



Lightning Ridge Area Opal Reserve



Plan of Management

December 2021

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Table of Contents

1	EXECUTIVE SUMMARY	7
2	OVERVIEW.....	9
PART - THE SITE		
3	INTRODUCTION	11
3.1	Plans of Management	11
3.2	Background to the Plan of Management	11
3.3	Process for Plan of Management Development	11
3.4	Land to Which this Plan of Management Applies	13
3.5	Reserve Management	18
4	BACKGROUND	20
4.1	History	20
4.1.1	Gamilaraay and Yuwaalaraay Land	20
4.1.2	European Settlement.....	21
4.1.3	Lightning Ridge and the Discovery of Opals	23
4.1.4	Agriculture and Tourism in Lightning Ridge.....	25
4.1.5	Voluntary Surrender Scheme.....	26
4.2	Legal Framework	27
4.2.1	Crown Land Management Act 2016	27
4.2.2	Mining Act 1992.....	28
4.2.3	Other Relevant Legislation.....	29
5	THE SITE	30
5.1	Reserve Purpose.....	31
5.2	Current Land Use.....	32
5.2.1	Mining.....	33
5.2.2	Tourism.....	35
5.2.3	Agriculture	38
5.2.4	Residential	39
5.2.5	Recreation.....	41
5.3	The Physical Environment	42
5.3.1	Western Land Systems.....	42
5.3.2	Soils.....	45
5.3.3	Native Vegetation	48
5.3.4	Threatened Species – Communities and Processes.....	54
5.3.5	Hydrological Influences on Agriculture and Conservation Values	55
5.4	Infrastructure	57
5.5	Land Management	65
5.6	Cultural Significance.....	71
5.6.1	Aboriginal Heritage Significance	71
5.6.2	Built Heritage Significance	73
5.7	Planning Controls	75
5.8	Competing Land Uses and Influences	76
5.9	Safety.....	82
6	CONSULTATION AND ASSESSMENT	84

PART B - THE PLAN

7	PLAN OBJECTIVES	86
7.1	Aim	86
7.2	Values	86
7.3	Vision	87
7.4	Planning Logic	87
7.5	Reserve Use and Development	88
8	RESERVE MANAGEMENT	95
8.1	Tourism	95
	8.1.1 Current Status	95
	8.1.2 Tourism Objectives (A)	97
8.2	Agriculture and the Grey Soil Country	101
	8.2.1 Current Status	101
	8.2.2 Agriculture Objective (B)	103
8.3	Aboriginal Culture – Access, Use and Site Protection	104
	8.3.1 Current Status	104
	8.3.2 Aboriginal Access Objectives (C)	104
8.4	Transition Areas	106
	8.4.1 Current Status	106
	8.4.2 Transition Areas Objectives (D)	106
8.5	Road and Track Management	107
	8.5.1 Current Status	107
	8.5.2 Roads Objectives (E)	109
8.6	Waste Management	112
	8.6.1 Current Status	112
	8.6.2 Waste Management Objectives (F)	112
8.7	Infrastructure Maintenance	114
	8.7.1 Current Status	114
	8.7.2 Maintenance Objectives (G)	115
8.8	Land Management	116
	8.8.1 Current Status	116
	8.8.2 Land Management Objectives (H)	117
8.9	Natural Resource Management	120
	8.9.1 Current Status	120
	8.9.2 Natural Resource Management Objectives (I)	120
8.10	History and Heritage	122
	8.10.1 Current Status	122
	8.10.2 History and Heritage Objectives (J)	122
8.11	Mining	124
	8.11.1 Current Status	124
	8.11.2 Mining Objectives (K)	125
8.12	Planning and the Provision of Services	128
	8.12.1 Current Status	128
	8.12.2 Provision of Services Objectives (L)	130
8.13	Ownership and Occupation	132
	8.13.1 Current Status	132
	8.13.2 Ownership and Occupation Objectives (M)	133
8.14	Safety	135
	8.14.1 Current Situation	135
	8.14.2 Safety Objectives (N)	136
8.15	Land Manager Structure	138
	8.15.1 Current Status	138
	8.15.2 Structure Objectives (O)	139

8.16	Finance	141
8.16.1	Current Status	141
8.16.2	Finance Objectives (P).....	148
8.17	Reserve Communication and Support	152
8.17.1	Current Status	152
8.17.2	Communication and Support Objectives (Q)	153
9	IMPLEMENTATION PLAN.....	155
10	REFERENCES	174
11	APPENDICES	176

Table of Figures

Figure 1 – Land Subject to this Plan of Management.....	14
Figure 2 – Land Subject to this Plan of Management - Lightning Ridge Area.....	15
Figure 3 – Land Subject to this Plan of Management – Grawin / Glengarry / Sheeppyard.....	16
Figure 4 – Land Subject to this Plan of Management - Cocoran and Wandella / Weetalibah / Allawah.....	17
Figure 5 – 1886 Map of the Warrego Pastoral District.....	22
Figure 6 – Locality Sketch 1910 Map of the Village of Wallangulla.....	24
Figure 7 – 1910 Map of the Village of Wallangulla.....	25
Figure 8 – History of the Lightning Ridge Area.....	26
Figure 9 – Opal Seam found at Grawin.....	34
Figure 10 – Polished Opals found at Lightning Ridge.....	35
Figure 11 – Existing Tourism Sites.....	36
Figure 12 – The Proposed Australian Opal Centre	38
Figure 13 – Residences on the Reserve	39
Figure 14 – Additional Permitted uses for Dwelling at Grawin and Glengarry.....	40
Figure 15 – Recreation on the Reserve	41
Figure 16 – Lightning Ridge and Rotten Plain Western Land Systems	43
Figure 17 – Llanillo and Wombiera Western Land Systems	44
Figure 18 – Nidgery and Upper Darling Western Land Systems.....	44
Figure 19 – Red Chromosol Soil.....	46
Figure 20 – Grey Vertosol Soil	47
Figure 21 – Grey Vertosol Soil.....	48
Figure 22 – Native Vegetation – Cypress Pine.....	49
Figure 23 – Native Vegetation – Coolibah	51
Figure 24 – Native Vegetation – Coolibah	52
Figure 25 – Native Vegetation – Barren	52
Figure 26 – Homesteads.....	57
Figure 27 – Infrastructure at Rexeen.....	57
Figure 28 – Infrastructure - Garule-Wali Reserve.....	58
Figure 29 – Infrastructure - Club in the Scrub	59
Figure 30 – Infrastructure - The Sheeppyard Inn.....	60
Figure 31 – Infrastructure - Sheeppyard Community War Memorial and Lake Beard	61
Figure 32 – Bores on the Reserve.....	62
Figure 33 – Angledool and Morella Water Schemes	63
Figure 34 – Hudson Pear Biological Control Area, Grawin	65
Figure 35 – Rehabilitation	67
Figure 36 – Rehabilitation	67
Figure 37 – Waste Management	69

Figure 38 – AHIMS Identified Aboriginal Cultural Areas.....	72
Figure 39 – Built Heritage.....	73
Figure 40 – Built Heritage.....	74
Figure 41 – Track and Road Maintenance.....	77
Figure 42 – Grey Soil – Red Ridge Transitional Zone.....	79
Figure 43 – Grey Soil – Red Ridge Transitional Zone.....	80
Figure 44 – Danger on the Reserve:.....	82
Figure 45 – Planning Logic.....	87
Figure 46 – Primary Use Wandella / Weetalibah / Allawah.....	89
Figure 47 – Primary Use Coocoran.....	90
Figure 48 – Reserves 70123 and 230002 and Native Title.....	91
Figure 49 – North Lightning Ridge and Native Title.....	92
Figure 50 – Lightning Ridge - Other Reserves.....	94
Figure 51 – Possible Tourism and Recreation Sites.....	97
Figure 52 – Possible Tourism and Recreation Sites.....	98
Figure 53 – Possible Tourism and Recreation Sites.....	99
Figure 54 – Reserve Access Permit and Black Opal Pass.....	100
Figure 55 – Grey Soil Country.....	101
Figure 56 – Public Roads – Grawin / Glengarry.....	109
Figure 57 – Proposed Easement for Access across Coocoran Lake.....	110
Figure 58 – Indicative Residential and Industrial Land Subdivision, Lightning Ridge.....	129
Figure 59 – Development Land, Lightning Ridge.....	129
Figure 60 – NSW Government Gazette Notice - Creation of Reserve 95758.....	177
Figure 61 – NSW Government Gazette Notice - 7 December 2018 - Addition to Reserve 1024168 (1).....	179
Figure 62 – NSW Government Gazette Notice - 7 December 2018 - Addition to Reserve 1024168 (2).....	180

List of Acronyms & Abbreviations for Reference

AHIMS	Aboriginal Heritage Information Management System
BCA	<i>Biodiversity Conservation Act 2016</i>
CLMA	<i>Crown Land Management Act 2016</i>
CRIF	Crown Reserve Improvement Fund
Crown Lands	NSW Department of Planning and Environment - Crown Lands
EEC	Endangered Ecological Community
EPBCA	<i>Environment Protection & Biodiversity Conservation Act 1999 (Com)</i>
Land Manager	Lightning Ridge Area Opal Reserve Land Manager
MEG	NSW Department of Regional NSW - Mining, Explorations & Geoscience
Minister	Minister administering the <i>Crown Land Management Act 2016</i> .
NRM	Natural Resource Management
NSW	New South Wales
PEOA	Protection of Environment Operations Act 1997
POM	Plan of Management
RAP	Reserve Access Permit
REF	Review of Environmental Factors
TSR	Travelling Stock Reserve
VSS	Voluntary Surrender Scheme
WLEP	<i>Walgett Local Environmental Plan 2013</i>
WLL	Western Lands Lease
WSC	Walgett Shire Council

1 EXECUTIVE SUMMARY

Lightning Ridge produces the majority of Australia's black opal which in 2008, was named the state gem of New South Wales. Lightning Ridge is the only producer of economic deposits of gem quality black opal in the world.

Opal mining impacts on lifestyle, reflects a rich and unique history and provides the synergy for wealth creation across the Lightning Ridge region, either through what it yields, or what it attracts. Mining for this precious gem, its processes and impacts both on the physical environment and on the people that are attracted to it, are the prime reasons for this Plan of Management.

The Lightning Ridge Area Opal Reserve is intricately linked to opal mining and the mining community with over 1800 mineral claims currently operating. Five hundred of these mineral claims are residential with a further 1000 residential western lands leases within the Reserve boundary.

Lightning Ridge is a prime tourist destination for Walgett Shire and the north-west of NSW and the Lightning Ridge Area Opal Reserve is fundamental to the success of the tourism industry at Lightning Ridge.

More than any reserve in NSW, the Lightning Ridge Area Opal Reserve has the opportunity to provide better outcomes for local communities, and the State, on a varied and complex array of issues through mining, tourism, agriculture and grazing, aboriginal culture and education, recreation, history, community infrastructure development and unique natural resources.

This Plan of Management reflects this opportunity.

This Plan of Management also seeks to address the significant issues arising from a complex array of responsibilities including conflicting use requirements, infrastructure management, resources and finance, safety and communication.

