological knowledge between generations are critical to the management of the natural and cultural values of the region and to the spiritual and social wellbeing of Yapa.

2) "Keeping Country Strong"

The management of threatening processes such as altered fire regimes, introduced plants and animals, and soil disturbance are essential for maintaining or enhancing the condition of the cultural and biodiversity values of the region. Managing these threats requires addressing data gaps and marrying customary and Western land management knowledge and techniques.

3) "Two-Way Environmental Law and Education"

Programs are required to facilitate the maintenance of customary law, uphold Kardiya laws and educate Yapa and Kardiya in both traditional and Western approaches to caring for country. Key elements include provision of training opportunities, community forums and the production of culturally appropriate educative materials and educational pathways into paid employment in conservation and land management.

4) "Jobs and Economic Development"

Employment opportunities to manage country are essential for the economic development of communities in the region, and for retaining traditional owner commitment to IPA designation over their country. Beyond ranger programs, other economic development opportunities in the IPA include tourism, the mining industry, the management of fire as a carbon abatement measure, and the contractual sale of environmental services to regional stakeholders.

3.1 "Keeping Culture Strong"

3.1.1 Background

Yapa environmental knowledge and customary land management practices are deeply embedded within Yapa culture. The ongoing transfer of this knowledge to young people and their involvement in its on-ground application are important for sustaining Yapa culture and increasing the wellbeing and resilience of individuals, families and communities.

This knowledge is also crucial for the long-term health of country. Prior to the introduction of feral animals and weeds, when Yapa still walked on their land, customary land management practices sustained the environment of the Southern Tanami. Customary practices, including fire management, maintaining water sources and sacred sites, and the sustainable use of resources, remain important aspects of looking after country.

Yapa Values of Country

> *"Without the country our spirit will die, we got nothing left, we lose everything. Every part of land is important because Jukurrpa is still there in the country today"*
>
> – Eddie Jampijinpa Robertson

The entire Southern Tanami IPA is a cultural landscape. From a Yapa perspective, land is the basis of spirituality, law, health and wellbeing. These connections underwrite Yapa interactions with land and are usually the motivating factors for engagement in contemporary land management activities.

Knowledge about country, being on country, using and managing country, are all intimately tied to Yapa's spirituality and personal identity. Ancestral beings associated with the Jukurrpa, who laid out the law governing all aspects of looking after country, are believed to continue to reside in the land. Many Yapa also believe that the spirits of past family members dwell in their traditional country. This personal connection imbues a sense of respect, empathy and kinship with country and generates personal responsibility for individuals and family groups to correctly maintain it.

Yapa consider that connection with their ancestral land enhances health and wellbeing. Country continues to provide Yapa with substantial resources for food, medicine and artefacts. Being on country encourages the eating of bush foods and undertaking of exercise, with many people describing how they "liven up" and "feel free" when they visit their ancestral lands.

Time on country is also valued by Yapa for its role in reducing substance abuse and social stress. Country is considered a place of nourishment and respite from the stresses of communities and townships.

> *"When I do ranger work, I don't worry for grog, I worry for work."*
>
> – male Warlpiri Ranger aged 22

For Yapa, land and people are indivisible, and country is valued for the personal, social and spiritual outcomes perceived to be generated through interacting with it. Customary activities that support healthy functioning ecosystems are considered the same as those required to support Yapa.

Jessie Presley and Samantha Ryder working on country

Indigenous Ecological Knowledge and Customary Practices

Yapa retain an extensive body of Indigenous Ecological Knowledge (IEK). In addition to specific knowledge about individual species of plants and animals, their habitat distributions, behaviour and management needs, IEK also incorporates a comprehensive suite of customary land management practices and cultural beliefs.

Ecological knowledge, and strict protocols for human interactions with land and resources, is contained within Jukurrpa songs, stories and dances. These provide an engaging way of transmitting large amounts of environmental knowledge about plants and animals, landforms, climate and people, and the interactions between and within these elements.

Jukurrpa links areas of country with particular ancestral beings, which are usually species or environmental features that are (or were) found in abundance in that area. For example, the Lander River, a site of outstanding Mala habitat that was formerly selected for a release program of the species, is associated with Mala Jukurrpa.

Although Yapa now live in centralised communities, often far removed from their ancestral lands, they continue to undertake a range of customary land management activities, which together help define their cultural identity and maintain the environment of the Southern Tanami. Five important customary land management practices used by Yapa today are described below.

Being on Country

> *"Mainly it [the Warlpiri way of looking after country] is visiting; going there [to] country, being part of the country... There should be a time to visit these countries that you belong to."*
>
> – Lindsay Japangardi Williams

Yapa consider that the health of the country is dependent on regular human contact. For Yapa, being on country, hunting on it, passing on cultural and ecological knowledge to family members, visiting sacred sites, interacting with the spirits in the land and monitoring and responding to the condition of the landscape, is seen as an essential aspect of looking after country.

Ceremony, Songs and "Law"

> *"Early days old people look after like farm, never let 'im down. They sing the country, grow 'im up bush tucker. They look after it well, never let country go down dry. They can't go hungry... Make 'im yarla (bush potato), make 'im yakajirri (bush raisin), wanakiji (bush tomato), janmarda (bush onion), wanardi (bush beans)... Everything."*
>
> – Rosie Nangala Flemming

Senior Yapa, of both genders, often refer to the importance of ceremony, songs, and others aspects of the Jukurrpa to look after country and keep it in good condition. Younger people, while generally believing in the power of songs and ceremony to impact the state of the land, do not talk as readily about this and often see the amount of unknown information as daunting and overwhelming.

Jo Bird singing for country

Burning Country

> *"Fire is really important for country for many many ways... It is always for good reason they [old people] are burning grass. Not just for fun."*
> – Peter Japaljarri Tex

Yapa continue to deliberately manipulate their landscape through the use of fire. The term "firestick farming" is often used to describe the Aboriginal use of fire. While over the last 130 years, fire patterns in the Southern Tanami have changed considerably due to altered demography and land use, fire still remains an important customary land management practice which is undertaken as a normal part of being on country. Today, Yapa use fire:

- To encourage plant growth and thereby increase the productivity of the country in terms of food resources. Yapa say that they burn to "rejuvenate" the county and "make it green...more alive"
- As a hunting tool. Women often use fire to assist in hunting small game animals as freshly burnt ground allows animal tracks to be more easily seen and followed. Fire attracts large game species to burnt areas, facilitating the hunting efforts of men
- To "clean up" the country. Large areas of tall grass that have not been burnt for a long time are considered "rubbish country", as they are unproductive in terms of food resources
- To protect sacred sites. Fire is sometimes used specifically to protect sacred sites from wildfires.

While motivated by cultural outcomes, customary burning practices have important environmental benefits. Burning applied with expert knowledge of temporal and seasonal conditions, the type and extent of fuels and the optimum fire regime for a given land type or plant community, assists in creating local-scale patchiness of fuel ages. Resultant increases in the inter-fire period and reductions in the scale and intensity of wildfires helps to protect fire-sensitive plant communities and populations of threatened animal species. It also enhances the productivity of hunting and bush food harvest areas.

Regulated Resource Use

The harvesting of natural resources, which is often the impetus for interacting with country, is governed by rules that discourage over-harvesting of key food resources and materials. These regulations include seasonal and access restrictions and the regulated harvest of totemic species.

Natural resource management rules extend beyond food gathering to the use of medicinal plants and material required for artefact production. There are a number of sacred sites in the region, where there is a prohibition at all times on entering, which enforces a lack of hunting and gathering in these areas. Sacred sites often correspond with water sources and rich habitats for flora and fauna (Latz 2008 pers. com; Berkes 1999; Brown and Haworth 1997). They can cover significant proportions of a particular group's country and therefore, effectively create a "protected area" for biodiversity conservation, which can restock surrounding land, particularly important in desert regions after lengthy dry seasons.

Wardarpi (sand goanna, *Varanus gouldii*)

Maintaining Sacred Sites and Water Places

Maintaining sacred sites is an important aspect of Yapa customary land management. This includes visiting them, passing on knowledge and conducting ceremonies. In the contemporary setting, maintaining cultural sites also refers to mapping these sites and implementing a broad range of management activities that may include soil conservation, or weed, feral animal and fire management to protect them from new threats.

At water places, management strategies include digging the water place out to maintain water availability and quality, and to ensure that these sites are not lost from the landscape. Maintaining rockholes and soakages has important localised benefits for water-reliant wildlife.

The conservation benefits of utilising indigenous ecological knowledge and practices in contemporary land management programs are now widely acknowledged and reflected in numerous national and international policies. The World Conservation for Environment and Development describes:

> *"These [Indigenous] communities are the repositories of vast accumulations of traditional knowledge and experience...their disappearance is a loss for the larger society, which could learn a great deal from their traditional skills in sustainably managing very complex ecological systems"* (WCED 1987).

Fortunately, in relation to the IPA, the body of Indigenous knowledge about all of the elements of the landscape and how they interact remains substantial in the region.

The key areas in which Yapa ecological knowledge has been used to date in management of the IPA are:

- **Fire management**
  Yapa knowledge of fuel loads, seasonal conditions and wind patterns, and their understanding of fire behaviour are of great benefit to fire planning and to both aerial and on-ground burning programs.
- **Wildlife management**
  Yapa knowledge of vertebrate species is central to biodiversity surveys and monitoring programs. Yapa possess detailed ecological knowledge of many threatened species. This includes knowledge of species distributions, preferred habitats and locations of extant and extinct species. Yapa are also skilled at detecting animals through signs such as tracks, burrows and scats, and at providing population size estimates.
- **Feral animal control**
  Yapa knowledge of the behaviour and ecology of introduced predators, together with their tracking skills, have been utilised in feral animal research and control programs. Knowledge of the distribution, habitat preferences and seasonal and diurnal influences of introduced herbivores has assisted in the development of feral animal control strategies.
- **Identification of key habitats and ecosystem functioning**
  Yapa possess detailed knowledge and language that describe individual landscape features and collective terms for land types and ecological associations. Refuge areas and habitats critical to game and threatened species and to at-risk fire sensitive plant communities have been identified in IPA operational plans based on Yapa knowledge.

Cleaning rockholes in the Pirlinyarnu area

3.1.2 Issues and Opportunities

Loss of Cultural and Ecological Knowledge

> *"Working with our old people – that is the very best part of the IPA."*
> – Lottie Robertson

Senior Yapa, particularly those who grew up walking on their country, retain extensive knowledge of sites and associated cultural, ecological and ceremonial knowledge, an accumulated understanding and experience of the natural world, and detailed skills in customary land management practices. With the death of each elder immense amounts of cultural and ecological knowledge may be lost. There is currently a heavy dependence on just a few key elders who have cultural knowledge and authority over large areas of country. These "old people" are considered central to all land management activities in the IPA. Transfer of cultural and ecological knowledge from these elders, particularly to those who are seen as the next in line to hold this knowledge, is an urgent priority.

Alice Henwood passing on knowledge about *walpajirri* (bilby, *Macrotis lagotis*)

Competing Demands on People's Time

> *"Lots of things stop us from going to our country, like our jobs make us stop going out bush, I want to go to my country more."*
> – Cherylyn Napangardi Granites

Many Yapa have numerous demands on their time, which limit their ability to engage in customary land management activities. Yapa often have multiple obligations to uphold, including employment, community and family responsibilities. Many are representatives on various community and regional committees and are required to attend meetings every week. As a result of these obligations and the need to have children in school, customary land management activities may be confined to after-work hours and school holidays.

Young People and IEK

> *"Most important is going out bush, especially with the elders and with the young kids, family...learning more from old people before it's too late."*
> – young Warlpiri woman

Yapa would like the IPA program to support young people, particularly children, in visiting their traditional lands during their formative years, as this instils interest and a sense of responsibility to maintain country later in life. IPA Management Committee members are concerned that young people are uninterested in learning customary land management knowledge. However, the majority of younger Yapa desire more opportunities to learn from elders on country, and regret allowing competing interests to distract them from achieving this.

Young people are far more interested and engaged in learning from their elders when they have an active role in the knowledge transfer process and there is a practical contemporary outcome associated with it. Trainee and junior ranger programs are an essential part of enlivening young people's interest in customary activity.

The Warlpiri Rangers provide role models to younger people, demonstrating the contemporary use of customary ecological knowledge and practices. Furthermore, IEK provides a distinct advantage for young persons applying for ranger employment, with flow-on improvements in wellbeing and material status gained through stable and meaningful employment.

Children on a trip to the Pirlinyarnu area undertaken in conjunction with the Mt Theo Program

Another issue related to young people and IEK transfer is the cultural protocol of only passing on knowledge to appropriate people who will respect that knowledge and not misuse it. This demonstrates the need for senior traditional owners to be involved in the selection of the young people who participate in country trips.

Locating, Mapping and Protecting Cultural Sites

Management Committee members have identified that two of the most important aspects of looking after culturally significant sites in the Southern Tanami today are locating and mapping them. There are numerous significant sites in the region that only very few Yapa can locate and there is serious concern that without urgent action these sites and knowledge about them will be lost forever. Management Committee members see a need to combine the knowledge of senior traditional owners with site information previously recorded by anthropologists and linguists, to locate, record and map cultural sites .

Many cultural sites also need protection from threats such as wildfires, camels, weeds or being obscured by siltation and sand drift. Yapa aspire to visit their country to monitor risks to cultural sites and protect them from wildfire and siltation.

Multimedia and Repatriation

Video, photo and sound recording equipment provide avenues whereby this threatened cultural knowledge can be documented for future generations. Engaging younger traditional owners in the process of recording the knowledge of elders also provides them with an active role in intergenerational knowledge transfer. There is an identified need for appropriate databases to store and provide community access to cultural and ecological information recorded as part of IPA management.

IPA Management Committee members also aspire to access cultural knowledge that has been previously recorded by a range of projects, organisations and individuals. However, much of this material is inaccessible to even the most literate Yapa. Many Yapa have called for the IPA program to help in repatriating this information or "getting these records back".

***Ngurra Warlalja* Country Visits**

> *"Country visits – that's the main one for looking after country"*
> – Allan Jungarrayi Dickson

The IPA program, in conjunction with the Warlpiri Rangers and partner organisations, provides an opportunity to assist traditional owners in maintaining traditional responsibilities to country through country visits. Known as Ngurra Walalja or "our family homelands", traditional owners see these visits as the basis of the IPA, from which all other land management activities may stem.

Conducting Ngurra Walalja country visits offers opportunities for undertaking a broad range of cultural and natural resource management activities, including:

- Accessing and maintaining connection with country
- Locating/relocating and visiting cultural sites
- Conducting customary land management – such as burning and waterhole maintenance
- Undertaking intergenerational transfer of Indigenous ecological and cultural knowledge, including but not limited to:
  - Warlpiri names and knowledge regarding plants, animals, birds and other environmental features
  - Warlpiri knowledge of habitats and ecological functioning
  - knowledge regarding roles and responsibilities of Kirda (owners) and Kurdungurlu (custodians) of country
  - songs, stories, dances, paintings and ceremonies associated with particular sites and areas of country
  - key bush food and medicine species
  - animal tracking knowledge
  - seasonal patterns of resource use
  - other aspects of IEK that traditional owners consider important.
- Teaching Warlpiri customary laws for looking after country
- Educating and training Yapa regarding Western land management techniques
- Undertaking fauna surveys
- Creating opportunities for young people to participate in land management-related employment pathways
- Assessing environmental values and threats and deciding on appropriate management strategies.

Ngurra Walalja country visits enable traditional owners of all ages, including senior knowledge holders and very young people, as well as rangers, to be involved in natural and cultural resource management together. (Case Study 3 demonstrates how Ngurra Walalja country visits generate benefits related to each of the four management themes outlined in this plan).

Box 3 *Ngurra Warlalja* Country Visit Case Study

The Larrara tracking transect was conceived following the 2008 IPA Management Committee meetings in which the remote and long unvisited region between Lararra and Pirrdi Pirrdi (Thompson's Rockhole) was identified as requiring customary management and as being data deficient for a range of values.

Eleven traditional owners and seven Warlpiri Rangers conducted a 170-kilometre long flora and fauna transect over five days. The transect route was set by traditional owners to align with culturally significant sites in the area which were located, visited and documented.

CLC staff trained rangers in undertaking flora and fauna surveys and provided information related to a range of Western land management concepts and issues. Rangers conducted standardised 2-hectare track-plot searches to record animal signs every 6 km, recorded other opportunistic fauna data, undertook fauna trapping and gathered botanical collections.

Fire management was also an important aspect of this trip. Traditional owners and rangers set fires to break up large areas of contiguous and long unburnt spinifex communities to prevent large wildfires, protect bilby habitat and cultural sites, and to enhance the productivity of country.

Senior traditional owners conducted ceremonies for key sites and passed on a wide range of cultural and ecological knowledge to the rangers and younger family members. The rangers recorded their elders' knowledge using multimedia resources and undertook physical maintenance of rockholes and soakages.

The Larrara country visit generated employment for senior traditional owners, key knowledge holders and Warlpiri Rangers. Extensive discussions regarding priority land management issues on the trip also informed the management objectives and strategies outlined in this plan and subsidiary operational plans.

On-country planning – Larrara (Mt Bennet) country visit 2009

Roads and Infrastructure

Roads and infrastructure, including artificial water points, play an important role in Yapa's engagement in customary land management. Many areas of cultural and biological significance in the IPA are hundreds of kilometres from settlements and poor or non-existent road access increases the risk of vehicle breakdown. Also, there are very few functional water points, which limits the time people can spend on their country. Yapa aspire for the IPA program to assist in developing roads and infrastructure, such as water points, to allow them to safely spend more time on country.

Restrictions are placed on Australian Government grant funding, through which the IPA is financed, whereby their contribution to infrastructure projects is limited to:

- Items that support the safe conduct of land management activities in remote areas
- The operation, maintenance and potential upgrading of remote infrastructure of direct benefit to land management efforts.

Key areas of potential for collaborative infrastructure development include:

- Vehicular track development in conjunction with mineral exploration
  Mineral exploration activities across the IPA have produced many graded tracks that in some cases run for over 100 km. Though valued in assisting access to country, these tracks usually take the most direct route across the landscape, without regard to sites of cultural and/or biological significance. As all mineral exploration on Aboriginal land must first be approved by traditional owners (overseen by the CLC) there is potential for the IPA to work with traditional owners in prescribing locations and routes for such track development.
- Community benefit funds
  GMAAAC has funds for community benefit projects that include development and maintenance of outstations and other remote area infrastructure (see Management Theme 4 for more detail).

"Yinapaka Highway" – a rough bush track that provides important access to Yinapaka (Lake Surprise)

3.1.3 Management Strategies

3.1.3 (a) Management Objective
Support traditional owners to fulfil cultural obligations to care for country through customary management activities, including:

- **looking after water places**
- **burning country**
- **protecting and maintaining sacred sites**
- **monitoring the condition of country**

Management Strategies

1) Develop and implement an annual schedule of Ngurra Walalja country visits across each of the Nyirripi, Yuendumu and Willowra IPA Management Regions as the key means of supporting customary management activities. In determining priorities for these visits, consideration will be given to:

   i. areas of outstanding cultural and/or environmental significance

   ii. a high risk of irretrievable knowledge loss due to heavy dependence on a small number of knowledge holders

   iii. estates for which a low level of cultural and ecological knowledge has been recorded

   iv. equity of country visits among estate groups within each IPA Management Region

   v. a demonstrated interest shown by traditional owners in passing on IEK and cultural knowledge

   vi. a demonstrated interest shown by potential recipients in receiving IEK and cultural knowledge

   vii. areas that are difficult for traditional owners to access without logistical support

   viii. areas with a low level of visitation in recent years

   ix. identified priority areas to address biological data deficiencies

   x. opportunities to mitigate risks to cultural and ecological assets presented by wildfire or other threats.

   In planning and implementing Ngurra Walalja country visits:

   - Coordinate the attendance and involvement of senior traditional owners, key knowledge holders, family members and the right young people for country
   - Involve Warlpiri Rangers in the planning, logistics and, where appropriate, implementation of Ngurra Walalja country visits
   - Where appropriate, integrate Ngurra Walalja activities with Warlpiri Ranger on-ground works to address strategic land management priorities
   - Involve IPA partners, particularly the Mt Theo Program in the planning, logistics and operation of Ngurra Walalja country visits.

2) Wherever possible, create opportunities for traditional owners to undertake customary obligations in conjunction with Warlpiri Ranger work trips.
3) Develop and implement an annual water place maintenance schedule for each IPA Management Region which includes:
    - Physical works such as removal of silt, sand, animal carcasses and debris from soakages and rockholes, and the removal of vegetation from soakages
    - Conducting ceremonial activities associated with water places
    - Recording the location and condition of water places.
4) In addition to burning opportunities provided by country visits, ensure that customary burning priorities are incorporated into annual regional burn plans (as described in Section 3.2.3).
5) Record the location, extent and attributes of each customary burning activity.
6) Develop and implement an annual sacred site maintenance schedule for each IPA Management Region which includes:
    - The physical maintenance of sacred sites, performing tasks such as removing vegetative fuel, clearing sand drift and debris, and maintaining rock art, stone arrangements and objects
    - Conducting ceremonial activities associated with particular sacred sites
    - Recording details of sacred site condition and protective works undertaken.
7) As part of all customary management activities, monitor and record the condition of country, including the identification of risks to individual sacred sites, water places and resource harvest areas stemming from new threats to country, including weeds, feral animals, changed fire regimes, over-harvesting and soil erosion.
8) Where deemed necessary, develop specific management plans for individual sacred sites, water places and resource harvest areas to mitigate against new threats (refer also Section 3.2.3).

3.1.3 (b) Management Objective
Support the intergenerational transfer of IEK and cultural knowledge

Management Strategies

1) Develop ecological and cultural knowledge transfer programs for each IPA Management Region with priorities based upon the same criteria as listed in 3.1.3 (a).

   Development of these knowledge transfer programs will require the identification of:
    - Appropriate senior knowledge holders
    - Priority IEK information to be passed on/recorded
    - Appropriate audience(s)/custodians of knowledge
    - Locations to be visited
    - Roles of knowledge holders, family members, young persons and Warlpiri Rangers in the teaching and recording of knowledge
    - Practical application of IEK through customary management activities
    - Relevant media to be utilised

- Appropriate systems for managing and archiving recorded knowledge

Ecological and cultural knowledge transfer projects will be implemented through:

- Project-specific IEK trips
- Ngurra Warlalja country visits
- Warlpiri Ranger activities.

3.1.3 (c) Management Objective
Document the cultural attributes of the IPA

Management Strategies

1) Collate existing sacred site and cultural information from a variety of sources.
2) Develop and implement an annual program to address cultural attribute knowledge gaps for each Management Region. Priority will be given to locating cultural sites at risk of being lost through low visitation and the passing of key knowledge holders and other criteria as listed in 3.1.3 (a).
3) To assist in documenting cultural attributes, develop a CyberTracker sequence (as per Appendix 9)
4) Document and record cultural attributes through:
    - Project-specific cultural mapping activities
    - Ngurra Warlalja country visits
    - Warlpiri Ranger activities.
5) Produce maps and other relevant products to assist traditional owners in maintaining and transferring cultural knowledge.

3.1.3 (d) Management Objective
Assist traditional owners to manage IEK and associated cultural information

Management Strategies

1) Indentify and pursue opportunities for the safe storage and appropriate access of IEK and associated cultural information. This will include exploration of existing databases established by the CLC and other organisations.
2) Develop protocols governing the appropriate use, storage, access and distribution of IEK and related cultural information to protect the cultural and intellectual property rights of traditional owners.
3) Develop data sharing agreements with relevant organisations.

3.1.3 (e) Management Objective
Develop, maintain and protect infrastructure that supports traditional owners in visiting their country

Management Strategies

1) Prepare and implement programs for the development, maintenance and protection of infrastructure across each of the Nyirripi, Yuendumu and Willowra IPA Management Regions, with priorities based upon the following considerations:

   i. co-investment from other organisations

   ii. that infrastructure be strategically placed to assist access for a maximum number of estate groups

   iii. the capacity and interest of estate group members in funding and maintaining infrastructure into the future

   iv. that infrastructure be strategically placed to support key land management activities

   v. increased visitation enabled by new or existing infrastructure will not unduly introduce new, or exacerbate existing, risks to environmentally-sensitive areas

   vi. infrastructure is suitable for the needs of traditional owners in accessing and maintaining their estates

   vii. the history of previous management concerning particular infrastructure

   viii. the immediate and long-term availability of resources to effect infrastructure projects

   ix. preservation of human life.

2) The types of infrastructure directly funded through the IPA program will be confined to projects which support the safe conduct of land management activities in accordance with Australian Government funding guidelines. These may include:
   - Roads and tracks
   - Bores
   - Hand pumps
   - Shade shelters
   - Water storage facilities
   - Remote area communications.

3) As part of the infrastructure programs for each Management Region, assess existing infrastructure to determine items that are redundant and require replacement, removal and/or rehabilitation. Undertake removal and rehabilitation works as required.

4) As part of the infrastructure programs, prepare condition reports and associated maintenance schedules for all infrastructure.

5) Undertake all infrastructure projects in accordance with the environmental protection guidelines provided in Section 3.2.3.

6) Identify and negotiate responsibilities among respective parties for the construction/ maintenance of each infrastructure item.

3.2 "Keeping Country Strong"

3.2.1 Background

All living and non-living elements in the IPA, including rocks, soils, water places, plants, animals, landforms and elemental forces such as rain, fire and wind are intrinsically linked. This connectivity extends beyond natural processes and is central to Jukurrpa and the spiritual and social health of Yapa.

Aerial fire management on Lake Mackay ALT

Rocks and Landforms

Many individual rocks, outcrops and landforms are highly significant to Yapa in that they embody the physical presence, past travels and actions of ancestral Jukurrpa beings. In many places across the IPA, stone tools and grindstones also hold great significance for Yapa as tangible and powerful links with their ancestors. For Kardiya as well, the rocks of the Southern Tanami have long been of significance. Among the first Europeans to come to the Tanami were prospectors in search of mineral wealth. For the past century, the mining and processing of gold has helped shape the economy of the region.

The geology of the IPA is characterised by the metamorphosed sedimentary rocks of the underlying Tanami and Arunta geological regions such as those of the Lander Rock Beds, which are approximately 1,800 million years old. These rocks occur extensively around Mt Doreen station as banded schistose outcrops. Granite hills, dated from 1,780 to 1,570 million years ago, dominate *pamarrpa/pirli* (hilly/rocky country) in the IPA, though older granites and metasediments occur as isolated outcrops elsewhere the IPA.

Overlying this basement geology are the younger sedimentary rocks of the Ngalia and Wiso Basins. In the southern portion of the IPA, Ngalia Basin rocks outcrop around Mt Doreen and Newhaven

Sanctuary and form the quartzite mesas and hills west and south of Nyirripi. The Wiso Basin rocks of the northern half of the IPA are largely covered by sand and alluvium. Outcrops of younger sedimentary rocks of the Canning and Murraba Basins occur in the far west of the IPA.

Soils

The soils of the IPA consist of those derived from local bedrock and windblown soils which have been transported from distant source material. With reference to land types, as described in Section 1.2, the *manangkarra* (sandplains) and *jilja* (sandhills) that occupy the majority of the IPA consist of nutrient-poor windblown red sands from the Cainozoic period (65.5 million years ago). These are interspersed with younger and more fertile red alluvial sandy and loamy soils, particularly across the south of the IPA in proximity to *pamarpa/pirli* (hilly/rocky country). Alluvial soils also occur throughout *karru* (watercourse) habitats and coincide with areas of pastoral production at Yuendumu and Willowra. River and creek channels are comprised of coarse sands and gravels transported from adjacent hills and ranges.

Surface deposits of mud, gypsum and salt occur on playa lakes, and extensive calcrete deposits associated with groundwater discharge often occur in association with *pilpilli* (paleodrainage systems), though may also be found among sandplain and sandhill habitats.

Water Places

Water places in the Tanami are ephemeral by nature, with some holding surface water for only a few days after rain and others retaining water for many months or even years. They range from innumerable small isolated soakages, claypans, springs and rockholes, to freshwater billabongs on river channels, expansive freshwater and saline swamps, lakes, and paleodrainage systems.

Water places of all types are culturally significant to Yapa. Many are associated with the travels and adventures of ancestral Jukurrpa beings. Prior to the arrival of Europeans, they sustained Yapa who in turn made sure that they were habitually cleaned and maintained. Surface waters sustain key game species such as *marlu* (red kangaroo) and *yankirri* (emu) and attract predators such as *malilyi* (Stimson's python), and *mulyu-rlinji* (perentie).

Local sheet flows across vast areas of the IPA in *manangkarra* (sandplain) and *jilja* (sandhill country) tend to concentrate water fleetingly in claypans, swamps and rockholes. Soakages requiring regular digging out can be found where the water table is close to the surface. Springs are associated with higher relief *pirli/pamarrpa* (hilly/rocky) country. Freshwater lakes and billabongs are associated with *karru* (watercourses) along defined channels that originate in ranges across the southern half of the IPA. *Muluwurru* (salt lakes) are filled from a combination of local sheet flows and groundwater recharge. *Pilpilli* (paleodrainage systems) represent natural depressions in the landscape, the vestiges of extinct river systems that are periodically inundated and re-charged by peak rainfall events.

The collection of nutrients and surface and groundwaters in wetland areas drives productive plant growth that supports a higher abundance and diversity of species than surrounding habitats. For example, watercourse habitats including floodouts across the south of the IPA, such as Wirliyajarrayi (Lander River), are important areas because defined channels transport and concentrate nutrient-rich sediments from ranges to the south of the IPA.

Traditional owners harvesting bush foods adjacent to a salt lake at Lunkartajarra (Sangsters Bore) within the South West Tanami Desert SOCS

From an ecological perspective, water places in the IPA often contain:

- Significant fire-sensitive vegetation communities that include threatened, rare, restricted and endemic plants
- Relatively diverse assemblages of vertebrates that include populations of nationally-threatened species such as *walpajirri* (greater bilby), *jajina* (mulgara), and *warrana* (great desert skink)
- Significant breeding sites, drought refuges and stopover areas for waterbirds that include international and national migrants.

They are also foci for frogs and waterborne invertebrates that may have high rates of local endemism (Bimbox pers. comm.)

Of all of the water places within the IPA, the following have been recognised by Kardiya as possessing exceptional biological values:

- Yinapaka (Lake Surprise) has been included in the Directory of Important Wetlands of Australia (DIWA) (Usback et al. 1996)
- Lake Surprise and paleodrainage habitat within the Yuendumu IPA Management Region have been recognised by Morton et al. (1995) as important sites of refugia for biological diversity
- Major waterholes along the Wirliyajarrayi/Lander River have been recognised as waterholes of botanical significance (White et al. 2000)
- Yirninti Warrku Warrku (Lake MacKay), Lake Surprise, the Lander River and Yunkanjini (Newhaven Lakes) are all listed as nationally important wetlands in an inventory of significant wetlands of the arid NT (Duguid 2005)
- The NT portion of Yirninti Warrku Warrku (Lake MacKay) is recognised as having international significance as an episodic breeding ground for wetland bird species protected under international treaties (Duguid 2005) and as such meets criterion 1 for Ramsar listing in accordance with the Ramsar Convention on Wetlands.

