2018 LIVING DESERT RESERVE PLAN OF MANAGEMENT

BROKEN HILL

CITY COUNCIL

AUSTRALIA'S FIRST HERITAGE LISTED CITY

QUALITY CONTR	OL			
KEY DIRECTION	3. Our Environment			
OBJECTIVE	3.2 Natural flora and fauna environments are enhanced and protected			are enhanced and protected
FUNCTION	Natural Environment	Natural Environment		
STRATEGY	3.2.1 Protect and enhance regeneration areas for the benefit of the City			
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1. INTRODUCTION

The Living Desert Reserve (LDR) (Reserve number 230092) covers 2,400 ha and is located 12 km from the City of Broken Hill in the Barrier Ranges (Figure 1-1). In 1992, an area was excised from the Willyama Common to establish a nature conservation and tourist facility.

1.1 Background

The purpose of the LDR is for environmental protection, heritage purposes and public recreation. Within the LDR is the 180 ha Living Desert Flora and Fauna Sanctuary (LDFFS, see Figure 1-2), which is bordered by an electric predator-proof fence, to protect resident flora and fauna. Within the LDR, evidence of Aboriginal occupation is protected and managed, including several rock engravings, remnant hearths and tool making quarries. Public recreation has been made possible within the LDR through creation of access roads, public amenities and attractions including the Sculpture Symposium, a series of 12 large sculptures.

This Plan of Management (PoM) has been developed to actively manage the LDR to meet the purpose of the Reserve, under the provisions of the Crown Lands Management Act 2016.

1.2 Land status

1.2.1 Crown land use/category

The LDR is classified as Crown Land and was established for the purpose of environmental protection, heritage purposes and public recreation. It was gazetted on 7 October 1994.

1.2.2 Native Title

On 16 June 2015, Native Title consent was given to the Barkandji Native Title Group Aboriginal Corporation RNTBC (NSD6084/1998). This includes the LDR which was determined to be a non-exclusive area. This gives members of the Barkandji Traditional Owners the right to enter, take and use natural resources for personal, domestic, cultural, communal and purposes within the LDR. Additional rights are expansive and include uses of the LDR for teaching, hunting, camping, travel and cultural practices.

1.2.3 Aboriginal Land Claims

Parts of Lot 30 DP 757295, Lot 6091 DP 822095 and Lots 7385 and 7386 of DP 1200953 are currently being assessed under an undetermined Aboriginal Land Claim, lodged by the New South Wales Aboriginal Land Council. In the event of any substantial work being undertaken on the LDR that will change the physical condition of the land, consultation with the New South Wales Aboriginal Land Council is required before work begins. This provision is only applicable while the land claims remain undetermined and will change once the land claim is determined.

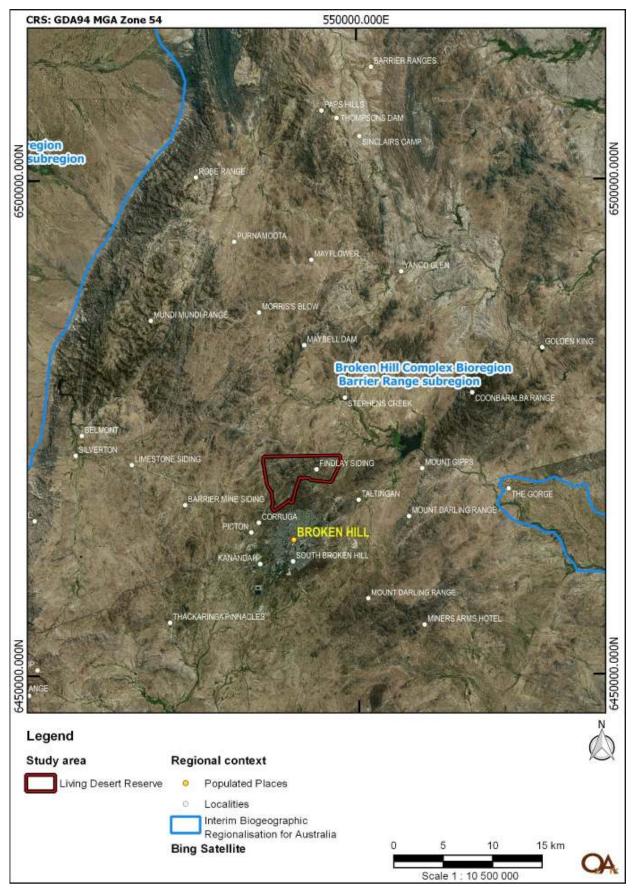


Figure 1-1: Regional context of the Living Desert Reserve

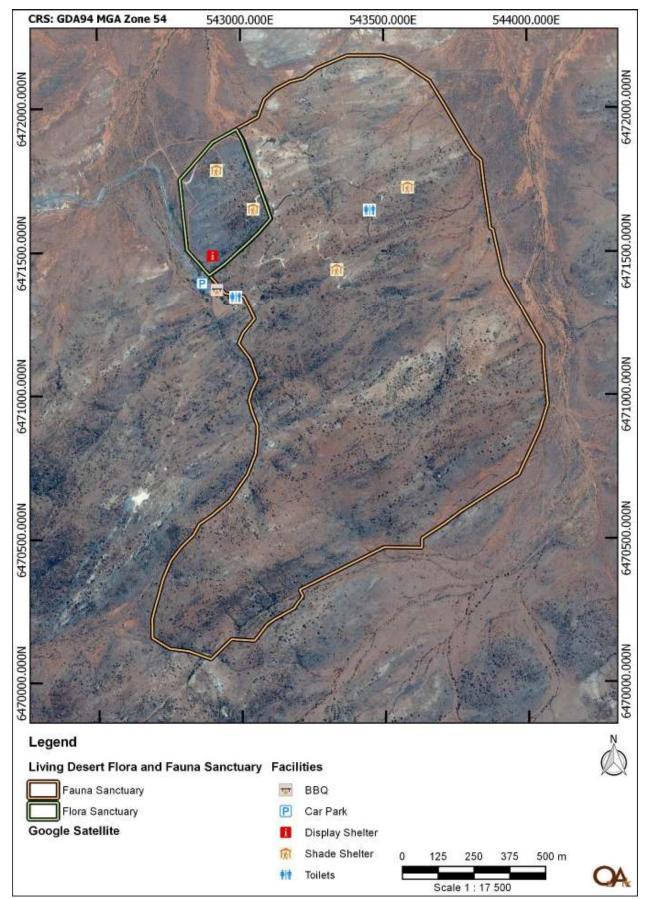


Figure 1-2: The Living Desert Flora and Fauna Sanctuary

1.2.4 Leases and licences

Council is trustee of the LDR and represent community interests and manages the reserve on day to day basis. Council also provides opportunities for consultation, help with maintenance, environmental and heritage protection.