The character, functions and purposes of the Reserve reflect the history, and aboriginal occupation over the land is clear with many cultural sites. Early European settlement was established with the creation of the pastoral industry. Following the first opal mining at Lightning Ridge agricultural, tourism and service industries have been established. The impacts of mining in terms of pressures on the many natural contingencies, as well as on the people who live, mine and visit there, complete the considerations within this Plan of Management.

This Plan of Management provides 39 objectives which describe priority issues for the future of the Reserve, some of which are obligations enshrined by legislation. Other issues range between adoption of best practice in the management of a large and variable landscape driven by an awareness and knowledge of how it functions, to priorities of self-

sustaining financial management. Communication between the Lightning Ridge Area Opal Reserve Land Manager and the wider community on progress in the achievement of its charter, will also be an important consideration.

A vision statement recognises the basis for the *Lightning Ridge Area Opal Reserve*, who it is seeking to serve and what are the desired long-term results expected. The vision for the *Lightning Ridge Area Opal Reserve* is:

**“A Crown Reserve with Opals at its Core,
Sustainably Delivering Gems for the Whole
Community.”**

2 OVERVIEW

The Lightning Ridge Area Opal Reserve (the Reserve) is one of the largest, most diverse and complex Crown Reserves in NSW. It is intricately linked to opal mining and is the only producer of economic deposits of black opal in Australia. As a result of opal mining for close to a century, the Reserve has become a prime tourism location for the Walgett area with interest in the mining process, the history of mining and, of course, in opals. The Reserve is home to many current and former opal miners, and communities have been established in the Reserve and on lands which have been formerly part of the Reserve at Lightning Ridge, Grawin¹ and Glengarry.

Part of the Reserve has been, and will continue to be, high value agricultural land, while potentially endangered ecological communities can also be found.

The Reserve is culturally rich with many highly valued and protected places. Places of high aboriginal cultural value are actively maintained and protected by Elders and community.

In parts of the Reserve this variety has led to some land use conflicts. Land management problems have emerged such as those associated with rehabilitation of areas disturbed by mining, invasion of difficult noxious species, management of historical sites and catering for safety, road and waste management. This plan seeks to manage the ongoing relationship between mining, agriculture, cultural heritage, tourism and environmental protection without compromising issues of safety and security to those who visit and the people who live and work in the settlements and on the opal fields.

The Lightning Ridge Area Opal Reserve Land Manager (Land Manager) is a Crown land manager under the *Crown Land Management Act 2016* (CLMA)². The Land Manager is *empowered to make decisions regarding the use and management of the reserve land and is responsible for the implementation of those decisions. A Crown land reserve board can make decisions about things like:*

- *how a reserve is used*
- *environmental and asset management within the reserve*
- *fundraising activities and commercial arrangements*
- *allocation and expenditure of generated funds.*

As managers of important public facilities Crown land boards are accountable to their community and are required to act in accordance with the Crown Reserve Code of Conduct and report to the Minister annually on their activities³.

¹ Grawin is sometimes referred to locally as “the Grawin”. A reference to Grawin in this Plan of Management is a reference to the Grawin Opal Fields which is on land described in the 1886 Warrego Pastoral District Map as Grawin South. The same map shows “The Grawin” as a property to the north on the eastern side of Wilby Wilby Road.

² The Land Manager is made up of seven members including an independent chairperson, community representatives and Ex-Officio positions.

³ *Get involved in Crown land Management*, Department of Planning, Industry and Environment – Crown lands, <https://reservemanager.crownland.nsw.gov.au/who-we-are/get-involved-in-crown-land-management>.

This includes the general use of the reserve, financial management, weed and pest management, asset/infrastructure management, bushfire management, access, illegal uses, rubbish dumping, erosion control and maintenance.

In accordance with S 3.33 of the *Crown Land Management Act 2016*, the former Minister for Lands and Forestry directed that the Land Manager develop a Plan of Management (POM) for the Reserve. The purpose of the POM is to compile and present an ongoing land-management based framework that will guide strategic decision making of current and future activities concerning the Reserve. It will also consider ongoing community engagement with key stakeholders.

The Plan of Management is presented in two parts:

Part A: **The Site**

Part B: **The Plan**

PART A – THE SITE

3 INTRODUCTION

3.1 Plans of Management

A Plan of Management on Crown land is the document that defines the value, use, management practices and intent for the broad public purpose for which the land has been reserved or dedicated. The plan must be prepared in accordance with the CLMA including the principles of Crown land management, and adopted by the minister administering the CLMA, the Minister for Lands and Water⁴.

The plan should be consistent with the public purposes for the Reserve, as well as other guidelines, policies and legal requirements that may apply to the Reserve. These may include the provisions of environmental planning instruments (for example, a local environmental plan) and threatened species or native vegetation controls.

3.2 Background to the Plan of Management

The Minister has requested that the Land Manager prepare a Plan of Management (POM) for the Reserve. On 21 September 2020, Lands Advisory Services Pty Ltd was engaged by the Land Manager to develop the POM for the Reserve.

3.3 Process for Plan of Management Development

This POM has been prepared as follows:

- Understanding the Ministerial direction and site research, information gathering and legislative review
- Preliminary meeting with the Land Manager
- Field inspections
- Consultations with stakeholders including industry associations, aboriginal organisations, farmers, miners, tourism organisations, historical interest leaders, emergency services, government agencies and the general public

⁴ *Plans of Management* – Department of Planning, Industry and Environment - Crown Lands, Plans of Management. (nsw.gov.au)

- Consultation Report (based on the above) with the Land Manager on the main themes and directions
- Further consultation with Government Agencies
- Draft of the POM, including vision, management and direction, financial sustainability, implementation, consultation, timing and review
- Presentation of the draft POM to Land Manager, and further consultation with the Land Manager
- Review and modification of draft POM
- Submission of final draft POM to Minister for Lands and Water seeking permission to exhibit
- Development of exhibition strategy consistent with requirements of Community Engagement Strategy (Part 5 of *Crown Land Management Act 2016*)
- Public 42-day exhibition period as required by the act, collate responses, present exhibition report for Land Manager's consideration
- Amendment of draft POM as required
- Final approval of POM to Land Manager
- Request that Minister adopt the POM.

3.4 Land to Which this Plan of Management Applies

Location

The Reserve is located in and around the vicinity of Lightning Ridge.

Lightning Ridge is 770 km north west of Sydney, 72 km north of Walgett, and approximately 60 km south of the Queensland border in New South Wales. The town is located about 6km east of the Castlereagh Highway.

The individual parcels of land included in this POM are listed in **Appendix 1**.

The Reserve consists of four separate geographical areas as shown (in pink) in Figure 1:

- *Lightning Ridge*: The area immediately to the west, north and south of Lightning Ridge township as shown (in pink) in Figure 2 – locally referred to as the *Preservation Area*.
- *Grawin / Glengarry / Sheeptyard*: Two separate areas approximately 25 km to the south west of Lightning Ridge shown (bound in yellow) in Figure 3.
- *Coocoran*: Directly west of Lightning Ridge and just west of Coocoran Lake.
- *Wandella / Weetalibah / Allawah*: to the west and north west of town, adjoining the Castlereagh Highway and then to the Narran River.

Figure 4 shows that part of the Reserve (bound in yellow) north and west of Lightning Ridge around Coocoran Lake, along the Narran River and along the Castlereagh Highway and the Goodooga Road.

The composite area of the Reserve is currently about 20,000 hectares.

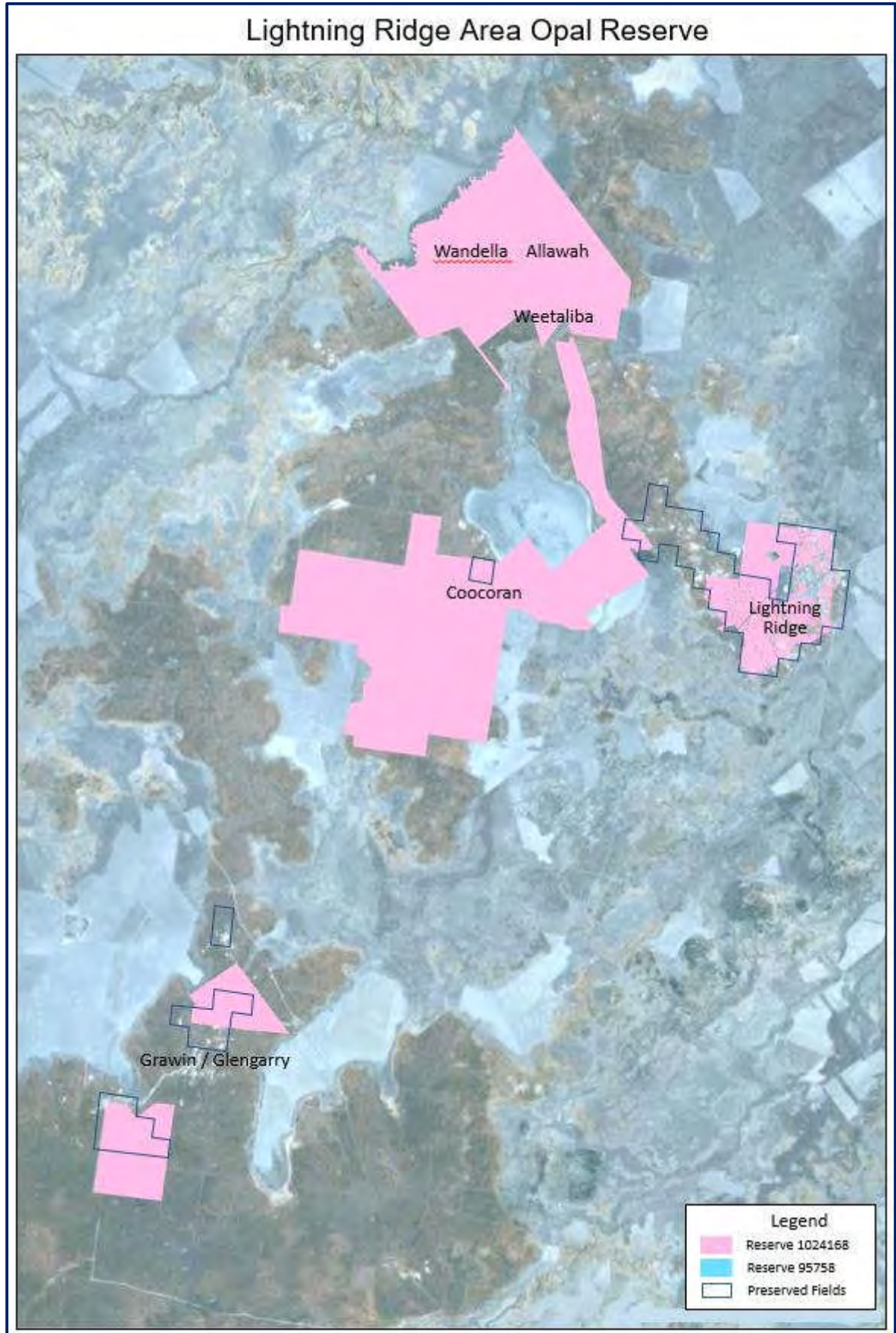


Figure 1 – Land Subject to this Plan of Management.