(See Table 3 for a summary of Sites of Conservation Significance.)

In addition to surface waters, *pilpilli* (paleodrainage systems) are especially ecologically significant in the Southern Tanami owing to the reliability, scale and rapid rate of recharge of groundwaters. These factors engender productive plant growth. This, coupled with rich edge habitats between salt channels, semi-saline and freshwater lakes and surrounding sandplains, create significant ecological communities that include refugia for great desert skinks and bilbies.

The most substantial paleodrainage channels in the IPA, the large depressions occurring in the vicinity of Rabbit Flat and The Granites, can experience massive and prolonged inundation events. In 2006 an exceptional rainfall event caused this paleodrainage system to combine with multiple lake systems to inundate an area of approx 500 km^2 (Reid et al. 2006).

Groundwater has been mapped to varying degrees across the IPA in association with government groundwater surveys and hydrological studies funded by the mining industry. Large areas of the IPA yield low amounts (less than 0.5 litres per second) of brackish, saline waters. Significant portions of the IPA, particularly across the Ngalia Basin in the south of the IPA, have projected bore yields of between one and five litres per second that are suitable for either stock or human consumption. The highest yields are associated with the aforementioned paleodrainage systems.

Plants

Marna (spinifex) grasslands characterise the Tanami region, occupying sandplain, sandhill and range country which accounts for some 95% of the IPA. Spinifex thrives on nutrient-poor red sands and survives long dry periods. Its flammable resins and its geographic dominance create an intrinsically flammable environment that underpins the ecology of the region.

Of the *marna* species, *Triodia pungens* is the least habitat-specific and dominates across *manangkarra* (sandplains) to dune crests and the fringes of salt lakes. Feathertop spinifex (*Triodia schinzii*) is prevalent on deeper sands with low clay content. Lesser areas of shallower sand overlying rocky strata are dominated by *janpi* (hard spinifex grasses) such as *Triodia basedowii* (Latz 1996).

Shrublands of fire-adapted hakea, grevillea and acacia species are also commonly found throughout the sandplains and sandhill country. Species such as *wakalpiri* (dogwood – *Acacia coriaceae*) and, *nguyu-parnta* (northern corkwood – *Hakea macrocarpa*) are characterised by thick porous bark that enables them to endure fire without burning and rapid epicormic growth to reshoot after fire. Other species such as *tipa* (honey grevillea – *Grevillea eriostachya*) re-grow from basal shoots to ensure a quick response after wildfire. Many forbs and perennial species are obligate seeders that can germinate under favourable conditions following fire.

Significant and extensive fire-sensitive plant communities can be found across the IPA, including those associated with *manja* (mulga) woodlands, south facing escarpments and gorges among *pamarrpa/pirli* (hilly/rocky) habitats and the periphery of *muluwurru* (salt lake systems).

Manja woodlands occur in flow-on areas that collect water from the surrounding landscape, being largely confined to the intermediate red earth soils on alluvial plains between spinifex sandplains and woodland communities that fringe rocky ranges. These woodlands have understoreys of annual or perennial grasses mixed with Senna, Cassia, and Acacia species. They are vulnerable to hot fires which sweep in from surrounding spinifex-dominated sandplains, killing mulga trees and eroding mulga community boundaries. A short inter-fire period can reduce the patch size of individual mulga stands while repeated high-intensity wildfires can remove these woodlands from large expanses of country.

Long-unburnt fire-sensitive communities are found in natural fire shadow areas on *pamarrpa/pirli* (rocky/hilly) habitats across the southern half of the IPA. Here, species such as *wijirrki* (fig), *wanngardi* (callitris pines), *winpiri* (spearwood) and perennial grass species are protected in gullies and on south-facing escarpments and low ranges from high-intensity wildfires that typically approach from the north-west.

Low, open *Mungulypa* (samphire – *Tetracornia sp.*) shrublands occur in association with *Muluwurru* (salt lakes) and *pilpilli* (paleodrainage) land types across the IPA. These diverse communities, which often contain rare and restricted species, are also vulnerable to wildfires.

Wapilingki, or white-trunked coolibah (*Eucalyptus victrix*), at Yinapaka

Large and mature hollow-forming trees, such as *ngapiri* (red gum – *Eucalyptus camadulensis*), *wirrkali* (bloodwood – *Corymbia opaca*), *wajarnpi* (ironwood – *Acacia estrophiolata*) and *wapilingki* (white-trunked coolibah – *Eucalyptus victrix*) are highly significant to Yapa in that they are often recognised as the embodiment of ancestral beings. They are also ecologically important as roost and shelter sites for a range of birds, bats and reptiles.

Individual species or remnant pockets of fire-sensitive communities also occur as islands among extensive and wildfire-prone sandplain and sandhill land types. In these situations, fire-sensitive plants, such as *wirrkali* (bloodwood), *wanurkurdu* (whitewood) and *marrawaji* (bush walnut – *Owenia reticulata*) are often bestowed with cultural values either as marker trees or sacred sites.

Of the 753 plant species recorded from the IPA, one species is listed as nationally threatened (*Eleocharis papillosa*), 19 as near-threatened, and 31 as data deficient. There are 19 species listed as nationally significant, 248 as bioregionally significant, 48 as significant within the NT, and five as significant within the southern NT.

The Southern Tanami IPA contains all or part of 14 recognised Sites of Botanical Significance (SOBS) (White et al. 2000) (see Figure 10). Of these, three are of national significance, seven are of bioregional significance, and four are of undetermined significance.

(Table 1 summarises the significance ratings, corresponding Sites of Conservation Significance, and IPA Management Regions for each of these SOBS. Figure 8 indicates the distribution of threatened and significant plant species within the IPA, sampling densities and Sites of Botanical Significance.)

SOBS	Significance	Portion within Southern Tanami IPA	IPA management region	Summary values	Corresponding SOCS
Lake MacKay	bioregional	all	Nyirripi	2 taxa of national significance, 12 taxa of NT significance, 2 taxa of bioregional significance, 7 taxa only known in bioregion from the site	Lake MacKay
Kalipimpa Drainage	bioregional	all	Nyirripi	9 taxa of NT significance, 1 taxon of bioregional significance, 4 taxa only known in bioregion from this site	n/a
Lake Bennet	bioregional	part	Nyirripi	6 taxa of NT significance, 3 taxa of bioregional significance, 1 taxon only known in bioregion from this site	Newhaven Lakes
Western Tanami Paleodrainage	national	part	Yuendumu	6 taxa of national significance, 25 taxa of NT significance, 4 taxa of significance to Southern NT, 17 taxa of bioregional significance, 8 taxa only known in bioregion from this site	South West Tanami Desert
Dead Bullock Soak	bioregional	all	Yuendumu	4 taxa of NT significance	South West Tanami Desert
Yuendumu South	bioregional	all	Yuendumu	1 taxon of national significance	n/a
False Mt Russell	bioregional	all	Yuendumu	1 taxon of national significance, 2 taxa of NT significance, 1 taxon of bioregional significance	South West Tanami Desert
Lake White	undeter-mined	all	Yuendumu	Unconfirmed botanical values	South West Tanami Desert
Tanami Paleodrainage System extension	undeter-mined	part	Yuendumu	Unconfirmed botanical values	South West Tanami Desert

Lake Surprise and Lander River Floodout	national	part	Willowra	7 taxa of national significance, 3 taxa of significance to Southern NT, 9 taxa of bioregional significance, 1 taxon only known in bioregion from this site	Lake Surprise and Lander River Floodout Swamps
Upper Lander River	national	all	Willowra	3 taxa of national significance, 2 taxa of NT significance, 4 taxa only located in the Tanami Bioregion	Lake Surprise and Lander River Floodout Swamps
Paleo-Lander River	bioregional	part	Willowra	3 taxa of national significance, 5 taxa of NT significance, 7 taxa of bioregional significance.	n/a
Central Tanami Remnant Mulga	undeter-mined	all	Willowra	Unconfirmed botanical values	n/a
Nanga Range	undeter-mined	part	Willowra	Unconfirmed botanical values	n/a

Table 1 Sites of Botanical Significance in the Southern Tanami IPA

Animals

Invertebrates dominate the Tanami in terms of numbers of individuals, species and total biomass. They are central to ecosystem functioning owing to their roles in plant consumption, nutrient cycling, pollination and decomposition and as food sources for a diverse array of reptiles, birds and other animals. Of the invertebrates, *kardilyka* (termites) are the most apparent. Their presence is marked by hard, bare pavements that conceal subterranean chambers on flat *manangkarra* (sandplains) and *mintarpa* (above-ground mounds) up to 4 m high in areas subject to flooding.

Species such as *yunkaranyi* (honey ants) feature strongly in Warlpiri mythology and are a prized bush food harvested from *manja* (mulga) communities. In contrast to this and the many common invertebrate species that inhabit the IPA, the regions also contains anomalous species such as *kurdujungujungu* (freshwater crabs) on the Lander River and colonies of cave-dwelling ogliochaete worms from an underground spring west of Nyirripi community.

Mintarpa (large termite mounds) in the north of the IPA. Termites are a reliable food source for many animals in the IPA

The reptile fauna of the Tanami is most notable for its abundance and diversity. Evidence of reptiles can be seen everywhere, from ubiquitous species such as *wigi* (military dragons) that dart erratically across sandplain habitats, to *Lerista spp*. that leave telltale tracks as they wriggle through surface layers of sand in pursuit of termites, and *wardarpi* (sand goannas) whose burrows occur across the sandplains of the IPA.

A total of 97 reptile species have been recorded within the IPA. A large part of this diversity can be attributed to an exceptionally high number of termite and invertebrate specialists, many of which coexist among subtle subdivisions of habitat. The most diverse of the reptile groups are the skinks, which are represented by 34 species. These range from large and familiar species such as *lungkarta* (blue tongue lizards) to secretive, obscure or diminutive species that remain unknown outside scientific circles. Almost half of the skink species belong to the genus *Ctenotus*, the most notable of which is the highly restricted *Ctenotus tanamiensis*, which only occurs in a small area straddling the WA/NT border. The IPA is also a stronghold for *warrana* (great desert skink – *Egernia kintorei*) which is listed nationally as vulnerable. The warrana population near Rabbit Flat, which is estimated to contain 2,250 individuals, is the largest known to exist in a protected area (McAlpin 2001) (refer to Figure 9).

Goannas are represented by seven species. These include prized and staple game species such as *mulyu-rlinji* (perenties) and war*darpi* (sand goannas).

Snakes feature strongly in Warlpiri mythology and are represented by 19 species. Important food species include all four species of Central Australian pythons: *yurnturrkunyu* (black-headed python – *Aspidites melanocephalus*), *yintajirrki* (centralian carpet python – *Morelia spilota bredli*), *rdjalpa* (Stimson's python – *Antaresia stimsoni*) and *malilyi* (woma python – *Aspidites ramsayi*). Three species of blind snake have also been recorded in the IPA.

Other major reptile groups present include geckos (18 species), dragons (17 species) and legless lizards (seven species).

Mulyu-rlinji (perentie – *Varanus giganteus*)

The spangled perch (*Leioptherapon unicolour*) is the only fish recorded in the IPA, or anywhere within the Tanami Desert. It has been found at Lake Surprise and at semi-permanent Curlew and Boomerang waterholes on the Lander River (Gibson 1986). The species, though native to Australia, was introduced to the Lander River by pastoralists at permanent bore-fed dams upcatchment from the IPA on Mt Allan and Napperby Stations where it persists in dry times.

Nine species of frogs have been recorded in the IPA, the most notable being the Tanami toadlet (*Uperoleia micromeles*) which is endemic to the Tanami bioregion. Species of burrowing frog are important game foods and are dug from great depths along the crests and flanks of sandhills in response to seasonal conditions.

> *"Janangpa (brush-tailed possum), wurlana (burrowing bettong), purdujurru (brush-tailed bettong), pakaru (golden bandicoot), yamarri (central hare-wallaby), mala (rufous-hare wallaby), yirdaji (pig-footed bandicoot) – lowa! All gone! Finished!"*
>
> – Japanangka Lewis

A total of 50 native mammal species have been recorded from within the boundary of the IPA. Of these, seven species are now extinct or presumed extinct from their entire former range and a further seven species no longer occur in the Tanami region. The highest losses have occurred among the Dasyurids, rodents, bandicoots and smaller macropods in the critical weight range of 35–5500 grams.

Ten of the original 15 Dasyurid species remain in the IPA. The surviving species tend to be the smaller members of the family and include five species of dunnart, the fat-tailed antechinus (*Pseudantechinus macdonellensis*), the *wongai ningaui* (*Ningaui ridei*) and *jajina* (mulgara – *Dasycercus blythii*).

Of the original five species of bilbies and bandicoots formerly found in the Tanami, only the *walpajirri* (greater bilby – *Macrotis lagotis*) survives (refer Box 4 for details). Aside from holding important cultural significance through the use of its tail as a ceremonial decoration and as a traditional game species, the *walpajirri* has been adopted as the logo of the Yuendumu-based Warlpiri Rangers in awareness and celebration of its national conservation significance.

Thirteen species of rodents have been recorded in the IPA. These include ubiquitous *jungunypa* mouse species such as the *wijala* (hopping mouse – *Notomys alexis*) and habitat-specific species such as the desert mouse (*Pseudomys desertor*), which inhabits long-unburnt spinifex communities. The local abundance of rodents varies markedly depending on seasonal conditions. In boom years when plant food is readily available, rodent populations may explode and species such as the *kutangi* (long-haired rat – *Rattus villosisimus*) and Forrest's mouse (*Leggadina forresti*), that have not been seen for many years may become locally common.

Five extant species of macropods inhabit the IPA including important game species such as *marlu* (red kangaroo – *Macropus rufus*), *kanyarla* (euro – *Macropus robustus*) and *wakulyarri* (black-footed rock wallaby – *Petrogale lateralis*, MacDonnell Ranges Race). *Wanpana* (spectacled hare-wallaby – *Lagorchestes conspiculatus*) and *kururrungu* (northern nail-tailed wallaby – *Onychogalea unguifera*), are two tropical species that reach their southern limits within the IPA. Both of these species have regional conservation significance owing to significant northward range contractions.

Eight species of bat have been recorded in the IPA. Of these, the ghost bat (*Macroderma gigas*) has experienced a dramatic northward range contraction and may no longer be present in the region.

A total of 199 bird species have been recorded in the IPA though the avian fauna of the region varies greatly from season to season.

Major lakes, such as Yirninti Warrku Warrku (Lake MacKay) and Yinapaka (Lake Surprise), serve as significant breeding sites for shore and waterbirds during periods of inundation. More than 40,334 waterbirds from 21 species were recorded from Lake MacKay following inundation in 2001, most notably large populations of stilts, ducks, avocets and terns. Such assemblages, though little studied, may be significant in terms of the total proportion of national or international populations (Duguid 2005).

Ephemeral wetlands in the IPA provide important rest stops for a range of migratory waterbirds such as sandpipers and stints. Rare records of species such as little stints (*Calidris minuta*) demonstrate the importance of remote billabongs and wetlands to diminutive long-haul international migrants en route from the arctic regions of Europe and Asia to southern Australia.

Warlpiri Ranger Preston Kelly on a bird survey

Box 4 Nationally Threatened Mammal Species

Walpajirri* (greater bilby – *Macrotis lagotis) (Vu*)

The Southern Tanami IPA contains nationally significant populations of *walpajirri* that represent one of only two populations of the species present in protected areas in the NT (the other is in the North Tanami IPA). The Tanami bioregion and the northern part of the Great Sandy Desert bioregion, which together occupy most of the Southern Tanami IPA, are considered critical habitat for the species (Pavey 2006). The Granites/Rabbit Flat region and lower Lander River/Lake Surprise area both contain core bilby populations where the species is concentrated on respective *pilpilli* (paleodrainage) and *karru* (watercouse) habitats. These populations are strongly associated with low fox densities, the maintenance of favourable fire regimes and stands of *janmarda* (bush onion – *Cyperus bulbosus*).

Wakulyarri* (black-footed rock-wallaby, Macdonnell Ranges race – *Petrogale lateralis) (Vu*)

Numerous restricted and isolated populations of *wakulyarri* occur across the southern portion of the IPA. These are confined to Mt Windajong, outliers of the central ranges including the Sidley, Mt Standley/Mt Cockburn complex, Kunajarrayi (Mt Nicker) and numerous minor ranges and low hills across the Nyirripi IPA Management Region. Recent surveys indicate that some colonies are in decline while others have become extinct in recent decades (Gibson 2010). The restricted and isolated nature of these colonies denotes high regional conservation significance.

Wakulyarri (black footed rock wallaby – *Petrogale lateralis*). Photo taken from a motion-senor camera during a rock wallaby survey at Mt Windajong

Jajina* (brush-tailed mulgara – *Dasycercus blythi) (Vu*)

It has been estimated that mulgara occupy some 18,000 km^2 of land in the Tanami (Masters 1997). Within the IPA, important habitats for the survival of the species include *Triodia basedowii*-dominated sandhills, *T. basedowii* and *T.pungens* sandplains, lateritic outcrops and paleodrainage systems. The combined pressures of introduced predators and changed fire regimes may have caused local declines of this species.

Pujarr-pujarrpa* (marsupial mole – *Notoryctes typhlops) (En*)

Though rarely seen and little known to science, this species features strongly in Warlpiri oral history and mythology and is reported by senior knowledge holders from all major sand hill areas in the IPA. Though several scientific specimens have been collected from the Tanami region, it is unclear which of the three described *Notoryctes* forms (two of *N. typhlops* – southern mole, and *N. caurinus* – northern mole) occur in the IPA.

(*Vu and En denote "vulnerable" and "endangered" species respectively.)

Pujarr-pujarrpa (marsupial mole – *Notoryctes typhlops)*

Ground-nesting species represent an important yet vulnerable set of the birds of the Southern Tanami. *Jaruluunjarylyn* (night parrot – *Pzeporus occidentalis*) and *nguumarra* (mallee-fowl – *Leipoa ocellata*) are two ground-nesting birds remembered by older traditional owners of the region that have not been detected from the IPA in recent decades. Species such as *wardilyka* (bush turkey – *Ardeotis australis*) and *yankirri* (emu – *Dromaius novaehollandiae*) remain important game species, which are hunted widely throughout the IPA despite being listed as vulnerable in the NT. Though some older people report that these species may be declining, their status in the IPA is unclear.

Other notable ground nesting species include *wirntiki* (bush-stone curlew – *Burhinus grallarius*) (Vu) and *kunkurdakurdaku* (spotted night jar – *Eurostopodus argus*).

Manja (mulga) communities support unique assemblages of birds compared to other habitats. These include grey honeyeaters (*Conopophila whitei*), *wintiki* (thornbills), *Ngalyurralyurru* (red-capped robins – *Petroica goodenovii*), red-throats (*Pyrrholaemus brunneus*) and *jiwilyirrilyirri* (splendid fairy wrens – *Malurus splendens*).

Four nationally threatened bird species have been recorded from the IPA (Table 2). The last confirmed sighting of the irruptive *jarrurlujarrarlu* (princess parrot – *Polytelis alexandrea*) occured in the 1960s near Yuendumu though traditional owners report the species as being a transient along *karru* (watercourse) habitats in the Nyirripi region over the last 15 years. Single observations of both

the masked owl (*Tyto novaehollandiae*) and the red goshawk (*Erythrotriorchis radiatus*) have been made in the IPA in recent decades. The Australian painted snipe (*Rostratula australis*) is classified as vulnerable in Australia due to the degradation of their wetland habitats. Although the status of the species within the IPA remains unknown, the wetlands of the Southern Tanami are likely to be very important for this species (P. Hodgens pers. comm.).

Warlpiri name	Common name	Scientific name	Northern Territory status	EPBCA status
Mammals				
walpajirri/ninu	bilby	*Macrotis lagotis*	Vu	Vu
wakulyarri	black-footed rock-wallaby	*Petrogale lateralis*	NT	Vu
jajina	mulgara	*Dasycercus blythi*	Vu	Vu
pujapujarrpa	marsupial mole	*Notoryctes typhlops*	Vu	En
Reptiles				
warrana	great desert skink	*Egernia kintorei*	Vu	Vu
Birds				
	red goshawk	*Erythrotriorchis radiatus*	Vu	Vu
jarrurlujarrarlu	princess parrot	*Polytelis alexandrea*	Vu	Vu
	masked owl	*Tyto novaehollandiae*	Vu	Vu
	Australian painted snipe	*Rostratula australis*	Vu	Vu
yankirri	emu	*Dromaius novaehollandiae*	Vu	n/a
wardilyka	bustard	*Ardeotis australis*	Vu	n/a

(En = endangered; NT = near threatened; Vu = vulnerable; EPBCA = Environment Protection and Biodiversity Conservation Act.)

Table 2 Extant Threatened Animals of the Southern Tanami IPA

***Warlu* – Fire**

Traditional owners of the Southern Tanami IPA refer to a time when the old people walked the country burning "little bit, little bit, little bit" – firing country as they travelled and hunted. Fire in this context had many purposes, including to signal, to protect sacred sites, to germinate bush foods and to flush out animals during hunting. Though there is little empirical evidence of pre-contact fire regimes, it is assumed that burning activities were conducted more intensely in proximity to high resource use areas along creeks and river channels and between water points that formed major travel routes across the landscape. The result was believed to have been a fine scale mosaic of new and old vegetation at varying stages of growth that minimised the likelihood of large and dangerous fires spreading across the landscape, thereby protecting fire-sensitive plant communities and dependent wildlife.

Fire in spinifex

Today, fire remains central to the lives of Aboriginal people living in the Southern Tanami and is the principal tool and expression of caring for country. Customary burning continues to be carried out in a familial context in more accessible areas of the IPA, including around communities and outstations, along roadsides, in hunting areas and around significant and sacred sites. This use of fire delivers innumerable environmental benefits that include:

- Triggering the germination of many plants and staple bush foods such as *wanakiji* (bush tomato)
- Maintenance of habitat edges between habitat types such as *manja* (mulga) and *manangkarra* (sandplain)
- Protection of large hollow-forming trees that provide important habitat for many bird, mammal and reptile species
- Creation of mosaics of new and old growth vegetation that enhance the productivity of resource-poor environments by providing a range of successional food plants and the release of nutrients back into soils ready for plant uptake following rains
- Maintenance of shelter sites for animals vulnerable to predation
- Protection of significant threatened species colonies from wildfires
- Reduced incidence of property damage from wildfire.

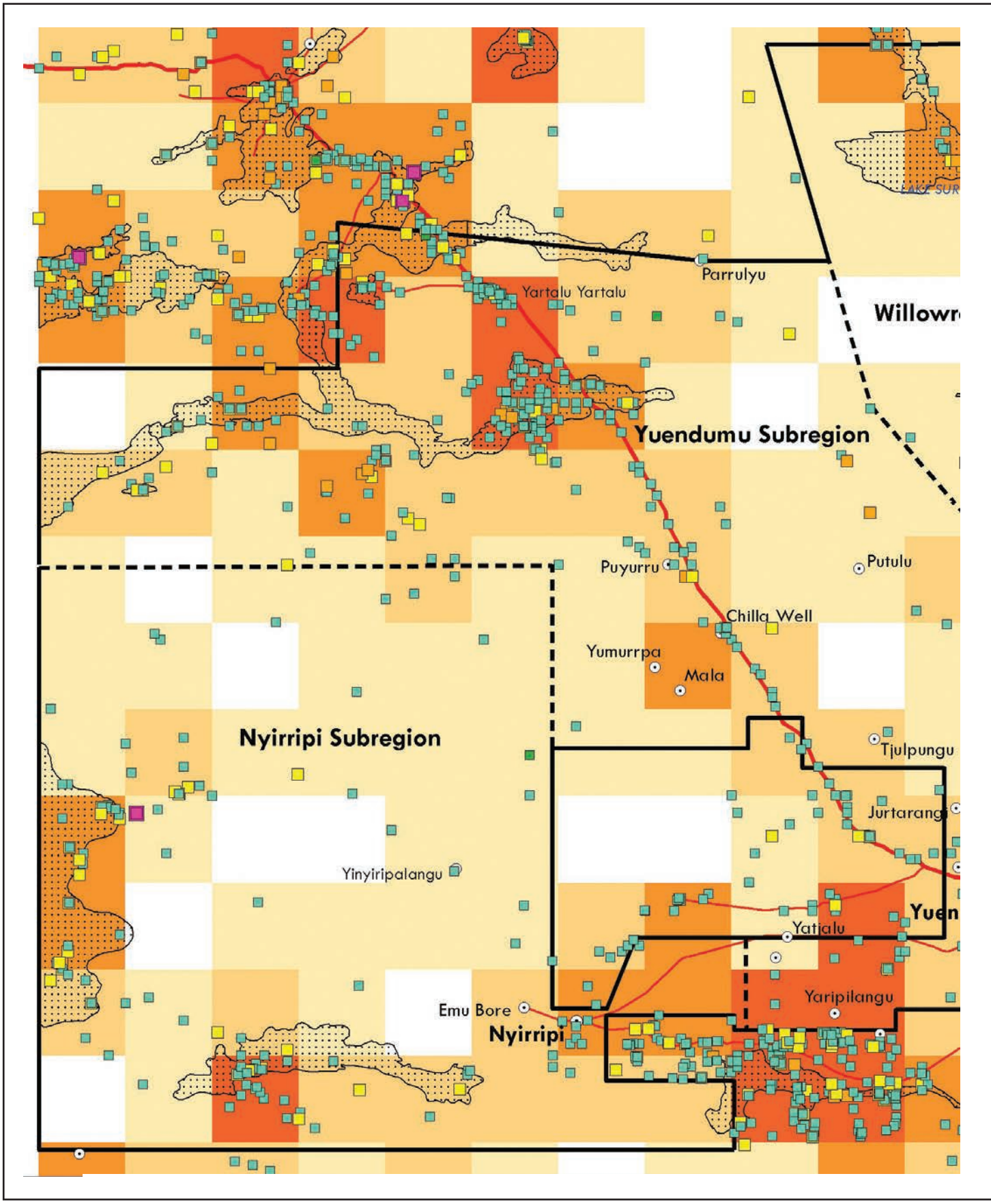
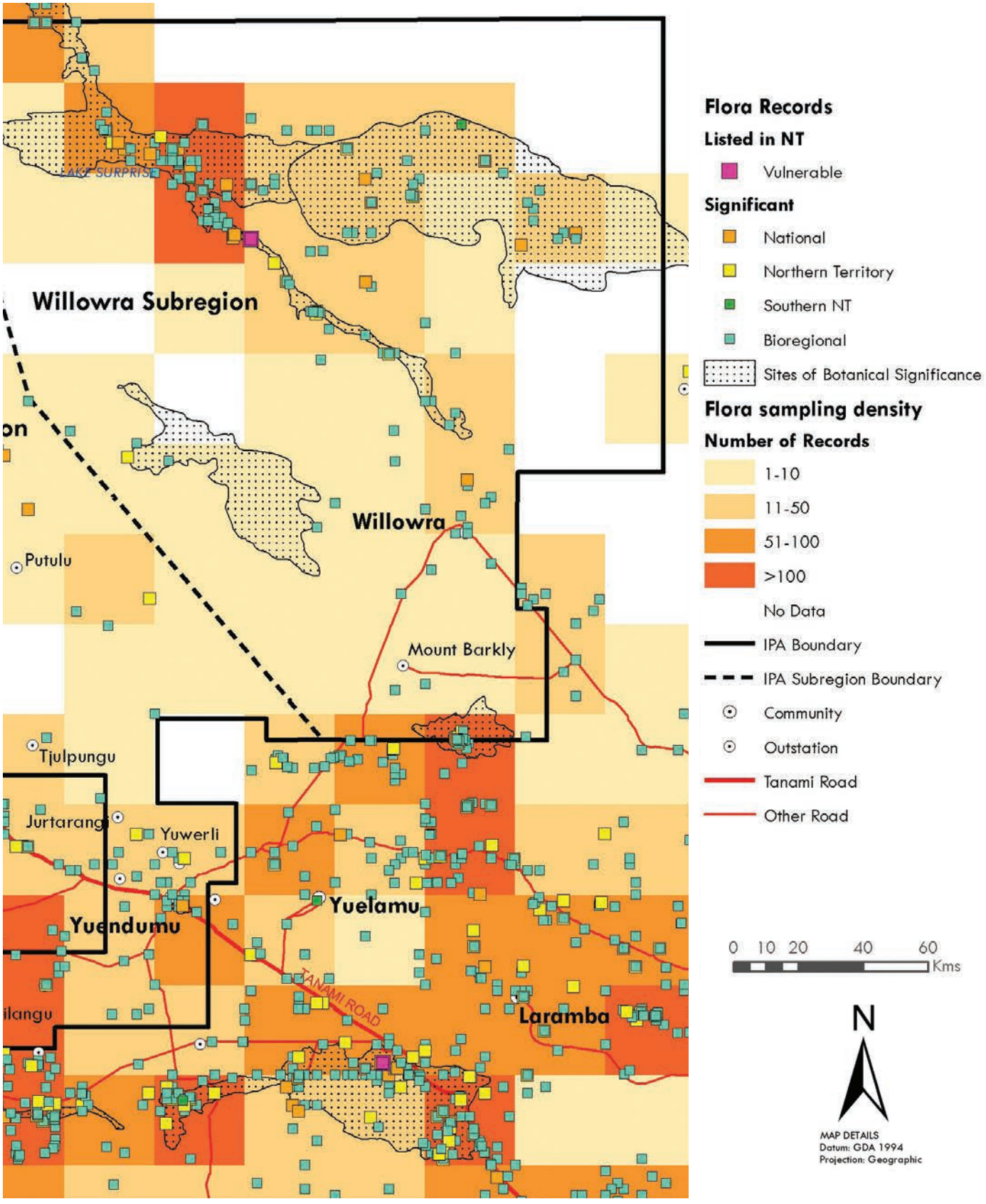


Figure 8 Botanical Sampling Density, Significant and Threatened Plants of the Southern Tanami IPA


Flora Records
Listed in NT
Vulnerable
Significant
National
Northern Territory
Southern NT
Bioregional
Sites of Botanical Significance
Flora sampling density
Number of Records
1-10
11-50
51-100
>100
No Data
IPA Boundary
IPA Subregion Boundary
Community
Outstation
Tanami Road
Other Road
0 10 20 40 60
Kms
N
MAP DETAILS
Datum: GDA 1994
Projection: Geographic
Willowra Subregion
LAKE SURPRISE
Willowra
Putulu
Mount Barkly
Tjulpungu
Jurtarang
Yuwerli
Yuendumu
Yuelamu
TANAMI ROAD
Laramba