Council has been granted a General License under section 120 of the National Parks and Wildlife Act 1974 (NPW Act) to run the Living Desert Flora and Fauna Sanctuary (LDFFS) using an approved Animal Management Plan. This section of the NPW Act has since been repealed, replaced by the Biodiversity Conservation Act 2017 (BC Act). Council will need to confirm what licensing is required under the new act and obtain.

Located within the boundaries of the reserve is a private Western Lands Leaseholder (WLL 9450) known as 'Plink's Dairy', which is approximately two hectares in size.

1.2.5 Community access

The LDR is open to the public to provide an opportunity for locals and visitors to experience a unique insight into flora, fauna and Aboriginal culture of western New South Wales. There are numerous paved roads and walking tracks to provide easy access to the LDR attractions and facilities. A campsite has been created to allow for visitors to stay overnight and experience the LDR under the stars.

1.3 Purpose of this plan

The purpose of this plan is to:

- Provide guidance for active management of the LDR as required by NSW legislation listed in **section 1.4**.
- Provide a framework for Council to ensure that they are managing the LDR in accordance with the management actions listed in Chapter 3.

1.4 Application of legislation

1.4.1 Crown Land Management Act 2016

The objects of the Crown Land Management Act 2016 (NSW) are:

- a) to provide for the ownership, use and management of the Crown land of New South Wales;
- b) to provide clarity concerning the law applicable to Crown land;
- c) to require environmental, social, cultural heritage and economic considerations to be taken into account in decision-making about Crown land;
- d) to provide for the consistent, efficient, fair and transparent management of Crown land for the benefit of the people of New South Wales;
- e) to facilitate the use of Crown land by the Aboriginal people of New South Wales because of the spiritual, social, cultural and economic importance of land to Aboriginal people and, where appropriate, to enable the co-management of dedicated or reserved Crown land; and
- f) to provide for the management of Crown land having regard to the principles of Crown land management.

Division 3.6 of the Act relates to PoM, in particular community engagement, approval of a PoM by the Minister and publications of PoM.

1.4.2 Local Government Act 1993

Under section 355 of the Local Government Act 1993 (NSW), Council has constituted the Friends of the Flora and Fauna of the Barrier Ranges to manage the LDR. The objective of the committee is to undertake an advisory role in respect of the care, maintenance, repair, beautification, improvement and management of the Sanctuary; the Committee shall liaise with Council through a Contact Officer or current Councillor representative/s on the Committee, in respect of proposed projects.

The Friends of the Flora and Fauna of the Barrier Ranges have been tasked with cleaning, maintenance, minor repairs and operations of the LDR, including:

- Assisting in the maintenance and future development of native flora and fauna within the Sanctuary.
- Presenting the Sanctuary at a standard of appearance that is satisfactory to the community.
- Undertaking roles as Volunteer Tour Advisors on a rostered basis.
- Assisting Council with the opening and closing functions of The Living Desert on a rostered basis.
- Recommending to Council an annual works maintenance program and any special projects proposed by the Committee.
- Nominating additional members from time to time, at its discretion, to provide specialist advice or assistance at nil cost and without voting rights.
- Ensuring that all Committee members abide by all of Council's Work, Health and Safety requirements, that all designated personal protective equipment (gloves, safety glasses) required by Council are used; and to ensure that safety procedures for use of the facility are monitored.
- Bringing to Council's attention by way of recommendation through the Council Standing Committee or his/her delegate any item requiring a policy decision outside the authorised delegation of the Committee.

1.4.3 Biodiversity Conservation Act 2016

The purpose of the *Biodiversity Conservation Act 2016* is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. This Act lists the threatened species, population and communities of New South Wales and provides penalties for the offence of harming these entities.

1.4.4 Biosecurity Act 2015

The *Biosecurity* Act 2015 aims to manage biosecurity risks from animal and plant pests and diseases, weeds and contaminants in New South Wales. The *Biosecurity* Act 2015 imposes a general biosecurity duty to ensure that, so far as is reasonably practicable, any biosecurity risk is prevented, eliminated or minimised. A full list of priority weed species identified for the Western Local Lands Services area, is provided as **Appendix A**.

1.4.5 Heritage Act 1977

The NSW Heritage Act 1977 is a statutory tool designed to conserve the cultural heritage of NSW and used to regulate development impact on the state's heritage assets. Administered by the NSW Heritage Office. This Act details the statutory requirements for protecting historic buildings and places and includes any place, building, work, relic, movable object, which may be of historic, scientific, cultural, social, archaeological, natural or aesthetic value. When items are listed on the State Heritage Register (SHR) applications to carry out work on those items need to be made to the Heritage Council under Section 60 of the Act. A search

of the study area and surrounds indicated no items in the vicinity of the proposal are included on the SHR. No Section 60 applications are required. There are no Section 170 listed heritage items in the vicinity of the proposal.

A person must not disturb or excavate land if they know, or have reasonable cause to suspect they might discover, expose, move or damage a relic, unless they have an excavation permit.

No items within the proposal area are listed under the *Heritage Act* 1977. No evidence of historic heritage was recorded during assessments (see Section 6.9).

1.4.6 National Parks and Wildlife Act 1974

The National Parks and Wildlife Act 1974 legislates the protection of Aboriginal objects (sites, objects and cultural material) and Aboriginal places (special significance for Aboriginal culture). No Aboriginal places have been registered at the LDR, however, there are known Aboriginal objects within and near the LDR as listed on the Aboriginal Heritage Information Management System (AHIMS) (**Appendix B**).

It is an offence under the Act to harm or desecrate an Aboriginal object or Aboriginal place, whether knowingly or unknowingly unless operating under an Aboriginal Heritage Impact Permit, due diligence or low impact activity procedure. Any future development of the LDR will be done so under the approved methods previously listed to avoid impacting any Aboriginal objects.

1.4.7 Environment Protection and Biodiversity Conservation Act 1999

There are nine matters of national environmental significance which are protected under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). The following matters apply to the LDR:

- National heritage places;
- Listed threatened species and ecological communities;
- Migratory species.

In early 2015, the city was placed on the National Heritage List as an outstanding example of significance to the nation for its role in creating enormous wealth, for continued mining operations, the community's deep and shared connection with the town. Broken Hill's position as the isolated city in the desert, outback landscape, planned design and landscaping of the town was considered noteworthy.

A search of matters of national environmental significance near the LDR found there were nine threatened species and eight migratory species with potential to be found in the LDR. No threatened ecological communities are known to occur at the LDR (**Appendix C**).

2. COMMUNITY CONSULTATION

2.1 Community values

Community consultation forms an important part of the process of preparing a PoM and of the ongoing management of the reserve. Consultation provides the Trust Manager with a realistic and sound understanding of relevant local opinion from those who are familiar with and use the reserve regularly. To a large degree the ultimate PoM is a reflection of and response to the views expressed by the general public.

In the process of developing this PoM staff and volunteers who work at the LDR, including Aboriginal community representatives and Broken Hill residents will be invited to comment on this PoM. Their views and comments will be incorporated into the PoM following consultation meetings and public display of the draft LDR PoM.