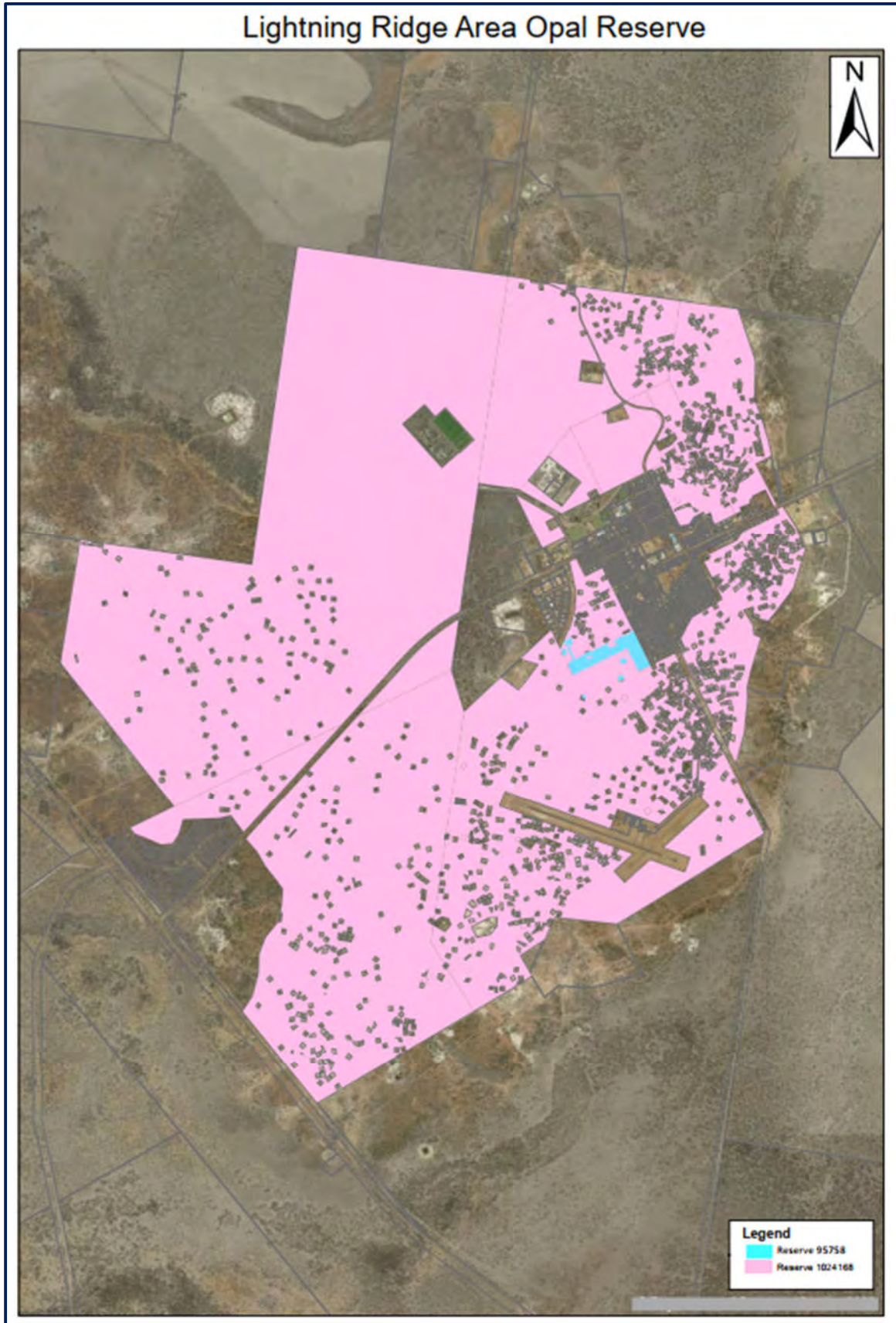


Figure 2 – Land Subject to this Plan of Management - Lightning Ridge Area.



Figure 3 – Land Subject to this Plan of Management – Grawin / Glengarry / Sheepyard.

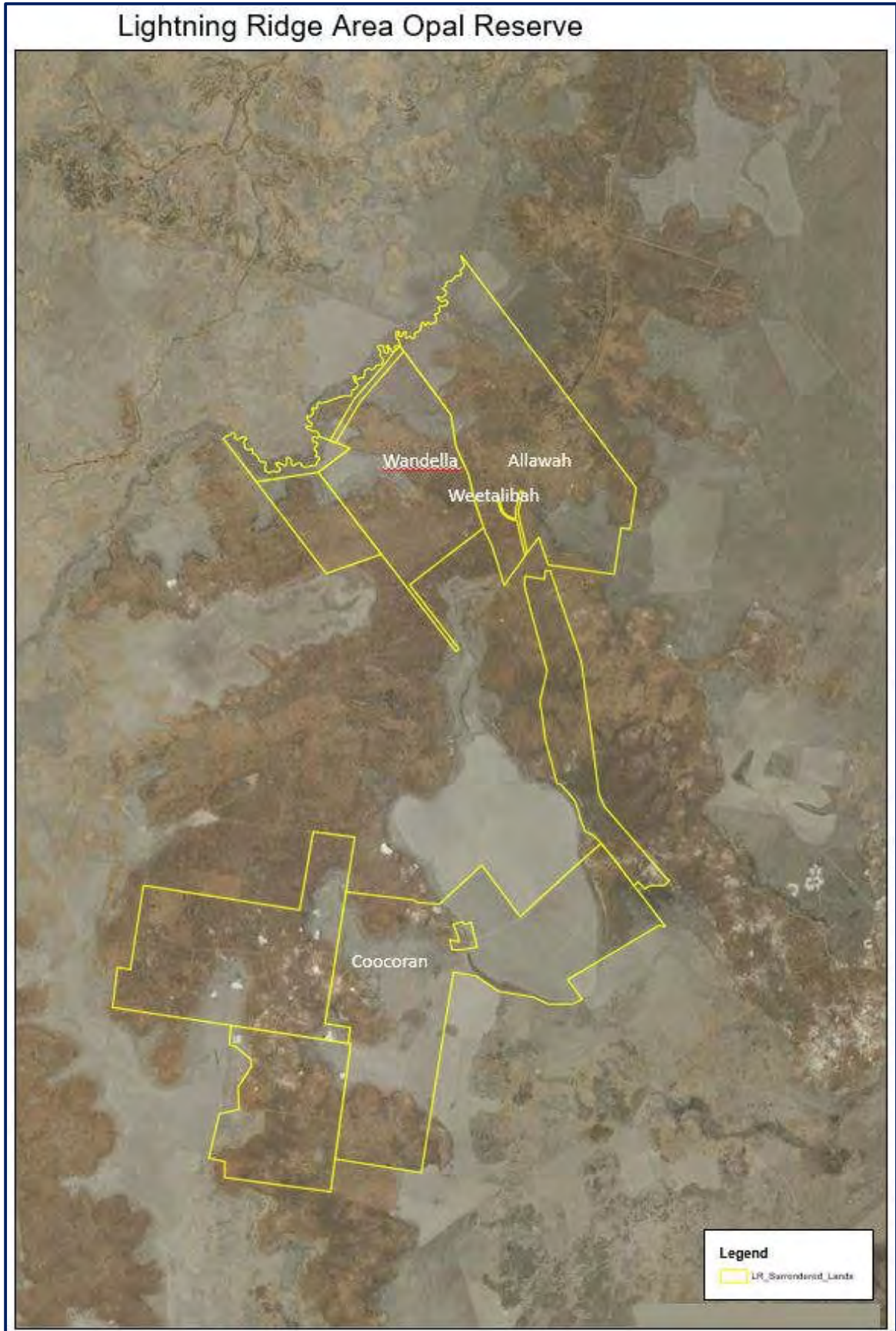


Figure 4 – Land Subject to this Plan of Management - Coocoran and Wandella / Weetalibah / Allawah.

The Reserve includes a significant part of the Lightning Ridge Preserved Fields⁵.

This POM acknowledges that although it is important to recognise the principal activity conducted at the Reserve was and continues to be opal mining, its current purposes by reservation are wide ranging. These multi-purposes need to be appropriately considered and managed, within this POM.

3.5 Reserve Management

The Crown Reserve Code of Conduct requires Crown land managers to manage Crown reserves in accordance with the following statements:

- *We treat each other with respect and promote an environment that enables us to work as a team to deliver benefits to our communities across NSW.*
- *We are responsible for the safety of children who participate in activities on the Crown reserve.*
- *We are accountable for our behaviour and are obliged not to harass, behave inappropriately, bully, or discriminate against any Crown reserve stakeholders including members of the public using the Crown reserve.*
- *We are customer-focused and responsible for ensuring necessary information and assistance is communicated in a prompt, impartial and professional manner.*
- *We are responsible for promoting confidence in the integrity of public administration of Crown reserves.*

⁵ In 1994, the interim Lightning Ridge Mining Board (LRMB) determined that the title 'Preserved Fields' would be applied to older mining areas which would not be returned to their previous land use. In its submission to the LRMB, Walgett Shire Council recommended that specified areas of the opal fields (generally those with a long history of mining and habitation) be designated 'Preserved Fields' and their appearance be maintained for heritage and social reasons. The concept of Preserved Fields was endorsed by a range of stakeholders including opal miners, landholders, WSC, Department of Lands and the then Department of Mineral Resources, as satisfying their respective objectives. The Preserved Fields constitute approximately 63 square kilometres of land in five non-contiguous parcels and are designated in Figure 1.

The primary purpose and value of the Preserved Fields is opal mining and associated activities. However, through a century of mining the Preserved Fields have accumulated other values and uses. Nowadays, as well as being vital for opal mining the Preserved Fields:

- are home to the people of Lightning Ridge, Sheeppyard, Grawin and Glengarry – either directly, for those who live on residential mining leases; or indirectly, as the wider environment of all local inhabitants,
- are recognised as being rich with sites of historical and scientific significance,
- are a primary tourism asset of Lightning Ridge and valued as one of Walgett Shire's greatest competitive advantages in the tourism market.

In 1996 an agreement was reached whereby secure title was to be offered to mining camp dwellers on the Preserved Fields with no further permanent habitation on the opal fields outside the Preserved Fields and the then Department of Mineral Resources adopted less strict rehabilitation standards for the Preserved Fields than the new fields.

- *We should not participate in activities that involve a conflict of interest between our personal interests and our duties and obligations to the Crown reserve.*
- *We are responsible for the health and safety of individuals working, volunteering and/or using the Crown reserve.*
- *We are responsible for implementing relevant commitments, initiatives and programs of the NSW Government, adhering to decisions and directions of the department.*
- *We are accountable for the transparent and efficient use of a publicly owned asset.*
- *We are responsible for managing and reporting breaches of this code of conduct.*

4 BACKGROUND

4.1 History

4.1.1 Gamilaraay and Yuwaalaraay Land

The traditional owners of the Lightning Ridge area are the Gamilaraay⁶ and Yuwaalaraay⁷ people⁸.