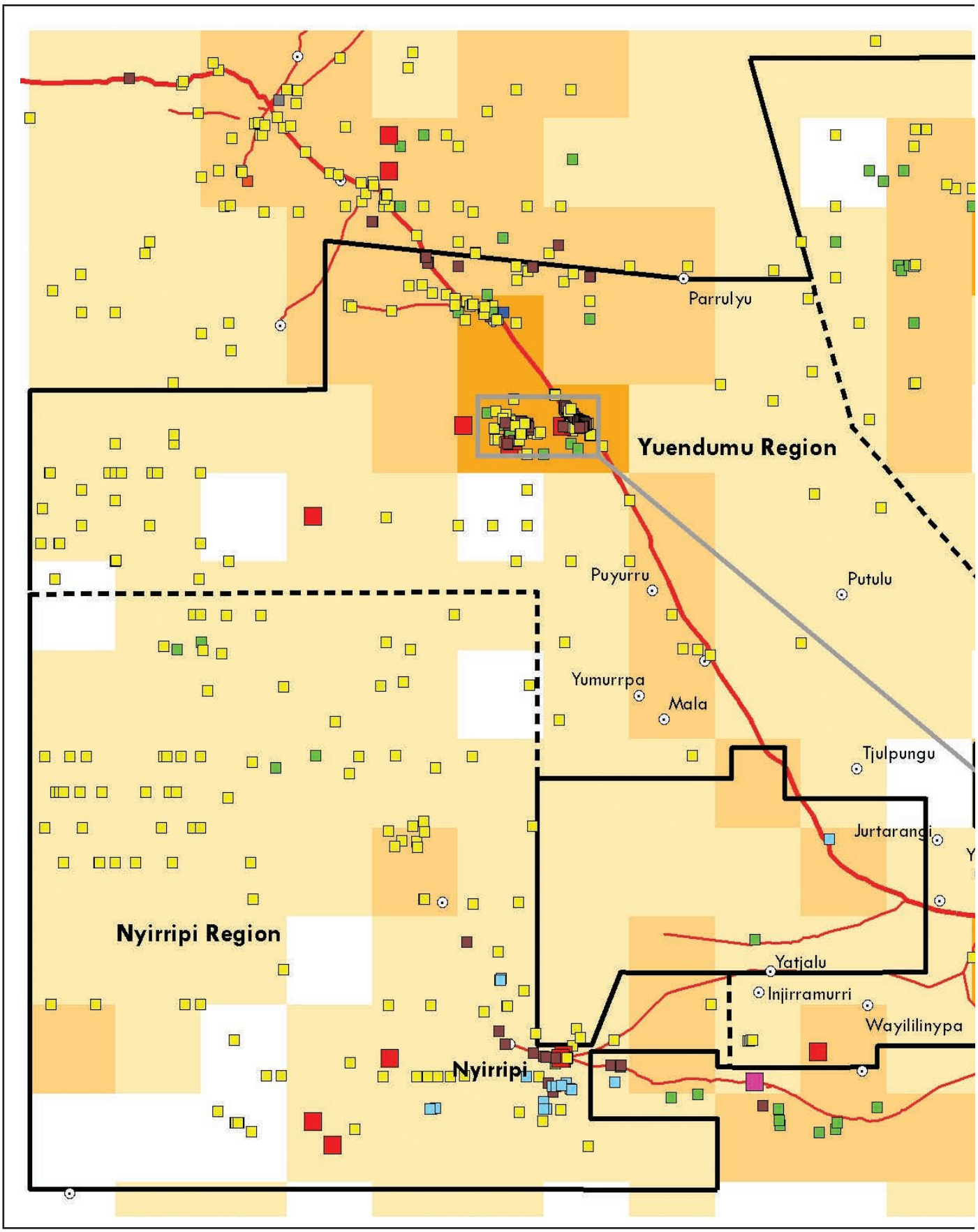
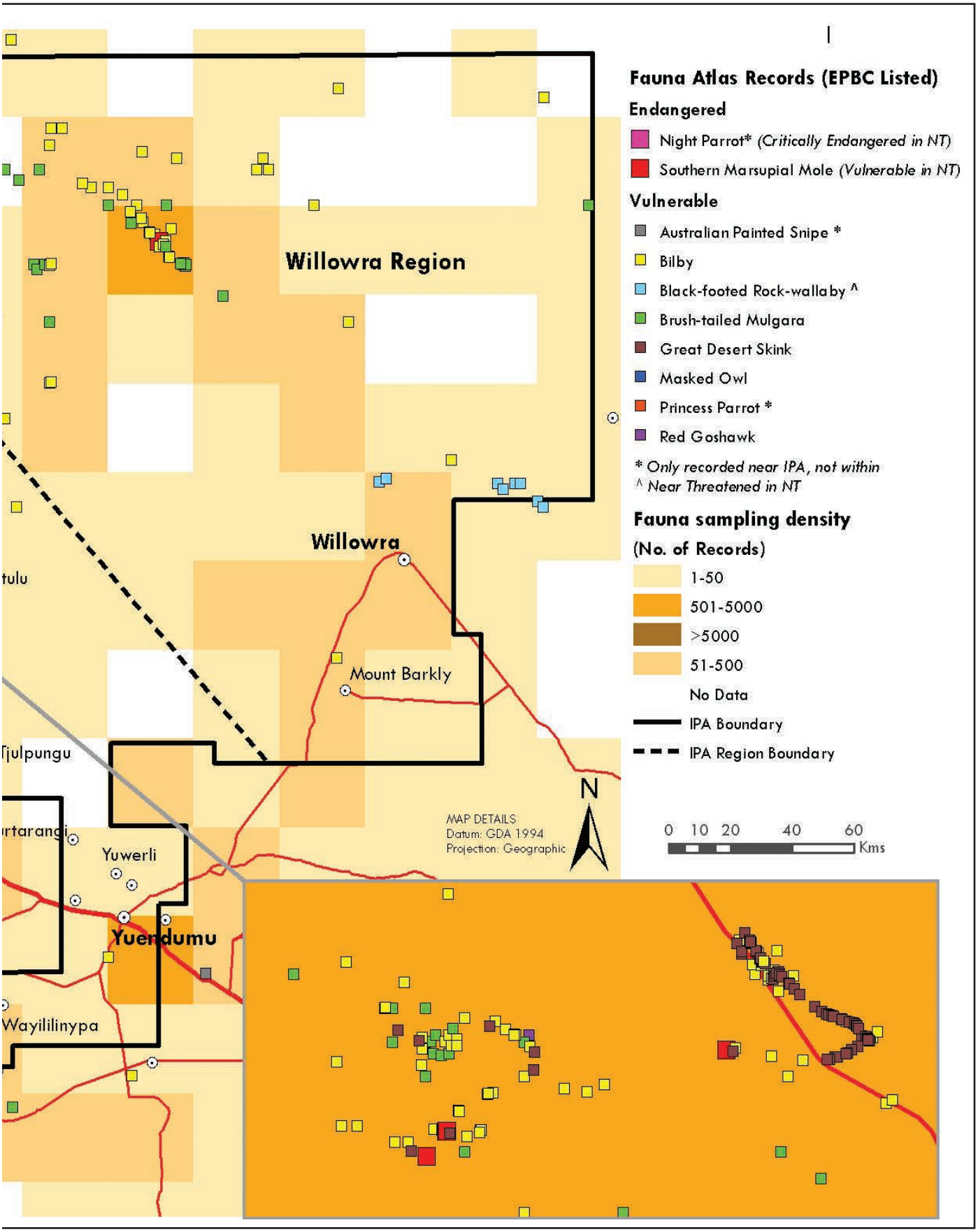


Figure 9 Fauna Sampling Density and Threatened Animals of the Southern Tanami IPA


Fauna Atlas Records (EPBC Listed)
Endangered
Night Parrot* (Critically Endangered in NT)
Southern Marsupial Mole (Vulnerable in NT)
Vulnerable
Australian Painted Snipe *
Bilby
Black-footed Rock-wallaby ^
Brush-tailed Mulgara
Great Desert Skink
Masked Owl
Princess Parrot *
Red Goshawk
* Only recorded near IPA, not within
^ Near Threatened in NT
Fauna sampling density
(No. of Records)
1-50
501-5000
>5000
51-500
No Data
IPA Boundary
IPA Region Boundary
Willowra Region
Willowra
Mount Barkly
Yuwerli
Yuendumu
Wayililinypa
tulu
Tjulpungu
rtarangi
MAP DETAILS
Datum: GDA 1994
Projection: Geographic
N
0 10 20 40 60
Kms

Conservation Significance

The Southern Tanami IPA shares adjoining boundaries with the Northern Tanami IPA and the Australian Wildlife Conservancy's (AWC's) Newhaven Sanctuary to form a 144,650 km^2 complex of protected areas. An additional IPA development project underway in WA promises to further expand this reserve network.

The Southern Tanami IPA provides the single largest contribution to the Trans-Australia Eco-Link initiative. In connecting northern subtropical savannahs to the arid rangelands of Central Australia, it forms a strategic conservation corridor with the potential to provide landscape-scale resilience to ecosystem processes in a changing climate.

Portions of the Tanami, Burt Plain and Great Sandy Desert bioregions are contained within the IPA. Declaration of the Southern Tanami IPA has increased protection of the Great Sandy Desert bioregion to above the 10% conservation target for bioregions, and resulted in a five-fold increase in the proportion of the Burt Plain bioregion that is protected. (Refer to Appendix 10 for detailed bioregion conservation information.)

The IPA contains a number of unique plant and animal species and communities due to its location in a crossover region between the southern arid rangelands and northern sub-tropical savannah woodlands. Several notable animals have their southern or northern limits in these latitudes: *wampana* (spectacled hare-wallaby), *kururrungu* (northern nail-tailed wallaby) and *warlpajirri* (bilby). While the IPA is characterised by arid land plants species, it also includes the southern distribution limits of some tropical species such as *pakarrli* (ti tree – *Melaleuca lasiandra*).

The Southern Tanami IPA contains all or part of four Sites of Conservation Significance of the Northern Territory (SOCS) as defined by Harrison et al. (2009) (Figure 10). Of these sites, two are of international significance and two are of national significance (refer Table 3.) (For more detailed summaries of SOCS in each management region refer to the respective Nyirripi, Yuendumu and Willowra operational plans.)

Clarke Martin with *walpajirri* (bilby)

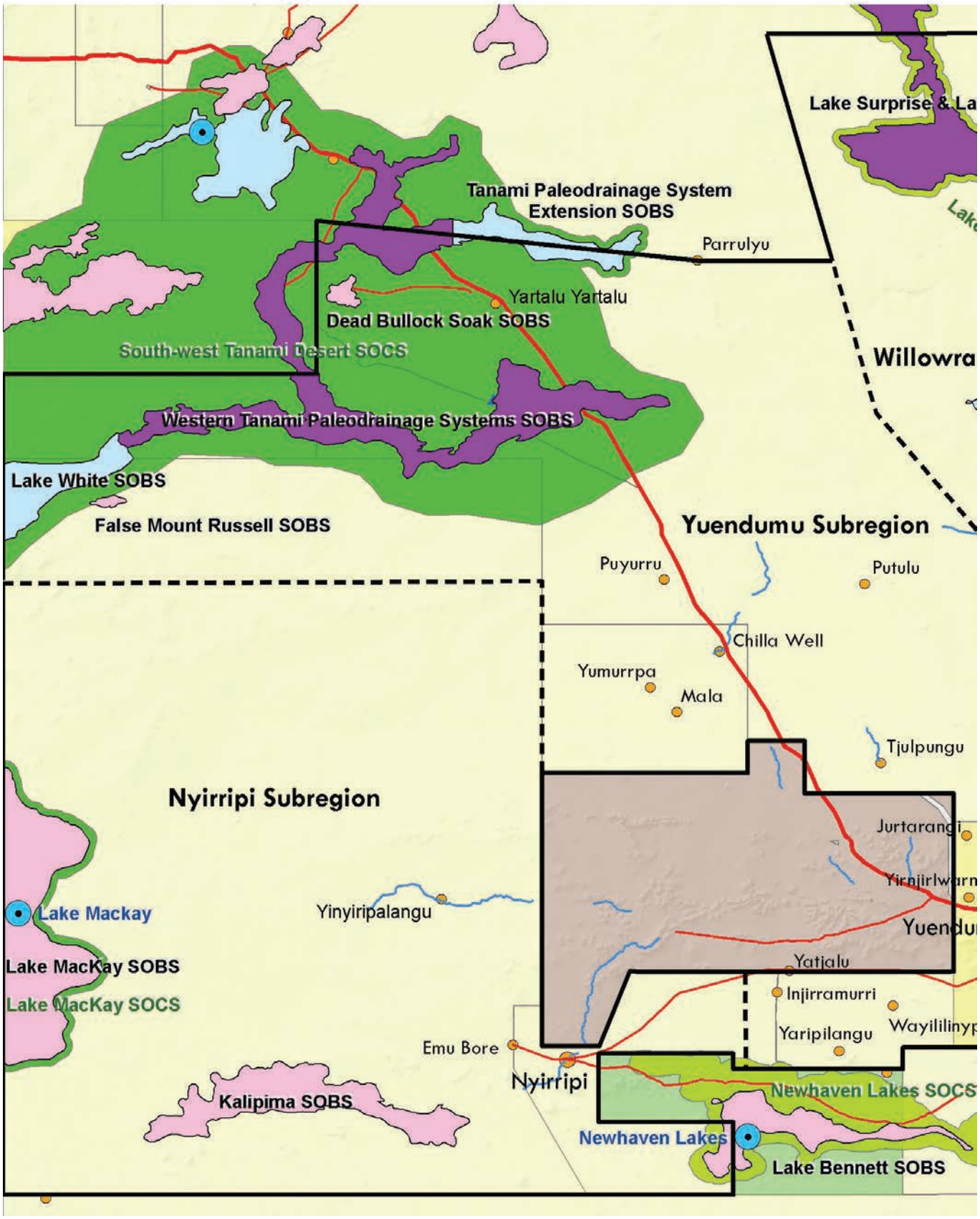
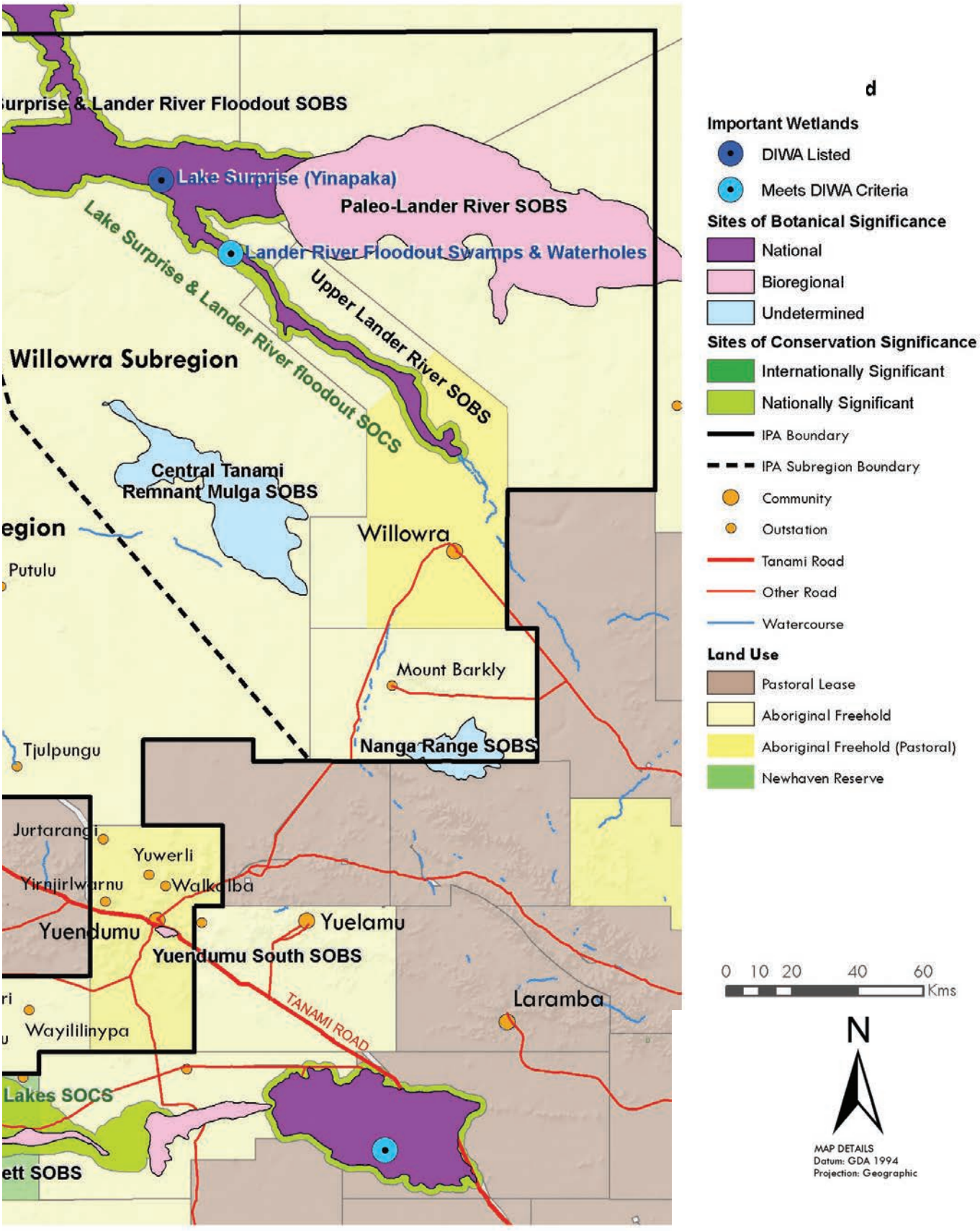


Figure 10 Biological Significance of the Southern Tanami IPA


urprise & Lander River Floodout SOBS
Lake Surprise (Yinapaka)
Paleo-Lander River SOBS
Lander River Floodout Swamps & Waterholes
Lake Surprise & Lander River floodout SOCS
Upper Lander River SOBS
Willowra Subregion
Central Tanami
Remnant Mulga SOBS
egion
Putulu
Willowra
Mount Barkly
Tjulpungu
Nanga Range SOBS
Jurtarangi
Yuwerli
Yirnjirlwarnu
Walkalba
Yuendumu
Yuelamu
Yuendumu South SOBS
TANAMI ROAD
Laramba
Wayililinypa
Lakes SOCS
ett SOBS
d
Important Wetlands
DIWA Listed
Meets DIWA Criteria
Sites of Botanical Significance
National
Bioregional
Undetermined
Sites of Conservation Significance
Internationally Significant
Nationally Significant
IPA Boundary
IPA Subregion Boundary
Community
Outstation
Tanami Road
Other Road
Watercourse
Land Use
Pastoral Lease
Aboriginal Freehold
Aboriginal Freehold (Pastoral)
Newhaven Reserve
0 10 20 40 60
Kms
N
MAP DETAILS
Datum: GDA 1994
Projection: Geographic

Lake MacKay		Summary of values Lake MacKay is a periodic yet long lasting breeding site for shore and waterbirds that meets Criterion 1 for Ramsar listing. The site contains one endemic and one threatened plant species, two threatened birds and one threatened mammal species. The area is in relatively pristine condition owing to the absence of mining, pastoral and other industry impacts.
Significance	international	
Portion contained within Southern Tanami IPA	all	
IPA management region	Nyirripi	
DIWA* criteria	1,4,5	
South West Tanami Desert		Summary of values High diversity of substrates coupled with reliable ground waters associated with paleodrainage systems contribute to species diversity. Eleven threatened species are recorded from the area, which includes strongholds for bilbies and mulgara. One endemic plant species and numerous taxa endemic to the bioregion and NT are recorded from the site.
Significance	international	
Portion contained within Southern Tanami IPA	part	
IPA management region	Yuendumu	
DIWA* criteria	n/a	
Newhaven Lakes		Summary of values The Newhaven Lakes contain a diverse array of wetland types with high habitat heterogeneity. Site contains plant taxa of national, NT, and bioregional significance.
Significance	national	
Portion contained within Southern Tanami IPA	part	
IPA management region	Nyirripi	
DIWA* criteria	1	
Lake Surprise and Lander River floodout Swamps		Summary of values As the largest freshwater lake in the Tanami, Lake Surprise forms a long-lasting drought refuge for waterbirds. Significant threatened species values include core populations of bilbies and mulgara. The area contains threatened, endemic and restricted plant species.
Significance	national	
Portion contained within Southern Tanami IPA	part	
IPA management region	Willowra	
DIWA* criteria	1,2,3,4,5	

*Criteria for listing in the Directory of Important Wetlands of Australia (DIWA)

Criterion 1 Good example of wetland type occurring within a biogeographic region in Australia
Criterion 2 Wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
Criterion 3 Wetland that is important as the habitat for animal taxa at a vulnerable stage in their lifecycles, or provides a refuge when conditions such as drought prevail
Criterion 4 Wetland supports 1% or more of the natural population of any native plant or animal taxa
Criterion 5 Wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level.

Table 3 Sites of Conservation Significance of the Southern Tanami IPA (adapted from Harrison et al. 2009)

3.2.2 Issues and Opportunities

History of Biological Decline in the Tanami

Some elders alive today grew up walking their country. Many of these people possess an intricate knowledge of animals that have since become extinct. They are members of the last generation of Yapa that experienced their lands before the introduction of new threats led to the rapid decline of already fragile ecosystems. The movement of Yapa from their traditional estates into missions and settlements from the 1920s onwards, and the attendant cessation of customary management practices, accelerated this decline.

Henry Cook, senior traditional owner for The Granites region

In the span of a human lifetime an unprecedented rate of mammal extinction has occurred within the Australian arid zone that ranks among the highest in the world. The story of the decline of ecological and customary values of the Southern Tanami are encapsulated in the life of Henry Cook, a senior traditional owner for *janangpa* (brush-tailed possum) Dreaming in The Granites region. Henry did not leave his country permanently until the 1940s and on return to his country in the 1950s he no longer found *janangpa* and a range of other medium-sized mammals and ground-nesting birds.

A combination of factors have been implicated in this rapid loss of biodiversity, the most important of these are:

- Replacement of traditional burning regimes by larger wildfires, which increased habitat patch sizes, reduced the diversity of seral stages of plant growth and altered vegetation structures
- Cessation of the customary maintenance of many water places which lowered the quality and extent of surface waters
- The appearance of foxes in the Tanami which placed extra predation pressure on mammal populations already suffering the impacts of cat predation
- The advent of myxomatosis which may have resulted in elevated numbers of dingoes and introduced predators switching prey from rabbits to medium-sized native mammals
- The reduced frequency of increase ceremonies for culturally important animals
- Increasingly widespread pastoral activities which led to the displacement of bettong and bandicoot species from more productive non-spinifex grassland areas
- Introduction and spread of weed species that displaced key food plants and altered fire regimes.

This pattern of decline continues unabated. The last wild population of mala became extinct at Sangster's Bore in the 1970s and the last possums were documented at Chilla Well in the early 1980s.

Fire management at Pirlinyarnu

Changed Fire Regimes

Changed fire regimes represent the single greatest threat to cultural and ecological values of the IPA. Prior to European contact, a diffuse population base and dependence on the use of fire to hunt and harvest ensured the continued and extensive application of fire in the landscape. Steady depopulation of country from the early 20th century resulted in an end to thousands of years of a burning regime which was characterised by a mosaic of small, low intensity fires. Since then, this has been replaced by a pattern of fewer, larger, and more intense wildfires that periodically burn tens of thousands of square kilometres of country. The seasonality of fires has shifted from cooler season burns commencing in *yulyurrpu* (cold season) and *karapurda* (westerly wind season: March-September) to hotter fires associated with *watangka* (hot season: November-March).

Wildfires are caused by a combination of human ignitions and lightening strikes.

The Tanami region becomes particularly vulnerable to destructive fires following two years of above-average rainfall that accelerates the build-up of fuel loads. (Figure 11 displays cumulative 24-month rainfall plotted against area burnt for country within an approximate 150 km radius of Yuendumu community.)

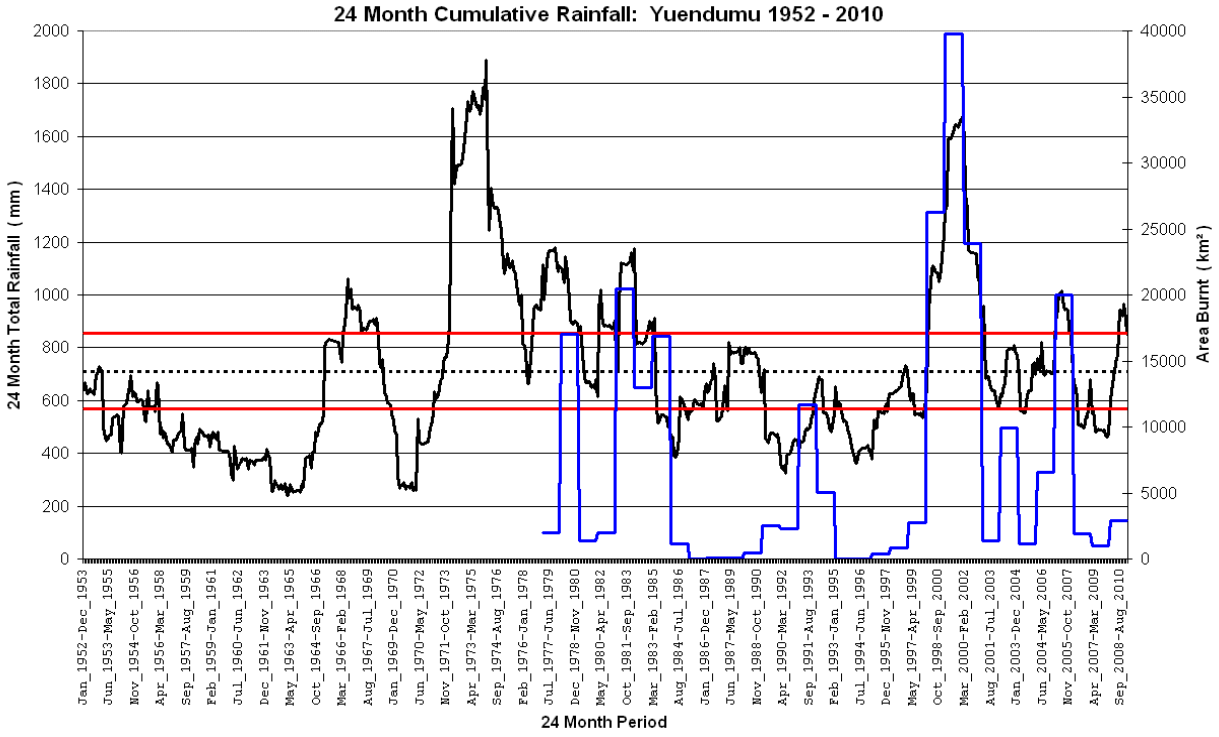


Figure 11 Rainfall (1952 – 2010) and Area Burnt (1979 – 2010) in the Yuendumu Region (Source: Bushfires NT)

During peak fire seasons such as those that occurred in 2000, 2001, 2007 and 2011, large fires dominated the total area burnt in the Tanami, with as much as 95% of the land burnt in a fire season occurring from a single fire (Edwards and Allen 2009). In 2007, separate wildfires originating in the vicinity of Tennant Creek, Lajamanu and The Granites combined to burn 80,000 km^2 of the Tanami region over an eight-week period.

Traditional owners report a decline over recent decades in the overall health of their country including significant habitats and sacred sites as a direct result of changes to fire regimes. Key effects include:

- Destruction of sacred trees and other vegetation by wildfire, which may result in whole Dreaming tracks being lost through the disappearance of sites and key markers along songlines
- Impacts on hunting and bush food harvesting areas such as reductions in:
  - Patch size of resource-rich *manja* (mulga) habitats
  - The productivity and availability of game species and bush foods in sandplain and sandhill habitats
  - The quality of refuge areas for key game species such as bush turkey and emu in *karru* (watercourse) and *pilpilli* (paleodrainage) habitats.
- Damage to, or destruction of, outstation infrastructure central to customary land uses and ceremonial activities

- Threats to traditional governance arrangements and law through the loss of control over country, whereby a fire lit tens or even hundreds of kilometres away has the ability to impact on values distant from its point of origin
- A reluctance to burn for customary purposes owing to uncertainty as to the status of fuels on adjacent estates or tenures leading to a reduction in hunting, food harvest and other customary uses of country
- Wildfires contribute to social tensions between traditional owners and pastoral lease holders
- Loss of large hollow-forming trees that provide habitat for birds, mammals and reptiles. Traditional owners report widespread declines in hollow-nesting granivorous birds including *kakalyalya* (Australian pink cockatoo – (*Cacatua leadbeateri*) and *pangarra* (little corella – *Cacatua sanguinea*)
- Local loss of many animal species including small mammals and reptiles that are not able to disperse beyond large burnt areas
- Increased vulnerability of many species to predation following large-scale wildfires, particularly of ground-nesting birds and medium-sized mammals
- Concentration of predators at remnant unburnt areas to exploit animals which have survived wildfires
- Loss of fire-sensitive plant species such as *marrawaji* (bush walnut – *Owenia reticulata*) and *janganpala* (bush orange – *Capparis loranthifolia*)
- Loss of animal species that require a small-scale mosaic of vegetation communities and/or age classes. *Warrana* (great desert skink) and *jajina* (mulgara) may be particularly affected
- Possible decline of species requiring long-unburnt spinifex communities, such as jewelled geckos (*Strophurus elderi*) and *Strophurus jeanae*, rufus crowned emu wren (*Stipiturus ruficeps*) and the desert mouse (*Pseudomys desertor*)
- Changes in the distributions of species of reptiles such as *Pygopid* and *Lerista* species, which are dependent on accumulated plant litter for habitat.

Box 5 Fire Management in the Southern Tanami IPA

Today traditional owners across the IPA are embracing new methods to control wildfires on country. Helicopters and Indigenous rangers have become integral to efforts to reinstate mosaic burning patterns at a landscape scale. Traditional owners and Warlpiri Rangers fly out to remote estates and conduct ground-based burning to protect sacred sites. Once this is completed, broadscale aerial incendiary operations take place. At key sites of biological value such as Yinapaka (Lake Surprise) and Lungartatjarra, rangers and traditional owners are conducting fine-scale mosaic burns to promote the productivity of habitats and provide protection from wildfires to core threatened species populations.

Boundaries with adjacent Aboriginal Land Trusts, pastoral leases and Newhaven Sanctuary are becoming sites of collaborative fire management as traditional owners, pastoralists and rangers work together to maintain fire breaks.

Emergent Southern Tanami IPA governance structures dovetail with the newly established Warlu Committee, the peak Tanami region Aboriginal fire management body, to create a structured annual process of planning, implementation, monitoring and review of fire management activities. The result has been increased coordination of resources and the coupling of customary burning priorities with strategic objectives for landscape-scale reductions in the size and frequency of wildfires which burn across the IPA.

Aerial fire management

Box 5 Continued

Fire planning with Yinapaka *Kidra* and *Kurdungurlu*

Lorraine Granites burning spinifex country

"Burn him little bit little bit little bit – every place – stop him big warlu burning up all the plants and animals!"
– Micky Jampijimpa Singleton

The ability of Yapa to reinstate a fire regime which more closely resembles that which was traditionally applied to country is hampered by their concentration in a few settlements, lack of adequate resources and the limited nature and poor condition of vehicular tracks across the IPA.