2.1.1 Aboriginal community consultation

Barkindji Traditional owners (Native title claim group) and other Aboriginal groups will be consulted as part of a workshop to be held once the draft PoM is put on Public Exhibition. The PoM will be reviewed and updated with the results of this consultation. The final PoM will reflect the views and aspirations of Barkandji in regards to the LDR.

2.1.2 Broken Hill Community Values

Members of the general public will be consulted as part of a workshop to be held once the draft PoM is put on Public Exhibition. The PoM will be reviewed and updated with the results of this consultation. The final PoM will reflect the views and aspirations of the Broken Hill community in regards to the LDR.

2.1.3 Friends of the Living Desert Reserve

Initial consultation with LDR staff and volunteers found the following items were significant to the community:

- Preservation of Aboriginal heritage and cultural practices;
- Maintaining current events at the LDR including open days, fun runs, school visits, special events on public holidays;
- Maintaining current facilities and infrastructure, such as repairing roads and walking tracks after rain events; expanding and maintaining current irrigation system and signage at the Living Desert Flora and Fauna Sanctuary; and maintaining current pest control activities including weed removal and predator proof fence maintenance;
- While preserving the current native flora and fauna is important to the volunteers, there is also goals to reintroduce threatened fauna to the LDR including the Yellow-footed Rock-wallaby (*Petrogale xanthopus*) and the Greater Bilby (*Macrotis lagotis*).

Overall, volunteers are satisfied with the LDR in its current state. This means there is no desire to build more infrastructure or other facilities which may take away from the natural state of the LDR and make the LDR become more of a commercialised tourist attraction. Volunteers and staff of the LDR will maintain current maintenance activities and will aim to improve the educational aspects of the LDR through additional flora signage and increase of educational materials.

3. DESCRIPTION OF THE LIVING DESERT RESERVE

3.1 Natural environment

3.1.1 Landscapes and geology

Locally, the landscape is comprised of densely dissected ranges mainly of lower to middle Proterozoic metamorphic rocks including several varieties of gneiss, schist, amphibolite and pegmatites with north-east structural trends. There are steep, partly beveled, asymmetric strike ridges on associated dipping upper Proterozoic quartzite, sandstone and shales (Mitchell, 2002, p. 18).

Rocky outcrops and lithosols occur on upper slopes. Red texture-contrast soils, locally calcareous and contour banded steps are present on lower slopes. Shallow reddish-brown calcareous stony loamy sands are on calcareous sandstone (Mitchell, 2002, p. 18).

3.1.2 Climate

Local climate statistics (Broken Hill Regional Airport), available from the Bureau of Meteorology, indicate the area is located within the arid zone, generally experiencing a hot, dry climate. Temperatures range from an average monthly maximum of 33.5°C in January to an average monthly minimum temperature of 4.8°C in July. Average monthly rainfall is highest in November with 28.7mm and lowest in June with 15.3mm (Bureau of Meteorology, 2017). Broken Hill, can be subjected to temperature extremes, with the highest recorded temperature of 45.5°C in February of 2011 and the lowest recorded temperature of -4.6°C recorded in July of 1992 (Bureau of Meteorology, 2017).

3.1.3 Vegetation

There are three main vegetation communities (Plant Community Types, PCT) of the LDR, which are based on landscape position and have transitional zones where the boundaries of two vegetation communities meet:

- On hill tops and upper slopes –PCT 123: Mulga Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion.
- Slopes and flats near drainage lines PCT 139: Prickly Wattle tall open shrub land of dunes and sandplains of semi-arid and arid regions.
- On lower slopes and flats PCT 155: Bluebush shrub land on stony rises and downs in the arid and semi-arid zones.

PCT 123: Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion

PCT 123 is an open shrub land/woodland dominated by Mulga (Acacia aneura) and Dead Finish (Acacia tetrogonophylla) and sometimes Black Oak (Casuarina pauper). Common shrub species include Umbrella Mulga (Acacia brachystachya), Bastard Mulga (Acacia sibirica), Budda (Eremophila duttonii), Rock Desert Fuchsia (Eremophila freelingii), Latrobe's Emu Bush (Eremophila latrobei), Long-leaf Emubush (Eremophila longifolia), various species of Hopbush (Dodonaea spp.), Mintbush (Prostanthera striatiflora) and Silver Senna (Senna form taxon 'artemisioides'). The understorey is usually sparse and varies depending on soil depth. Where there is reasonable soil depth various species of Bluebush (Maireana spp.) and Saltbushes (Atriplex spp.) may be present. On rockier or heavily grazed sites Copperburrs (Sclerolaena spp.) are the dominate species. Common forb species include Ptilotus obovatus var. obovatus, Ptilotus atriplicifolius var. atriplicifolius, Solanum quadriloculatum, Chenopodium melanocarpum and Tetragonia eremaea. Grass species include Bottle Washer (Ennaepogon avenacea), Bunched Kerosene Grass (Aristida contorta) and Cotton Panic (Digitaria brownii). PCT 123 occurs on skeletal or shallow, stony, red earth soils on crests and steep slopes and terraced flats on stony hills and outcrops in far north western NSW. The main threat is overgrazing by stock and goats preventing the establishment of a new generation of Acacia and other species. Some species may be becoming rare due to goat grazing. Dieback in Mulga is common. For these reasons the long term persistence of this community in some places is threatened. It may become a threatened community if regeneration of key species does not occur (OEH, 2017).



PCT 139: Prickly Wattle tall open shrub land of dunes and sandplains of semi-arid and arid regions

PCT 139 is a tall open shrub land dominated by Prickly Wattle (Acacia victoriae), Narrowleaved Hopbush (Dodonaea viscosa subsp. angustissima). In rare occasions remnant stands of Needle Bush (Hakea leucoptera), Hooked Needlewood (Hakea tephrosperma) or White Cypress Pine (Callitris glaucophylla) may also be present. Understorey is sparse with Ruby Saltbush (Enchylaena tomentosa), multiple Maireana and Sclerolaena species, Cannonball Burr (Dissocarpus paradoxus) and annual daisies such as Poached-egg Daisy (Polycalymma stuartii), Paper Everlasting (Rhodanthe corymbiflora) and Dwarf Daisy (Brachyscome lineariloba).

PCT 139 occurs on sandy loams and sands on dunes in the semi-arid zone of the far south western plains of NSW, mainly in the Murray-Darling Depression Bioregion. May be derived from a previous Callitris or Mulga woodland - the Callitris having been cut out in the past (OEH, 2017).