The area has been inhabited by aboriginal people speaking the 'Gamilaraay' language (in Northern NSW and Southern Queensland) for an estimated 40,000 years. During the course of this time, it has been suggested that 15,000 people roamed the nation of north west NSW⁹.

Gamilaraay / Yuwaalaraay¹⁰ is an aboriginal language spoken on Yuwaalaraay country.

For the Yuwaalaraay people from around the Wallangulla (Lightning Ridge) area of NSW, their dreaming involves a crocodile named Gurria.

“The supreme spirit Bhiemie and his two wives Birring Ooloo, mother nature, and Cunnum-Biellie, law maker/teacher, went for a swim in a spring while travelling through the outback but were unaware Gurria followed them as he coveted their spirits.

Gurria swallowed both women and swam down the Narran River but Bhiemie tracked Gurria to a lake, speared him at Weetalibah Water Crossing, and as Gurria lay dying, he rolled over and his squirming body created two holes one by his tail (Coocoran Lake) and one by his nose (Angledool Lake).

As Gurria lay dying, it rained, and a rainbow appeared. The colors of the rainbow were trapped in the crocodile’s scales, and with it, opal was formed in the ground. Bhiemie freed his wives from Gurria and with the help of Ghee-jar, a little black ant, brought them back to life.”¹¹

Aboriginal people knew of opals from Dreamtime stories, but they did not mine it¹².

⁶ Also spelt Kamilaroi, Camilaroi, Kamalarai or Gamilaroi.

⁷ Also spelt Euhlayi.

⁸ National Indigenous Australians Agency - <https://www.indigenous.gov.au/community/lightning-ridge>. Gamilaraay and Yuwaalaraay area is roughly bounded by Walgett, Goodooga, Mungindi, Goondiwindi, Ashford, Tamworth, Murrurundi and Coonabarabran. Australian Institute of Aboriginal and Torres Strait Islander Studies – <https://collection.aiatsis.gov.au/austlang/language/D23>

⁹ Kamilaroi – A Nations Identity - <https://kamilaroianationsidentity.weebly.com/colonial-history.html>

¹⁰ It is established that Gamilaraay, Yuwaalaraay and Yuwaalaraay are dialects of a single language. Australian Institute of Aboriginal and Torres Strait Islander Studies <https://collection.aiatsis.gov.au/austlang/language/D23>

¹¹ Lightning Ridge Tourism Association - <https://lightningridgeinfo.com.au/opal-history.html>

¹² *My Own Boss – Migrant Opal Miners at Lightning Ridge* – The Migration Heritage Centre New South Wales.

The Yuwaalaraay people around Lightning Ridge lived on the rivers, using the ridges as highways between those rivers, especially in times of flood. However, lifestyle was disrupted as they were significantly displaced by the establishment of colonial pastoral stations. Many Yuwaalaraay people stayed on as labourers in the rural industries but were increasingly dispersed in the early 20th century and resettled on missions. An event that stands out in local aboriginal history is the forced removal of Yuwaalaraay people living at nearby Angledool, to Brewarrina mission¹³, the disruption resulting in the loss of much local knowledge and culture.

Several aboriginal families went to Lightning Ridge for opals after the Angledool Mission closed in 1936 and a number of families arrived in the 1950s and 60s from other areas. Since then, town amenities and work in aboriginal enterprises have also been an attraction. But while many aboriginal people who live in Lightning Ridge now, are newcomers to the town, the environment of Lightning Ridge and surrounds is marked with the signs of a much older aboriginal presence.

Aboriginal people of Walgett and Lightning Ridge communities now keenly pursue maintenance of culture and the educational and healing values of Country to aboriginal people. They are led by the Dharriwaa Elders Group¹⁴ and the Lightning Ridge and Walgett Local Aboriginal Land Councils.

4.1.2 European Settlement

British settlement in NSW was initially limited to the 19 counties fanning out from Sydney. Nevertheless, squatters began occupying land beyond these limits and in 1835 Governor Bourke issued regulations permitting squatters to take up annual lease of “runs” of land for grazing purposes at a fee of £10 per annum¹⁵. These unsurveyed runs eventually progressed to the North Walgett district. The introduction of the *Australian Colonies Waste Lands Amendment Act 1847* (Imp) permitted the grant of 14-year leases to pastoralists and many of the runs were converted to pastoral leases under the *Crown Lands Occupation Act 1861*.

By the mid-1800s, colonialists settled in the Lightning Ridge area and the current Reserve includes land that was subject to the Angledool, Wamell, Bangheet, Bundinbarrina and Grawin South Pastoral Holdings at that time. Figure 5 shows part of the 1886 Map of the Warrego Pastoral District with the location of some of these holdings.

The Pastoral Holdings were divided into reserved areas and leasehold areas under the *Crown Lands Act 1884* as shown in the 1886 Map of the Warrego Pastoral District (see Figure 5). The leasehold areas were subsequently granted as Western Lands Leases (mostly perpetual) under the *Western Lands Act 1901*.

¹³ *Migration Memories* - <http://migrationmemories.net.au/html/barker2.html>

¹⁴ The Dharriwaa Elders Group are Elders from three aboriginal nations – the Yuwaalaraay people, the Ngayiimbaa people and the Gamilaraay people. <https://dharriwaaeldersgroup.org.au/index.php>

¹⁵ Butt's Land Law 7th Edition (2017).

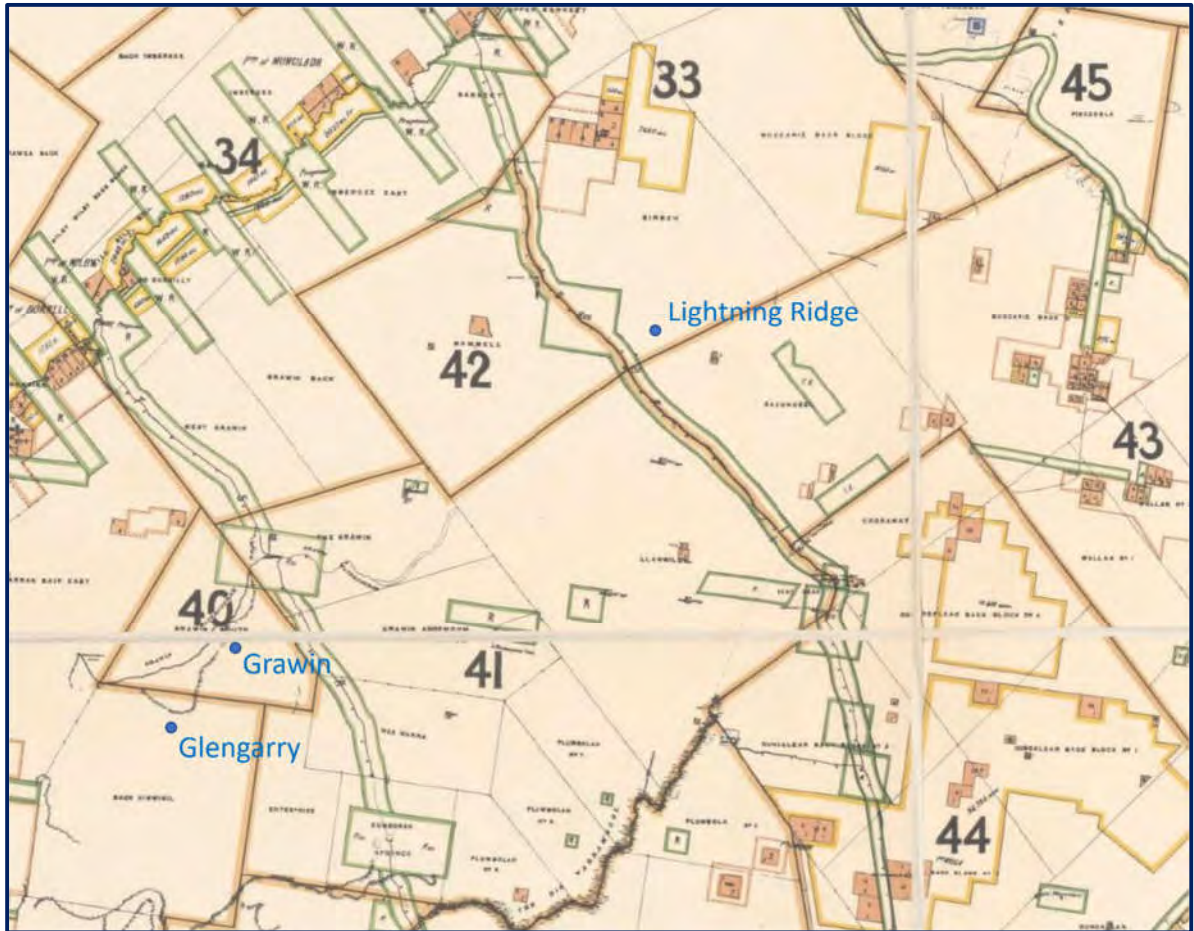


Figure 5 – 1886 Map of the Warrego Pastoral District.
33 – Angledool, 42 – Wamell, 34 - Bangheet, 43 - Bundinbarrina, 40 – Grawin South.

The majority of the Reserve was subject to Perpetual Western Lands Lease (WLL) being:

- WLL 5347 and WLL 2928 in the Wandella / Weetalibah / Allawah area.
- WLL 722, WLL 308, WLL 7790 and WLL7952 in the Coocoran Area.
- WLL 4642, WLL 3140 and WLL 3946 in the Lightning Ridge Area, and
- WLL 4121 and 4132 in the Grawin / Glengarry / Sheeppyard Area.

4.1.3 Lightning Ridge and the Discovery of Opals

The name *Lightning Ridge* is said to have originated when in the 1870s, passers-by found the bodies of a shepherd, his dog, and 600 sheep which had been struck by lightning during a storm.

Opals around the current Lightning Ridge township (formerly Wallangulla) were found late in the year 1900 by Jack Murray, boundary rider on *Dunumbral Run, Bundinbarrina Station*. He was the first registered opal miner. Word spread to an existing opal town, White Cliffs near Wilcannia, that a new form of opal, black opal, was discovered, and many thought their fortunes lay there.

During the drought of 1902, an inquisitive Charlie Nettleton walked 700 km eastward from White Cliffs. At the base of the 6-Mile field, he was shown a handful of unusual dark stones by Mrs Ryan, a boundary rider's wife. He saw the potential in the unique black opal. In 1903, he and Murray walked to White Cliffs and sold their parcel to EF 'Ted' Murphy, who became the first resident opal buyer at Lightning Ridge in 1905. Many of Charlie's mates followed the men back to the Ridge.

Nettleton, now regarded as the founder of the black opal industry, is commemorated with a life-sized bronze statue, the "*Spirit of Lightning Ridge*", located in the Lightning Ridge township at 7 Morilla Street.

The first opal rush occurred in 1905 at the beginning of the ridge near the first settlement, Old Town. In 1908, a second settlement, Nettleton, was developed on the 3-Mile Flat diggings. The village of Wallangulla (New Town) was surveyed on land least likely to be opal bearing, and equidistant between both settlements (see Figures 6 and 7 for the 1910 locality sketch and first village map of Wallangulla). Old Town and the Nettleton settlements were abandoned by World War 1 in favour of the new village Wallangulla, which was gazette in 1908.