Other challenges include a lack of:

- Detailed vegetation and land unit mapping to inform the management of fire-sensitive vegetation communities
- Fine-scale fire history mapping to inform ongoing fire management planning
- Research into the long-term biological impacts of changed fire regimes on different land types including a lack of data on optimal fire mosaic scales for the enhancement of biodiversity values.

The Warlu Committee is the peak Aboriginal fire management body for the Tanami region and is comprised of delegates from major communities. Originally created by the CLC in 2009 to investigate interest among Aboriginal landholders in establishing an Aboriginal fire management region under the *NT Bushfires Act 2009*, its roles now encompass:

- Strategic regional planning to determine annual fire management priorities
- An opportunity to liaise and share information between a range of agencies and stakeholders
- Strategic decision-making and the allocation of interagency resources
- Advocacy to a broad mainstream audience to highlight the important role that Aboriginal landholders and ranger groups play in contemporary fire management.

Maintenance of Water Places

The decline of customary maintenance of water places since Yapa stopped walking their country is implicated as a factor in the ecological changes that have characterised the Southern Tanami region for almost a century. Cessation of water place maintenance has resulted in a reduction in available surface water to wildlife as soakages and rockholes have silted up. The lack of regular visitation and maintenance of water places has also resulted in many places being lost from the collective memory of Yapa.

Water places are also a focus for feral camel, weed and soil erosion issues. Maintaining the long-term health of water places requires a two-way approach that couples customary management practices with a range of integrated management actions, including research into the effects of reductions in water quality and availability on biota.

Weeds

The IPA is characterised by large expanses of weed-free areas, particularly in *manangkarra* (sandplain), *jilja* (sandhill) and *muluwurru* (salt lake) habitats where limited access and minimal disturbance combined with low-nutrient soils have limited weed introductions and spread.

Significant weed infestations in the IPA are primarily confined to areas of nutrient-rich alluvial and colluvial soils associated with *karru* (watercourse) and *manja* (mulga) habitats across the southern half of the IPA. The most heavily affected areas occur in proximity to Yuendumu and Willowra communities where a history of pastoralism and human disturbance has accelerated the introduction and spread of

several invasive weed species along riparian corridors, grasslands and floodout areas (refer Figure 12).

A total of 18 weed species have been recorded from the IPA. Eight of these species are noxious weeds as defined by the *NT Weeds Management Act 2001*. Three of these species (Mesquite, Rubber Bush and Athel Pine) are declared Weeds of National Significance (WONS) under the *Environmental Protection and Conservation of Biodiversity (EPBC) Act 1999*. (Table 4 summarises weeds recorded from the Southern Tanami IPA.)

Weed infestations in the Tanami are having serious impacts on customary, biological and economic values through:

- Displacement of important bush foods for Yapa and wildlife including *walpajirri* (bilby)
- Reducing the inter-fire period which, in turn, is leading to changes to vegetation structure and composition and impacting on fire-sensitive communities and cultural sites
- Degradation of pastoral values.

Over the last five years Warlpiri rangers have made significant progress in managing weed infestations across the IPA. This work has included:

- Treatment of rubber bush and parkinsonia on the Yuendumu grazing lease in line with the Yuendumu Weed Management Plan
- Suppression of couch grass at Lake Ruth on Tanami Downs station
- Spraying of parkinsonia on the Willowra grazing lease
- Weed survey and mapping activities targeting vulnerable wetland areas and riparian corridors of high cultural and biological value.

Key weed management issues in the IPA include the need to:

- Continue and expand the management of existing infestations of WONS and priority weed species
- Conduct systematic and regular weed surveys targeting wetland areas at greatest risk of infestation
- Raise community awareness of weed impacts
- Ensure that new vehicular tracks and other earthworks are sited and constructed in ways that reduce the likelihood of new weed introductions and infestations
- Develop complementary weed management programs and protocols with Shire Councils, mining and mineral exploration companies, and the owners and/or managers of adjoining pastoral leases
- Implement rigorous weed hygiene procedures and establish weed quarantine sites at communities and environmentally sensitive areas (refer Appendix 11).

Weed spraying on Yuendumu ALT

Common name	Scientific name	NT Weed status	Australian status	IPA management subregion(s)
Asian Mustard	*Brassica tournefortii*			Yuendumu
Buffel Grass	*Cenchrus ciliaris*			all
Colocynth Melon	*Citrullus colocynthis*			Yuendumu
Couch Grass	*Cynodon dactylon*			all
Feathertop Rhodes Grass	*Chloris virgata*			Yuendumu
Flaxleaf Fleabane	*Conyza bonariensis*			Yuendumu
Prickly Lettuce	*Lactuca serriola*			Yuendumu
Rosy Dock	*Acetosa vesicaria*			Yuendumu
Small Flowered Mallow	*Malva parviflora*			Yuendumu
Spiked Malvastrum	*Malvastrum americanum*			Nyirripi, Yuendumu
Dalbergia	*Dalbergia sissoo*	A / C		Nyirripi
Mesquite	*Prosopis pallida*	A / C	WONS	Yuendumu
Mexican Poppy	*Argemone ochroleuca*	B / C		Willowra
Athel Pine	*Tamarix aphylla*	B / C	WONS	all
Castor Oil Plant	*Ricinus communis*	B / C		Yuendumu
Coffee Senna	*Senna occidentalis*	B / C		Yuendumu
Mossman River Grass	*Cenchrus echinatus*	B / C		Yuendumu
Parkinsonia	*Parkinsonia aculeata*	B / C	WONS	all
Rubber Bush	*Calotropis procera*	B / C		Yuendumu

A/C reasonable effort must be made to eradicate the plant within the NT

B/C reasonable attempts must be made to contain the growth and prevent the movement of the plant within the NT

Table 4 Weeds of the Southern Tanami IPA

Box 6 Priority Declared Weeds in the IPA

Parkinsonia (*Parkinsonia aculeata)*
Parkinsonia occurs in and around the communities of Nyirripi, Yuendumu and Willowra. It forms extensive infestations on the Yuendumu pastoral lease at disturbed sites including dams, bores, outstations, roadsides and along eroded gullies and creeks. Parkinsonia is also present in limited locations at operational and defunct bores on the Willowra Pastoral Lease. The species threatens pastoral and ecological values by forming thick impenetrable stands that exclude stock and native animals and restricts recruitment and establishment of native plants.

Rubber bush (*Calotropis procera)*
Rubber bush is widespread along drainage lines and in highly disturbed and eroded areas across the Yuendumu pastoral lease where it is displacing native vegetation and degrading economic values associated with pastoral production. Rubber bush is also prevalent in the Yuendumu community. Rubber bush seeds are light and capable of air, water and mechanical distribution that has been exacerbated by human activity in the Yuendumu area.

Athel pine (*Tamarix aphylla*)
The communities of Nyirripi, Willowra and Yuendumu all contain Athel pines. Though the species has the potential to invade major watercourses such as the Lander River causing severe impacts upon biodiversity, no Athel pines have been detected in the IPA outside of major communities. The species is a classic "sleeper weed" that has lain dormant in other parts of Central Australia for decades before severely invading catchments such as that of the Finke River.

Mexican poppy (*Argemone ochroleuca*)
Mexican poppy is a recent arrival in the Tanami region and has been recorded in Willowra community where it could potentially invade the Lander River catchment. It has also been recorded near the IPA at Yuelemu community. Should this species establish in the IPA it has the potential to infest *karru* (watercourse) habitats. Particular risks are associated with the transport of seeds through quarrying activities, on road maintenance and earth moving equipment, and the waterborne carriage of seed into the IPA from upstream catchments.

Mesquite (*Prosopis pallida*)
Mesquite has been recorded in low numbers from the Yuendumu ALT. Though not yet widespread, this species has the potential to invade catchments and disturbed areas.

Box 7 Priority Environmental Weeds in the IPA

Couch Grass (*Cynodon dactylon*)
Couch grass is prevalent at Nyirripi, Yuendumu and Willowra communities where it has been propagated as a hardy lawn cover. Couch poses a significant risk to riparian corridors, paleodrainage systems and saline and freshwater lakes where is has the ability to smother and suppress native plants and invade areas with little or no disturbance. As such, this species is a major threat to all wetlands in the IPA. Of particular concern is the ability of this species to displace *janmarda* (bush onion – *Cyperus bulbosus*) which is both a key bush food for Yapa and an important fallback food species for *walpajirri* (bilby) during dry times.

Existing couch grass infestations that are of particular concern include:

- Infestations in the Lander River at Willowra which threatens the Lake Surprise and Lander River Floodout SOCS
- A restricted and recent infestation at Lake Ruth (outside the IPA) which poses a high risk to the South West Tanami Desert SOCS
- Infestations along the Tanami Road at locations such as Chilla Well and The Granites mine in the Yuendumu IPA management region which may lead to widespread infestations along road verges and accelerate the spread of the species.

Buffel grass (*Cenchrus ciliaris*)
Buffel grass favours nutrient-rich colluvial and alluvial soils and is primarily restricted to *pamarrpa/pirli* (rocky/hilly), *manja* (mulga) woodland and *karru* (watercourse) habitats. Apart from limited outlying infestations associated with disturbed sites at outstations and campsites, it is largely absent from red, sandy soils across *manangkarra* (sandplain) and *jilja* (sandhill) habitats across the northern half of the IPA.

The species is prevalent in major communities and at outstations and is widespread and common on pastoral leases and around bores where human activity, feral herbivores and livestock activity have caused soil disturbance and greatly accelerated the spread of seed. It forms a monoculture across extensive disturbed areas of the upper Lander River and along Mission and Atlee Creeks in the Willowra and Yuendumu management regions. Here the proliferation of the species in recent decades has seen the disappearance of important bush foods such as *ngarlajiyi* (pencil yam – *Vigna lanceolata*) from areas which were formerly amongst the most productive food harvest areas in the IPA.

Other key threats posed by buffel grass in the IPA include:

- Displacement of numerous bush foods and medicinal plants with high customary significance
- An increase in the intensity and frequency of wildfires in *karru* (watercourse) habitats resulting from thick buffel grass infestations which can kill significant trees including *ngapiri* (river red gums) and *wapilingki* (white-trunked coolabah)
- The invasion of nationally significant vegetation and threatened species habitats along the Lander River and Lake Surprise
- Increased fire risk to infrastructure at outstations.

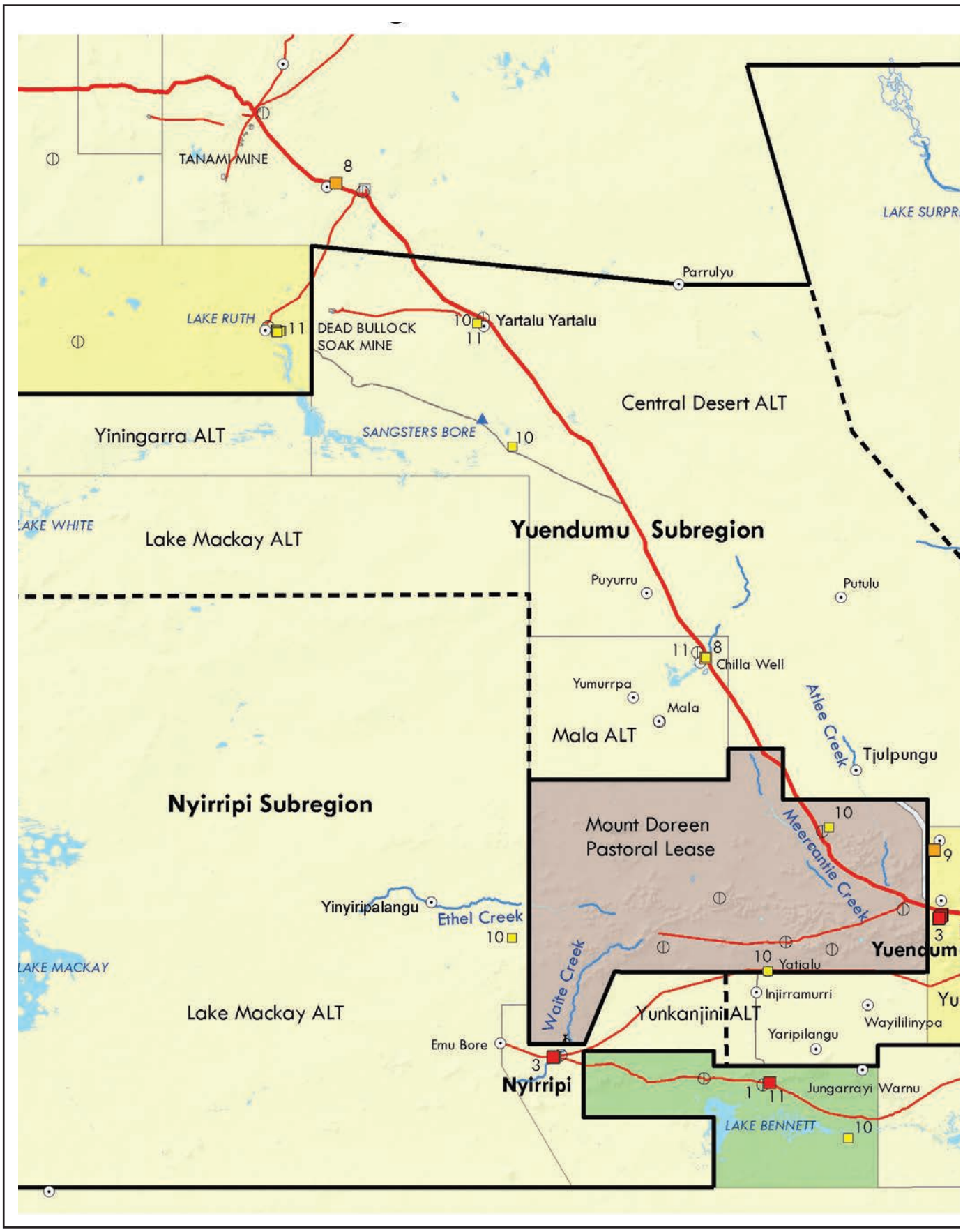
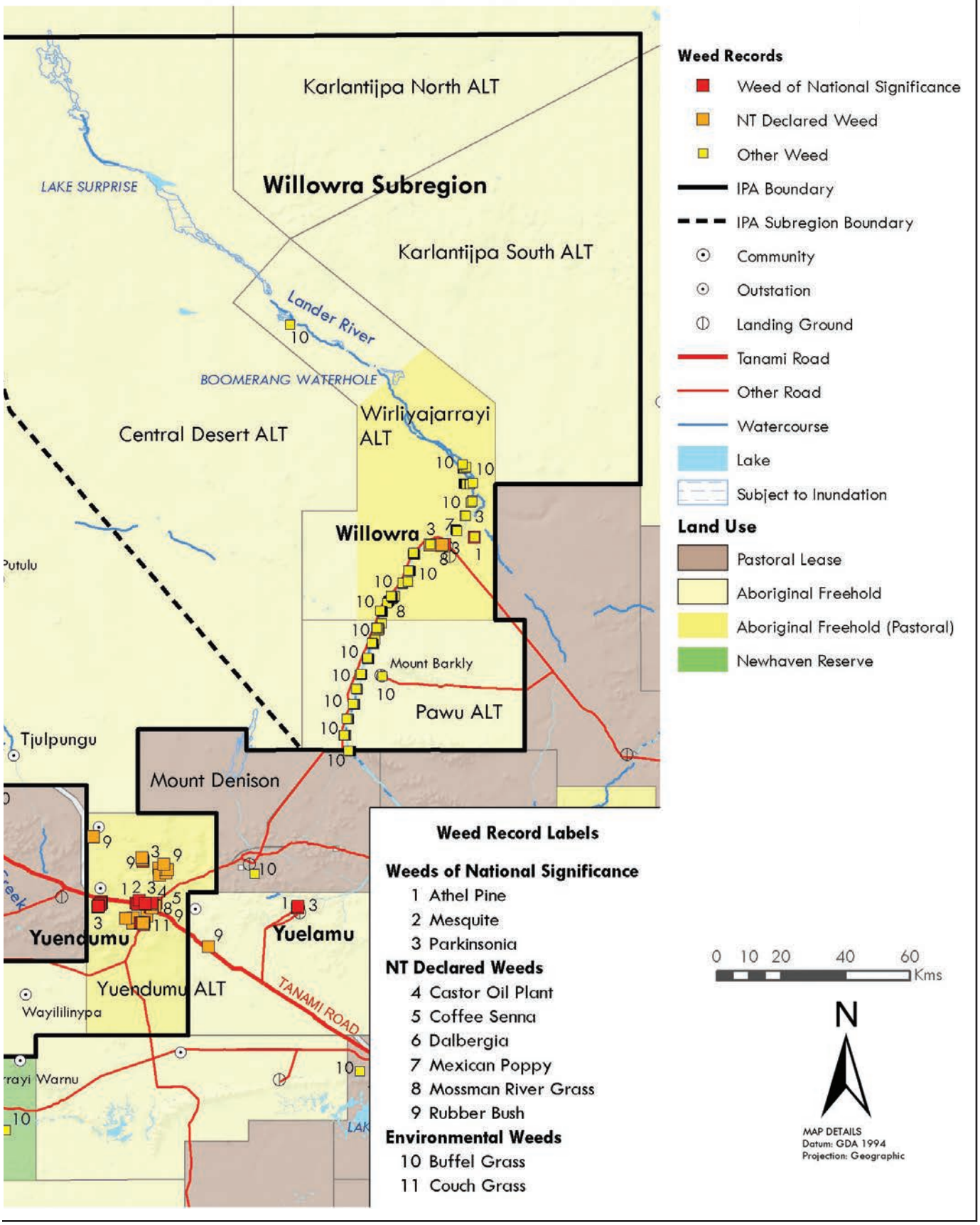


Figure 12 Weeds in the Southern Tanami IPA


Karlantijpa North ALT
Willowra Subregion
Karlantijpa South ALT
LAKE SURPRISE
Lander River
BOOMERANG WATERHOLE
Central Desert ALT
Wirliyajarrayi ALT
Willowra
Mount Barkly
Pawu ALT
Putulu
Tjulpungu
Mount Denison
Yuendumu
Yuelamu
Yuendumu ALT
Wayililinypa
TANAMI ROAD
Weed Records
Weed of National Significance
NT Declared Weed
Other Weed
IPA Boundary
IPA Subregion Boundary
Community
Outstation
Landing Ground
Tanami Road
Other Road
Watercourse
Lake
Subject to Inundation
Land Use
Pastoral Lease
Aboriginal Freehold
Aboriginal Freehold (Pastoral)
Newhaven Reserve
Weed Record Labels
Weeds of National Significance
1 Athel Pine
2 Mesquite
3 Parkinsonia
NT Declared Weeds
4 Castor Oil Plant
5 Coffee Senna
6 Dalbergia
7 Mexican Poppy
8 Mossman River Grass
9 Rubber Bush
Environmental Weeds
10 Buffel Grass
11 Couch Grass
0 10 20 40 60
Kms
N
MAP DETAILS
Datum: GDA 1994
Projection: Geographic

Feral Animals

Eight feral animal species have been recorded in the IPA (refer Table 5). These consist of two carnivore and six herbivore species.

Cats are long-time residents of the Tanami region and are present throughout all habitats in the IPA. Though considered a useful game species amongst older people, the impact of cats on native animals has been, and continues to be, catastrophic. They prey on a wide rage of small mammals, birds and reptiles and are implicated in the demise of a released colony of mala at the Lander River (P. Latz pers. comm.)

Foxes, which until the late 1980s were considered rare in the Tanami, are now prevalent, especially across the southern two thirds of the IPA. Continued expansion of populations to the north, particularly following periods of above-average rainfall, may pose a further threat to core populations of *walpajirri* (bilby). They are also known to be a major predator of black-footed rock wallabies (Kinnear 1988).

The impacts of introduced predators combined with other threatening processes is not generally well understood (Woinarski et al. 2007). Warlpiri Rangers have been involved in experimental trials of a dingo-proof fox baiting device at Sangster's Bore since 2005 and at the Lander River since 2008 in an attempt to elucidate predator-prey dynamics among cats, foxes and dingos relevant to the conservation of key threatened species. Currently results remain inconclusive as to the effectiveness of the device.

Given the scale of country, cost, intensive nature and apparent ineffectiveness of conventional baiting programs, there are currently few means available for the broadscale control of feral predators.

Traditional owners report drastic increases in the abundance and range of feral camels across the IPA. Aerial surveys indicate that camels are present at densities ranging between 0.5 per km^2 and 0.1 per km^2 (Edwards et al. 2008). The most heavily affected areas occur in the Nyirripi management region where camels congregate among *manja* (mulga) and *muluwurru* (salt lake) habitats during dry periods. Though absent from the Nyirripi area until recent decades, traditional owners now cite camels as a principal threat to important bush food harvest and hunting areas through the overgrazing and trampling of important bush foods, rapid depletion of limited and ephemeral waters and the fouling of rockholes, soakages and other sacred sites. Particular concern is held for important food and medicinal species whose abundance is declining through grazing pressure including *walakarri* (supplejack – *Ventilago viminalis*) and *yirninti* (bean tree – *Erythrina vespertilio*).

Camels are also contributing to negative social impacts including a fear of camping out on country and damage to outstation infrastructure that is restricting the undertaking of customary activities.

Camels at Yinapaka

Rabbits are patchily distributed across the IPA and occur in relatively low numbers. They are mostly confined to *muluwurru* (saltlake) habitats including semi-saline swamps where *mungilypa* (samphire) species provide reliable moisture. They also appear on the flanks of *pirli/pamarrpa* (hilly/rocky) habitats where springs are present. Rabbits coincide with *walpajirri* (bilby) colonies at Sangster's Bore where they may exert pressure on bilbies through competition for burrows.

Donkeys are confined to the Willowra pastoral lease and upper Lander River between Willowra and Coniston Station. Horses are limited to the Willowra and Yuendumu pastoral leases where they are periodically mustered. Both species contribute to soil erosion problems, impacts on water places and the overgrazing of pastoral lease areas, particularly around bores that already sustain commercial herds of cattle. At Willowra, a large herd of donkeys contributes to significant airborne dust issues, particularly in dry times when they concentrate on irrigated areas in the community.

Cleanskin and branded bullocks occur across all IPA management regions in proximity to local pastoral operations and neighbouring pastoral properties owing to the absence of effective fencing to contain stock on pastoral leases. Following good rains, bullocks disperse from bores and dams on the Willowra and Yuendumu pastoral leases and many cleanskin and branded cattle enter the IPA from adjacent pastoral stations to exploit temporary surface waters and consume riparian grasses. Although cleanskin bullocks are generally viewed as a useful source of meat by community residents, many traditional owners are resentful of the spoiling of water places by cattle and the depletion of grasses needed by *marlu* (kangaroo) and *yankirri* (emu).

Key areas affected by bullocks include:

- Hunting areas adjacent to the western boundary of Mt Doreen station on *manja* (mulga) habitats
- Julpungu and the Atlee Creek floodout along the northern boundary of Mt Doreen station
- Wirliyajarrayi (Lander River) where cattle follow available surface waters downstream after good rains. As waters dry up many become stranded on semi-permanent waterholes within the Lake Surprise SOCS.

Common name	Scientific name	IPA management region(s) where present
bullock	*Bos tarus*	all
cat	*Felis catus*	all
camel	*Camelus dromedaries*	all
donkey	*Equus asinus*	Willowra
fox	*Vulpes vulpes*	all
horse	*Equus caballus*	Yuendumu, Willowra
house mouse	*Mus musculus*	all
rabbit	*Oryctolagus cuniculus*	all

Table 5 Feral Animals Recorded in the IPA

Soil Erosion

The IPA remains relatively free of human-created soil erosion owing to the limited development of roads and tracks in the region. Localised erosion problems are primarily associated with ad-hoc road and track development and the use of vehicles around communities, outstations and bores. The most severe erosion issues are confined to areas of relatively high relief across *pirli/pamarrpa* (rocky/hilly), *manja* (mulga) and *karru* (watercourse) habitats in the southern half of the IPA. Elsewhere, erosion problems are most evident on alluvial and colluvial red sandy soils within grazing lease areas due to a long grazing history and periods of overstocking. Wetland areas of the Willowra pastoral lease are especially impacted.

Mineral exploration activities across the IPA have produced many graded tracks that in some instances run for over 100 km, often taking the most direct route across the landscape without regard to local topography. Poor siting and construction of tracks has altered local drainage patterns, restricted sheet flows to local vegetation and created erosion problems. This is especially pronounced across laterite rises and low granitic hills in the South West Tanami Desert SOCS. (Appendix 12 provides the road and track construction and rehabilitation guidelines which form part of the terms and conditions of CLC mining exploration guidelines to which all new road projects should conform.)

Harvesting of Natural Resources

A wide range of species are hunted and utilised across all land types throughout the IPA. Though hunting and harvest activities generally return benefits to country, particularly through the maintenance of fine-scale mosaics of fuel ages, areas close to communities are subject to higher rates of resource harvest than would have occurred prior to settlement. Concerns raised by traditional owners whose lands are impacted by a wide rage of community uses include:

- Not enough time is left for country to recover between fires
- Key species including *marlu* (red kangaroo), *wardilyka* (bush turkey) and *Yankirri* (emu) are over-hunted
- Too many *yirninti* (bean trees) are cut down to produce coolamons for the art trade.

Although many areas of significance for bush food harvest and hunting are identified within the IPA, there remains a paucity of data pertaining to the distribution and abundance of important resource species. Some popular game species such as *wardilyka* (bush turkey) and *yakijirri* (emu) which were once common are now locally uncommon as a result of the concentration of hunting activities in areas close to communities.

Knowledge Gaps

Knowledge about the plant and animal assemblages of the IPA is far from complete, reflecting a relatively short history of Kardiya interest in the biota of the region and a comparatively low number of targeted surveys. Similarly, much work is required to document the wealth of Yapa ecological knowledge.

The Tanami Biodiversity Monitoring Program undertaken between the CLC, Newmont Tanami Operations and Low Ecological Services in the vicinity of The Granites mine since 2004 provides the only medium-term data set for the Tanami region. Established to monitor the potential impacts of mining activity within the mining lease, it provides a valuable baseline from which to measure ecological change across the region. Comprehensive biodiversity monitoring undertaken by Newhaven Sanctuary staff since 2007 is also building a regionally significant data set.

Since 2007, the IPA development program has commenced addressing knowledge gaps through:

- Targeted flora and fauna surveys
- Weed surveys
- The establishment of permanent fauna monitoring sites
- Broadscale track-plot surveys
- Opportunistic data collection
- Recording of Indigenous Ecological Knowledge (IEK)
- Waterhole monitoring
- Waterbird surveys.

Much of this activity has focused on determining the status of known key customary and threatened species populations, investigating new populations reported by traditional owners, and increasing floristic sampling densities in identified data-deficient areas. Regular annual monitoring of core threatened species populations has been undertaken at Sangster's Bore since 2004 and at the Lander River since 2008.

As with most survey programs, highest sampling densities in the IPA have occurred along roads and tracks (Figures 8 and 9). While survey work has focused on a number of known sites of conservation significance in the IPA, other remote and difficult-to-access areas remain relatively unstudied. For example Lake MacKay, despite meeting criteria for Ramsar listing, is poorly surveyed. Similarly, two sites of undetermined botanical significance within the South West Tanami Desert SOCS, and the IPA portion of the Newhaven Lakes SOCS have low sampling densities. Elsewhere in the IPA, SOBS of undetermined significance including the Central Tanami Remnant Mulga, Nganga Range, Lake White and the South West Tanami Desert Paleodrainage extension require further botanical survey work to define values.

The collective wealth of IEK that includes Warlpiri terms for types of country, knowledge of species distributions, habitat preferences and broader ecosystem processes and associations is of great value to ongoing management of the IPA.

A land unit mapping process grounded in the direct transfer and recording of IEK and remote sensing technologies has the potential to define land units within each broad land type defined in this plan. Once defined, management targets and monitoring requirements can be set for individual land units that consider customary and biodiversity conservation targets.

3.2.3 Management Strategies

3.2.3 (a) Management Objective
Manage fire so as to:

- **reduce the extent, frequency and intensity of wildfires**
- **protect sites of cultural significance**
- **maintain or enhance the productivity of key hunting and customary resource use areas**
- **maintain or enhance the condition of biodiversity values**
- **protect pastoral, outstation and mining infrastructure**

Management Strategies

1. Prepare and implement an annual fire management activity schedule for each of the Nyirripi, Yuendumu and Willowra IPA management regions based upon:
   - Regional IPA operational plans
   - Regional priorities identified through IPA Coordinating Council and Warlu Committee meetings
   - Local priorities identified through IPA Management Committee meetings.

In determining fire management priorities, consideration will be given to:

i. preservation of human life
ii. the level of wildfire risk
iii. level of significance of the cultural, biodiversity or economic values
iv. fuel levels and their extent
v. seasonal conditions
vi. the needs of species and communities which require specific fire regimes for their survival
vii. fire management actions identified in recovery plans or related documents for threatened species
viii. the likelihood of success for a given fire management activity
ix. protection of infrastructure assets
x. fire management actions for which control must be continued to maintain benefits from previous management
xi. the immediate and long-term availability of resources to effect fire management actions.

Fire management activities will be tailored to individual situations but may include the following on-ground and aerial components:

- Landscape-scale aerial incendiary operations to break up large areas of contiguous and high fuel loads or to create strategic fire breaks
- Ground burns adjacent to roads and tracks to strengthen their role as firebreaks and reduce the risk of roadside ignitions
- On-ground burns, including aerially-assisted burns, to protect or enhance the condition of culturally, biologically or economically significant areas
- Localised fuel reduction activities including back burning and slashing to protect outstations and remote infrastructure from wildfire.

3.2.3 (b) Management Objective

Contribute to collaborative fire planning and management between regional stakeholders

Management Strategies

1. Engage neighbouring stakeholders in annual IPA fire planning cycles to identify shared resources, personnel, expertise, funding opportunities, joint burning activities and responsibilities for each fire season.
2. Undertake collaborative fire management activities with regional stakeholders as agreed through annual planning processes. These may involve:
   - Aboriginal-owned pastoral companies operating within the IPA
   - Shire Councils
   - Australian Wildlife Conservancy (Newhaven Sanctuary)
   - Neighbouring pastoralists
   - Neighbouring Aboriginal landowners.
3. Develop and implement a fire management strategy in partnership with Newmont Tanami Operations toward the mutually inclusive goals of enhancement of cultural and ecological values and protection of mining infrastructure assets within the South West Tanami Desert SOCS.