PCT 155: Bluebush shrub land on stony rises and downs in the arid and semi-arid zones

PCT 155 is a mid-high open shrub land, which is dominated by several species of bluebushes. The most common species is Black Bluebush (Maireana pyramidata), with Pearl Bluebush (Maireana sedifolia) occurring in more calcareous sites. Other shrubs include Atriplex, Enchylaena and Rhagodia saltbush species, Low Bluebush (Maireana astrotricha), Buckbush (Salsola tragus) and Copperburrs (Sclerolaena spp.). Grasses of PCT 155 include Bottlewasher (Enneapogon avenaceus), Neverfail (Eragrostis setifolia) and Button Grass (Dactyloctenium radulans). Ephemeral forbs are common after rain including Sida intricata, Goodenia fascicularis, Portulaca oleracea, Solanum quadriloculatum, Swainsona campylantha, Lotus cruentus, Abutilon halophilum, Ixiochlamys cuneifolia, Brachyscome lineariloba and Rhodanthe floribunda. Weed species include Schismus barbatus and Carrichtera annua.

PCT 155 occurs on red or brown clays, calcareous red loams and skeletal soils derived from shales, ferruginous sandstone and other substrates. It often contains gibbers on undulating gibber plains, stony rises, adjoining slopes and associated drainage lines. It is degraded through grazing but large areas still remain. May become threatened over the long term if grazing is too intense but as of 2005 this community is not threatened, although poorly represented in protected areas (OEH, 2017).



3.1.4 Flora

A variety of plants specifically adapted to the desert environment are present, with the most prolific being Acacia and Senna species on hills, with Saltbush (Atriplex spp. and Rhagodia spp.) and Bluebush (Maireana spp.) species on lower slopes and plains. Wildflowers such as Sturt Desert Peas (Swainsona formosa) and Daisies (Asteraceae spp.) are abundant during periods of suitable climatic conditions.

Interspersed amongst the landscape and sometimes occurring in specific stands are common shrubs such as Dead Finish (Acacia tetragonophylla), Prickly Wattle (Acacia victoriae), Long-leaf Emu bush (Eremophila longifolia), Butter bush (Pittosporum phylliraeoides), Hop Bushes (Dodonea spp.) and Copper burrs (Sclerolaena spp). Grasses typically have a lower abundance than shrubs as they are preferentially grazed by Macropods and Feral Goats (Capra hircus). The most common grass species is Kangaroo Grass (Themeda triandra).

3.1.5 Fauna

Fauna present in the LDR is representative of fauna in the semi-arid climate of the Broken Hill region. A predator proof fence has been erected around 180ha of the LDR, creating the Flora and Fauna Sanctuary. Within the Flora and Fauna Sanctuary introduced predators and pests, including Cat (*Felis catus*), Red Fox (*Vulpes vulpes*) and European Rabbit (*Oryctolagus cuniculus*), have been excluded and sensitive native fauna such as the Yellow-footed Rock-wallaby (*Petrogale xanthopus*) have been introduced. The fence has allowed some species of small mammal that are rare or extinct elsewhere due to predation by feral predators to persist.

Rocky outcrops across the LDR support a diverse range of reptiles including Western Brown Snakes (Pseudonaja nuchalis), Shinglebacks (Trachydosaurus rugosus), Sand Goannas (Varanus gouldii), Central Bearded Dragons (Pogona vitticeps) and Tree Skinks (Egernia striolata). The main macropods found at the LDR are the Red Kangaroo (*Macropus rufus*), Wallaroo (*Macropus robustus*) and Western Grey Kangaroo (*Macropus fuliginosus*). Non-breeding populations of the Yellow-footed Rock-wallaby (*Petrogale xanthopus*) are present within the Flora and Fauna Sanctuary for up to 10 years following reintroduction.

Other iconic species present at the LDR are the Wedge-tailed Eagle (Aquila audax), Nankeen Kestrel (Falco cenchroides) and Emu (Dromaius novaehollandiae). A multitude of smaller birds inhabit the area including the Zebra Finch (Taeniopygia guttata), Yellowthroated Miner (Manorina flavigula) and Galah (Eolophus roseicapillus).



3.2 Cultural significance

The LDR has a high cultural significance to the traditional owners of the land, the Barkindji people. The significance of this ongoing connection to the land has been recognised through the granting of native title rights in 2015. More recently, the significance of the LDR has been recognised by all Australians and internationally, as an iconic representation of the semi-arid environment and landscapes of Western New South Wales. This is reflected in the reservation of the area for environmental protection, heritage purposes and public recreation under the Crown Land Management Act 2016.

3.2.1 Aboriginal cultural heritage

The Aboriginal tribes that were present in Broken Hill before European settlement include the Barkindji, Wiljakali and Danggali. The Barkindji are known as the people of the Darling River. The Wiljakali were the hill people of the Barrier Ranges who lived with the natural watering holes located in the ranges. The Danggali inhabited an area to the south of the region. There were other smaller, isolated tribes in the area that were not aligned to the larger groups.

Reciprocal trading occurred between the Barkindji and Wiljakali. The Barkindji would trade various items from the river country with the Wiljakali, who provided nardoo stones and axes from metamorphic rock found in the ranges.

The arrival of European pastoralists brought disease, hunger and death, including from smallpox in the 1850s. A drought from 1895 – 1902 combined with overgrazing caused denudation of the land. What was once sustainable for the Aborigines, now resulted in death and starvation. Squatters then either drove the Aborigines from the land, or employed them as stockmen. Increased European settlement and mining forced the remaining Aborigines into reserves or missionaries, or absorbed into European settlements.

Within the LDR, evidence of Aboriginal occupation includes several rock engravings adjacent to the 'Rock Pool' area, remnant hearths from past campsites and tool making quarries. Access to and management of these sites is a high priority for local Aboriginal groups.

3.2.2 Historic heritage

The value of Broken Hill to the cultural heritage of Australia has been recognised by its listing on the National Heritage List by the Federal Government. Broken Hill was recorded by the expedition of Charles Sturt in 1844-45. This expedition identified and named prominent features such as Peisse's Knob, the Broken Hill and Stephens Creek.

This initial expedition was quickly followed by further exploration by pastoralists and prospectors, large properties such as Corona (3 million acres), Kinchega (1.25 million acres) and Mount Gipps (1 million acres) were founded in the Broken Hill region.

Prospectors were disappointed when they came to Broken Hill looking for gold in the early 1880s. However, one of the world's largest deposit of silver-lead was discovered at Broken Hill in 1883 by Charles Rasp. While there are no known gold or silver deposits at the LDR, the tracks, pits, diggings and open cuts from historical mining for other minerals can still be found in the LDR today.

Several water catchment areas have also been developed within the reserve. These were generally earthen walls constructed to dam intermittent water flows. Above the rock pool area a stone and mortar dam wall has been constructed but this has been breached in several places and is now silted up.

In one location an old dumping ground reveals an interesting collection of artefacts. An old fuel stove, vintage car parts, cooking utensils, bottles and jars are some of the items to be found.

The larger Willyama Common borders the area of the Reserve. The Common was originally used for the grazing of stock required by early residents. Wide-scale clearing and grazing of the Willyama Common resulted in severe erosion from removal of vegetation. Winds would pick up the fragile soil and create dust storms and drift sand that accumulated against fences and buildings was slowly engulfing the City. In 1936 Albert Morris in conjunction with The Zinc Corporation Limited initiated a scheme to halt sand drift. The plan was to naturally regenerate the vegetation on the Willyama Common by excluding grazing by stock and rabbits. Following the success of this plan, the management actions have been expanded to restrict the removal of timber and soil and by limiting any grazing of stock at any one time by the Department of Soil Conservation.