The name Lightning Ridge which was used for decades by locals and government to describe the town of Wallangulla, was officiated only in 1963, the same year permanent water and power were laid on in the struggling village. It was during that period that the populations grew significantly, often nourished by migration from European countries after the World Wars.

The relationship between the miner influx and their activities, business structures and economies, and the existing pastoralists, is notable in the history of the town and area. The early years of opal mining saw much conflict between the new wave and the pastoralists. Syndicates formed sometimes by the pastoralists; miners were impounded; drinking water was poisoned; and two large Sydney pastoral companies who owned much of the land in the area engaged in a bitter battle to prevent opal mining succeeding. It is from this backdrop that the town and its people developed. Similar to the process of the silica being laid down over many years to form the unique black opal, the rich character of

the town developed from what was left over after its tumultuous past¹⁶.



Figure 6 – Locality Sketch 1910 Map of the Village of Wallangulla.

The opal fields at Grawin are located about 40km south west of Lightning Ridge and includes Glengarry, Sheepyard, Mulga Rush and the Grawin opal fields. During the 1980's, opal discovered at Coocoran Lake 20km north west of the Ridge, contributed to the biggest boom since the early days. The culturally diverse population of Lightning Ridge and its attached areas then swelled significantly, unofficially reported to have been over 8,000 people¹⁷.

¹⁶ <https://lightningridgeinfo.com.au/about-lightning-ridge.html>

¹⁷ <https://lightningridgeinfo.com.au/opal-history.html>

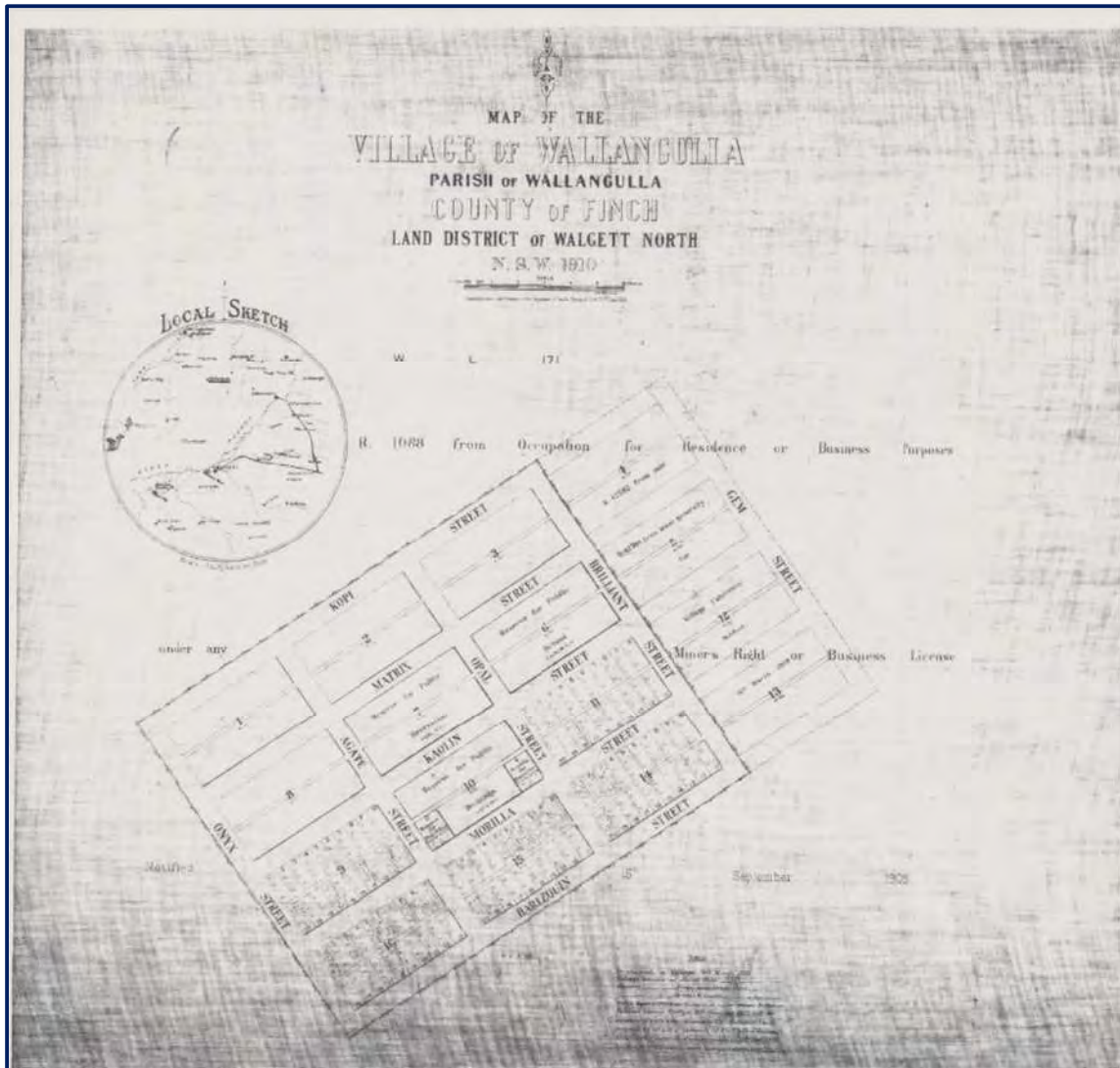


Figure 7 – 1910 Map of the Village of Wallangulla.

With its current relatively stable population of around 2,500 people¹⁸, Lightning Ridge and area remains the well- established regional centre within Walgett Shire fostering a growing tourism industry still based upon the key activity - opal mining.

4.1.4 Agriculture and Tourism in Lightning Ridge

Grazing sheep was the principal agricultural pursuit brought to the Lightning Ridge area by the original pastoralists. Limited cropping of some of the better soils occurred in the early days of rural holding subdivision and intensification of agriculture. However, it wasn't until the late 1970's and 1980's with the introduction of modern conservation tillage machinery and technology, that pastoralists realised the potential of cropping the stored moisture which in some years, accumulated the profiles of deep cracking clay soils which form the

¹⁸ The transient nature of work and lifestyle means population statistics with any accuracy are difficult to procure. Nevertheless, from the official records generated by the 2016 Commonwealth Census (*Quickstats – Australian Bureau of Statistics*), 2,284 people lived at Lightning Ridge and adjoining areas, plus 249 at Cumborah (includes Grawin/Glengarry mining fields).

floodplains surrounding the red ridge country. Being a marginal rainfall area, cropping has progressed on an opportunistic basis capitalising on the wetter years particularly when floodwaters from the Condamine catchment in Queensland flowed south across the border to recharge the deep soil profiles of the lower slopes and lake systems (such as Coocoran Lake).

Tourism in Lightning Ridge, a response to the unique nature of mining and life in an outback town, has been an important benefit for many decades. However, this has stepped to a significantly higher level since the turn of the current century, with emergence of a strong and generally well resourced “grey nomad” culture, easier travel and outdoor living conveniences (vehicles, campers etc.), and an appreciation of the recreational and health benefits of the Great Artesian spa waters.

Figure 8 depicts the historical progression of activities at Lightning Ridge and area, explained by the interactions and impacts of people.

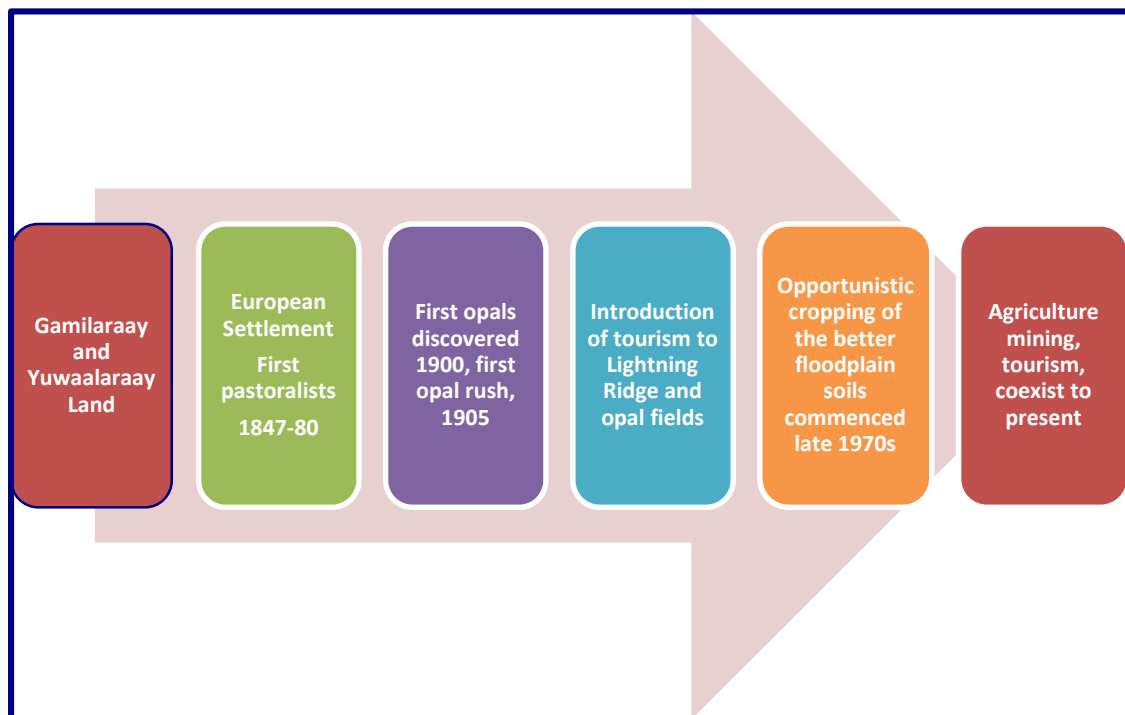


Figure 8 – History of the Lightning Ridge Area.

4.1.5 Voluntary Surrender Scheme

An important milestone in the history of the management and administration of opal mining and land management on the opal fields was the *Lightning Ridge Voluntary Surrender Scheme* (VSS). The VSS was established in March 2016 by the NSW Government and aimed to address the 2015-19 election commitment of working towards securing landholder interest at Lightning Ridge by reducing dual use conflict between grazing leaseholders’ leases and opal miners. The VSS allowed WLL holders to surrender land

significantly impacted by opal mining activities. Following a process of non-binding expression of interest, land valuation was provided by an independent valuer and an assessment conducted by an independent panel. The VSS closed on 30 June 2016.

The VSS resulted in the purchase of four leasehold properties totaling about 17,500 hectares incorporating over 800 mineral claims for a cost of \$6.8 million. Of the areas purchased, the majority were red ridges land, highly suitable for mining and the remainder totaling about 4,500 hectares were grey floodplain soils (referred to generically in this POM as “the grey soil country”¹⁹), more useful for ongoing agricultural production.