3.2.3 (c) Management Objective

Reduce the introduction, spread and proliferation of weed species across the IPA through targeted strategies related to:

- **minimising the introduction of new species**
- **early detection of new weed species**
- **limiting the spread of existing weed species**
- **suppression and eradication of weeds**

Management Strategies

1. Undertake weed management activities as detailed in regional operational plans. In determining priorities, consideration will be given to:
   i. any species that threatens customary, biodiversity or economic values
   ii. the level of significance of the values of affected or adjoining land
   iii. legislative requirements related to the control of the species
   iv. a weed population of limited distribution that has known potential to become a significant problem
   v. a species that requires ongoing management to maintain benefits from previous control activities
   vi. a species that must be controlled to allow another higher-priority action to take place
   vii. the location of an infestation within an area of exceptional customary, biological or economic value

viii. the location of an infestation with regard to its likelihood to be spread by human or other means (i.e. at the headwaters of a catchment or along roadsides)
ix. shared responsibilities and commitment from affected stakeholders including neighbouring pastoralists, mining proponents, community organisations and Aboriginal pastoral companies to optimise the likelihood of success
x. the existence of effective and suitable means of controlling the species
xi. the immediate and long-term availability of resources to effect control or eradication.

2. Undertake regular systematic surveys and mapping exercises to identify changes in weed distributions and detect recent weed introductions. Particular attention will be given to identified risk areas for the spread and introduction of weeds into SOCS and other significant wetlands.
3. Identify, promote and equip weed quarantine stations at key sites to prevent the introduction of environmental weeds and WONS into SOCS and other significant wetlands.
4. Implement and publicise weed hygiene procedures for vehicles entering risk areas for the spread and introduction of weeds including SOCS and other significant wetlands (refer to Appendix 11).
5. Negotiate and implement no-go zones for heavily weed infested areas to limit the spread of environmental weeds and WONS.
6. Minimise soil disturbance with the aim of limiting opportunities for the introduction of new weed species and expansion of existing weed infestations.
7. Promote and enforce quarantine and weed hygiene standards for road maintenance and earthmoving equipment operating across the IPA (as per Appendix 11).
8. Collaborate with regional stakeholders including Shire Councils, Aboriginal pastoral companies and non-Aboriginal pastoral lessees to implement whole-of-catchment weed management strategies.

3.2.3 (d) Management Objective

Protect key customary, ecological and infrastructure assets from impacts associated with feral animals and livestock

Management Strategies

1. Undertake feral animal control activities as identified in regional operational plans. Work priorities will be based upon the following considerations:
   i. whether a species threatens customary, biological or economic values
   ii. the level of significance of the values of affected or adjoining land
   iii. legislative requirements to control a particular species
   iv. whether a species has had a national, state or cross-border initiative developed, with preference given to collaborative management approaches
   v. actions identified in recovery plans for threatened species
   vi. an introduced species that has known potential to become a significant problem
   vii. introduced animal species that must be controlled or maintained to allow another priority management program to be effective

viii. introduced animal species for which control must be continued to maintain benefits from previous management
ix. species for which a window of control exists e.g. congregations of camels or bullocks at water points during dry times
x. the level of commitment from affected stakeholders including traditional owners, neighbouring pastoralists and Aboriginal pastoral companies to ensure successful control
xi. the existence of an effective and suitable means of control
xii. the immediate and long-term availability of resources to effect control or eradication.

2. Within the context of regional operational plans and, where appropriate, the National Feral Camel Management Project:
   - Undertake broadscale aerial culls of feral camels
   - Support commercial off-take and meat utilisation initiatives for pest animal species including camels, horses and donkeys
   - Undertake local-scale seasonal culling of feral camels.
3. Relieve impacts on community infrastructure, including outstations and water points, through targeted culling of pest animal species.
4. Undertake opportunistic feral animal management actions in response to favourable seasonal conditions.
5. Report cattle-related issues to the CLC Regional Enterprise Unit (REU) to engage adjacent pastoral leaseholders or Aboriginal pastoral company managers in appropriate control activities.
6. Work with CLC REU and Aboriginal pastoral companies to coordinate the muster and sale of cleanskin and privately-owned bullocks that have entered the IPA from adjacent pastoral leases to relieve pressure on key bush food, hunting and ecological values.
7. Develop and maintain infrastructure to protect customary and ecological values from a range of feral animal and pastoral impacts including, but not limited to:
   - Establishing alternate water points to draw animals away from important water places
   - Exclusion and/or check fencing.
8. Where deemed to be effective, implement local-scale projects including trapping and baiting programs to mitigate the impacts of feral predators and herbivores on key customary and ecological values.

3.2.3 (e) Management Objective
Maintain or restore the integrity of significant habitats across the IPA through the prevention of soil disturbance and mitigation of existing soil erosion problems

Management Strategies

1. Prepare an inventory of existing soil erosion sites as the basis for a prioritised schedule of rehabilitation works to be undertaken in the IPA. As part of this, undertake assessments of vehicular tracks and determine which of these require:
   - Closure and rehabilitation
   - Re-routing
   - Upgrading (including erosion control works).

2. Undertake soil conservation activities based upon prescriptions contained in regional operational plans, the soil erosion inventory and the following considerations:
   i. the need to stabilise actively eroding sites
   ii. threats to biological, customary or economic values
   iii. the level of significance of the values of affected or adjoining land
   iv. the likelihood of significant and ongoing soil erosion issues if left untreated
   v. the strategic value of an affected road or track in maintaining access to key areas of customary, biological or economic significance
   vi. the strategic value of an existing road or track to providing access for land management activities
   vii. the level of commitment from affected stakeholders including traditional owners, neighbouring pastoralists and Aboriginal pastoral companies to ensure successful management of soil erosion issues
   viii. the immediate and long-term availability of resources to effect soil conservation priorities.
3. Liaise with regional stakeholders and external proponents to ensure that all new roads and tracks constructed within the IPA conform to the Southern Tanami IPA road construction guidelines as described in Appendix 12.

3.2.3 (f) Management Objective
Address data deficiencies and undertake monitoring related to customary and ecological values of the IPA to inform ongoing management

Management Strategies

1. Identify and implement targeted surveys to address knowledge gaps related to customary and ecological values as identified in regional operational plans.
2. Establish a series of permanent monitoring sites across the IPA designed to detect changes in threatened species populations, or in ecological or cultural values of habitats, resulting from management actions prescribed in this and subsidiary operational plans.
3. Develop and maintain baseline biodiversity resource data sets for all management regions of the IPA.
4. Undertake monitoring of the condition of grazing leases within the IPA in accordance with CLC REU standards and processes.
5. Develop Warlpiri-specific land unit maps, including fine scale vegetation mapping, to inform ongoing management of key habitats across the IPA.
6. Implement fine-scale mapping of fire histories across the IPA to inform ongoing fire management.
7. Identify and work with partner organizations, including universities, research centres and government agencies, to research and develop management tools and techniques in order to protect the values of the IPA.

3.3 Two-Way Environmental Law and Education

3.3.1 Background

Yapa acknowledge that to achieve best practice management of country in the IPA both traditional and Western skills and knowledge need to be taught and applied. Providing two-way education and learning is dependent on partnerships and collaborations between the IPA program and various organisations funded to deliver training and education.

Yapa also want an increased role in actively policing country against illegal activities and cultural misconduct, and for residents and visitors to the IPA to have a greater awareness of both customary and Kardiya laws that apply to the region.

Senior Warlpiri ranger Madeline Dixon teaching young people about animals

Customary Law

Strict protocols for resource use, fire management and other aspects of customary land management are adhered to by Yapa in line with Yapa customary laws. Customary law is a key asset for maintaining the health of country in the IPA as it provides a social and moral framework within which land management activities take place.

IPA Management Committees identify that key areas of law most relevant to maintaining the health of country and Yapa society are those related to sanctioned rights to access resources, burning the right way and hunting the right way.

Junior ranger Japanangka Small at Ilyanpurnu, Lake Surprise

"It's about laws, Yapa laws. You've got to respect law, and land will respect you… If you don't respect land there will be no marlu (kangaroo), ubali (bush banana), wanagidgee (bush tomato)…lowa, no anything, because you, silly fool…you mess up the area and they won't be there – Yapa wiyarpa (poor thing) you'll go hungry."
– Eddie Jampijinpa Robertson

Kardiya Laws

Several Kardiya laws are pertinent to maintaining the health of country and protecting the property rights and economic and cultural assets of traditional owners. These include:

- *Commonwealth Aboriginal Land Rights Act 1976* (illegal access and use of Aboriginal land, damage/destruction of sacred sites)
- *Environmental Protection and Biodiversity Conservation Act 1999* and the *Territory Parks and Wildlife Conservation Act 1977* (protection of native plants and animals against illegal harvest and hunting, protection of biodiversity values and threatened species against mining or other industry impacts)
- A range of NT and Commonwealth legislation related to environmental compliance for mining and pastoral industries
- Laws related to the theft and vandalism of the economic and property assets of Aboriginal landholders.

Warlpiri Rangers and Two-Way Environmental Education

The Warlpiri Rangers are a major asset in two-way education in the region. They receive direct tutelage, mentoring and instruction from key knowledge holders and senior traditional owners in their day-to-day work. This involvement of elders ensures that information related to basic cultural protocols, protection of sacred sites and other aspects of IEK are taught and maintained. Rangers cite learning from elders as a key area that instils meaning and purpose in their work.

Elder Leah Nampijinpa Martin teaches Willowra-based Warlpiri Ranger Ritchie Williams about tracks and scats

Senior knowledge holders are employed to educate and train rangers in key areas of IEK. Training is conducted concurrently with all on-ground works as well as in targeted training sessions related to particular tasks and projects. (Key aspects of this training are summarised in Table 6.)

IEK training:
Tracking skills
Warlpiri identification skills (names for plants, animals, landforms etc.)
Warlpiri habitat types and ecological associations
Correct Kirda and Kurdungurlu for each area of country
Jukurrpa associated with particular areas of country, or sites or species
Seasonal indicators
Bush foods – names and correct harvesting procedures and preparation techniques
Bush medicines - correct species and production methods
Dances and ceremonies associated with particular areas of country
Burning procedures and protocols

Table 6 IEK Training Components

Compulsory Training for all CLC Ranger Groups:
CLC Induction
Baseline Workplace English Language Literacy and Numeracy (WELL) test
WELL training (ongoing)
Basic First Aid
4WD training for licensed drivers
Certificate II (or higher) in Conservation and Land Management
Quad bike operations
Safe chemical handling
Chainsaw operation
Advanced Training and Skills Development (optional):
Certificate III and IV in Conservation and Land Management
Certificate IV in Training and Assessment
Certificate II in Multi Media or basic filming and editing training
Basic Wildfire Awareness
Fire Fighter I
Aerial incendiary operations
Water monitoring methodology
Sensor camera setup and operation
CyberTracker use
Traditional tracking methodology
Horsemanship
Rural Operations (units from Cert I to III)
Firearms safety and awareness
Field butchery
Computer and IT certificate courses
Horticulture and nursery training
Welding and metal fabrication certificate courses
Occupational licensing (optional):
ChemCert Accreditation
Firearms licensing (corporate)
Construction Industry White Card
Heavy Machinery Operator Licence
'C' Class NT Drivers Licence

Table 7 CLC Supported Ranger Training Package

Warlpiri Rangers also receive extensive training in Western land management skills and techniques. The CLC ranger training program places an emphasis on advancing rangers through nationally recognised certificate courses (such as the Certificate in Conservation and Land Management) rather than delivery of one-off training opportunities. The CLC Ranger Training Officer is responsible for coordinating and tailoring training opportunities for all of the CLC ranger groups. Education and training organisations, in particular, Batchelor Institute of Indigenous Tertiary Education and Charles Darwin University, are engaged to deliver an annual professional development program that includes predominantly accredited training units and numeracy, literacy, health and wellbeing programs. (Table 7 outlines key elements of the CLC ranger training package.)

Warlpiri Rangers undertaking plant identification as part of Certificate II in Conservation and Land Management

The Warlpiri Rangers are also critical in raising community awareness about contemporary threats to country and their management. The rangers have knowledge of customary and contemporary land management through their time with old people on country and their participation in contemporary land management activities and training courses. The rangers are also well regarded within the community and viewed as role models given their demonstrated commitment to working within traditional governance frameworks and their success in working in meaningful and externally-valued jobs.

Community environmental education roles filled by rangers include:

- Production of IEK-related resources including Warlpiri field guides and educational picture books
- Production of cross-cultural resources describing contemporary threats and values of country
- Providing direct tutelage to school-age children and youth through coordinated activities, including IPA country visits and community education activities in association with schools and the Mt Theo Program
- Peer-to-peer skills transfer and mentoring of new rangers and rangers in other CLC ranger groups
- Community role modeling with regard to customary law and cultural protocols.

Warlpiri Rangers, by virtue of their two-way land management experience and bicultural skills, play an important role in facilitating an ongoing dialogue between Kardiya land management staff, IPA Management Committee members, traditional owners and community members regarding key values and threatening processes. Senior Warlpiri Rangers are also actively engaged in information-sharing, advocacy and workshop facilitation that raises the profile of Indigenous land management through a range of NT and national forums.

Junior Ranger Initiatives

Junior ranger programs offer important educational and employment pathways for young people. These programs are delivered by IPA staff and Warlpiri Rangers and provide school-aged children with practical two-way land management experience on country.

Trainee Ranger Initiatives

The IPA program works with the Mt Theo Program to support trainee rangers on Ngurra Walalja country visits and in implementing the Warlpiri Ranger work plan. This provides young people with experience to assist their transition into land management related employment.

Junior Ranger Leon Jakamarra at Mt Windijongu

Community Education Organisations

A number of community organisations operating in the Southern Tanami currently collaborate with the IPA and Warlpiri Ranger programs. Key organisations and areas of collaboration include:

- Warlpiri Education and Training Trust (WETT)
  - youth media projects
  - community learning centres
  - community country visits
  - secondary schooling support
  - bilingual resource development.

- Schools and Community Education Centres
  - rangers deliver IEK presentations at school culture nights
  - development of bilingual environmental educational resources
  - rangers and IPA representatives provide specialist environmental training in schools
  - support for school country visits.
- Warlpiri-patu-kurlangu Jaru (WpkJ)
  - school curriculum planning meetings.
- Warlpiri Youth Development Aboriginal Corporation (Mt Theo Program)
  - homework centre and night schools
  - trainee rangers
  - youth media.

(Refer to Appendix 8 for more detail regarding the charter of each organisation and areas of collaboration.)

Making a film about Warlpiri knowledge of country

3.3.2 Issues and Opportunities

Limited Community Understanding of Environmental Threats and Contemporary Management of Country

While many community residents observe the deteriorating condition of country due to changed fire regimes, or increased numbers of feral animals and weeds, they are often unaware of the scale of these changes, the mechanisms by which they are effected, and the long-term implications for customary and biodiversity values.

IPA Management Committee members identify a need for ongoing community education initiatives to help foster community understanding and awareness of key issues affecting the health of country including:

- Weeds
- Feral animals
- Soil erosion
- Fire management.

Lack of Knowledge and Understanding of Traditional Law

Declining knowledge and understanding of customary law is identified by Yapa as a key threatening process to both the physical environment of the IPA as well as the health of Yapa society. Issues of particular concern are:

- **Sanctioned rights to access country**

  Management Committee members are anxious that correct codes of conduct regarding accessing county and use of resources are not always being observed by younger people. Furthermore, knowledge regarding correct Kirda and Kurdungurlu associated with each area is declining and protocols for consulting these people prior to accessing country are not always followed.

- **Burning the right way**

  Elders are concerned that young people are not burning in the correct season, are over-burning particular hunting areas, and generally not ensuring that their burning has been sanctioned by senior Kirda and Kurdungurlu. The incorrect use of fire is reducing the number and size of refuge areas for important game species and the ability of country to regenerate between fires. Elders recognise the importance of landscape patchiness, achieved through correct fire management, in enhancing biodiversity and important resource species and report that many young people's current fire practices are resulting in the decline of culturally significant or fire sensitive plant species.

- **Hunting the right way**

  Management Committee members are concerned that younger generations are not adhering to laws regarding hunting the right way and identify that some community members are wasting, misusing and overharvesting game species, including:

  - Species such as *marlu* (kangaroo) and *wardarpi* (sand goanna) are inspected for fat content after they have been killed and discarded if deemed "too skinny"
  - Illegal recreational hunting on Aboriginal land by Kardiya living in communities is deeply offensive to traditional owners

- Older residents identify that prized game foods including *wardilyka* (bush turkey) and *yankirri* (emus) are over-hunted by some people and are locally in decline.

"Old days they'd go hunting after rain. Now don't worry about season – when they get new Toyota they go hunting"

– Yuendumu IPA Management Committee member

Hunting

Promoting and Educating about Kardiya and Customary Laws

Yapa wish to establish community-based education initiatives to promote a two-way understanding and dialogue regarding Yapa and Kardiya laws. They report that many property and land-use offences are perpetrated by Kardiya living and working in Aboriginal communities through ignorance of basic Aboriginal land and property rights. They wish to see rangers and the IPA program assist in raising the awareness of both Yapa and Kardiya residents in the region about their rights to access and use country and the correct and sustainable use of resources. They wish to increase knowledge and awareness of laws and to instil a greater sense of responsibility among residents of the IPA to behave correctly on country.

Policing Country and Reporting Back

Yapa want the Warlpiri Rangers to assume increased responsibility in policing country and reporting back to rightful traditional owners. The role of the rangers in this context would be to create a heightened sense of responsibility amongst community residents that are not following customary law.

Yapa also wish to see Warlpiri Rangers assume increased responsibility for detecting, recording and reporting illegal activities on country as defined by Kardiya laws. This desire stems from a history of misuse of Aboriginal lands that includes trespass, illegal hunting of native wildlife, collection of native plants and animals, cattle theft, damage and theft of culturally significant objects, and damage to sacred sites and infrastructure.

As employees of the CLC, Warlpiri Rangers have a statutory function in the reporting and collection of evidence that may lead to prosecution by police under the *ALR Act 1976*, particularly with regards to trespass on Aboriginal lands and the interference, damage and destruction of sacred sites. Under section

23.2 of the *ARL Act 1976*, pending ministerial consent, there is provision for the CLC (Rangers) to provide functions under NT laws in relation to schemes for the management of wildlife on Aboriginal land. Such provision may include delegation of powers to act as honorary rangers under the *Territory Parks and Wildlife Conservation Act 1977* in the policing of offences related to illegal hunting and harvest of native wildlife on Aboriginal lands.

Warlpiri Ranger Training and Professional Development

Bringing Warlpiri Rangers together to undertake training at common locations in the IPA eliminates the need to duplicate training services for rangers in multiple communities, though it presents significant logistical difficulties. Potential training locations include the CLC office at Yuendumu, and WETT and Bachelor-funded learning centres at Nyirripi and Willowra.

Though rangers currently undertake informal learning and professional development in IEK and tracking techniques, this training lacks formal accreditation. Development of an accredited training scheme in these matters would:

- Add a further dimension to ranger employment pathways and salary progression
- Formally acknowledge the unique and valuable contribution provided by key knowledge holders and IEK to the ongoing management of country in the IPA
- Provide benchmarks by which to gauge trainer and ranger knowledge and skill levels
- Provide a means of measuring the effectiveness of efforts to retain and apply traditional knowledge and skills in the management of the IPA over time.

Other opportunities for the professional development of Warlpiri Rangers include facilitating regular work exchanges both within the region through the regular involvement of Warlpiri Rangers in adjacent IPA management regions, and among other Aboriginal and non-Aboriginal ranger programs. Work placements on parks and reserves, including the adjacent Newhaven Sanctuary, offer further potential for professional development through exposure to a wide rage of management techniques.

Warlpiri Ranger Coordinators also require significant training and education in two-way land management. In addition to tertiary qualifications and/or previous experience working in land management, Ranger Coordinators are encouraged to undertake training in traditional skills concurrent with rangers (refer Table 6).

Education Pathways into Land Management

Community leaders lament the drift of young people away from smaller communities and wish to create practical education pathways to retain them in the region. This issue is particularly acute for communities such as Nyirripi and Willowra where there are fewer local employment opportunities compared to Yuendumu. Education pathways promise to create interest and incentives linking primary schooling to secondary education and assisting in the transition of young people through the school system into local land management jobs. Key steps in creating such links include:

- Supporting on-country junior ranger initiatives
- Rangers teaching junior ranger subjects in schools
- Developing vocational education and training opportunities for secondary school students
- Placement schemes for high school graduates.

Trainee rangers employed by Mt Theo Program learning how to put out Elliot traps

3.3.3 Management Strategies

3.3.3 (a) Management Objective
Develop Warlpiri Ranger skills required to conduct two-way land management programs

Management Strategies

1. Work with community education partners to streamline and coordinate the delivery of accredited and non-accredited training opportunities to Warlpiri Rangers from Nyirripi, Yuendumu and Willowra communities.
2. Engage key knowledge holders in the day-to-day instruction and on-the-job training of Warlpiri Rangers (refer Table 6).
3. Investigate opportunities for the accreditation of IEK and tracking skills in collaboration with key knowledge holders, the Department of Education and Training (DET) and registered training organisations.
4. Pursue secondment arrangements with other Aboriginal ranger groups and a variety of government and non-government organisations to further develop Warlpiri Ranger education, training and experience.
5. Provide training in CyberTracker use and monitoring and survey design to Warlpiri Rangers and traditional owners.

3.3.3 (b) Management Objective
Identify, record and report breeches of customary and Kardiya laws on country

Management Strategies

1. Develop and implement protocols and policies for Warlpiri Rangers to identify, record and report cultural misconduct under traditional law to IPA Management Committees and relevant traditional owners.
2. Provide governance training to Warlpiri Rangers regarding responsibilities to monitor and report offences on country under the *ARLA 1976*, *NT Parks and Wildlife Act*, *EPBC Act 1999* and other relevant legislation.
3. Identify, record and report illegal access and use of country under the *ALR Act 1976*, *NT Parks and Wildlife Act*, *EPBC Act 1999* and other relevant legislation related to:
   i. trespass on Aboriginal land
   ii. destruction or damage to sacred sites
   iii. illegal hunting
   iv. illegal collection of plants and animals.
4. Identify and pursue opportunities for Warlpiri Rangers to assume delegated powers of enforcement under the NT Parks and Wildlife Act.

3.3.3 (c) Management Objective
Promote increased community awareness and understanding of country regarding:

- **key values and threats**
- **Kardiya laws**
- **customary law**
- **outcomes of IPA planning, governance and land management activities**

Management Strategies

1. Develop bilingual educational and awareness-raising resources targeted at IPA Management Committee members, the Warlpiri Rangers and IPA residents. Resources will include:
   i. educational picture books, films and other relevant multimedia products
   ii. community poster and signage projects
   iii. language-based field guides and other relevant land management tools
   iv. publicly available maps depicting key cultural and environmental information.
2. Conduct community forums led by IPA Management Committee members and community leaders to discuss key threats to country stemming from a lack of adherence to customary laws and other threats to country.
3. Develop sustainable hunting, bush food and resource harvest guidelines to mitigate the effects of overharvest on a range of customary resources.
4. Undertake active liaison with Kardiya, their employers and relevant agencies to increase their understanding of their responsibilities and requirements concerning accessing areas within the IPA.
5. Collaborate with external agencies such as NRETAS to deliver community information sessions regarding key threats to biological values of country.

3.3.3 (d) Management Objective
Develop education pathways linking primary, secondary and community education to employment outcomes in conservation and land management

Management Strategies

1. Work with relevant education and training organisations to develop and implement a junior ranger curriculum in schools.
2. Support vocational education and training opportunities for high school students to work with Warlpiri Rangers.
3. Develop opportunities for the Warlpiri Rangers to teach land management knowledge and skills to young people participating in community education programs such as the Mt Theo homework centre and night school.
4. Support the involvement of trainee rangers employed by Jaru Pirrjidi (Mt Theo program) in on-ground land management activities.
5. Investigate opportunities for a placement scheme for high school graduates in the Warlpiri Ranger program.

3.4 Jobs and Economic Development

3.4.1 Background

Many older traditional owners, who previously worked in stock camps and missions, are opposed to passive welfare dependence and are eager for young people to be gainfully employed. They are supported by young people in their desire to create long-term employment and business opportunities that will help foster economic independence for communities within the IPA.

Land management work and commercial activities that provide access and opportunities to improve the condition of country are viewed by Yapa as meaningful sources of employment and revenue. They are also seen to provide opportunities to:

- Extend and strengthen cultural and kinship ties to country
- Satisfy cultural obligations regarding the care and maintenance of customary sites
- Advance traditional knowledge in relation to Jukurrpa, law and broader ecological management.

Willowra rangers Nazareth Long, Selina Williams and Doris Martin undertaking an environmental fee-for-service contract at Newmont mine

Warlpiri Ranger Program

The CLC Warlpiri Ranger program has been employing people from Nyirripi, Willowra and Yuendumu since 2002. Initially, rangers were employed on a part-time basis with wages sourced through Community Development Employment Projects (CDEP) arrangements with community councils. The ranger group operated on a sporadic basis up until 2008 when consolidated funding allowed a full-time Ranger Coordinator to be employed

> *"Yapa like to work...do a job they like... Ranger [work] is a good job."*
> – Nazareth Long.

Since 2009, four Warlpiri Rangers from Yuendumu have been permanently employed using "Working on Country" (WOC) federal government funds, and, since that time, the Warlpiri Ranger Coordinator has been based at Yuendumu. A casual pool of 16 flexible ranger positions are also managed between Nyirripi and Willowra communities using a combination of WOC and Indigenous Land Corporation (ILC) "Real Jobs" funding.

To date, activities of the Warlpiri Ranger program have included:

- Conventional land management activities including: weed control, flora and fauna surveys, threatened species projects, ground and aerial-based fire management, and feral animal monitoring and management
- Facilitation of IPA feasibility and planning processes, including community forums and country visits
- Implementation of customary management priorities, and a wide range of IEK and traditiional knowledge-based projects
- Fee-for-service environmental works on mining leases
- Community based and two-way learning activities including production of newsletters, picture books and posters
- Involvement in presentations and workshops at regional conservation and natural resource management forums.

In association with the ranger program, the IPA development project has provided additional land management employment opportunities. For example, in the 2008/2009 financial year alone, 72 traditional owners and key knowledge holders were employed on a casual basis for varying periods of time, as consultants for specific projects, ranger mentors, and teachers of IEK. In accordance with cultural protocols, rightful Kirda and Kurdungurlu remain involved in the week-to-week activities of the Warlpiri Ranger program. (Appendix 14 provides employment guidelines for traditional owners, cultural advisors, key knowledge holders and young people in the implementation of land management activities in the IPA.)

Senior traditional owners Paddy Willis, Jo Bird and Dick Walker overseeing a site visit, en route to Larrara (Mt Bennet), Central Desert ALT

Pastoral Enterprises

Two grazing licenses have been granted over portions of Aboriginal land within the IPA, centred on the communities of Yuendumu and Willowra (refer Figure 3). Each is held as a non-exclusive grazing license under a commercial contract held in confidence between the respective Aboriginal Land Trust (on behalf of the traditional owners) and an Aboriginal or non-Aboriginal corporate entity conducting the pastoral activity. Both operations were established as economic activities to generate income and seasonal employment for traditional owners living in these remote communities where economic opportunities are very limited.

The CLC's Rural Enterprise Unit (REU) is responsible for monitoring compliance with the terms and conditions of grazing licenses and providing assistance to Aboriginal licensees to build their capacity to manage cattle operations. The licence holders are responsible for all of the costs associated with running the licenses, while the CLC occasionally provides in- kind staff support and some resources for musters associated with Aboriginal-owned operations.

Grazing licenses are typically held for a period of five years with the option of renewal at the end of the contract period. A range of conditions relating to protection of environmental and cultural values are included as standard terms in all CLC grazing licenses related to:

- Sacred site protection and access
- Sustainable land management activities with regard to industry best-practice, stocking rates, the input of independent expertiseand environmental monitoring
- Feral animal and weed control.

(Refer to Appendix 13 for a complete list of environmental conditions in CLC-issued grazing licenses.)

Pastoral activity under Aboriginal-ownership has continued at Willowra in some form since 1973 when the Willowra Pastoral Lease of 4885 sq. km was purchased by the Australian Government on behalf of the Aboriginal residents of the lease area and transferred to the Willowra Pastoral Company. Since that time, up to 10,000 head of cattle have been run on the property with the seasonal stock camp being the main source of local employment for Yapa, employing as many as ten men over a nine month period in better times. Until recently the Wirliyajarrayi Cattle Company maintained pastoral activity over the area in the period since conversion of the Willowra Pastoral Lease to the Wirliyajarrayi ALT in July 1983 as a result of a successful land claim under the Aboriginal Land Rights (NT) Act 1976.

The current Willowra grazing licence entered into in 2006 (comprising roughly 3225 km2 of the Wirliyajarrayi ALT) is currently held by a non-Aboriginal Company (G&C Pty Ltd) with approximately 1500 cattle watering off the four operational bores within the lease area or seasonal waterholes on the Lander River. Three Yapa from local communities are employed to undertake cattle work within the license area under funding arrangements with the Indigenous Pastoral Program, a partnership between the CLC, ILC, NLC and the Northern Territory Cattlemen's Association (NTCA). REU staff undertake broadscale assessment of grazing impacts across the licence on a biennial basis. It is the aspiration of the Willowra Cattle Company to use revenue from the grazing license to maintain and upgrade existing infrastructure within the area for their future use.

Grazing activity commenced on the former Yuendumu Aboriginal Reserve with the creation of the government-controlled Yuendumu Cattle Company in the mid-1950s. That company continued to operate beyond the conversion of the Reserve to the Yuendumu ALT with the passage of the Land Rights Act but was eventually transferred to the Ngarliyikirlangu Cattle Company in August 1979, an Aboriginal corporation owned and controlled by traditional owners of the area. The company was heavily dependent on government funding for infrastructure development and ran at a loss until the mid-1990s when it ceased operating. The Aboriginal-owned and operated Yuendumu Mining Company (YMC) continued pastoral activity beyond that point but did not formalise its operations

until 2006 when a grazing licence was issued to it over the entirety of the Yuendumu ALT (2194 km2). The company periodically employs a small number of local stockmen to maintain infrastructure and undertake mustering, though it relies heavily on REU support from the CLC to undertake basic pastoral management activities. Approximately 300 head of cattle are run on the Yuendumu grazing license currently and stock utilise water from 11 operational bores and dams across the lease. The CLC Warlpiri Rangers undertake basic annual environmental monitoring (photopoint and vegetation plots) at a number of permanent monitoring sites have also assumed sole responsibility for controlling weeds (predominantly Parkinsonia infestations around waterpoints) on the license area.

Mining and Mineral Exploration

Mining and mineral exploration activities in the IPA provide significant employment and economic opportunities for Aboriginal people. These activities are conducted under commercial contracts between the CLC (on behalf of the traditional owners) and mining proponents, the terms of which are held in confidence. The agreements cover various matters, including environmental and sacred site protection, other cultural considerations, rehabilitation, financial provisions, employment, training and business enterprise.

Environmental monitoring and compliance of mining exploration and extraction activities are governed under the *NT Mining Management Act* and *Environmental Assessment Act* and are the responsibility of the Northern Territory Government. However, the CLC may have specific requirements for environmental protection, rehabilitation and acces restrictions based on traditional owners' aspirations. All mining-related agreements brokered by the CLC also cover sacred site protection matters. Sacred site protection is a statutory function of the CLC under the *ALR Act 1976*. Conditions which are typically included in mineral exploration contracts include:

- Annual site visits for traditional owners to inspect exploration activities and to ensure that sacred sites clearances have been adhered to
- Criteria relating to site rehabilitation and road and track construction
- Submission of annual work plans detailing all proposed works
- The lodgement of annual work reports describing all activities undertaken.