3.3 Environmental hazards

3.3.1 Wildfire

No wildfires have occurred on the site since the LDR was established. The flora site (arboretum) part of the Living Desert Flora and Fauna Sanctuary is at greatest risk of wildfire

due to the high densities of grasses present in summer. Increased global temperatures and extreme climate conditions may increase the risk of wildfire at the LDR during periods of increased temperature and predicted increase in rainfall.

3.3.2 Flooding

Watercourses in the LDR are prone to flash flooding from heavy rain. Some of the watercourses cross the main walking trail and are near the picnic area, which can degrade roads and trails, and erode creek banks.

3.3.3 Erosion

The reserve is considered as being moderately stable to erosion due to relatively good vegetation cover, however in some areas, localised patches are severely eroded. This can include severe water sheet erosion on steeper hills and slopes and severe gullying on lower slopes and alluvial plains. Many of the gullies have been initiated by vehicle tracks.

3.3.4 Weeds

Weeds are a hazard across the LDR and in particular at the arboretum part of the Living Desert Flora and Fauna Sanctuary. Increased watering at the arboretum for the native flora has also resulted in an increase in weeds. Some weeds are deliberately maintained and have identification signage, as they are part of the educational program.

Control of weeds, public notification and use of herbicides follows the *Pesticides Act 1999*. Priority weeds which have been previously recorded within the LDR and require population control include:

- Mesquite (Prosopis spp.).
- African Boxthorn (Lycium ferocissimum).
- Silverleaf nightshade (Solanum elaeagnifolium).
- Noogoora Burr (Xanthium occidentale).
- Bathurst Burr (Xanthium spinosum).

3.3.5 Pests

Pest animals are controlled from entering the Living Desert Flora and Fauna Sanctuary from the predator proof fence. In addition to this, baiting and other population control methods are used for foxes, cats, goats and rabbits across the LDR.

3.4 Existing facilities

Improvements and facilities within the reserve consist of the following (Figure 1-2):

- A predator proof fence surrounding the 180 ha Living Desert Flora and Fauna Sanctuary;
- Public toilets, shade areas and gas barbeques have been established in the picnic area;
- A sculpture space is located on top of the highest hill in the centre of the reserve;
- A permaculture site has been established and a shaded viewing area overlooks the site;
- A 10 ha flora regeneration project;
- Various walking trails have been developed throughout the reserve;
- A four wheel drive tour has been established that runs through the reserve;
- Campgrounds consisting of:
 - Large and small vehicle parking.

- Camping sites for 8-12 tents and 15 caravans.
- Public amenities including shower and toilet blocks, star-view seating and two barbeque areas.

4. Management activities

4.1 General

The management actions have been devised to meet the following objectives of the LDR:

- Comply with the provisions of the Crown Land Management Act 2016 and the intentions of the Local Government Act 1993.
- Meet the purpose of the LDR by ensuring the ongoing management and facilitation of the LDR as an area of environmental protection, heritage significance and public recreation.

4.2 Natural environment

This plan of management ensures that these objectives are met by:

• Protecting and enhancing habitat used by native species, population and communities within the LDR.

The following management activities will ensure that the environmental objectives of the LDR are met:

- Training guides on flora and fauna identification, habitat, biology and conservation goals of the LDR.
- Installing and maintaining interpretive signs, displays and educational material related flora and fauna of the LDR.

4.2.1 Flora management

The flora management objectives of this PoM are to:

- Protect and enhance flora species and their habitat within the LDR.
- Controlling weed populations within the LDR.

The objectives will be achieved by:

- Reintroducing native flora which are currently absent from the LDR.
- Controlling weeds on a routine basis and in response to weed infestations.
- Encouraging visitors to remain on the formed paths and not pick flowers or damage flora in any other way.

4.2.2 Fauna management

The fauna management objectives of this PoM are to:

- Operate as per the requirements of the BC Act General License: MWL000100629.
- Controlling pest populations including predators and overabundant herbivores.

The objectives will be achieved by:

• Follow the management actions outlined in the Animal Management Plan: Living Desert Flora and Fauna Sanctuary (OzArk, 2017).

- Reintroducing native fauna which are currently absent from the LDR.
- Undertaking regular pest control activities.
- Maintaining the predator proof fence around the Living Desert Flora and Fauna Sanctuary.

4.3 Cultural values

The cultural objectives of this PoM are to:

• Recognise, interpret, protect and promote Aboriginal and European, culture and heritage relating to the reserve.

The objectives will be achieved by:

- Training guides in the Aboriginal and European history of the area.
- Installing and maintaining interpretive signs, displays and educational material related to Aboriginal and European history.

4.3.1 Community involvement

The community consultation and involvement objectives of this PoM are to:

- Inform the community and visitors in a creative and inviting manner, of the unique attributes of the reserve and the most responsible means of conserving and enhancing these attributes.
- Encourage and provide opportunities for the active participation of the local community and visitors both Aboriginal and Non-Aboriginal in the conservation, restoration, enhancement and long term management of the reserve.
- Inspire public appreciation of the ecological, aesthetic and cultural values of the reserve.

The objectives will be achieved by:

- Facilitating opportunities for Aboriginal and non-Aboriginal communities, visitors and school groups to participate in activities which encourage education, connection with land and recreational use of the LDR.
- Encouraging residents of Broken Hill to become involved in the Friends of the Living Desert volunteer group which assists in managing the LDR.

4.3.2 Native Title

The native title objectives of this PoM are to:

- Ensuring access to the LDR is provided to the Native Title holders to fulfil their rights under the Native Title determination.
- Ensuring none of the management actions listed in this PoM will impede the rights under the Native Title determination.

The objectives will be achieved by:

• Ensure an Indigenous Land Use Agreement (ILUA) is taken over the Reserve.

4.3.3 Aboriginal Land Claim

The Aboriginal Land Claim objectives of this PoM are to:

• Manage the parts of the LDR which are currently being assessed under an undetermined Aboriginal Land Claim, in a manner which does not interfere with future Aboriginal Land Claim use.

The objectives will be achieved by:

• Ensuring if any substantial work is to be undertaken on the LDR, that consultation with the New South Wales Aboriginal Land Council is required before work begins.

4.4 Safety and public health

The safety and public health objectives of this PoM are to:

- Ensure the provision and maintenance of facilities in a manner that minimises risk to users of the reserve and promotes a healthy lifestyle.
- Educate visitors to the reserve on appropriate use of facilities and actions to take in response to hazards e.g. extreme weather and interaction with flora and fauna.
- Reduce the risk of incidents to the public when visiting the LDR.