4.2 Legal Framework

4.2.1 Crown Land Management Act 2016

Crown land is owned by the State of New South Wales for the benefit of all persons, under the CLMA. This POM has been prepared in order to achieve a balanced, responsible and ecologically sustainable use of the land and to ensure that it addresses the needs of the local neighbourhood, the broader community, and the environment. The POM is also compiled in accordance with the requirements of the CLMA.

Dedicated or reserved Crown land may be used only for the following purposes:

- (a) the purposes for which it is dedicated or reserved
- (b) any purpose incidental or ancillary to a purpose for which it is dedicated or reserved
- (c) any other purposes authorised by or under the CLMA or another Act.

The *principles of Crown land management* as prescribed in the CLMA, are:

- that environmental protection principles be observed in relation to the management and administration of Crown land, and
- that the natural resources of Crown land (including water, soil, flora, fauna and scenic quality) be conserved wherever possible, and
- that public use and enjoyment of appropriate Crown land be encouraged, and
- that, where appropriate, multiple use of Crown land be encouraged, and
- that, where appropriate, Crown land should be used and managed in such a way that both the land and its resources are sustained in perpetuity, and

¹⁹ These lower landscapes are dominated by grey heavier textured soils. Some lighter textured reddish and brown soils also exist in this landscape.

- that Crown land be occupied, used, sold, leased, licensed or otherwise dealt with in the best interests of the State consistent with the above principles.

4.2.2 Mining Act 1992

The objects of the *Mining Act 1992* are to encourage and facilitate the discovery and development of mineral resources in New South Wales, having regard to the need to encourage ecologically sustainable development, and in particular:

- to recognise and foster the significant social and economic benefits to New South Wales that result from the efficient development of mineral resources, and
- to provide an integrated framework for the effective regulation of authorisations for prospecting and mining operations, and
- to provide a framework for compensation to landholders for loss or damage resulting from such operations, and
- to ensure an appropriate return to the State from mineral resources, and
- to require the payment of security to provide for the rehabilitation of mine sites, and
- to ensure effective rehabilitation of disturbed land and water, and
- to ensure mineral resources are identified and developed in ways that minimise impacts on the environment.

Opal mining within the Lightning Ridge region is undertaken within the *Narran-Warrambool Reserve*²⁰. The *Mining Act 1992* enables the creation of Mineral Claims Districts such as the Lightning Ridge Mineral Claims District²¹ within that reserve. The *Mining Act 1992* also:

- imposes a range of special and specified conditions over land specified within the districts.
- further prescribes land as *Opal Prospecting Areas* which may apply to certain Crown land, for instance that which is held under licence or lease for grazing purposes.

²⁰ The Reserve was gazetted in 1989 under Section 24 of the then *Mining Act 1973* to limit exploration licences within the area. The Reserve boundaries are the Queensland New South Wales state border to the north, the Narran River to the west, the Big Warrambool River to the east and the Barwon River to the south. –ref: Parsons Brinckerhoff.

²¹ Mining for opals occurs within the Lightning Ridge Mineral Claims District (which mirrors the area of the Narran-Warrambool Reserve), one of two districts set up in New South Wales under Section 173 of the *Mining Act 1992* (the other being White Cliffs Mineral Claims District) to allow miners to explore and extract opals on a small scale. Mineral claims are currently restricted to less than one quarter hectare in size. – Parsons Brinckerhoff.

- gazettes *Opal Prospecting Blocks* within *Opal Prospecting Areas*. Opal prospecting licences, and mineral claims, are issued accordingly with the special and specified conditions.

4.2.3 Other Relevant Legislation

Additional legislation and policy requirements which can or may also impact on the management of the Reserve, are presented and briefly described in **Appendix 2**. The titles to these acts are as follows:

- *Local Government Act 1993*
- *Environmental Planning and Assessment Act 1979*
- *Native Title Act 1993 (Commonwealth)*
- *Biodiversity Conservation Act 2016*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Local Lands Services Act 2013*
- *Protection of Environment Operations Act 1997*
- *National Parks and Wildlife Act 1974.*

5 THE SITE

Lightning Ridge is 770 km north west of Sydney, 72 km north of Walgett and approximately 60 km south of the Queensland border in New South Wales. The town is located about 6km east of the Castlereagh Highway. Although Lightning Ridge established as an opal mining settlement in the early 1900s, it is now known as a world-renowned centre and only reliable source for the mining of the rarest of gems, black opals. Other opal gemstones including light and crystal opal are also mined.

Accordingly, the Lightning Ridge area is frequented by around 100,000 tourists every year who come to experience life in a true outback mining town and try their luck at fossicking for opal.

The Reserve consists of four separate geographical areas:

- *Lightning Ridge*: The area immediately to the west north and south of Lightning Ridge township.
- *Grawin / Glengarry*: Two separate areas approximately 40 km to the south west of Lightning Ridge.
- *Coocoran*: Directly west of Lightning Ridge and just west of Coocoran Lake.
- *Wandella / Weetalibah / Allawah*: to the west and north west of town, adjoining the Castlereagh Highway and then to the Narran River.

5.1 Reserve Purpose

The land included in this Plan of Management is subject to the following reservations under the *Crown Land Management Act 2016*:

- Reserve 95758 for Village Purposes was created, with the notification in the NSW Government Gazette, on 24 December 1981 over land at Lightning Ridge as shown in **Appendix 1**. An additional purpose to allow the issue of a licence for Advertising Site was added on 26 February 2016.
- Reserve 1024168 for Opal Mining and Exploration and Public Access, with the notification in the NSW Government Gazette on 4 December 2009 over land at Lightning Ridge, Grawin and Glengarry as shown in **Appendix 1**. Additional Purposes for Tourist Facilities & Services, Accommodation, Heritage Purposes, Public Recreation, Future Public Requirements, Rural Services, Government Purposes and Environmental Protection were added in two notifications in the NSW Government Gazette in 2016. Additional purposes to allow the issue of licences for Access, Advertising Site, Air Strip, Automatic Weather Station, Cultivation, Dam, Grazing, Residence and Sporting Event have also been added over various dates.

Part of the land is also subject to reserves for Urban Services, Travelling Stock, Public Recreation Village Purposes, Water Supply and Public Recreation and Racecourse as set out in Table 7 in **Appendix 1**.

5.2 Current Land Use

The land included in this POM is used for multiple purposes including:

- Opal mining and exploration including:
 - Underground mining
 - Open Cut
- Mining related activities such as:
 - Access to mines
 - Opal processing facilities and dams
 - Mullock heaps
 - Rehabilitation
 - Water pumping
- Tourism and Recreation including:
 - Access roads and car parks
 - Art works
 - Australian Opal Centre (under construction)
 - BBQ and Picnic areas
 - Golf course
 - Guided and self-guided tours.
 - Hotels, shops and cafés
- Agricultural activities including:
 - Cultivation
 - Dams
 - Grazing
 - Shearing sheds
 - Stock yards
 - Travelling stock routes
- Residential Purposes including:
 - Access to Residential leases and residential mineral claims
 - Residences
- Civil infrastructure including:
 - Access roads and ramps
 - Drainage
 - Dump and waste sites
 - Three licensed premises
 - Fuel Station
- Environmental Protection activities including:
 - Hudson Pear Control, and a range of other weeds including additional Weeds of National Significance
 - Potential Endangered Ecological Community Regrowth
 - Feral animal control

- Heritage purposes such as:
 - Aboriginal cultural sites and activities
 - Early settlement historical sites
 - Museum
 - War memorial
- Airstrips
- Advertising
- Weather Station
- Events

5.2.1 Mining

Australia is responsible for over 90% of the world's supply of gem quality opals. Half of that supply comes from the two NSW opal mining areas – White Cliffs and Lightning Ridge, with the Ridge producing the large majority of the prized black opal. On 10 April 2008, soon after Lightning Ridge produced around \$60 million in black opal, the NSW government designated this opal as the state's official gemstone. The difference between precious and common opal is due to differences in the size and arrangement of the silica spheres in the structure, amorphous silica being the dominant element in the componentry of opal²².

Across the whole of the *Narran-Warrambool Reserve*, approximately 3,300 mineral claims exist at the present time of which 500 to 800 are mined on a regular basis whilst 2,000 claims are mined on a casual basis. The Department of Regional NSW – Mining, Exploration and Geoscience (MEG) advised that in May 2020 there were 1831 mineral claims on the Reserve.

The black opal mined at Lightning Ridge is generally found at 5 to 30 metres below ground level in the deeply weathered claystone layer of the Graman Creek formation of early Cretaceous age. This forms a distinct layer below the overlying sandstones and conglomerates of Tertiary Age.

Mines were originally dug by hand and opal production was limited. With the advent of mechanised mining in the late 1960s, opal production increased substantially²³. Underground mining is the most common method employed in the opal fields surrounding Lightning Ridge. This method involves sinking a shaft through the sandstone and conglomerate layers to reach the claystone, where 'levels' are then dug horizontally

²² About Opal: *Resources and Geoscience NSW government*.

²³ Opal Mining within the Narran-Warrambool Reserve Lightning Ridge. Review of Environmental Factors. *NSW Department of Primary Industries/Minerals 2004*.

through potential opal bearing material. Open cut mining involving excavating a large area with heavy machinery occurs, but is rare.

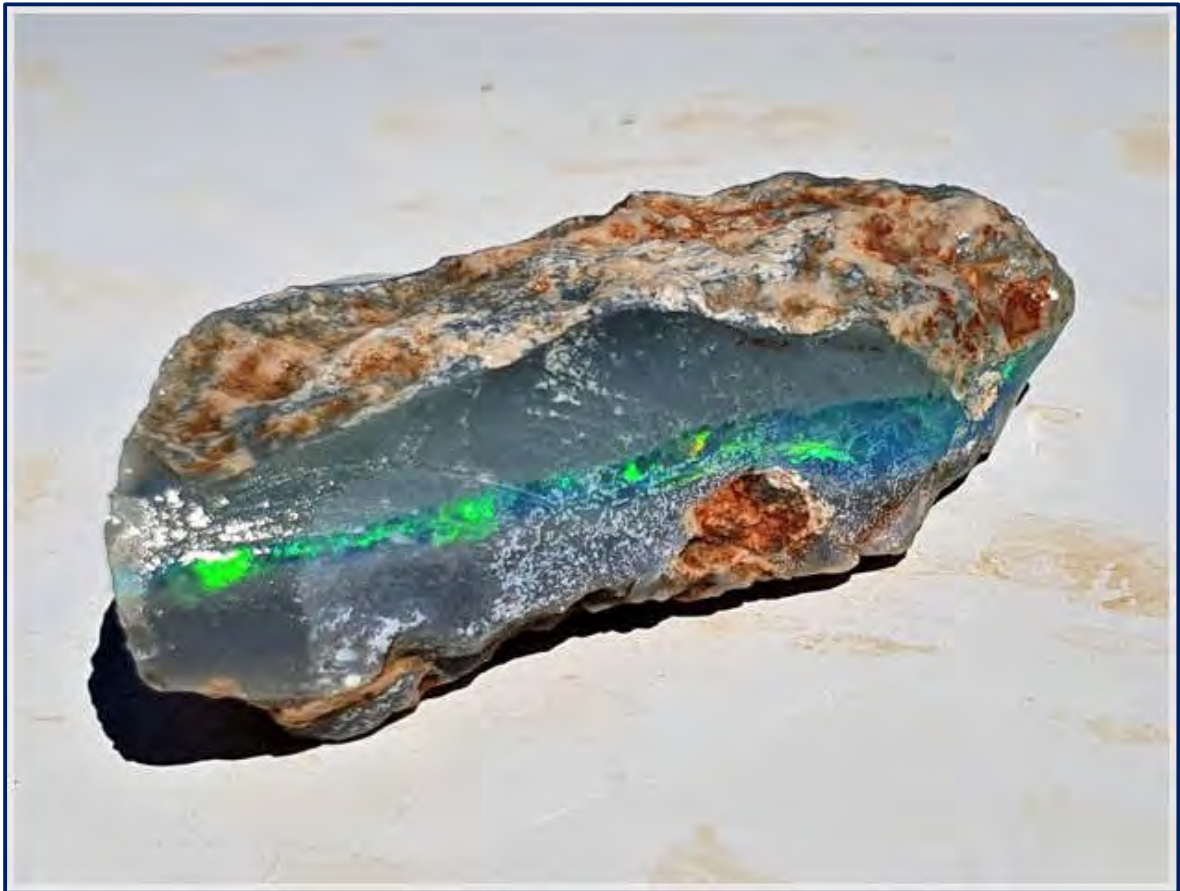


Figure 9 – Opal Seam found at Grawin.