In the exploration phase, the CLC discerns between reconnaissance activities with limited ground disturbance and prospect activities where ground disturbance is at a higher intensity. An environmental profile may be required for projects subject to prospect exploration activities including fauna and flora surveys to identify significant environmental values and threats posed by the proposed activities.

Despite some 6,577 km² (or 6.4% of the IPA) currently being subject to mining exploration licenses (refer Appendix 3), the actual amount of exploration that occurs varies markedly from year to year. Many mining exploration licenses are held by mining companies without execution or on-sold to third parties in response to market conditions. Mining exploration royalties paid to traditional owners occur on a one-off basis and are nominal compared to ongoing amounts paid as a proportion of total profits for actual mining operations. Guiding work during exploration activities provide Yapa with important, if transient, employment opportunities.

Should a mining project move into the extraction phase, the CLC will negotiate a further agreement specific to a mining operation with full consideration of environmental, cultural, employment, training and business enterprise opportunities.

The Granites gold mine is currently the only operating mine located within the IPA. Managed by Newmont Tanami Operations (NTO), this mine is the fourth largest gold mine in Australia by dollar

value and has a permanent workforce of 600 personnel. The Aboriginal component of the NTO workforce is 11%, including a significant number of workers from the surrounding communities of Lajamanu, Yuendumu, Willowra, and Nyirripi. An additional number of local people are employed in the "Yapa Crew", which comprises a maximum of twelve workers and is designed to familiarise and train people for work in the mining industry.

NTO contracts the Warlpiri Rangers to conduct environmental service work. In 2004, the CLC and NTO developed a comprehensive environmental monitoring strategy for the NTO tenements. The resulting Tanami Biodiversity Monitoring Program (TBMP), which was implemented as an annual biodiversity survey between 2005 and 2009, has employed Wulaign Rangers from Lajamanu and Warlpiri Rangers from Nyirripi, Yuendumu and Willowra. These rangers have also been contracted by NTO to conduct other environmental programs related to mine site rehabilitation, weed control and dingo management.

Elsewhere in the IPA, deposits of uranium have been identified that have considerable, if unrealised, economic potential.

Mining Royalties and Affected Areas Monies

Mining royalties in the Southern Tanami region amount to millions of dollars annually, a portion of which is invested by traditional owners into various community programs. Royalties paid by NTO as compensation for mining activities on Aboriginal land represent 2.5% of the company's annual profits. In 2003, the CLC negotiated for an additional 0.5% of Newmont profits to be paid into the Warlpiri Education and Training Trust (WETT), which is administered by the Kurra Aboriginal Corporation with assistance from the CLC. WETT monies have been used to fund:

- Warlpiri language and culture support
- Early childhood care and development
- Warlpiri Youth and Media program
- Warlpiri Secondary Student Support Program
- Warlpiri Community Learning Centres programs.

"Affected areas" monies are paid to Aboriginal people by the Australian government from mining profits taxes in recognition of the impacts of mining on Aboriginal communities. In the Southern Tanami, The Granites Mine Affected Areas Aboriginal Committee (GMAAAC) receives funds to implement a broad range of community benefit projects. Those related to the charter of Ngurra Walalja Warra Warra Kanjaku include:

- Youth activities
- Cultural recording and performance
- Development and maintenance of outstations and other remote area infrastructure.

Newhaven Sanctuary

Newhaven Sanctuary is a pastoral lease managed by the Australian Wildlife Conservancy (AWC) for biodiversity conservation. It adjoins the southern boundary of the IPA. Traditional owners and rangers from the Nyirripi IPA management region, including IPA Management Committee members, have strong cultural ties with the area and recognised Native Title rights to the Sanctuary.

The CLC has coordinated the involvement of Warlpiri rangers and traditional owners in monitoring

and land management activities on Newhaven since it became a conservation reserve under management of Birds Australia in 2003. Since 2007, Newhaven managers have taken an active role in the direct employment and coordination of Nyirripi-based rangers. Funding for ranger wages to work on Newhaven Sanctuary has been provided through a variety of environmental grants secured by Newhaven managers and the CLC.

Partnerships: James Young (CLC), Duncan Gallagher (Nyirripi Rangers), Phillip Shillingsworth (NT Parks), Josef Schofield (Newhaven Sanctuary)

Adjacent IPAs and Aboriginal Ranger Groups

Traditional ties and interests in the management of the IPA are shared by many people across the greater Tanami region and beyond. These include traditional owners involved with:

- North Tanami IPA and Wulaign Rangers (CLC)
- Kiwirrkurra IPA (Western Australia) (Ngyaanyatjarra Council)
- Anmatyerr Rangers (CLC)
- Papunya Rangers (CLC).

As partners, these land management groups offer significant potential to improve regional capacity, coordination and resourcing to undertake collaborative management of country within the IPA and to address cross-border management issues.

Tourism

A significant number of tourists access the Southern Tanami region, principally as self-drive individuals and groups on the Tanami Highway en route between Central Australia and the Kimberly region. Engagement with Aboriginal communities by tourists is largely limited to refuelling and accessing shops and the Warlukurlangu Arts Centre at Yuendumu. Currently there is no Aboriginal involvement in organised tourism activities or products in the region.

Some 300 people, predominantly bird watchers and nature enthusiasts, visit nearby Newhaven Sanctuary each year. Of these, most are self-drive visitors though some access the area as clients of commercial tour operators.

Commercial Harvest of Traditional Resources

Traditional owners and residents of the IPA, usually older women, are engaged periodically in the harvest and sale of bush foods. Acacia seeds are sold to the Yuendumu Mining Company at a fixed price per kilogram and are then on-sold for mining rehabilitation projects and other revegetation purposes. Seeds of other species such as *yininti* (Erythrina verspertilio) and *yakajirri* (Solanum centrale) are also collected for sale. Harvest activities are conducted by groups of individuals, generally without support from commercial proponents. Owing to seasonal and spatial variability in the availability and abundance of seed across the IPA, as well as buyer demand, this activity is taken up periodically when local conditions are optimal.

The flexibility of employment opportunities to harvest seed and payment of cash or cheque on delivery, and the confidential nature of arrangements between harvesters and buyers, means that little is known about the actual size and scale of bush food harvesting operations.

The Warlukurlangu Arts Centre purchases a range of traditional artefacts from residents living in the communities of Nyirripi, Yuendumu and Willowra including clapping sticks, spears, digging sticks, coolamons, woomeras, shields, and two types of boomerangs (Meltzer 2008). A large proportion of the resources for these artefacts is collected from the Yuendumu ALT.

3.4.2 Issues and Opportunities

IPA Management Jobs

Since its inception, the Warlpiri Ranger program has delivered land management employment opportunities between the communities of Willowra, Yuendumu and Nyirripi. As smaller communities that do not receive the same levels of government investment in infrastructure and community programs, Nyirripi and Willowra residents aspire to equitable funding and resourcing for ranger jobs across the IPA as a means of increasing local employment in order to retain young people and reduce population drift to Yuendumu and Alice Springs. These expectations need to be balanced by logistical and resourcing practicalities and an economy of scale achieved through centralised coordination and resourcing of the IPA from Yuendumu (refer Appendix 7).

The ranger program has experienced some difficulties in retaining rangers in permanent positions and transitioning rangers from casual to permanent positions. These difficulties are linked to historically low employment rates in the region and a lack of local role models for young rangers.

The IPA promises to provide valued ongoing casual employment opportunities for key knowledge holders and relevant traditional owners in the implementation of all management themes of Ngurra Walalja Warra Warra Kanjaku.

Warlpiri Ranger
Logo (Yuendumu)

Alternative Funding of the IPA and Warlpiri Ranger Programs

Specialist skills and expertise held by long-term staff in the Warlpiri Ranger program, coupled with the existence of reasonably significant plant and equipment, mean that the group is well placed to provide environmental services for a variety of local businesses, shire councils, pastoralists, mining companies and community organisations across the region. Identified areas of potential service provision include:

- Landscaping
- Environmental monitoring
- Fire management
- Fencing
- Feral animal control
- Weed control
- Small-scale infrastructure development
- Cultural tourism.

- **Mining and Mineral Exploration**

  The mining and mineral exploration sector is currently the most obvious source of additional or alternative funding for the IPA and Warlpiri Ranger programs.

  The CLC and Newmont Tanami Operations (NTO) are currently discussing a range of contract-based opportunities that will help broaden the funding base of the Warlpiri Ranger program and allow NTO to meet many of its basic environmental monitoring and compliance requirements. Contract-based opportunities on mining leases include:

  - Weed mapping and management
  - Groundwater monitoring
  - Waste management
  - Fire management (infrastructure protection)
  - Biodiversity monitoring
  - Mine site rehabilitation.

  Rangers also have potential roles in conducting environmental and cultural protection works in relation to other mining and mineral exploration activities. These may include fee-for-service audits and inspections of:

  - The placement and construction of mining exploration tracks
  - Rehabilitation of exploration impacts on mining leases
  - Adherence to sacred sites clearance conditions
  - Weed management requirements.

  Although the economic benefits to the Warlpiri Ranger program through engagement with the mining industry or other commercial sectors could be substantial, a potential conflict may emerge if the resources and skills of the rangers are diverted away from implementing other management goals of Ngurra Walalja Warra Warra Kanjuku.

  In a broader sense, mining and mineral exploration activities offer potential for infrastructure and economic development in the region through the construction of vehicular tracks, water bores, participation in sacred sites clearances, exploration compensation payments and royalties and affected areas money where mineral deposits are exploited.

  Where a new mine is developed within the IPA, and with the informed consent of traditional owners, there is also latent potential to generate revenue to support land management initiatives. This may be achieved either through allocation of a proportion of mining royalties directly toward land management efforts in the region or indirectly through a land management tax levy enforced under the terms of mining agreements.

  Many community residents wish to see GMAAAC funds used to directly support the IPA and Warlpiri Ranger programs through the purchase of capital items and construction of infrastructure. Others would like to see GMAAAC funds allocated to the IPA to implement road and outstation maintenance, which would allow people to more readily access country and conduct customary land management activities.

  As the CLC is both a member of the GMAAAC consortium and responsible for the administration of the IPA and Warlpiri Ranger programs, a potential conflict of interest arises if GMAAAC funds are used for land management projects administered by the CLC. This issue is yet to be resolved.

- **Tourism**

  Yuendumu IPA Management Committee members have identified a strong interest in supporting tourism-based employment initiatives. In particular, they have expressed interest in developing local campgrounds with interpretive signs at popular visitor sites as a means of minimising site disturbance and regulating visitor activities. Self-drive tourists, government employees visiting local communities and resident community service workers have been identified as possible target audiences for these tourism initiatives.

  Niche interest groups that visit Newhaven Sanctuary over the winter period are a potential target audience for cultural tours. In particular, ethno-ornithological tours in which traditional owners are able to share traditional bird and other ecological knowledge with visitors have considerable potential.

- **Carbon Abatement**

  Emerging markets for greenhouse gas reductions present potential employment and economic opportunities for Aboriginal people in the Tanami region. Implementation of a fire management regime, where a myriad of relatively small cool season burns replaces intense broadscale summer wildfires, is the key means by which carbon abatement may be achieved in the IPA. The highest, though untested, potential for sequestering carbon is thought to exist in the northern portion of the IPA where total annual rainfall is greater and more reliable than areas further south.

  In 2009, the Wulaign Rangers, CSIRO and Bushfires NT concluded a project in the adjacent North Tanami IPA directed at investigating the practical means by which Aboriginal communities might engage with the research and development of fire-related greenhouse gas abatement schemes. The members of the Southern Tanami IPA Coordinating Council and Management Committees, together with representatives of the Warlu Committee, have expressed unanimous support for research initiatives into the viability of carbon abatement schemes in the Southern Tanami IPA.

  Another land management activity that has been identified as having potential application in carbon abatement schemes in the Tanami is feral camel management.

- **Philanthropy**

  IPA Management Committee members have expressed a willingness to engage with individual philanthropists and philanthropic organisations in order to realise the full charter of Ngurra Walalja Warra Warra Kanjaku. Establishment of an IPA trust fund for philanthropic donations offers a potential means of generating income through one-off or regular donations. This could include the return of an annual donor dividend generated by the accumulated interest.

Collaborative and Cross-Border Management

Many regional stakeholders share an abiding interest in the management of country within, and adjacent to, the IPA. Partnerships between the IPA and Warlpiri Ranger programs and other stakeholders, in relation to planning, on-ground works and capacity building, have the potential to significantly improve the management of the IPA. Key partners include:

- **Newmont Tanami Operations**

  The location of The Granites mine within the South West Tanami Desert SOCS presents fire management issues and opportunities. In 2007, wildfires swept through the mining lease, threatening mining operations and the accommodation village. A coordinated and jointly resourced fire management strategy for the area offers an opportunity to protect the mining infrastructure as well as the outstanding customary and biodiversity values of the SOCS.

- **Newhaven Sanctuary**

  Potential exists to consolidate and enhance the training and employment opportunities that have already been created for Yapa at Newhaven Sanctuary. Currently, these opportunities are dependent on the goodwill and interests of the resident reserve managers. This presents risks to the long-term employment of Nyirripi community residents in the management of Newhaven Sanctuary, particularly if and when the current managers are replaced. As such, there is a need to develop an agreement between the CLC and Australian Wildlife Conservancy (AWC) to sustain and expand the existing management arrangements.

  The Native Title rights of traditional owners of Newhaven Sanctuary to hunt, harvest and maintain access to the area were granted in 2010. The eventual change of tenure of Newhaven Sanctuary from a perpetual pastoral lease to a Crown lease more suited to the goals of managing the area for conservation, will necessitate the creation of an Indigenous Land Use Agreement (ILUA) between traditional owners and AWC. Development of an ILUA will present an opportunity for native title-holders and AWC to formally define terms and responsibilities for long-term collaborative management of Newhaven Sanctuary. This could include consideration of:

  - Co-development of a regional resource and coordination hub for land management activities
  - Involvement and support for traditional owners to implement customary management obligations, including the maintenance of sacred sites, water places and fire management
  - Ongoing involvement of Warlpiri Rangers in the day-to-day management of Newhaven Sanctuary.

- **Other IPAs and Aboriginal Ranger Programs**

  Partnerships with staff of adjoining IPAs and neighbouring Aboriginal ranger groups offer opportunities to pool skills, finances and resources to achieve better management outcomes for the Southern Tanami IPA. Such potential management partnerships include:

  - North Tanami IPA and the Wulaign Rangers
  - Kiwirrkurra IPA (under development at the time of writing)
  - Anmatyerr Rangers
  - Papunya Rangers.

- **Aboriginal Pastoral Companies**

  The development of collaborative management arrangements with Aboriginal pastoral companies operating within the IPA boundaries has the potential to produce improvements in pastoral productivity, environmental condition and local employment. Although issues related to the mitigation of impacts on cultural and environmental values within grazing leases stemming from pastoral activities is considered the responsibility of the leaseholder under the terms of CLC grazing licenses (refer Appendix 13), such impacts may spread beyond lease area boundaries into adjoining parts of the IPA. Collaborative management opportunities should be based upon pastoral management plans that are related specifically to the sustainable and restorative management of the leases, as well as to broader cultural and ecological priorities identified through IPA planning processes. Potential areas of collaboration include:

  - Weed control
  - Feral animal management
  - Fire management
  - Environmental monitoring

- Co-financing of infrastructure projects
- Strategic placement of artificial water points
- Fencing (to protect cultural and biological assets)
- Training in horse handling and mustering activities that may be of use in feral animal control activities.

Pastoral monitoring on the Yuendumu ALT

Management of Mining and Mineral Exploration

Under the *ALR Act 1976*, where consent to exploration is given, traditional owners cannot refuse any subsequent mining. As such, traditional owners are highly discerning about granting permission for mineral exploration in the IPA. However, mineral exploration applications may create conflict within and between traditional owner groups whereby longer-term considerations for country, such as environmental and cultural damage associated with mining, may be countered by short-term gains related to the construction of tracks for access to country, discovery of potable water, casual employment opportunities for sacred site clearances or exploration work, compensation payments and the chance to visit remote and seldom-accessed country.

In decisions concerning mineral exploration, the CLC works to ensure that sufficient information is provided to traditional owners to enable them to make well informed decisions. Declaration of an IPA in the Southern Tanami offers several opportunities to improve and expand this advisory role, including:

- Regular liaison between the IPA Manager and CLC Mining Section staff to identify new exploration applications within the IPA
- Collation by the IPA Manager of relevant information regarding known environmental values and land management initiatives that may be affected by a specific exploration application
- Presentation by IPA Management Committee or respective IPA Coordinating Council delegates and/or the IPA Manager of environmental information to traditional owners for consideration prior to decision-making at mining meetings convened by the CLC
- Input by the IPA Manager of specific environmental terms and conditions for inclusion in exploration agreements to ensure that known environmental or cultural values defined through IPA planning processes are protected.

3.4.3 Management Strategies

3.4.3 (a) Management Objective
Provide employment opportunities for Yapa to implement Ngurra Walalja Warra Warra Kanjaku

Management Strategies

1. Develop ongoing ranger jobs for Yapa living in Nyirripi, Yuendumu and Willowra communities.
2. Support the casual employment of new and trainee rangers at Nyirripi, Yuendumu and Willowra communities.
3. Provide employment opportunities for relevant Kirda and Kurdungurlu to coordinate, supervise and instruct Warlpiri Rangers, young people and family members in association with all land management activities (as per Appendix 14).
4. Provide employment opportunities for key knowledge holders to instruct and mentor rangers and young people in association with on-ground works, country visits and knowledge-based projects (as per Table 6; Appendix 14).
5. Employ cultural advisors and local interpreters to undertake planning, stakeholder consultation, community awareness and education exercises, and the management of discreet IPA projects (as per Appendix 14).

3.4.3 (b) Management Objective
Broaden the funding base of the IPA and Warlpiri Ranger programs

Management Strategies

1. Pursue contractual opportunities related to the supply of environmental services to Newmont Tanami Operations (NTO) on a cost-recovery basis, including environmental management and the monitoring of environmental compliance.
2. Identify and pursue new opportunities for the provision of environmental fee-for-service activities within the region to a wide range of interests including: NTO, AWC, the mining sector, shire councils, local businesses, community organisations, Aboriginal and non-Aboriginal pastoral companies.
3. Undertake business planning to determine business structures and opportunities relevant to expanding the financial base of the IPA and Warlpiri Ranger programs. Pursue these opportunities as appropriate.
4. Identify and pursue opportunities for community investment of GMAAAC funds to support the IPA and Warlpiri Ranger programs.
5. Establish a philanthropic trust fund or other mechanism(s) to accommodate potential donations to the IPA and Warlpiri Ranger programs.
6. Work with CLC mining section staff to review opportunities to direct a proportion of mining royalties into a land management fund or create a land management levy for mining companies operating within the IPA.

3.4.3 (c) Management Objective
Develop management partnerships between the IPA and Warlpiri Ranger programs and regional stakeholders

Management Strategies

1. Engage NTO in the development and implementation of collaborative fire management arrangements that provide wildfire protection to mining and processing infrastructure while enhancing biodiversity and customary values within the South West Tanami Desert SOCS.
2. Encourage AWC Newhaven Sanctuary to develop collaborative management arrangements that sustain and improve land management outcomes and employment for Nyirripi-based Warlpiri Rangers and IPA residents.
3. Develop collaborative management partnerships and implement cross-border land management programs with adjacent IPAs and Aboriginal ranger groups.
4. Develop collaborative management partnerships with neighbouring Aboriginal pastoral companies contingent on:
   - Developing a schedule of collaborative management projects for each of the Yuendumu and Willowra grazing leases
   - Identification of management priorities as per CLC grazing lease management plans and IPA operational plans
   - Negotiation of responsibilities to finance and implement key management actions between grazing lease holders, Aboriginal pastoral companies, the IPA and Warlpiri Rangers and the insertion of terms related to these into grazing lease agreements
   - Representation of Aboriginal Pastoral companies on IPA management committees.

3.4.3 (d) Management Objective
Foster economic and employment development in the region through support for land management and community enterprise opportunities

Management Strategies

1. Support research into the viability of carbon abatement programs in the Southern Tanami region, including mechanisms by which Aboriginal people may best interact with emerging carbon markets. Investigate and pursue, as appropriate, carbon abatement initiatives relevant to the management of the IPA.
2. Work with IPA Management Committee members to identify interest in, and opportunities for, appropriate tourism products in the IPA. Support such tourism enterprise developments.
3. Support traditional owners, key knowledge holders and Warlpiri Rangers to work with existing tourism operators and organisations to undertake cultural tourism activities in the IPA.
4. Assist Yapa's engagement with the bush foods industry by linking buyers to harvesters.
5. Support the economic development of communities in the region by preferencing local and Yapa-owned businesses for the resourcing and implementation of activities conducted under Ngurra Walalja Warra Warra Kanjaku.

3.4.3 (e) Management Objective

Ensure that all commercial development activities are undertaken using best practice environmental knowledge and principles

Management Strategies

1. Collate environmental information and define values for areas subject to mineral exploration applications within the IPA.
2. Assess the potential for mineral exploration and subsequent extraction activities to have negative impacts on values within the IPA. In particular, identify:
    i. potential for mineral exploration activities to interfere with or enhance current land management activities
    ii. potential for the introduction and spread of weeds
    iii. potential for soil erosion issues stemming from road and track construction
    iv. potential disturbance of habitat or destruction of populations of threatened or significant animals
    v. potential disturbance or destruction of significant or threatened plant populations or vegetation communities
    vi. potential for pollution from mining
    vii. the combined impacts of soil erosion, the introduction of weeds and pollution on areas of outstanding value associated with wetlands and watercourses, SOCS ,SOBS and culturally significant sites
    viii. knowledge gaps for biological values
    ix. the presence of any values that may trigger the *EPBC Act 1999*
    x. potential impacts on groundwater and hydrology
    xi. significant landforms
    xii. sites of historical significance.
3. In conjunction with CLC mining meetings and other statutory processes, ensure that traditional owners are fully informed regarding the environmental implications of proposed mineral exploration and mining activities within the IPA. To this end, provide traditional owners with:
    - An outline of potential consequences of proposed mineral exploration and subsequent extraction activities and their likely impacts upon key environmental or other values
    - A set of proposed operational conditions and criteria for their consideration which may be incorporated into the terms of the exploration agreement, such as:
        i. measures to mitigate the impacts of weeds, soil erosion and pollution on known values
        ii. mineral exploration exclusion zones designed to protect key environmental values.
4. In collaboration with CLC Mining Section staff, develop a schedule of strategic infrastructure requirements to support ongoing land management activities within each of the three IPA management regions for possible inclusion in negotiations with mineral exploration proponents. Such infrastructure may include:
    - Roads and tracks
    - Water points, including bores, hand pumps and tanks.
5. Work with CLC mining section staff to develop environmental assessment criteria and accompanying policies and protocols to guide consultative processes for all future mining exploration applications in the IPA.

CHAPTER 4

MONITORING, EVALUATION, REVIEW AND IMPLEMENTATION

Willowra-based Warlpiri rangers undertake a tracking survey at Wirliyajarrayi (Lander River)

4.1 Monitoring

Monitoring changes in the condition of the values of the IPA over time is essential for gauging the success or otherwise of the management strategies being used to achieve the IPA management objectives as stated in this plan.

As it is not possible to measure the condition of all values within the IPA, a selection of performance indicators is required, their selection based on priority issues and an understanding of their significance, sustaining processes and threats. In respect of the four management themes of this plan, performance indicators for monitoring and subsequent evaluation should be aligned with the key objectives of each theme.

It is a condition of IPA funding that a Program Logic and Monitoring, Evaluation, Reporting and Improvement (MERI) plan be completed and implemented. The purpose of a MERI plan is to ensure that milestones related to five-year Caring for our Country (CFOC) targets, as well as traditional owner objectives and aspirations outlined in this plan, are met. Though MERI plans are developed for the life of an IPA funding agreement (usually five years), they are reviewed annually with the aim of fostering an adaptive management approach.

It is the role of the IPA Manager to collate data generated against MERI criteria on an ongoing basis and to undertake desktop evaluation of project outcomes prior to reporting at the end of each financial year. The extent and scope of a MERI plan for the IPA will be contingent on the resourcing, capacity and funding available to implement this plan. (Appendix 15 provides a table of suggested key evaluation questions, indicators, methods, metrics and review periods to form the basis of a MERI plan).

Establishment and maintenance of a monitoring schedule to measure progress against key performance indicators related to the four management themes of Ngurra Walalja Warra Warra Kanjaku will require:

- Establishment and maintenance of an appropriate, representative data collection schedule tailored to suit locally specific values and threats across each of the IPA Management Regions and designed such that Warlpiri Rangers are the principal people involved in data collection
- Striking a balance between qualitative and quantitative measures to ensure strong community engagement in the monitoring and evaluation process and a rigorous scientific basis to future management decisions
- Monitoring sites and methodologies that, wherever possible, conform to existing IPA, CLC, regional or national monitoring initiatives
- Establishment and maintenance of a monitoring database in which to store and integrate baseline and historical information related to key performance indicators
- Tailoring of the design of CyberTracker data collection sequences to link with, and inform, reporting against key performance indicators
- Training of rangers and key traditional owners in data collection and monitoring program design and implementation.

4.2 Evaluation and Review

Understanding the nature and rate of change in the condition of values as indicated by the results of monitoring allows the effectiveness of chosen management regimes to be evaluated, adapted and improved.

It is the role of the IPA Manager, with assistance from relevant CLC staff, to collate MERI data for comparison against the previous year's performance. Added to this, IPA Management Committee members are required to undertake qualitative evaluation of IPA performance through the identification and recording of "stories of most significant change".

This annual evaluation of performance is circulated to the IPA Advisory Committee in advance of its annual meeting. Committee members are required to provide advice and feedback regarding the effectiveness of management efforts particular to their areas of expertise and, where necessary, recommend changes to management strategies. Such changes, if accepted, are then made to the contents of the IPA plan of management and operational plans.

In addition to the changes made to the plan of management in response to annual evaluation reporting, a formal review of the plan of management will be undertaken after it has been in force for five years. In 2018, the IPA Manager will be required to undertake a high-level review of this plan and recommend changes to it and associated operational plans.

Pending the outcomes of the five-year review, Ngurra Walalja Warra Warra Kanjaku will be updated or modified as necessary.

4.3 Plan Implementation

Implementation of Ngurra Walalja Warra Warra Kanjaku will be undertaken within the context of annual ranger work plans and regional operational plans for each of the Nyirripi, Yuendumu and Willowra IPA management regions. These subsidiary planning documents utilise the same four management themes and related management objectives and strategies as described in this plan of management.

Implementation priorities are subject to the availability of core and supplementary funding, staffing and resourcing levels of the IPA. As a guide to the implementation of operational plans, individual management actions have been assigned a relative priority using the categories below:

High	Critical to achieving stated management objectives, if deferred could potentially result in an unacceptable loss or devaluing of cultural/biological/economic values
Medium	Important to achieving stated management objectives – can be deferred without unacceptable loss of cultural/biological/economic values
Low	Actions to be undertaken once high/medium priorities have been completed
Ongoing	Actions to be undertaken as required

4.4 Management Strategies

4.4.1 Management Objective

Develop a monitoring and evaluation framework to support the implementation of Ngurra Walalja Warra Warra Kanjaku

Management Strategies

1. Complete a Program Logic and MERI Plan within 12 months of IPA declaration.
2. Finalise the MERI reporting pro forma (refer Appendix 15).
3. Identify approaches and methodologies for recording "stories of most significant change" which will allow traditional owners and IPA Management Committee members to undertake qualitative assessments.
4. Establish an appropriate and representative data collection schedule in line with the MERI plan and which is tailored to suit locally specific values and threats across each of the IPA Management Regions and Warlpiri Ranger data collection skills.
5. Develop supporting CyberTracker sequences and training relevant to the collection of data by Warlpiri Rangers against MERI criteria including "stories of most significant change".
6. As part of planned CLC land resource information management systems, establish an IPA database in which to collate all natural and cultural resource data collected through the implementation of this plan.
7. Provide CyberTracker and monitoring program design and implementation training to the IPA Manager, Warlpiri Ranger Coordinator and Warlpiri Rangers.

4.4.2 Management Objective

Implement a schedule for the evaluation and review of Ngurra Warra Warra Walalja Kanjaku in line with IPA governance arrangements and processes

Management Strategies

1. Conduct an annual evaluation and review of the performance of the IPA program against each of the four management themes of Ngurra Walalja Warra Warra Kanjaku. This will include:
    i. tracking the condition and trends in condition of key values of the IPA based on MERI indicators
    ii. qualitative evaluation of the IPA through presentation of "stories of most significant change"
    iii. identifying and recommending changes to management strategies in order to improve the effectiveness of management efforts
    iv. identifying and recommending changes to monitoring programs and key performance indicators in line with changes to management strategies or data gaps
    v. recommending changes to management strategies in response to relevant research findings

vi. reviewing the progress of the IPA programs in implementing the plan of management provisions.

2. Undertake a five-year review of Ngurra Walalja Warra Warra Kanjaku involving assessment and preparation of the following:
   i. community and traditional owner appraisal of the IPA and Warlpiri Ranger program
   ii. reappraisal of IPA governance structures, management arrangements and partnerships
   iii. reappraisal of the four management themes and major objectives of Ngurra Walalja Warra Warra Kanjaku in meeting the primary aspirations of traditional owners and community residents
   iv. review of the annual MERI reports and identification of significant trends in the condition of key values
   v. reappraisal of values and issues related to the four management themes in light of new information
   vi. review of the resourcing strategies of the IPA and Warlpiri Ranger program
   vii. effectiveness of management efforts in addressing key issues and threats
   viii. suitability of the monitoring program for measuring change in the condition of values
   ix. traditional owner interest in retaining the existing IUCN reserve category for the IPA
   x. traditional owner interest in pursuing listing of places within the IPA under various international conservation treaties (eg RAMSAR).

   (The evaluation and review activities as described above, including changes to planning documents, will be undertaken through the IPA governance processes as detailed in Appendix 6.)