The objectives will be achieved by:

- Encouraging vehicles and pedestrians to stay on formed roads and paths.
- Maintaining restricted speed limits.
- Restricting access to the LDR to between sunrise and sunset.
- Undertaking ongoing risk assessments of the LDR.

4.5 Risk assessment

The risk management objectives of this PoM are to:

- Minimise risk to staff and the public whilst at the LDR.
- To educate staff and the public on the risks of the LDR, to avoid incidents occurring.

The objectives will be achieved by:

- Providing warnings and educational opportunities staff, volunteers and visitors on the risks of the LDR, through signs, conversations and on LDR related websites.
- Maintain attractions, structures and facilities so they can continue to be used safely.
- Identifying and mitigating any risks or hazards to the public.

4.5.1 Unauthorised access

The LDR is open to the public over the following periods:

- Summer: from 6am to half an hour after sunset.
- Autumn, winter and spring: 8.30am to half an hour after sunset.

The LDR is fenced off and is able to be locked during closing hours to prevent unauthorised access.

Patrons staying at the Primitive Campground can still access the LDR after hours when access to the general public is restricted.

4.5.2 Vandalism

There is potential for vandalism to occur across the LDR to structures, trees and locations of Aboriginal heritage value. The rock pool area has been fenced to protect it from vandalism and can only be opened by authorised personnel.

Graffiti and physical damage to property has previously been managed by removing the graffiti with cleaning products and repairing structures and sculptures.

4.5.3 Hazardous flora

While the flora present at the LDR is a main attraction, there are hazards with interacting with them. Interacting with flora may trigger allergies or allergic reactions to certain individuals. A number of flora species within the LDR such as Dead Finish (Acacia tetragonophylla) and Elegant Wattle (Acacia victoriae) have spiked branches which may cause minor cuts and scratches when handled.

4.5.4 Hazardous fauna

Fauna of the LDR are wild and should not be handled by the general public. Fauna can cause injuries, including allergic reactions from bites, stings and scratches by attempting to handle individuals. Certain fauna species are seasonally or always territorial and can be aggressive if approached, for example Western Brown Snakes (*Pseudonaja nuchalis*) and Magpies (*Cracticus tibicen*).

4.5.5 Climatic extremes

The LDR is located within the arid zone and generally has a hot, dry climate. The area can be subjected to temperature extremes. These extremes are a hazard to flora and fauna of the LDR as well as visitors.

4.5.6 Slips, trips and falls

The LDR contains uneven terrain, sporadic vegetation and steps which can lead to slips, trips and falls. Visitors are encouraged to stay on formed roads and paths, which are regularly maintained to avoid slips, trips and falls.

4.6 Management style

The management style objectives of this PoM are to:

- Implement a management system which will ensure the viability and sustainability of the reserve and promote cooperative decision making.
- Ensure the management of the reserve is responsive to legal, environmental, community, social and technological change.

Currently the LDR is managed by Broken Hill City Council through a cooperative arrangement between Council Rangers and volunteers from the community.

4.7 Financial management

The financial management objectives of this PoM are to:

• Secure financial self-sufficiency.

- Promote and maintain current services, attractions and facilities to encourage visitors to visit the LDR.
- Adapt management styles as required in response to changes in financial position.

The objectives will be achieved by:

- Maintaining the current system used to pay for entrance fees.
- Accessing funding provided by private, state and commonwealth bodies where applicable.

4.8 Utility services

The utility service objectives of this PoM are to:

• Provide and maintain services such as roads, footpaths, reticulated water, power, effluent disposal and drainage in a manner, which is efficient, visually unobtrusive and environmentally responsible.

The objectives will be achieved by:

- Maintaining and upgrading access roads and walking paths when required.
- Implement soil erosion controls, especially to inhibit effects of gullying.
- Providing and maintaining infrastructure related to power, water and waste.
- Encouraging visitors to clean up after themselves and undertake additional cleaning where required.

4.9 Recreation

The recreational objectives of this PoM are to:

- Promote recreational opportunities consistent with the reserve's environmental and cultural values.
- Promote and maintain, current and future recreational opportunities which are sustainable within the bounds of the reserve's physical, environmental and financial carrying capacity.
- Enable a wide range of recreational, tourism activities to be experienced within the reserve.

The objectives will be achieved by:

- Maintaining attractions and facilities, which encourage visitors to the LDR.
- Removing any rubbish or graffiti from the attractions when required.
- Monitoring the changing expectations of users through survey, taking into account the physical, environmental and financial constraints of the reserve.

4.10Tourism visitation rates

The tourism visitation rates objectives of this PoM are to:

- Promote tourism opportunities consistent with the reserve's environmental and cultural values.
- Promote and maintain, current and future tourism opportunities which are sustainable within the bounds of the reserve's physical, environmental and financial carrying capacity.
- Enable a wide range tourism activities to be experienced within the reserve.

The objectives will be achieved by:

- Increase the social media profile of the LDR to engage and retain support of visitors. Apps to help identify birds, enter sightings on an interactive database, or similar to be investigated.
- Maintaining attractions and facilities, which encourage visitors to the LDR.
- Explore other opportunities to engage visitors, including nocturnal tours, breakfast tours and sculpture tours.

4.11 Future development

The future development objectives of this PoM are to:

- Consult with the New South Wales Aboriginal Land Council before any substantial work occurs on the LDR.
- Ensure future developments minimise impact to culturally and environmentally sensitive areas and are consistent with the land use purposes of the LDR of environmental protection, heritage purposes and public recreation.

The objectives will be achieved by:

- Ensuring any future development is designed to be visually unobtrusive to the natural landscape.
- Ensuring any future development is supported by volunteers, Aboriginal representatives and the general community before implementing.

In the event of any substantial work being undertaken on the LDR that will change the physical condition of the land, consultation with the New South Wales Aboriginal Land Council is required before work begins. This provision is only applicable while the land claims remain undetermined and will change once the land claim is determined.

5. Monitoring and review

Monitoring and review of this PoM and associated actions is required to ensure operation of the LDR remains relevant and consistent with government legislation, licensing and policy and meeting environmental, cultural and community expectations. Review should take place in consultation with representatives from BHCC, Living Desert Reserve Trust, Aboriginal groups, LDR staff and volunteers.

The following reviews will occur at the specified review frequency:

- Priorities for work and future development of the LDR will be reviewed annually to align with the objectives of this PoM, financial capability and community priorities.
- This PoM is to be reviewed every five years.