Two common techniques are applied to processing of opal dirt – wet puddling and dry puddling:

- Wet puddling operations may service up to 20 or more individual mining operations, occurring where a dammed water supply enables a wet sieving and separation of the opal soil materials from the opal.
- Dry puddling uses the same sieving processes as wet puddling, although reliant on a dry mechanical separation process.

The township of Lightning Ridge was founded to service the mining community. Indeed, the nature of this community has been shaped by the people attracted to the opal mining industry, which has a flow on effect in creating jobs in retail and hospitality industries.

A significant benefit has been the growth of tourist industries (see below). In addition to the obvious flow-on values, tourists enjoy the first-hand experiences of opal mining and

its culture from the fossicking activity. A noodler is a person who fossicks mullock heaps. Noodling has become a popular activity, creating special considerations within this POM.



Figure 10 – Polished Opals found at Lightning Ridge.

While mining and exploration takes place across significant sections of the Reserve, it is concentrated:

- around Lightning Ridge.
- in the Coocoran Area west of the *Rexeen* Homestead.
- in the Allawah area east of the Castlereagh Highway.
- at Glengarry in the north section of Lot 1952 DP 763834.
- at Grawin in the south western section of Lot 1 DP 1145840.

5.2.2 Tourism

Tourism is a mainstay economic activity at Lightning Ridge. Without tourism, it is unlikely that Lightning Ridge would prosper economically. Tourism enriches the town's accommodation venues, fuel and food suppliers, small retail businesses, restaurants and

cafes within the township. On the opal fields, it provides a viable organised touring business opportunity (currently three companies), enabling visitations by singles and groups in a casual capacity and the patronising of the *Club in the Scrub* at Grawin, the *Hilton Hotel* and the *Sheepyard Inn* at Glengarry, as well as hands-on fossicking experiences. The *Car Door Tours* are popular, as are visitations to other tourist attractions on the Preserved Fields. These experiences ideally enable tourists to absorb the unique culture and way of life of those who live and work on the Reserve.



Figure 11 – Existing Tourism Sites.

The Club in the Scrub at Grawin (top) and Chambers of the Black Hand – are popular tourist destinations.

The Reserve contains tourism attractions with active recreation opportunities such as:

- Club in the Scrub and golf course at Grawin (Orange Car Door Tour)

- Sheepyard Inn and Lake Beard War Memorial at Glengarry (Orange Car Door Tour)
- Coocoran Lake in flood times off the Castlereagh Highway
- Lunatic Hill Open Cut Viewpoint (Yellow Car Door Tour)
- Artesian Baths on Sherman's Way
- Nettleton's First Shaft (Green Car Door Tour)

The Reserve also provides access to many other built attractions in Lightning Ridge including:

- Cactus Nursery (Blue Car Door Tour)
- Walk-in Mine (Blue Car Door Tour)
- Chambers of the Black Hand (Yellow Car Door Tour)
- Australian Opal Centre Black Opal Heritage Shed (Yellow Car Door Tour)
- Amigo's Castle (Red Car Door Tour)
- Ridge Castle (Red Car Door Tour)
- Astronomers Monument (currently not available to tourists)
- Big Opal Underground Mining Tour (Yellow Car Door Tour)

The dynamics of Australian tourism may have changed, perhaps permanently, because of the unusual and tragic *Covid 19* phenomenon during 2020. It is unknown, at this time, the permanency of changes to tourism patterns at Lightning Ridge, although there are some early trends which flag changes to the distribution of tourist numbers in time. For instance, for the calendar year 2019, the *Lightning Ridge Visitor Information Centre* reports a total of 50,085 individual visitations from tourists to its shopfront²⁴. For the incomplete year ending October 2020, 29,117 visitations were recorded for a year which also included just 92 visitations for April and May combined, the two main *Covid 19* impacted months. The single month of October for the same year records 6,503 visitations, almost twice the tally for the same month in 2019.

²⁴ Diane Kearn Lightning Ridge Visitor Information Centre Manager, *pers.comm.*

A proposed *Australian Opal Centre* will be a huge investment and a boon to the future economy of the town and region. This centre will promote the full story of the only commercial mining of Black Opals in the world and its infrastructure will be established near a large (inactive) open cut mine on Lunatic Hill, close to Lightning Ridge.



Figure 12 – The Proposed Australian Opal Centre
Site of the proposed Australian Opal Centre tourist attraction on the Three Mile Loop, Lunatic Hill.

5.2.3 Agriculture

The opal mining industry at Lightning Ridge and area has historically occurred over land held as Western Lands Leases by pastoralists (now covered within the CLMA). However, the *Mining Act 1992* (and its precursor legislation), “binds the crown” in recognition of the significant social and economic benefits to New South Wales that result from the efficient development of mineral resources²⁵. So, for long periods of time, the land was shared by both industries.

This sharing of the same or related lands under different tenures, and for different purposes, has historically created tensions between parties. Opal mining operations may exclude grazing activities for safety reasons and result in loss of grasses in the vicinity of mines. Fencing and access issues, biosecurity and an uncertain “scope creep” of mining across the landscape in time, has created uncertainty in the agricultural sector. The intention of the VSS was in part to create clearer separation of interests and reduction in ongoing disagreements, notwithstanding a clear economic advantage provided by mining over agriculture more particularly on the poorer/marginal agricultural lands.

Agriculture is limited to grazing activities (sheep, cattle, goats) on the red ridge country which shows good grass growing response after rain and is a valuable flood refuge. The grey soil country creates potential for higher return opportunistic cropping activities. On the heavier country, prior to the Land Manager assuming responsibility, crops which have been planted include winter cereal (mainly wheat), chickpea (winter), sunflower (summer) and sorghum (summer).

²⁵ *Mining Act 2012 3A (a)*.

In either case, fencing and biosecurity remains a responsibility for the Land Manager, as do fencing maintenance and water supply for the pastoral component.

5.2.4 Residential

The Reserve is also used for residential living by both active and inactive miners and retirees who remain or are attracted by the lifestyle and cheap living costs.



*Figure 13 – Residences on the Reserve
Clockwise from Top – Wandella Homestead; Residential Mineral Claims at Glengarry; Residential Mineral Claims at Grawin.*

The estimates of the number of residents, especially those residing on the Reserve, is rather vague. According to the ABS²⁶ 2016 census, Lightning Ridge township has an official population of approximately 1,400, though it is estimated that this is probably a significant underestimation with the inclusion of opal miners and their families who are temporary residents or not recorded by the census. For the area which includes the township, the majority of the Lightning Ridge and nearby opal fields (Grawin / Glengarry-Sheepyards), Angledool, and on to the Queensland border, the 2016 census shows a population of 2,206. However, it has also been reported anecdotally that about 4,500 people collect mail from Lightning Ridge post office. This suggests that there are many more people living on

²⁶ Australian Bureau of Statistics.

the opal fields than has been acknowledged in the census workings of 2016, and most likely, over the years prior.

MEG advised that 486 of the 1831 Mineral Claims on the Reserve are Residential Claims with the majority in the Grawin Area (404). These have planning authorisation as additional permitted uses for dwelling as noted in the *Walgett Local Environmental Plan 2013* at Figure 14.

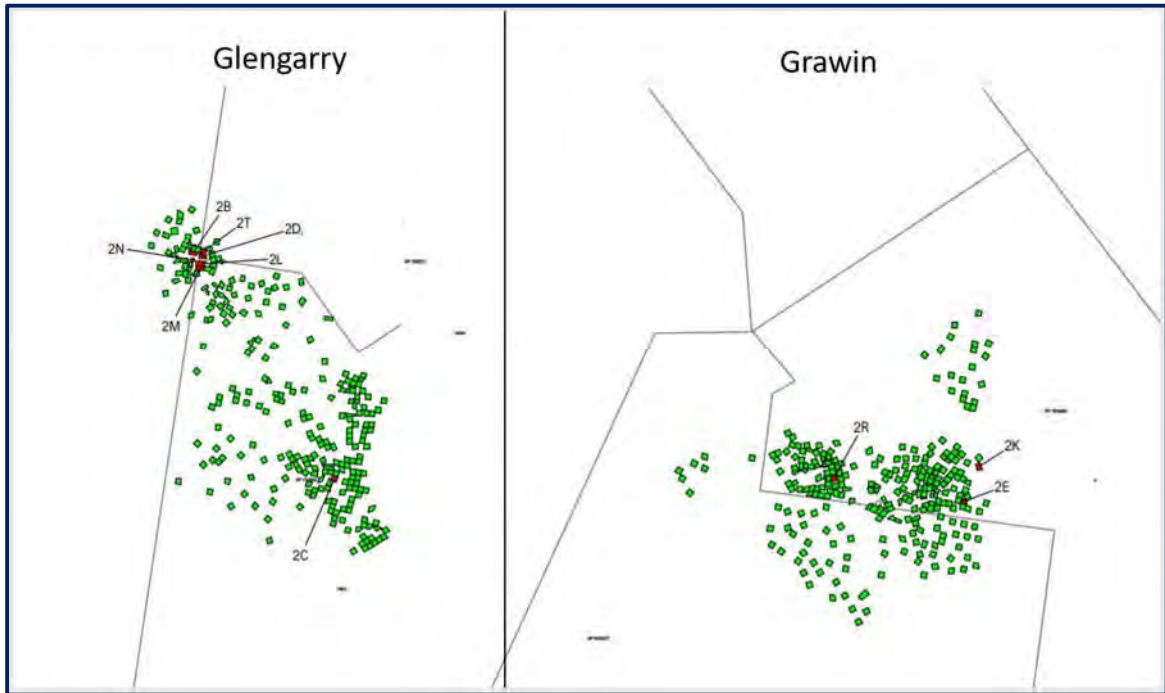


Figure 14 – Additional Permitted uses for Dwelling at Grawin and Glengarry.