PART C

APPENDICES

Appendix 1 Acronyms

AIATSIS	Australian Institute of Aboriginal and Torres Straight Islander Studies
ALRA	Aboriginal Land Rights Act
ALT	Aboriginal Land Trust
ATSIC	Aboriginal and Torres Straight Islander Commission
AWC	Australian Wildlife Conservancy
CCNT	Conservation Commission of the Northern Territory
CDEP	Community Development Employment Projects
CFOC	Caring for our Country
CLC	Central Land Council
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DET	Department of Education and Training (NT)
FTE	Full-time equivalent
GMAAAC	Granites Mine Affected Areas Aboriginal Committee
IBRA	Interim Biogeographic Regionalisation of Australia
IEK	Indigenous Ecological Knowledge
ILC	Indigenous Land Corporation
ILUA	Indigenous Land Use Agreement
IPA	Indigenous Protected Area
IUCN	International Union for the Conservation of Nature
MERI	Monitoring, evaluation, reporting and improvement
NLC	Northern Land Council
NRETAS	Department of Natural Resources, Environment, the Arts and Sport
NRM	Natural Resource Management
NRS	National Reserve System
NT	Northern Territory
NTCA	Northern Territory Cattlemen's Association
NTO	Newmont Tanami Operations
PoM	Plan of Management
REU	(CLC) Regional Enterprise Unit
SEWPAC	Department of Sustainability, Environment, Water, Population and Communities
SOBS	Site of Botanical Significance
SOCS	Site of Conservation Significance
TBMP	Tanami Biodiversity Monitoring Program
TRPA	Tanami Regional Partnership Agreement
WA	Western Australia
WDAC	Warlpiri Youth Development Aboriginal Corporation
WETT	Warlpiri Education and Training Trust
WOC	Working on Country
WpkJ	Warlpiri-patu-kurlangu Jaru
WONS	Weeds of national significance

Appendix 2 Consultation Summary

Consultation	Date	File note(s)	Picture book
Informal community consultations			
Nyirripi	11/2007	2007 11-14 Nyirripi consults 14-11-07.doc 2007 11-22 File Note consults Nyrripi.doc	n/a
Nyirripi	09/2008	2008 29-09 Peter Tex and Edger Spencer re Sth tanami IPA.doc	n/a
Yuendumu	07/2007	2007 07-15 Filenote IPA consults in Yuendumu.doc	n/a
Yuendumu / Lajamanu	07-08/2007	2007 08-24 till 10-08 File Note IPA consults in Yuen & Laj .doc	n/a
Yuendumu	02/2008	2008 02-14 File Note IPA consults Yuendumu.doc	n/a
	02/ 2009	2009 02 23 IPA consults at Yuendumu.doc	n/a
Kintore	08/2008	n/a	n/a
Community and stakeholder engagement meetings			
Willowra Pastoral Co.	12/2007	2007 12 20 File Note Willowra Pastoral co.doc	n/a
Nyirripi	03/2008	2008 03-26 Nyirripi community IPA info seminar.doc	n/a
Yuendumu	03/2008	2008 03-13 File Note IPA info session.doc	n/a
Yuendumu mens planning	11/2008	2008 11 23 Yuendumu mens IPA planning meeting .doc	n/a
Yuendumu womens IPA planning	11/2008	2008 11 11 Yuendumu ranger and IPA development workshop (women only).doc	n/a
Yuendumu with govt. IPA representatives	11/2008	2008 11 11 DEWHA open community forum.doc	n/a
Willowra mens meeting	05/2008	2008 5-1 willowra mens IPA info meeting.doc	n/a
Willowra womens meeting	04/2008	2008 4-30 willowra womens IPA info meeting.doc	n/a
Tanami Downs Board meeting	03/2009	2009 03-28 Tanami Downs Pastoral Board meeting.doc	n/a

Consultation	Date	File note(s)	Picture book
Nyirripi IPA management region informal community consults	2007-2010	2008 06-11 Eddie Robertson IPA dev. Facilitation	n/a
		2009-02-27 Nyirripi IPA and ranger consultations.doc	n/a
		2009-02-27 Karrinyarra outstation IPA consultation.doc	n/a
Yuendumu IPA management region informal consults	2007-2010	2007 08-24 till 10-08 Filenote IPA consults in Yuen & Laj .doc	n/a
		2008 02-28 File note Jaru Pirrjirdi Warrana.doc	n/a
		2008 03-17 File Note Jaru Pirrjidi Warrana 2.doc	n/a
		2008 11 11 Yuendumu ranger and IPA development workshop (women only).doc	n/a
IPA broad traditional owner meetings			
Yuendumu IPA consult and IPA MC establishment	11/2009	2009 11 16 IPA Meeting Report.doc	n/a
Willowra IPA consult and IPA MC establishment	09/2009	2009 09 09 Willowra IPA Meeting Report.doc	n/a
Nyirripi IPA consult and IPA MC establishment	07/2009	2009 07 01 IPA PoM consult at Ethel Creek Outstation.doc	n/a
Karrinyarra IPA consult	03/2010	2009-02-27 Karrinyarra outstation IPA consultation.doc	n/a
IPA consults, mining meetings / other			
EP92 road show presentations at Tennant Creek, Willowra, Ali Carung, Yuendumu, Lajamanu	08/2007	Land management file note EP92 Consults .doc Mining Meeting Anthropologist Report 2007 EP92 ELAs 10159-10163.doc	n/a
Mt Wedge (Clyburn cattle proposal)	10/2010	2010 10 Mt Wedge excision from IPA proposal.doc	n/a
Mt Allen (Clyburn cattle proposal)	10/2010	2010 10 Yalparinku ALT IPA exlcusion.doc	n/a
Lake MacKay ALT mining meeting Emu Bore	05/2011	2011 05 11 Minutes from IPA consults at Emu Bore.doc	n/a

Consultation	Date	File note(s)	Picture book
On-country consultation and action planning			
Yinapaka #1	10/2007	2007 10 24 Lander River-Lake Surprise country visit report.doc Anthro Report Country Visit to Yinapaka 2007.doc	Yinapaka 2007 CV picture book .pub
Watiyawarnu IPA country visit	09/2007	2007 09 14 Watiyawarnu country visit notes.doc 2007 09 14 Watiyawarnu IPA meeting notes.doc	Watiyawarnu country visit .pub
Mina Mina IPA country visit	04/2008	2008 03 Mina Mina country visit.doc	2008 04 Mina Mina country visit picture book.pub
Yinapaka #2	05/2008	2008 05 Yinapaka country visit draft report.doc	2008 05 Yinapaka picture book.pub
Talarrarrara – Mt Redevers bilby survey	06/2008	n/a	2009 05 Talararra. pub
Lungartatjarra / Marlujarra IPA country visit	08/2008	2008-03 File Note Lungkatajarra county visit planning.doc 2008 08 26 Lunkatajarra IPA meeting .doc	2008 08 Lunkatajarra picture book .pub. pub
Pirlinyarnu	09/2008	2007 11 File Note consults Nyrripi November 2007.doc	n/a
Nyirripi Rockholes #1	08/2008	2008 09 Nyirripi rockhole IEK trip 1 Kunajarrayi and Pirlinyarnu.doc	2008 08 nyirripi rockhole trip 1 picture book.pub
Redbank and Padiliri IPA	02/2009	2009 02-10 Willowra padiliri and redbank ipa consults .doc	n/a
Yinapaka #3	04/2009	2009 04 Yinapaka trip report.doc	n/a
Nyirripi Rockholes #2	05/2009	2008 06-11 IPA-IEK rockhole Consult Paddy Japananka Lewis	2009 05 Nyirripi rockhole trip 2 picture book.pub
Lungartatjarra #1	07/2009	n/a	2009 07 Sangster's Bore predator baiting and tracking training June 2009.pub
Lungartatjarra #2	08/2009	n/a	2009 08 Sangster's Bore predator baiting and tracking training June 2009.pub
Mt Bennent to Thompsons Rockhole transect	08/2009	n/a	2009 08 Mt Bennet Thompson's rockhole.pub
Nganga	11/2009	n/a	n/a

Consultation	Date	File note(s)	Picture book
Mt Wedge IEK bird survey	05/2010		2010 04 karrinyarra bird knowledge trip.pub
Yinapaka #4	08/2010	n/a	n/a
IPA governance and planning meetings			
Nyirripi IPA Management Committee #1	09/2008	2008 30-09 Nyirripi (inaugural) IPA MC meeting .doc	n/a
Nyirripi IPA Management Committee #2	11/2009	2009 11 Nyirripi IPA MC meeting report.doc	n/a
Nyirripi IPA Management Committee #3	11/2010	n/a	n/a
IPA governance meeting Yuendumu	02/2009	2009 05 19-20 Yuendumu ranger development.doc 2009 02-25 Yuendumu IPA governance meeting.doc	n/a
Yuendumu IPA Management Committee #1	02/2009	2010 03 23 Yuendumu IPA Management Committee meeting (2).doc 2010 04 07 Yuendumu IPA Management Committee meeting. doc	n/a
Yuendumu IPA Management Committee #2	11/2010	2010 11 Yuendumu IPA Management Committee minutes. doc	n/a
Willowra IPA Management Committee #1	11/2009	2009 11 Willowra IPA MC meeting report.doc	n/a
Willowra IPA Management Committee #2	11/2010	2010 11 Willowra IPA Management Committee meeting report.doc	n/a
Inaugural IPA Coordinating Council	10/2010	2010 04 10 draft Southern Tanami IPA Coordinating Council meeting report changes.doc	n/a
Inaugural IPA Advisory Committee	10/2010	2010 10 05 draft Southern Tanami IPA advisory committee meeting minutes.doc	n/a
Coordinating Council meeting to ratify draft PoM	06/ 2011	2011 06 21 IPA PoM consultations. doc	n/a

Other IPA coordinated land management activities involving: • **broad traditional owner engagement** • **opportunities for informal consultations** • **action planning involving customary management activities, IEK projects**			
Activity	**Date**	**Estate groups engaged**	**Picture books / documentation**
Yuendumu ALT weed spraying	2007-2011	Julpungu, Ngalikalangu, Wakalba, Keridi	n/a
Customary management activities, fire management Lander River	2008 - 2010	Ngarnalkurru	n/a
Watiyawarnyu IPA cultural mapping	2008	Watiyawarnu	n/a
Bilby monitoring, fire management Sangster's Bore	2008 - 2011	Lungartatjarra	n/a
Fire management	2008-2011	Yunkanjini	n/a
Bilby monitoring, fire management Lander River	2008-2011	Yinapaka, Ngarnalkurru	n/a
Aerial burning Lake MacKay	2008	Yalalya, Kunyarrpa, Jilpinya, Jila, Kunajarrayi, Mina Yirninti Warrku Warrku Mina, Pirlinyarrnu	2008 07 Lake MacKay Aerial Burning draft.pub
Aerial incendiary burning Yinapaka	2009	Kurpurlunu, Parulyu, Piti Piti, Jiparanpa, Ngunulurru, Yinapaka, Rdilyka,,	n/a
Aerial incendiary burning Lake MacKay	2009	Yalalya, Kunyarrpa, Jilpinya, Jila, Kunajarrayi, Mina Yirninti Warrku Warrku Mina, Pirlinyarrnu	n/a
Padiliri IEK	2009	Padiliri	2009 09 Padaliri IEK trip.pub
Lake MacKay rock wallaby survey(s)	2009 - 2011	Karrku, Wintijarru, Juntu, Kunajarrayi, Lunkarda, Pirti, Pirlinyarnu	2010 07 PWS secondment report Nyirripi RW survey and fire management. pdf
Lander River weed survey stage #1	2010	Redbank, Yarruku	2010 09,11 LanderRiver WeedSurvey.pdf
Lander River weed survey stage #2	2010	Ngarnalkurru	2010 09,11 LanderRiver WeedSurvey.pdf

Activity	Date	Estate groups engaged	Picture books / documentation
Mt Windajong rock wallaby survey	2010	Windajong	2008 10 Mt Windijongu Rock Wallaby Survey. pub
Aerial incendiary burning Mt Bennet	2010	Pirliwarnawarna, Larrara, Wantapari	n/a
Aerial incendiary burning Lake MacKay	2010	Yalalya, Kunyarrpa, Jilpinya, Jila, Kunajarrayi, Mina Mina, Pirlinyarnu, Yirninti Warrku Warrku	n/a
Aerial burning Yinapaka	2010	Kurpurlunu, Parulyu, Piti Piti, Jiparanpa, Ngunulurru, Yinapaka, Rdilyka	n/a
Warrana survey and fire management	2010	Putulyu	n/a
Fire management	2010	Karrinyarra	n/a
Fire management	2010-2011	Yatjalu	n/a
Fire management	2010-2011	Yirapilangu / Jungarrayiwarnu	n/a
Fauna survey and fire management	2010	Mala, Yumurrpa, Nyurripatu	n/a
Nyirripi womens IEK	2010		2010 06 Nyirripi women's land management.pub
Weed survey Atlee Creek	2010	Julpungu	n/a
Aerial incendiary burning Mt Bennet	2011	Pirliwarnawarna, Larrara, Wantapari	n/a
Fire management Mt Doreen fire break	2011	Ngarupalya, Janyinki, Juntu	n/a

Appendix 3 Mining Activities (Current as of May 2011)

Agreement Type	Activity	Land area km²	% Total IPA land area
Exploration Licences	Mining exploration	6577	6.47
Mining Leases	Active mining	38	0.037
	Processing	29	0.029
	Tailings monitoring	7	0.007
Mineral leases subtotal		74	0.073
Total		**6651**	**6.54**

Appendix 4 History of Biological Interest and Two-Way Land Management

Early Biological Interest

The Commonwealth government-funded survey party led by Captain H.V. Barclay, which travelled along the Lander River in June 1911, represents the first biological survey in the Southern Tanami region. Further biological work was undertaken during prospecting and anthropological explorations in the region during the 1920s and 1930s. In 1952, the Australian Museum conducted a biological expedition to The Granites.

Tanami Desert Wildlife Sanctuary

The 37,529 km² Tanami Desert Wildlife Sanctuary was proclaimed by the Conservation Commission of the Northern Territory (CCNT) in 1964. The Sanctuary was established at the recommendation of wildlife biologist Allen Newsome because of the significant and unique plants and animals of the region. Foremost amongst these was the mala (*Lagorchestes hirsutus*), a species long believed extinct, which was rediscovered at Sangster's Bore.

Nine major biological surveys were undertaken in and around the Sanctuary by the Wildlife section of the Animal Industries Branch (1964, 1965, 1970), Territory Parks and Reserves Board (1973, 1976, 1977, 1979) and the CCNT (1980). Detailed studies of the highly restricted mala were conducted from the early 1970's, with research into bilbies commencing in the 1980s.

The first comprehensive and systematic study of the vertebrate fauna of the Tanami did not occur until DF Gibson undertook a series of 15 major wildlife surveys between 1981and1984. They were significant in documenting a baseline of the abundance and distributions of species, describing the landforms and land types of the region.

Aboriginal Land Rights and the Tanami Desert Wildlife Sanctuary

Various land claims lodged by the CLC on behalf of traditional owners of the region from 1977 onwards included the area formerly proclaimed as the Tanami Desert Wildlife Sanctuary. The CCNT objected to the transfer of the lands to Inalienable Aboriginal freehold title due to concerns over the implications of this for wildlife management.

In handing down his findings in the Warlpiri and Kartangarurru-Kurintji land claim, Justice Toohey stated that:

> 'All these considerations suggest that there is no inherent incompatibility between environmentally acceptable land use together with the protection of national park and wildlife values and Aboriginal ownership and indeed that the areas of common interest are overwhelmingly predominant. The issue is therefore simply that of identifying the most effective means of that environmental protection and appropriate land use.....
>
> .....The Tanami Desert Wildlife Sanctuary has landforms, flora and fauna that make it an area of great importance as a sanctuary. Acceding to the claim will result in some permanent occupation of parts of it, but only a few in places and by small communities. If there is an unconditional grant of that land to a Land Trust the probabilities are that the traditional owners, through the land council, and the Territory Parks and Wildlife Commission will enter into a satisfactory agreement for its management and that no serious harm will result.'

Though a heads of agreement concerning collaborative management of the Tanami region was finalised between the CLC and the CCNT in the 1990's, no formal agreement regarding the establishment of protected areas was produced.

Two-Way Land Management

Key Yapa knowledge holders and senior traditional owners were engaged by researchers in major biological surveys and research projects in the Tanami region throughout the 1970s, 1980s and 1990s. Yapa worked alongside and guided scientific staff while contributing their extensive knowledge and greatly assisting the collection and recording of plants, animals and ecological associations of the Tanami. These collaborative working relationships were developed at a time when the accuracy of Aboriginal knowledge of plants and animals and its importance to conservation and management efforts were not widely recognised by mainstream land management agencies.

Key Yapa involved in this biological work included Neville (Cobra) Poulson and the late Darby Jampijinpa, as well as numerous others including Jimija Jungarrayi, Major Jangala, Shorty Jangala, Paddy Jupurrurla, Sandy Japangardi, Toby Japangardi, Larry Tracker Japaljarri Ruby Nakamarra, Salty Willy Japanangka, Engineer Jack Japaljarri and Claude Williams Japanangka (K. Johnson pers. comm.). The scientists who conducted the surveys included Ken Johnson, Dave Gibson, Peter Latz, Don Langford and Jeff Cole. All remain highly respected by Yapa owing to their extensive knowledge of country and a long period of involvement in the management of the Southern Tanami region.

The collaborative management of a translocated mala population from 1980 – 1992 between the CCNT and the traditional owners of the Lander River helped to establish mainstream recognition of the role of customary activities, particularly traditional burning practices, in the maintenance of biodiversity. Though ultimately unsuccessful in the aim of re-establishing a wild population of the species, some 98 traditional owners from Willowra community worked alongside CCNT staff during more than 300 work trips.

Yapa participants in early scientific work are remembered today as the first and true Warlpiri Rangers. The success of the Warlpiri Ranger program is dependent on leadership and governance provided by the remaining elders who built a legacy of two-way land management in the Southern Tanami region. Present day rangers from Willowra community identify ranger work as an important part of their family heritage owing to the work of their fathers and grandfathers who worked alongside CCNT scientists at the Mala camp.

Appendix 5 Management Zoning Scheme

Vehicular Access
Good Close to a major community with connecting roads, transit routes and a comprehensive network of minor graded roads and ungraded vehicular tracks
Moderate May be close to a major community or in proximity to a major transit route. Through roads and/or lesser tracks penetrate the management area
Restricted Remote area away from major communities and major transit routes; minor roads with limited through access. Most of the management area is not accessible by vehicular tracks
Highly Restricted Remote area with no vehicular access
Biological Value
International Recognised values of international significance (eg RAMSAR)
National Recognised values of national significance (eg SOCS, SOBS, DIWA)
Bioregional Presence of discreet biological values (eg threatened species, plant taxa significant to the bioregion)
Customary / Community Use
Primary daily to weekly use
Secondary weekly to monthly use
Episodic seasonal/annual use
Opportunistic infrequent use
Management Interval
Ongoing weekly to monthly management activities required
Annual annual management cycle
Seasonal management activities in response to seasonal events
Episodic management conducted in response to periodic or a seasonal or climatic event
Economic Activities
N/A
Pastoral
Mining
Other

Appendix 6 Governance Processes

IPA Management Committees

Management Committees sit for a period of two to three days on-country in each of the Nyirripi, Yuendumu and Willowra IPA management regions to undertake a review of the previous 12 months' activities and plan for the year ahead. IPA Management Committees may also be convened throughout the year as required to coincide with major works such as Ngurra Walalja country visits, IPA surveys or aerial incendiary operations. Smaller, informal meetings and consultations with Management Committee members are also required throughout the year in relation to specific projects.

Being on-country and away from communities minimises distractions and simplifies the logistics required in running meeting proceedings.

Holding regional planning meetings at the start of the calendar year is favoured for the following reasons:

- committee members have completed ceremonial business over the summer and are refreshed to plan for the year ahead
- it allows time to analyse data and update operational plans prior to review and commencement of planning
- fuel loads can be assessed and fire scar maps updated following summer rains.

In the interests of broad community and traditional owner engagement, the Management Committee may nominate additional members or invite additional persons to participate in planning meetings from year to year. Attendance of additional family members or proxy members due to the absence of a committee member means that, though key individuals remain involved, attendance is varied from year to year.

Key elements of IPA Management Committee meetings include:

- IPA Coordinating Council delegates providing feedback from annual Warlu, Advisory Committee and Coordinating Council meetings, including a summary of activities in other IPA management regions
- Warlpiri Rangers presenting a pictorial summary of major work outcomes and activities from the previous year
- a summary of management activities are plotted on large format maps
- IPA Management Committee members presenting "stories of most significant change' related to the four management themes
- IPA Manager presenting findings of annual evaluation against MERI criteria related to the four management themes
- discussion forum regarding successes and failures, issues and opportunities stemming from the year's work
- plotting of significant natural and cultural resource data generated over the previous year on maps
- appraisal of management approaches and techniques undertaken over the past year.

Planning is to be facilitated by the IPA Manager. Key planning elements of IPA Management Committee meetings include:

- discussion of ongoing projects with regard to key objectives, consideration of issues and opportunities, successes and failures raised in review session
- presentation of information pertinent to management in the upcoming year; may involve specialist input from key knowledge holders, CLC, Bushfires NT or NRETAS staff
- input from relevant project partners including neighbouring pastoralists, mining interests, Newhaven Sanctuary personnel, community organisation staff
- identification of new projects
- development of a short list of key projects against management themes
- prioritisation of key projects
- plotting of key activities against a seasonal calendar.

At the conclusion of IPA Management Committee meetings, it is the role of the IPA Manager to:

- write up minuted notes from each meeting and delegate the production of a plain English version to Warlpiri Rangers for circulation back to Management Committee members
- work with the Ranger Coordinator(s) to allocate planning outcomes into a week by week activity schedule*
- liaise with Management Committee members, CLC specialist staff and relevant project partners regarding content, timing and implementation of the activity schedule
- liaise with relevant management partners
- update regional operational plans where relevant.

*Warlpiri Ranger Coordinator(s) will be required to develop a more detailed Warlpiri Ranger work plan listing weekly priorities and schedules to achieve individual project milestones

IPA Coordinating Council

The IPA Coordinating Council sits in October each year. It is an annual opportunity to bring together delegates and senior rangers from each of the IPA management regions to undertake a planning, review and information sharing process to set strategic direction for the upcoming calendar year.

This meeting takes place to coincide with the Warlu Committee (for which the majority of IPA Coordinating Council members are also delegates) and the IPA Advisory Committee meetings.

Holding the Coordinating Council meeting at a central location that also accommodates the need for Warlu Committee delegates to travel from communities around the Tanami including Lajamanu, Tennant Creek and Ali Carung is paramount. Hamilton Downs Youth Camp is the preferred venue due to its accommodation capacity, proximity to the Tanami, catering facilities and suitable meeting spaces.

It is advantageous to hold the Coordinating Council meeting in the second half of the calendar year for the following reasons:

- funding announcements and budgetary allocations will have taken place for the new financial year
- staggering governance duties and obligations for Coordinating Council delegates allows time for reflection prior to IPA Management Committee meetings in the new year.

The Coordinating Council meeting provides the principal forum for strategic IPA-wide review and planning.

Key aspects of IPA review by the Coordinating Council include:

- feedback from IPA Management Committee meetings including a summary of key projects, successes, failures, issues and opportunities from respective IPA management regions
- project partnerships and contributions of partnering organisations
- budgeting and expenditure of core IPA and supplementary funding in the previous financial year
- outcomes of monitoring and evaluation as per MERI plan
- "stories of most significant change' from Management Committee delegates and senior rangers
- discussion regarding issues related to the meeting of reporting milestones
- expert input from relevant specialist staff regarding progress on key issues. May involve key knowledge holders, CLC specialist staff, NRETAS and Bushfires NT personnel, members of the IPA Advisory Committee
- Identification of strengths, weaknesses and areas for improvement in addressing each of the four IPA management themes.

Key aspects of planning to be undertaken by the IPA Coordinating Council include:

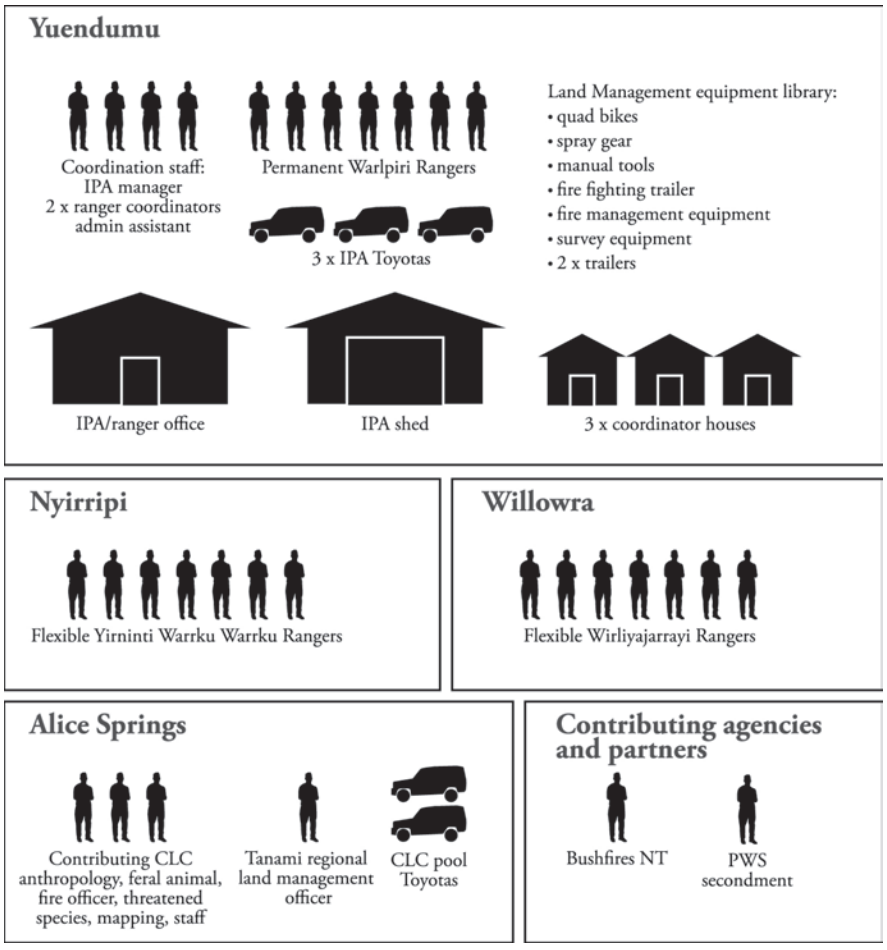
- discussion of the status of projects related to each of the four management themes
- presentations by prospective IPA management partners, ratification of partner involvement

- identification of goals for each of the IPA management themes for the coming calendar year
- ratification of major project expenditure
- identification of supplementary funding sources and ratification of new/out-of-session funding submissions
- identification of new and prospective management partners
- allocation of major resources within the IPA.

At the conclusion of the Coordinating Council meeting, it is the IPA Manager's responsibility to:

- write up minuted notes and delegate the production of a plain English version to Warlpiri Rangers for circulation back to Coordinating Council and Management Committee members
- collate resolutions to inform regional planning for the coming year
- liaise with management partners and regional stakeholders
- undertake budgeting and prepare relevant grant submissions.