APPENDIX A: PRIORITY WEEDS

Priority weeds for the Western Local Land Services region

Scientific Name	Common Name	Management Action
	All plants	General Biosecurity Duty
Alternanthera philoxeroides	Alligator weed	Mandatory Measure/Biosecurity Zone
Ambrosia confertiflora	Burr ragweed	Regional Recommended Measure
Andropogon gayanus	Gamba grass	Prohibited Matter
Annona glabra	Pond apple	Prohibited Matter
Anredera cordifolia	Madeira vine	Mandatory Measure
Arundo donax	Giant reed	Regional Recommended Measure
Asparagus aethiopicus	Ground asparagus	Mandatory Measure
Asparagus africanus	Climbing asparagus	Mandatory Measure
Asparagus asparagoides	Bridal creeper	Mandatory Measure/Regional Recommended Measure
Asparagus declinatus	Bridal veil creeper	Prohibited Matter
Asparagus plumosus	Climbing asparagus fern	Mandatory Measure
Asparagus scandens	Snakefeather	Mandatory Measure
Austrocylindropuntia cylindrica	Cane cactus	Mandatory Measure
Austrocylindropuntia species	Prickly pears - Austrocylindropuntias	Mandatory Measure
Bassia scoparia	Kochia	Prohibited Matter
Bryophyllum species	Mother-of-millions	Regional Recommended Measure
Cabomba caroliniana	Cabomba	Mandatory Measure
Cenchrus longispinus	Spiny burrgrass - Iongispinus	Regional Recommended Measure
Cenchrus spinifex	Spiny burrgrass - spinifex	Regional Recommended Measure
Centaurea stoebe subsp. micra nthos	Spotted knapweed	Prohibited Matter
Centaurea X moncktonii	Black knapweed	Prohibited Matter
Chromolaena odorata	Siam weed	Prohibited Matter
Chrysanthemoides monilifera su bsp. monilifera	Boneseed	Mandatory Measure/Control Order
Chrysanthemoides monilifera su bsp. rotundata	Bitou bush	Mandatory Measure/Biosecurity Zone
Clidemia hirta	Koster's curse	Prohibited Matter
Cryptostegia grandiflora	Rubber vine	Prohibited Matter
Cylindropuntia fulgida var. mami Ilata	Boxing glove cactus	Mandatory Measure/Regional Recommended Measure
Cylindropuntia imbricata	Rope pear	Mandatory Measure/Regional Recommended Measure
Cylindropuntia rosea	Hudson pear	Mandatory Measure/Regional Recommended Measure
Cylindropuntia species	Prickly pears - Cylindropuntias	Mandatory Measure
Cytisus scoparius subsp. scopariu s	Scotch broom	Mandatory Measure
Dolichandra unguis-cati	Cat's claw creeper	Mandatory Measure
Eichhornia azurea	Anchored water hyacinth	Prohibited Matter

Scientific Name	Common Name	Management Action
Eichhornia crassipes	Water hyacinth	Mandatory Measure/Biosecurity Zone/Regional Recommended Measure
Genista linifolia	Flax-leaf broom	Mandatory Measure
Genista monspessulana	Cape broom	Mandatory Measure
Harrisia species	Harrisia cactus	Regional Recommended Measure
Hieracium species	Hawkweeds	Prohibited Matter
Hydrocotyle ranunculoides	Hydrocotyl	Prohibited Matter
Hymenachne amplexicaulis and hybrids	Hymenachne	Mandatory Measure
Hyparrhenia hirta	Coolatai grass	Regional Recommended Measure
Jatropha gossypiifolia	Bellyache bush	Mandatory Measure
Lagarosiphon major	Lagarosiphon	Prohibited Matter
Lantana camara	Lantana	Mandatory Measure
Limnobium laevigatum	Frogbit	Prohibited Matter
Limnobium spongia	Spongeplant	Prohibited Matter
Limnocharis flava	Yellow burrhead	Prohibited Matter
Lycium ferocissimum	African boxthorn	Mandatory Measure/Regional Recommended Measure
Miconia species	Miconia	Prohibited Matter
Mikania micrantha	Mikania vine	Prohibited Matter
Mimosa pigra	Mimosa	Prohibited Matter
Myriophyllum spicatum	Eurasian water milfoil	Prohibited Matter
Nassella neesiana	Chilean needle grass	Mandatory Measure
Nassella tenuissima	Mexican feather grass	Prohibited Matter
Nassella trichotoma	Serrated tussock	Mandatory Measure
Oenothera curtiflora	Clockweed	Regional Recommended Measure
Opuntia aurantiaca	Tiger pear	Mandatory Measure/Regional Recommended Measure
Opuntia ficus-indica	Indian fig	Regional Recommended Measure
Opuntia monacantha	Smooth tree pear	Mandatory Measure/Regional Recommended Measure
Opuntia species	Prickly pears - Opuntias	Mandatory Measure/Regional Recommended Measure
Opuntia stricta	Common pear	Mandatory Measure/Regional Recommended Measure
Opuntia tomentosa	Velvety tree pear	Mandatory Measure/Regional Recommended Measure
Orobanche species	Broomrapes	Prohibited Matter
Parkinsonia aculeata	Parkinsonia	Mandatory Measure/Control Order
Parthenium hysterophorus	Parthenium weed	Mandatory Measure/Prohibited Matter
Prosopis species	Mesquite	Mandatory Measure/Regional Recommended Measure
Rubus fruticosus species aggregate	Blackberry	Mandatory Measure
Sagittaria calycina var. calycina	Arrowhead	Regional Recommended Measure
Sagittaria platyphylla	Sagittaria	Mandatory Measure/Regional Recommended Measure
Salix cinerea	Grey sallow	Mandatory Measure

Scientific Name	Common Name	Management Action
Salix nigra	Black willow	Mandatory Measure
Salix species	Willows	Mandatory Measure
Salvinia molesta	Salvinia	Mandatory Measure
Searsia lancea	Willow rhus	Regional Recommended Measure
Senecio madagascariensis	Fireweed	Mandatory Measure
Solanum elaeagnifolium	Silverleaf nightshade	Mandatory Measure/Regional Recommended Measure
Solanum viarum	Tropical soda apple	Control Order
Stratiotes aloides	Water soldier	Prohibited Matter
Striga species	Witchweeds	Prohibited Matter
Tamarix aphylla	Athel pine	Mandatory Measure
Trapa species	Water caltrop	Prohibited Matter
Ulex europaeus	Gorse	Mandatory Measure
Vachellia karroo	Karroo thorn	Prohibited Matter
Vachellia nilotica	Prickly acacia	Prohibited Matter

Class	Management Action(s)
Biosecurity Control Order	Must be eradicated from the land and be fully and continuously destroyed and suppressed and the land kept free of the plant after eradication. Seeds and propagules must not be knowingly moved. The local control authority must be notified of any suspected or known presence of this plant.
Biosecurity Zone	Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone.
General Biosecurity Duty	All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.
Mandatory Measure	Must not be imported into the State or sold.
Prohibited Matter	A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.
Regional Recommended Measure	Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.

APPENDIX B: ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM RESULT



AHIMS Web Services (AWS) Search Result

Purchase Order/Reference : LDR 6H Client Service ID : 330008

Date: 26 February 2018

OzArk Environmental and Heritage Management PO Box 2069 Dubbo New South Wales 2830

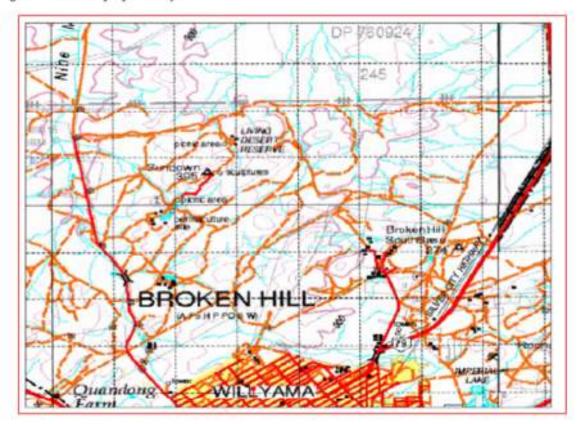
Attention: Jane Book

Email: jane@ozarkehm.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -31.9353, 141.4189 - Lat, Long To : -31.8789, 141.5084 with a Buffer of 50 meters, conducted by Jane Book on 26 February 2018.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

71 Aboriginal sites are recorded in or near the above location.
0 Aboriginal places have been declared in or near the above location.*

APPENDIX C: MATTER OF NATIONAL SIGNIFICANCE

Australian Government Department of the Environment and Energy

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about <u>Environment Assessments</u> and the EPBC Act including significance guidelines, forms and application process details.

Report created: 22/12/17 10:00:24

Summary Details Matters of NES Other Matters Protected by the EPBC Act Extra Information Caveat Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordi	nat	88	
Buffer:	10	OK	T



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties;	None
National Heritage Places;	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park;	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities.	None
Listed Threatened Speckes:	9
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A <u>cermit</u> may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land;	9
Commonwealth Heritage Places	1
Listed Marine Species:	12
Whales and Other Cetaceans;	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

None	
None	
22	
None	
None	
	None 22 None

Details

Matters of National Environmental Significance

	[Resource Information]
State	Status
NSW	Listed place

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Amytomis modestus		
Thick-billed Grasswren (84121)	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Pedionomus torquatus		
Piains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area
Pezoporus occidentalis		
Night Parrot [59350]	Endangered	Extinct within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Maccullochella peelli		
Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Mammals		
Nyctophilus corbeni		
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
Plants		
Acacia carneorum		
Needle Wattle, Dead Finish, Purple-wood Wattle [66685]	Vulnerable	Species or species habitat likely to occur within area
Solanum karsense		
Menindee Nightshade [7776]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
Species is listed under a different scientific name on	the EPBC Act - Threatene	d Species list.
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

likely to occur within area

Name	Threatened	Type of Presence
Migratory Terrestrial Species		
Motacilla cinerea		
Grey Wagtali [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Other Matters Protected by the EPBC Act		
Commonwealth Land		Resource Information
The Commonwealth area listed below may indicate th	he presence of Commonwe	atth land in this vicinity. Due to

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name

Commonwealth Land -Commonwealth Land - Airservices Australia Commonwealth Land - Australian Broadcasting Commission Commonwealth Land - Australian Postal Commission Commonwealth Land - Australian Telecommunications Commission Commonwealth Land - Defence Housing Authority Commonwealth Land - Director of War Service Homes Commonwealth Land - Telstra Corporation Limited Defence - BROKEN HILL TRAINING DEPOT

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Historic		
Broken Hill Post Office	NSW	Listed place
Listed Marine Species		[Resource Information]
* Species is listed under a different scientific nam	e on the EPBC Act - Threater	ned Species list.
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Ardea alba Great Egret, White Egret [59541]

Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Ardea Zois		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwicki		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacila flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato)		
Painted Snipe (889)	Endangered*	Species or species habitat likely to occur within area

Extra Information

Extra Information		
Invasive Species		[Resource Information]
Weeds reported here are the 20 species that are considered by the States and Te following feral animals are reported: Goa Landscape Health Project, National Land	mitories to pose a particularly sig it, Red Fox, Cat, Rabbit, Pig, Wa	inificant threat to biodiversity. The ter Buffalo and Cane Toad. Maps from
Name	Status	Type of Presence
Birds		
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch (403)		Species or species nabitat likely to occur within area
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pige	eon [803]	Species or species habitat likely to occur within area

Name Passer domesticus House Sparrow [405]

Stumus vulgaris Common Starling [389]

Turdus merula Common Blackbird, Eurasian Blackbird [596]

Mammals

Bos taurus Domestic Cattle [16]

Canis lupus familiaris Domestic Dog [82654]

Capra hircus Goat [2]

Felis catus Cat, House Cat, Domestic Cat [19]

Mus musculus House Mouse [120]

Oryctolagus cuniculus Rabbit, European Rabbit [128]

Sus scrofa Pig [6]

Vulpes vulpes Red Fox, Fox [18]

Plants

Carrichtera annua Ward's Weed [9511]

Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]

Cylindropuntia spp. Prickly Pears [85131]

Lycium ferocissimum African Boxthorn, Boxthorn [19235]

Opuntia spp. Prickly Pears [82753]

Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]

Prosopis spp. Mesquite, Algaroba [68407]

Status

Type of Presence

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

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Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur

Name	Status	Type of Presence	
		within area	
Tamarix aphylla			

Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]

Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-31.911604 141.494952,-31.911604 141.493236,-31.908398 141.484996,-31.907815 141.47195,-31.932876 141.471263,-31.933168 141.458217,-31.94016 141.441394,-31.935207 141.429721,-31.885954 141.425258,-31.885371 141.519328,-31.89674 141.516582,-31.905192 141.512805,-31.910147 141.507312,-31.911604 141.494952

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales -Department of Environment and Primary Industries, Victoria -Department of Primary Industries, Parks, Water and Environment, Tasmania. -Department of Environment, Water and Natural Resources, South Australia -Department of Land and Resource Management, Northern Territory -Department of Environmental and Herilage Protection, Queensland -Department of Parks and Wildlife, Western Australia -Environment and Planning Directorate, ACT -Birdlife Australia -Australian Bird and Bat Banding Scheme -Australian National Wildlife Collection -Natural history museums of Australia -Museum Victoria -Australian Museum -South Australian Museum -Queensland Museum -Online Zoological Collections of Australian Museums -Queensland Herbarium -National Herbarium of NSW -Royal Botanic Gardens and National Herbarium of Victoria -Tasmanian Herbarium -State Herbarium of South Australia -Northern Territory Herbarium -Western Australian Herbarium -Australian National Herbarium, Canberra -University of New England -Ocean Biogeographic Information System -Australian Government, Department of Defence Forestry Corporation, NSW -Geoscience Australia -CSIRO -Australian Tropical Herbarium, Caims -eBird Australia -Australian Government - Australian Antarctic Data Centre -Museum and Art Gallery of the Northern Territory -Australian Government National Environmental Science Program -Australian Institute of Marine Science -Reef Life Survey Australia American Museum of Natural History -Queen Victoria Museum and Art Gallery, Inveresk, Tasmania -Tasmanian Museum and Art Gallery, Hobart, Tasmania -Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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