Appendix 7 Resourcing Strategy



Southern Tanami basic resourcing strategy

Appendix 8 IPA Management Partners

Description of partner organisation	Initiatives relevant to the IPA and potential areas of collaboration	Relevant management themes	Communities of operation
Aboriginal Pastoral Companies			
Two grazing licenses exist over portions of the IPA. These are held by the Willowra Pastoral Company and the Yuendumu Cattle Company	**Co-financing land management initiatives** Co-funding and investment in collaborative management initiatives between the IPA program and Aboriginal pastoral companies presents opportunities to improve the landscape in terms of both cattle production and protection of environmental and cultural assets both within and adjacent to pastoral lease areas. Key areas include: - fire management - feral animal control - weed control - fencing required to exclude cattle from environmentally or culturally sensitive areas. **Pastoral monitoring** Warlpiri Rangers undertake monitoring and compliance of grazing licences on behalf of the CLC	2,4	Y,W
Bushfires NT			
Bushfires NT is a Northern Territory Government agency which aims to protect life, property and the environment from the threat of wildfire, and to maintain natural resources through appropriate fire regimes.	**Fire management planning** Bushfires NT assists the IPA program in fire management planning through involvement in annual Warlu Committee meetings and provision of planning advice **Fire training** Bushfires NT staff provide basic wildfire awareness training and aerial incenciary machine training to ranger staff **Fire education** Bushfires NT provides education, public awareness and extension programs. There is potential for collaboration with Bushfires NTin running community awareness campaigns about fire lighting. **Technical and operational support** Bushfires NT staff provide technical and operational support for fire management in the IPA. This takes the form of staff participating in fire management trips to provide equipment and hands-on assistance in burning activities. Staff also provide regular assistance in terms of equipment maintenance support, legal advice, and information regarding permit seasons, fire danger periods etc.	2,3	W,Y,N

Department of Natural Resources, Environment and the Arts (NREATAS -inclusive of Parks and Wildlife Service)			
Responsible for oversight of biodiversity conservation on all land tenures, management of reserves etc.	**Operational support** NRETAS staff provide technical support particularly in relation to flora and fauna surveys.	2	W,Y,N
Granites Mine Aboriginal Affected Areas Committee (GMAAAC)			
GMAAAC receives royalty funds in recognition of areas affected by The Granites Mine. Funds are administered with assistance from the CLCL Community Development unit. Funds are paid to community organisations and businesses to implement community benefit projects.	**Road and outstation maintenance** Many community residents wish for GMAAAC funds to be used towards the development and maintenance of roads and outstation infrastructure, which will support time on country and provide direct benefit to customary land management outcomes. **Operational and capital support for IPA and Rangers** Many community residents also wish to pledge GMAAAC funds to support the IPA andWarlpiri Ranger programs directly as community benefit projec in their own right in recognition of improvements to the overall health of country and lives of Yapa. Key areas include the purchase of major capital items including vehicles and other equipment **Development of infrastructure to support land management efforts** GMAAC funds represent a potential source of revenue for developing new roads, tracks and water points on country that will support land management initiatives. Note: As the CLC is responsible for overseeing both GMAAAC funding and the administration of the Warlpiri Rangers and the Southern Tanami IPA, a significant conflict of interest arises where GMAAAC funds are allocated to CLC land management projects. This issue is yet to be resolved.	1,2,4	W,Y,N

Mt Theo Program - Warlpiri Youth Development Aboriginal Corporation (WYDAC)			
Mt Theo program is an Aboriginal organisation nationally renowned for eliminating petrol sniffing in the Warlpiri region. Mt Theo operates a comprehensive youth development program with support staff based in each of the communities in the Southern Tanami IPA region. This is in addition to the substance misuse and youth diversion program at Mt Theo outstation.	**Country visits** Mt Theo Program funds a range of youth activities designed to support transfer of cultural knowledge between traditional owners, key knowledge holders and young people, including country visit activities. Mt Theo is keen to collaborate with the IPA program in running country visits across the region. It has agreed to provide traditional owner payments, a staff member, vehicle, food and fuel costs towards the running of these trips in Willowra and Nyirripi (using WETT funds). **Youth media** Mt Theo (with funding from WETT) delivers a youth media project in Willowra, Nyirripi and Lajamanu. This project develops media opportunities for young people as a diversion from at-risk behavior; higher end media training and activities focused on employment options, and media products for use in the communities and the wider community. The IPA program has collaborated with Mt Theo to create short films detailing customary land management and IEK topics. Mt Theo has agreed to employ youth media trainees in Willowra and Nyirripi to document cultural and related IEK matters on an ongoing basis. **Trainee rangers** Mt Theo Program supports young people into life pathways including community-based employment and recognises the Warlpiri Ranger program as an important local employer. Mt Theo has agreed to assist young Yapa into land management employment through paying trainee ranger wages on IPA and Warlpiri Ranger work trips. **Training and education** Mt Theo delivers support programs to primary and secondary students including an after school homework centre catering to ages 5 – 15 and a night club that delivers an adult learning curriculum to youth aged 15 – 25. At the moment these are only undertaken in Yuendumu, but will be rolled out to all communities in the Southern Tanami. Senior rangers from Yuendumu have provided tuition to young people regarding contemporary land management. Mt Theo is keen to increase this collaboration in which IPA Management Committee members and rangers would assist with youth education. Mt Theo has agreed to pay casual wages to IPA Management Committee members for their involvement.	1,2,3,4	N,Y,W

Newhaven Sanctuary - Australian Wildlife Conservancy (AWC)			
Newhaven Sanctuary is a 2,620 km² pastoral lease adjoining the southern boundary of the IPA that has been managed by the AWC for biodiversity conservation since 2007. The Native Title Rights of traditional owners for the reserve to hunt, harvest and maintain access to the area were granted in 2010.	Collaborative and cross-tenure land management The IPA program and Newhaven currently collaborate on cross-tenure land management activities including fire management and threatened species monitoring. **Data Sharing** Data sharing promises to enhance monitoring and management efforts across tenure boundaries in the region. Data may relate to ongoing biodiversity monitoring efforts or discreet protects. **Environmental contracts for Nyirripi Rangers** Newhaven currently employs rangers under various environmental grants to undertake tracking surveys and fire management. There is strong potential for this to be increased as the rangers skills develop. Professional development for Nyirripi Rangers Newhaven staff offer Nyirripi rangers exposure to rigorous scientific survey, monitoring and management methodologies. This has greatly improved the capacity, interest and understanding of local rangers to engage with natural and cultural resource management in the region with many skills applied on adjacent Aboriginal land. **Labour and resource pooling** The eventual change of tenure of Newhaven Sanctuary from a perpetual pastoral lease to a Crown lease more suited to the goals of managing the area for conservation will necessitate the creation of an Indigenous Land Use Agreement (ILUA) between traditional owners and AWC. This presents an important opportunity to consider and negotiate provisions for collaborative management of the reserve.	2,4	Y,N

Newmont Tanami Operations (NTO) – The Granites gold mine			
The Granites mine is Australia's third largest gold mine. It is located approximately 560 km north-west of Alice Springs, entirely on Aboriginal freehold land. NTO supports a permanent workforce of 540 personnel including a small but significant proportion of local Aboriginal people.	**Environmental contracts** NTO entered into an agreement with CLC in 2011 to employ Warlpiri Rangers from Willowra and Yuendumu as well as Wulaign rangers from Lajamanu to undertake environmental works as part of meeting their environmental monitoring and compliance requirements. These works include fire management, weed spraying, the Tanami Regional Biodiversity Monitoring Program and dingo management. NTO has agreed to provide flights, accommodation, all catering, all required equipment and site induction training for each ranger. CLC will coordinate ranger's site clearances, transport to the mine, and activities while on site. **Fire management for asset protection** Co-investment between the IPA and Warlpiri Ranger programs and NTO offers opportunities to achieve best-practice fire management toward the mutually inclusive goals of protecting NTO economic assets and preserving customary and biodiversity assets of the area.	2,4	Y,W
PAW Media			
PAW media is an Aboriginal media organisation that operates from an administrative hub at Yuendumu to deliver media services throughout the Pintubi, Anmatyerr and Warlpiri regions. It produces a range of media products including community radio, film, music, documentary projects, animation and community television.	**Radio broadcasting** PAW provides radio broadcasting to each of the communities in the Southern Tanami. It also produces radio content including documentaries, audio books and oral histories for distribution through the PAW network. There is potential for material from IPA trips to be converted into radio documentaries and broadcast through the PAW network to assist in environmental education. **Warlpiri media archive** PAW has a film archive established in 1983 that includes important cultural material. It commissioned a feasibility study into a Warlpiri and Anmatyerr Culture and Language Centre to be built in Yuendumu. **Cultural media projects** PAW Media receives GMAAAC funds to record specific projects related to culture, language and country relevant to the charter of Ngurra Walalja Warra Warra Kanjaku, particularly Management Themes 1 and 3. **Youth media** PAW also works in collaboration with Mt Theo to train young people in multi-media to undertake community based media projects using WETT funding. There is potential for young media-trained Yapa in Willowra and Nyirripi to document IEK-related trips on an ongoing basis.	1,3,4	N,Y,W

Schools			
Nyirripi, Willowra and Yuendumu each have NT Department of Education and Training-funded primary schools. Yuendumu's community education centre (CEC), also caters for pre-school and secondary students	**School country visits** Each school in the region is funded to deliver an annual country visit program, although the form of each country visit varies greatly. These trips are generally designed to promote land-based learning and involves students visiting their respective country to learn about Law, ceremony and Jukurrpa, in addition to environmental matters. Historically school country visits have formed a structured component of student learning and have been coordinated and overseen by committed groups of community residents and Aboriginal teaching staff. The IPA program has agreed to provide logistical and operational support to the school country visits, when requested. **Culture nights** Yuendumu CEC hosts a fortnightly program of cultural nights. These evenings are a platform for a wide range of cultural learning initiatives that attract many school students, their families as well as many local non-Aboriginal people. Culture nights follow a varied program of customary activities including artefact making, dancing, and painting depending on community interests. IPA Management Committee members are keen to participate in culture nights to pass on IEK, customary land management skills and knowledge related to Warlpiri Law. **Development of Warlpiri educational resources** The Bilingual Resource Development Unit (BRDU), hosted by Yuendumu school, develops and prints Warlpiri educational resources. It has produced a number of books relevant to Warlpiri ranger work. The Yuendumu CEC and BRDU have welcomed input from the Warlpiri Rangers and the IPA program in collaboratively developing educational resources on ecological and related cultural themes. There is particular need for books documenting Warlpiri names of plants, animals and habitat types in the IPA to be used in schools and as field guides by the Warlpiri Rangers. **Rangers and IPA representatives providing specialist environmental training in schools** At the request of schools in the region, Warlpiri Rangers and IPA Management Committee members have participated in teaching primary school students about ranger work and caring for country. Warlpiri Rangers and IPA representatives are universal in their interest to continue sharing two-way land management knowledge and experience. **Junior ranger initiatives** Junior ranger programs provide important educational pathways toward employment in the environmental sector through teaching about the natural environment in a fun and practical manner. Junior ranger activities delivered by IPA staff and Warlpiri rangers are viewed by Management Committees as an important avenue to engage younger people in land management. They include the involvement of school-aged children in informal two-way land management experiences and training under the tutelage of Warlpiri Rangers and family members on IPA country visits..	1,2,3,4	N,Y,W

Warlukurlangu Artists Aboriginal Corporation			
Warlukurlangu is a not-for-profit Aboriginal owned and governed art centre based in Yuendumu and supporting Nyirripi. A proportion of the proceeds of art sales are returned to community projects.	**Country visits** Warlukurlangu runs artist-led country visits. There is potential for collaboration with the IPA program on these trips. Cultural maintenance The maintenance and transmission of Warlpiri culture to the next generation is part of Warlukurlangu's mission. There is potential for Warlukurlangu to provide art materials for IPA country visits to assist in recording Jukurrpa designs related to particular areas of country.	1,3	N,Y,W
Warlpiri-patu Kurlangu-Jaru (WpkJ)			
Warlpiri-patu Kurlangu-Jaru is the Warlpiri regional educational body. It is comprised of a group of Warlpiri teachers and community members interested in education. WpkJ is supported by WETT and the NT Department of Education and Training	**Warlpiri curriculum development** WpkJ conducts regular meetings on development of the Warlpiri curriculum. There are opportunities for IPA representatives to attend these meetings to assist in planning related to the incorporation of IEK, environmental education and land management in school curriculums in the Warlpiri region.	3	W,Y,N
Warlpiri Education and Training Trust (WETT)			
WETT is a Warlpiri community development and education initiative operating across Warlpiri communities including Lajamanu, Nyirripi, Yuendumu and Willowra. WETT funding is invested into a range of community education programs to target identified gaps in education provision in the region	**Warlpiri education** The IPA program and WETT do not have a formal partnership, however they have many shared partners and regularly conduct discussions regarding on-ground educational activities in the Warlpiri region.	1,3	N,Y,W

Appendix 9 Cultural Mapping Pro-Forma

Site information
Site Name
English Name
Alternative Name(s)
Feature(s)
Coordinates by GPS in GDA94 Datum
Location Description
Site Significance and Restrictions
Dreaming(s)
Kirda and *Kurdungurlu* (senior custodians and the nature of their affiliation)
Informants
Variations to Site Location

Appendix 10 IBRA Bioregions

IBRA Bioregion	**Land area (km²) contained within Southern Tanami IPA**	**% total bioregion**	**NRS representation before declaration and priority for inclusion**	**NRS representation after declaration**
Great Sandy Desert	25590	6.45%	5.01 – 10%	> 10%
Tanami	72176	27.69%	15.01 – 30%	> 30%
Burt Plain	3814	5.14%	0.01 – 5%	> 5%
Total	**101580**			

Appendix 11 Weed Hygiene Procedures for Vehicle Inspection and Clean Down

(Procedures and checklists have been adapted from Queensland Weed Seed Spread Project 2000)

1. Clean down procedures on-site

The cleaning of vehicles and machinery on-site prevents weed seed contaminants being spread to an adjoining weed free or less infested area/property/road.

Mobile/Field Site Selection

- The most important point to consider is run off. Ensure the site is away from watercourses and drains. This will prevent weed seeds, grease and detergents polluting the stream
- The site should be relatively flat (a slight slope or railway sleepers may prevent water logging) to help prevent run off and for safety reasons
- The site must be easily identified for future reference as this location will need monitoring for future outbreaks in the following seasons. The landholder/trustee of the land should also be notified of this location (a painted post, tree, distinguished landmark or GPS recording is ideal)
- An area that is well grassed will reduce mud during cleaning down and assist as competition for any weed seed that later germinates
- Landholders should be consulted to determine a suitable clean down site
- The site should be close to the infested area to prevent further spread
- Avoid crossing the property boundary prior to cleaning -down (unless the infestation is also located on the adjoining property at similar or higher densities)
- Small clean downs may be conducted at the landholders shed facilities (with permission) prior to leaving the property.

Suggested Equipment

- A mobile water tanker or spray unit is ideal
- Water may also be pumped from a dam or cattle trough/tank
- High pressure water from a gurney or pump
- An air compressor for removing dry material (radiators and grain headers)
- Broom/dust pan (cleaning cabins)
- A garden hose may be adequate for small clean downs.

2. Vehicle inspection checklist for machinery operating within the IPA

Cars, 4WD, Trucks and Trailers

1. Ensure that the vehicle is unlocked and you have access to the boot and bonnet.
2. Inspect the interior of the vehicle, especially:
   - Foot wells, check carpets and mats for burrs, seeds, mud
   - Tool boxes.
3. Inspect inside the boot of the vehicle. Remove any contents if required to facilitate the inspection of the following:
   - Carpet (deposits of hay, weed seeds, burrs and/or soil or water)
   - Spare tyre area
   - Other recesses in the boot/rear of the vehicle.
4. Inspect the engine bay, especially:
   - Radiator
   - Grill
   - Top of transmission gearbox
   - Recess under windscreen wipers.

5. Inspect the underside of the vehicle, especially:
    - Wheel arches, wheel trims, flares, step treads, bumpers
    - Mud flaps
    - Tyre rims (particularly the rear side)
    - Axels and diffs
    - Spare tyres on 4WD's and station wagons are often suspended underneath. Note: these are potentially a high risk area as contaminants collect inside the horizontally-positioned rim.
6. Inspect boxes and/or cartons present in the vehicle if you cannot ascertain their contents.
7. For utes and trucks, inspect the floor of the tray and channels of tail gates, side guards and under chassis rails. Gaps in the floor welds or boards and bolt holes.
8. Inspect trailers – check wheels, guards, trays, channels of draw bar and under body.

Wheeled loaders and compactors

Check all areas, with particular attention to the following:

1. Drivers cab:
    - Check externally under and around driver's cab
    - Check under mats in cab
    - Remove/lift seat; remove/lift floor pans to allow checking to top of transmission
    - Check air conditioner filter (if fitted) – shake/tap filter to check if clean.
2. Tracks/track frame:
    - Examine tracks carefully
    - Ensure inspection/cover plates are removed to allow inside track area
    - Check idler wheels (these support the tracks).
3. Belly plates should be removed to allow inspection and cleaning.
4. Rear plates at back of dozer should be removed to allow inspection and cleaning.
5. Hydraulic cover plates should be removed to allow inspection and cleaning.
6. Engine:
    - Check radiator core and engine area for residues
    - Remove and check the air filter/cleaner (these often require destruction where they are clogged with QRM)
    - Check carefully the void space between the oil and radiator cores.
7. Battery box:
    - Lift/remove the battery to check for contamination (battery box may be at side/rear or under seat).
8. Fuel cells:
    - Are removable therefore dirt etc can pack between the tank and the frame.
9. Blade:
    - Ensure that edge of blade top/bottom is not split – this allows soil to be packed very tightly in the hollow
    - Check cutter points/wear blades
    - Check trunction arms
    - Check carefully the pivot points and adaptors at the rear of the front blade – these allow the blade to change height and angle. Sometimes soil has compacted and is difficult to dislodge
    - Check all hollow sections.
10. Ripper support frame is usually hollow:
    - Check carefully if any contaminants have entered this section. The tynes may need to be removed.
11. Tynes:
    - Tynes need careful inspection. Contamination may often be removed by water blasting, but tynes may need to be removed in some cases.

Appendix 12 Road and Track Construction and Rehabilitation Guidelines

(Guidelines are consistent with those contained within CLC ALRA exploration deeds)

1. Location

1.1 Proposed roads locations will be identified on the ground and, where necessary checked by interpretation of aerial photographs prior to finalising their positions.

1.2 The physical and biological Environment and the identification of potential impacts outlined in the Environmental Profile will be considered when locating the Roads to ensure roads are located in areas of low erodibility, and low vegetation density and that the Environmental Impact of the Road is minimised.

1.3 Wherever possible roads will ascend or descend along ridges and be located along the contour when traversing slopes.

1.4 (a) roads will be kept out of drainage lines

(b) roads will avoid claypan areas and salt lakes

(c) road construction will avoid clearance through stands of shrubs and trees

(d) roads will avoid restricted or unusual habitats as identified in the Environmental Profile.

1.5 Use of existing roads will be made wherever possible.

1.6 No more than one road will be constructed between any two sites of exploration activities and all transport operations will be confined to this Road.

1.7 If the CLC consents, a second access road may be constructed if it is necessary for the conduct of the project.

2. Construction

2.1 Roads constructed by pushing with a grader or bulldozer will be regarded as temporary dry weather access tracks. Vehicle use will be avoided during wet weather.

2.2 The blade depth used in road construction and the consequent windrow development will be minimised especially on sand plains, dune systems, gibber plains and dissected tablelands.

2.3 Roads located across slopes, should have adequate cross drainage to disperse water across the road, to the down slope side. Trafficable cross banks will be constructed at regular intervals sufficient to catch water running down the road and divert it to the down slope side.

Using this form of construction, drains on the upslope side of the road are avoided, thus avoiding the need for culverts.

2.4 Borrow pits utilised in the construction and maintenance of roads will be operated according to the specifications for effective rehabilitation of borrow pits in part of this annexure.

3. Rehabilitation

3.1 Roads will be rehabilitated at the cessation of Exploration Activities (unless the Company intends to utilise that road in the future and has approval from the CLC) and the rehabilitation will take place where possible prior to the next rains at the end of the field season for which the road was constructed.

3.2 The windrows of top layer soil and vegetation created during construction will be re-spread evenly across the track. The track will then be tyned with the grader rippers.

3.3 If the CLC directs on completion of exploration activity the company will rehabilitate the

access roads by deep ripping. If in the opinion of the CLC the seed store in the top layer and the respread vegetation proves to be non-viable after first rain after rehabilitation the company will revegetate the access road.

Appendix 13 Environmental Conditions of CLC Grazing Licenses

Article 1 Aboriginal People and Sites

1.1 The licensee must not hinder or interfere with the entry upon, occupation or use of the license area by Aboriginal people entitled by Aboriginal tradition to do so.

1.2 The licensee must:

a) comply with all requests for the protection of sites on the license area which are sacred or otherwise significant according to the instructions of traditional Aboriginal landowners

b) prevent its agents, employees and contractors from entering such sites unless they are entitled to do so in accordance with Aboriginal tradition.

Article 2 Sustainable Land Management

2.1 The licensee's cattle operation on the license area must be environmentally sustainable and in accordance with current industry best practice for pastoral land management.

2.2 The licensee will stock the license area conservatively having regard to the availability of feed and water.

2.3 The CLC may engage an expert pastoral consultant to inspect the license area and advise on appropriate pastoral management practices.

2.4 The licensee will implement any pastoral management practices that are recommended in a report prepared by an expert pastoral consultant referred to in clause 2.3.

2.5 The licensee must not do any of the following in the license area without the written consent of the CLC:

a) use the license area for any other purpose than grazing cattle

b) graze more than the maximum head of cattle (including calves and weaners) at any one time

c) overgraze, i.e. graze more cattle than is environmentally sustainable

d) cause soil erosion or other environmental degradation to the license area

e) lop, prune, damage or remove any native tree, timber, shrub, bush or other growth, alive or dead, other than for the purpose of maintaining improvements and fire breaks

f) use fire

g) introduce or propagate any new plant or animal species (other than stock horses)

h) disturb or remove any rock, clay, sand, gravel or other constituents of the soil, other than the purpose of maintaining improvements

i) disturb, destroy, bait or remove any wild animals or birds (including wild dogs) or other wildlife, other than feral horses, donkeys and camels or

j) interfere with any environmental monitoring points set up within the licence area.

2.6 The licensee must, at its own expense, maintain appropriate fire breaks around the license area.

2.7 The licensee must comply with all reasonable requests made by the CLC on behalf of the licensors in relation to any monitoring points within the license area, including taking, and providing to the CLC photographs of the license area.

Article 3 Feral and Weed Control

3.1 The licensee is responsible for keeping the license area free from feral horses, donkeys and camels.

3.2 The licensee is responsible for keeping the license area free from declared weeds and must comply with relevant weed management plans approved pursuant to the *NT Weeds Management Act 2001*.

3.3 The licensee must comply with all notices and orders issued by any government department or agency requiring an infestation of a declared weed within the license area to be removed or otherwise controlled. If the Licensee fails to comply with a notice or order within a reasonable time, the CLC may arrange for the removal or control of the infestation and the licensee must pay the costs of the operation.

Appendix 14 Employment Guidelines for Traditional Owners, Cultural Advisors, Interpreters and Family Members involved in IPA Land Management Meetings, Country Visits or Fieldwork

(Payment rates current as per CLC Land Management section guidelines November 2011.)

	Type of work done					
	Providing advice etc for land management projects	**Participating in Ngurra Warlalja country visits, and general land management work**	**Partici-pating in IEK projects**	**Site clearances for land management work**	**Attending IPA meetings**	**Attending other land manage-ment meetings as CLC represe-ntative**
Senior traditional owners	Paid $150/day for full day or $20.41/h (includes Kirda and Kurdungurlu participation in all Warlpiri ranger activities)	Not paid for look around work on own country, or for passive involvement. 1Paid if providing advice for planning or projects: $150/day for full day or $20.41/h	Paid only for identified knowledge holder and if actively engaged in project. Paid $150/day for full day or $20.41/h	Paid $150/day for full day or $20.41/h	Paid as member of IPA Advisory Committee and Coordinating Council, but not paid as member of IPA Management Committees	Paid if attendance critical, but not paid if part of general interest/ learning (accomm-odation, travel and food covered in some cases)
Cultural advisors or Interpreters	Paid $150/day for full day or $20.41/h	Paid $150/day for full day or $20.41/h	Paid $150/day for full day or $20.41/h	Paid $150/day for full day or $20.41/h	Paid $150/day for full day or $20.41/h	Paid $150/day for full day or $20.41/h
Family members	Not paid, food provided (as negotiated with project coordinator)	Not paid, food provided (as negotiated with project coordinator)	Not paid, food provided (as negotiated with project coordinator)	Not paid, food provided (attendance negotiated with project coordinator)	Not paid, food provided (attendance negotiated with project coordinator)	Not paid, food provided (attendance negotiated with project coordinator)
Young persons	May be paid a nominal rate to undertake work as 'trainee rangers' – funds auspiced by Mt Theo Youth program (payment rate TBA)	May be paid a nominal rate to undertake work as 'trainee rangers' – funds auspiced by Mt Theo Youth program (payment rate TBA)	May be paid a nominal rate to undertake work as 'trainee rangers' – funds auspiced by Mt Theo Youth program (payment rate TBA)	n/a	n/a	n/a

Notes:

1. Only for people identified as critical to the project work. TOs etc cannot receive payments of more than $450 per month. If you anticipate that these people will be working more than 3 days per month they will need to go on to a casual contract (13 wk duration) and paid at ASO 2/1 rate, unless more senior and essential to the project/meeting and if they have contributed meaningfully in the past (i.e. not just been present on trip/at meeting), in which case they can be paid at ASO 3/1 rate.
2. Same as above in terms of frequency of employment. If interpreter's presence is critical for project, then need to consider paying interpreter at rate appropriate to any qualifications they may have (Certificate courses etc) – ASO 3/1 rate may be most appropriate.

Appendix 15 Suggested MERI Evaluation Questions

'Keeping Culture Strong'					
Management Objective	**KEQ**	**Indicator**	**Method**	**Metric**	**Review**
3.1.3 (a) Support traditional owners to fulfil cultural obligations to care for country through customary management activities	Have traditional owners and family members been supported to access country?	1. ngurra walalja country visits	review records	number	annual
		2. traditional owners in attendance	review records	number	annual
		3. number of estates visited	review records	number	annual
	Have customary obligations to care for country been met?	1. Kirda and Kurdungurlu supported to access country	review records	number	annual
		2. water places maintained	review records	number and type	annual
		3. country burnt	fire scar mapping	ha. size of fire scars	annual
		4. sacred sites protected	review records	number and type	annual
		5. ceremonial activities conducted	review records	number and type	annual
3.1.3 (b) Support the intergene-rational transfer of IEK and cultural knowledge	Has IEK been transferred?	1. IEK projects undertaken	review records	number and type	annual
		2. IEK material recorded	review records	number and type	annual
		3. IEK material documented	review records	number and type	annual
3.1.3 (c) Document the cultural attributes of the IPA	Has the cultural attributes of the IPA been mapped?	1. cultural sites documented	review records	number and type	annual
		2. cultural maps produced	review records	number and type	annual

3.1.3 (d) Assist traditional owners to manage IEK and associated cultural information practices	Has multimedia data been managed?	1. amount of IEK and cultural knowledge multimedia stored	Review records	number and type	annual
		2. amount of IEK and cultural knowledge multimedia accessed	Review records	number and type	annual
		3. amount of IEK and cultural knowledge repatriated	Review records	number and type	annual
3.1.3 (e) Develop, maintain and protect infrastructure that supports traditional owners in visiting their country.	Has infrastructure been developed / maintained?	1. new infrastructure projects	review records	number and type	annual
		2. infrastructure maintained / protected	review records	number and type	annual

'Keeping country strong'					
Management objective	**KEQ**	**Indicator**	**Method**	**Metric**	**Review**
3.2.3 (a) Manage fire so as to: reduce the extent, frequency and intensity of wildfires, protect sacred sites, maintain or enhance the productivity of key hunting and customary resource use areas, maintain or enhance the condition of biodiversity values, protect pastoral, outstation and mining infrastructure	Has the size and patchiness of fires within the IPA decreased, remained stable or increased?	1. size of fires	fire scar mapping	mean ha. size of fire scars	annual
		2. patchiness of fires	fire scar mapping	perimeter length and number of patches	annual
	Has the proportion of cool season fires decreased, remained the same or increased?	1. number of cool season fires	fire scar mapping	number of fires May - August and September - March	annual
		2. area burnt during cool season	fire scar mapping	ha size of fires May - August / Sep - March	annual
	Has the proportion of customary resource harvest areas, SOCS, SOBS burnt by hot season wildfires decreased, remained stable or increased?	1. number of hot season fires	fire scar mapping	number of fires April - August	annual
		2. area burnt during hot season	fire scar mapping	Ha. size of fire scars Sep - March / April - August	annual
	Has the number of outstations affected by wildfire decreased, remained stable or increased?	1. number of outstations	number affected by wildfire	number % extent	annual annual
		2. other infrastructure assets	number affected by wildfire	number % extent	annual

3.2.3 (b) Contribute to collaborative fire planning and management between regional stakeholders	How many burning projects involved external partners?	completion of collaborative fire projects	review records	number and type	annual
3.2.3 (c) Reduce the introduction, spread and proliferation of weed species across the IPA	Has the incidence of environmental and WONS decreased, remained stable or increased since last year?	1. density at monitored sites	Transects	% ground cover	annual
		2. area of infestations	number of sites and estimate of area	number and area (ha.)	annual
3.2.3 (d) Protect key customary, ecological and infrastructure assets from impacts associated with feral animals and livestock	Has the incidence of feral herbivores decreased, remained/ stable or increased?	objective estimate of feral camel, bullock, horse, donkey density at key sites	standardised observation at key sites; tracks, kuna, damage	ranked trend	annual
	Are feral animals still a significant problem for traditional owners?	IPA Management Committee responses	collated survey results	yes/no	annual
3.2.3 (e) Maintain or restore the integrity of significant habitats across the IPA through the prevention of soil disturbance and mitigation of existing soil erosion problems	Have new roads and tracks conformed to IPA guidelines?	completion of roads and tracks	audit of new roads and tracks	number and extent of compliance	annual
	Have degraded areas been restored?	completion of soil conservation works	review records	number and type	annual
3.2.3 (f) Address data deficiencies and undertake monitoring related to customary and ecological values of the IPA to inform ongoing management	Have data deficiencies been addressed?	completion of surveys to data deficient areas	review records	number and type	annual
	Has the condition and abundance of customary resources increased, remained the same or decreased?	objective estimate at monitored sites	standardised observation at key sites; tracks, kuna, burrow	ranked trend	annual
	Has biodiversity increased, stayed the same, decreased?	1. number of fauna species detected	trapping survey	trend (number of species)	annual
		2. number of flora species	veg. transect	trend (number of species)	annual
		3. objective estimate at monitored sites	standardised observation at key sites; tracks, kuna, burrow	ranked trend	annual

'Teaching the right way'					
Management objective	**KEQ**	**Indicator**	**Method**	**Metric**	**Review**
3.3.3 (a) Develop Warlpiri Ranger skills required to conduct two-way land management programs	Has the skills base of the Warlpiri Rangers grown?	1. accredited training completion	review records	attainments and levels (ie. Cert III etc...)	annually
		2. IEK training completion	review records	number and type	annually
3.3.3 (b) Identify, record and report breeches of customary and Kardiya laws on country	Has country been policed?	1. patrols completed	review records	number and type	annually
		2. breeches of law reported	review records	number and type	annually
3.3.3 (c) Promote an increased awareness and understanding of country	Have multimedia resources been developed?	multimedia resources	review records	number and type	annually
	Has knowledge and awareness of customary and ecological values and threats been promoted?	meetings completed	review records	number and type	annually
3.3.3 (d) Develop education pathways linking primary, secondary and community education to employment outcomes in conservation and land management	Have primary school students been engaged in two-way conservation and land management?	1. junior ranger activities completed	review records	number and type	annually
		2. primary school children engaged	review records	number	annually
	Have secondary school students been engaged in two-way conservation and land management?	1. vocational training activities completed	review records	number and type	annually
		2. secondary school students engaged	review records	number	annually
	Have youth been engaged in two-way land management activities?	1. youth activities completed	review records	number and type	annually
		2. youth engaged	review records	number	annually

'Jobs and economic development'					
Management objective	**KEQ**	**Indicator**	**Method**	**Metric**	**Review**
3.4.3 (a) Provide employment opportunities for Yapa, to implement Ngurra Walalja Warra Warra Kanjuku	How many Warlpiri Rangers are being employed?	1. permanent employment	review records	number, level (senior ranger etc..), duration	annual
		2. casual employment	review records	number and period	annual
	How many traditional owners are employed?	casual employment	review records	number and duration	annual
	How many key knowledge holders are employed?	casual employment	review records	number and duration	annual
3.4.3 (b) Broaden the funding base of the IPA and Warlpiri Ranger programs	How many contracts are undertaken by the Warlpiri Rangers?	contractual agreements	review records review financial records	number monetary value	annual annual
	Have other revenue sources been accessed?	financial agreements	review financial records	monetary value	annual
	Are community projects being supported by the IPA?	community projects supported	review records	number of projects and type number of rangers involved in-kind contributions	Annual
	Are communities investing in the IPA?	IPA projects supported	review records	number and type monetary value	annual
3.4.3 (c) Develop management partnerships between the IPA program and regional stakeholders	Is the IPA being collaboratively managed with other stakeholders?	collaborative management projects completed	review records	number and type	annual
3.4.3 (e) Foster economic development in the region through support for land management and community enterprise opportunities	Have land based businesses been supported?	number of activities	review records	number and type	annual
		expenditure	review records	$$$ value	annual
3.4.3 (f) Ensure that all commercial development activities are undertaken using best practice environmental knowledge and principles	Are commercial development activites undertaken using best-practice environmental knowledge and principals?	Number of commercial development activites with CLC / IPA planning input regarding environmental conditions	review records	number and type	annual

Appendix 16 IUCN Protected Area Categories

Category Ia Strict nature reserve

Strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.

Primary Management Objective:

To conserve regionally, nationally or globally outstanding ecosystems, species (occurrences or aggregations) and/or geodiversity features: these attributes will have been formed mostly or entirely by non-human forces and will be degraded or destroyed when subjected to all but very light human impact.

Category Ib Wilderness area

Protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

Primary Management Objective:

To protect the long-term ecological integrity of natural areas that are undisturbed by significant human activity, free of modern infrastructure and where natural forces and processes predominate, so that current and future generations have the opportunity to experience such areas.

Category II National park

Protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.

Primary Management Objective:

To protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation.

Category III Natural monument or feature

Protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

Primary Management Objective:

To protect specific outstanding natural features and their associated biodiversity and habitats.

Category IV Habitat/species management area

Protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

Primary Management Objective:

To maintain, conserve and restore species and habitats.

Category V Protected landscape/seascape

A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

Primary Management Objective:

> *To protect and sustain important landscapes/seascapes and the associated nature conservation and other values created by interactions with humans through traditional management practices.*

Category VI Protected area with sustainable use of natural resources

Protected areas are generally large, with much of the area in a more-or-less natural condition and where a proportion is under sustainable natural resource management and where low-level use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

Primary Management Objective:

> *To protect natural ecosystems and use natural resources sustainably, when conservation and sustainable use can be mutually beneficial.*

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