In Lightning Ridge these Residential Mineral Claims have generally been replaced by Western Lands Leases (WLL)s. The Department of Planning and Environment - Crown Lands (Crown Lands) advised in 2018 that 1050 Western Lands Leases had been granted since 2006. Although the creation of the WLLs revokes the land from the Reserve residents who continue to utilise the Reserve for access to housing, Residential Claims continue to exist in Lightning Ridge (42), Coocoran (14) and Weetalibah/Weetalibah Lane (26).

Constructed residences, managed by the Land Manager, are the former Wandella, Weetalibah and Rexeen²⁷ Homesteads.

²⁷ Rexeen Homestead is included on the basis it will be added to the Reserve at a later date.

5.2.5 Recreation

The Reserve provides recreation facilities for the local community including golf facilities at Lightning Ridge and Grawin, and shooting facilities at the Lightning Ridge Gun Club. Lake Beard at Sheeppark has picnic facilities and cooling-down opportunities.



Figure 15 – Recreation on the Reserve

Clockwise from Top Left – Grawin Golf Course, Lightning Ridge Golf Course, Lightning Ridge Gun Club, Lake Beard Picnic Area.

5.3 The Physical Environment

Consistent with the principles of Crown land management, it is important to describe and understand the physical environment of the Reserve. Three spatial layers of information which have been produced in various forms by agencies within the NSW Government, have been used in this POM to describe the physical environment of the Reserve. They are:

- Western Land Systems
- Soils
- Native Vegetation

The relationships and spatial overlaps between all three layers with accompanying descriptions, provide an advanced characterisation of the land, its natural resource assets, and its priority and capability for management into the future. For the Reserve, this underlies the custodial responsibilities of the Land Manager for the way land is managed, which in some cases, is underlain by legislative responsibilities and requirements.

All three spatial layers are used in this POM to describe and locate various land management actions, which relate directly to the technical nature of the respective spatial layer. For example:

- Western Land Systems: At a smaller mapping scale (larger landscape unit), useful in reference to a single integrated landscape description (landform/ soils/vegetation), which has relevance across the NSW Western Division and is generally well understood by most western land managers
- Soils: Specific information, particularly pertinent to agricultural capability and specific soil related management constraints
- Native Vegetation: More relevant to the management of specific native vegetation types and communities, clearing and biodiversity values and associated custodial responsibilities.

5.3.1 Western Land Systems

Land systems are areas or groups of areas for which there is a recurring pattern of topography, soils and vegetation and which apply to Western New South Wales²⁸. Land systems provide descriptions of soil and land resource information suitable to assist in broad scale land-use planning and land management. As such, land systems remain in their

²⁸ SEED; The Central Resource for Sharing and Enabling Environmental Data in NSW. *NSW Government*.

own right, a reliable integrated method for systematically describing the landforms, soils, erosion constraints, land management considerations and existing native vegetation. Land systems were mapped by the former *Soil Conservation Service of NSW* at a scale of 1: 250,000 scale and field checked at a larger scale.

The Land Systems which are relevant to the Reserve are briefly described:

Lightning Ridge Land System – The Lightning Ridge Land System represents the areas that have more traditionally been mined for opals. It consists of gravelly red ridges with sandy plateaux and drainage lines, in the vicinity of Lightning Ridge township, Grawin and Glengarry /Sheepyard to the south west, and the upper slopes and ridges at Coocoran areas to the north. The undulating ridges are of Cretaceous claystone, siltstone and sandstone, with slightly sloping sandy plateaux, narrow dendritic drainage lines and small rounded pans; relief²⁹ to 20m.

Rotten Plain Land System – These are drainage plains with cracking clay soils occupying lower Quaternary alluvial areas of Coocoran Lake, which are periodically partially or completely inundated by local run-off or floodwaters from the north; depressed to 4m.



Figure 16 – Lightning Ridge and Rotten Plain Western Land Systems
Lightning Ridge Land System (left); Rotten Plain Land System.

Llanillo Land System – These land systems occur as slightly elevated and lightly timbered floodplains to the north of Lightning Ridge township and to the south and south west of Coocoran Lake. This system is part of the extensive floodplains and are of older (brown) and younger (grey) Quaternary alluvium; relief to 1m.

Wombiera Land System – This land system occurs as highly-channelised floodplain components which are common along the tributaries of the main rivers or elevated alluvial plains, containing a dense network of incised stable and shallow channels of grey Quaternary alluvium and red and brown soils. They are lightly timbered and occur to the north east of Coocoran Lake; relief to 1m.

²⁹ Relief is defined here as the difference in height between the lowest and highest point in the respective Land System described.



Figure 17 – Llanillo and Wombiera Western Land Systems
Llanillo Land System (cleared): Wombiera Land System.

Nidgery Land System – The Nidgery Land System also occurs as floodplains, components of an extensive network and occur as grey and minor areas of slightly elevated red-brown Quaternary alluvium, featuring minor narrow, poorly defined drainage lines and swamps; relief to 1m. The Nidgery Land System occurs in the north of the VSS area towards the Narran River.

Upper Darling Land System – This land system abounds the main river systems (eg. the Narran River) and occurs as major perennial drainage tracts and associated floodplains of grey Quaternary alluvium, normally quite localised. There is one small area located within the VSS near the Narran River to the north. Relief to 2m though depressed channels may be up to 15m in depth near the river.



Figure 18 – Nidgery and Upper Darling Western Land Systems
Nidgery Land System (left): Upper Darling Land System.

The maps of Western Land Systems which apply to the Reserve and associated Crown lands are provided in **Appendix 3**. A complete description of each relevant Land System including landform unit descriptions, appears in **Appendix 4**.

This POM universally uses the Land System nomenclature throughout the range of discussions and analyses within, as a means of spatial refencing and generalised physical description, and land management.

5.3.2 Soils

Lightning Ridge lies in the Surat Basin, which is part of the Great Australian Basin covering 1.7 million km² of eastern Australia. Opal is found in the deeply weathered portion of the Early Cretaceous Graman Creek Formation. Overlaying these sedimentary rocks are sandstones and conglomerates of the Tertiary Period which have often hardened to form silcrete³⁰. It is also important to note here that the range of Cretaceous Deposits at Lightning Ridge yield some of the rarest, most beautiful and precious fossils in the world³¹. It is from these geologies that the soils of the ridges and slopes of the Reserve, and their opal bounty, are derived. Alluvial soils of the floodplains which overlay these geologies, have a different origin.

The following soil descriptions are sourced from the *Northern Floodplains of Western NSW*³² report, originally compiled to provide base information to assist in the assessment of lands for clearing and cultivation licences and consents for the Western Division component of the Walgett Shire. This work which offers the most contemporary description of soils in the area, was based on interpretations of aerial photographs, Landsat imagery, the previously discussed Land Systems mapping and field checking. For each soil map unit, the potential for sustainable agricultural development has been rated as low, medium or high, the low rating indicating various soil constraints to development, and the high rating indicating few soil constraints to development.

Soil types are classified according to the *Australian Soil Classification*³³ and the (older) *Great Soil Group system*³⁴.

Of the fourteen broad soil map units identified in this study, **four** are relevant to the Reserve and descriptions provide a valuable insight into their agricultural capability and physical and chemical attributes.

Red Kandosols³⁵ (Red Earths³⁶). *Soil Landscape Process: Erosional.*

The main soil types occur as Red Kandosols, although some areas of Tenosols (Siliceous Sands) also occur within the unit. They occupy the higher slope and ridges, so spatial

³⁰ Opal Mining within the Narran-Warrambool Reserve, Lightning Ridge Review of Environmental Factors. 2004 NSW Department of Primary Industry NSW government/Minerals

³¹ The sandstone at Lightning Ridge once formed the floor of an ancient shallow inland sea where plants, aquatic life and occasionally the bones and teeth of animals were preserved. As they tunnel through these sediments searching for precious opal, miners sometimes find these fossils. The most famous and significant fossils from Lightning Ridge are those of some early mammals. Mammal fossils are not often found in Cretaceous fossil deposits, since the generally rare, tiny and delicate mammals of this period were far outnumbered by the more successful and diverse dinosaurs. In Australia, Cretaceous mammal fossils are almost unknown, which is why the Lightning Ridge fossils are so important.
<https://australian.museum/learn/australia-over/time/fossils/sites/lightning-ridge/>

³² Soils of the Northern Floodplain Regional Planning Area – Western Division Section of the Walgett Shire. Within the Northern Floodplain report, *NSW Government*, and *pers.com.* (Mark Young, *Environment, Energy and Science, NSW Department of Planning, Industry and Environment.*)

³³ Isbell R (1996) *The Australian Soil Classification*, second edition: *National Committee on Soil and Terrain.*

³⁴ Stace HCT *et al.* (1968) *A Handbook of Australian Soils: CSIRO Pub.*

³⁵ Australian Soil Classification (after Isbell).

³⁶ Great Soil Group (after Stace).

boundaries generally accord with those of the Lightning Ridge Land System. Soil textures at the surface are typically sands or sandy loams and overlie sand to sandy clay loam subsoils that are red in colour and have an earthy or sandy fabric.

Capability of this unit for agricultural development is generally low. Soils are of low fertility and high erodibility and are often acid with low nutrient and water retention capabilities. More stony sites may hinder the use of some farm machinery. Expected crop/pasture productivity without significant inputs such as fertilisers, lime, etc., is very low. Woody weed infestations are commonplace on soils of this unit. Localised areas that have been cleared in the past and not regularly maintained are now presently sites of severe woody weed reinfestation.

Red and Brown Chromosols (Red Brown Earths). *Soil Landscape Process: Stagnant Alluvial.*

These soils have limited distribution between the floodplains and the down-slope extensions of the Red Kandosols described above. Within the study area, these soils are relatively minor in extent and occur within the Wombiera Land System east of the highway near the Travelling Stock Reserve of the northern extension of the VSS area; within the Lightning Ridge Land System as a footslope above the western edge of the floodplain on the western section of the VSS; and at Grawin as a small area also within the Lightning Ridge Land System on the western tip above the western margins of the Coocoran Lakebed.



*Figure 19 – Red Chromosol Soil
Red Chromosol soil profile on foot-slope above Coocoran Lake floodplain.*

The Red and Brown Chromosols generally have enough depth to develop a texture contrast profile, being a clay loam or sandy loam surface horizon overlying a reddish-brown medium clay subsoil. Some minor Red Kandosols are also included within this unit.

Capability for agricultural development is generally low to moderate. Soils are capable of sustaining some cropping activities and pasture improvement, but low soil fertility, hard setting surfaces, and sodicity³⁷ may all hinder production. Where cleared, these soils can be exposed to high levels of wind and water erosion, which can result in the development of scalded surfaces. Maintenance of a protective groundcover is important.

³⁷ Sodic or *Sodicity*: The clay component of the subsoil is high in exchangeable sodium which tends to disperse the clay particles when wet, causing break down on soil structure, high bulk densities and poor infiltration and plant root development.

Grey, Brown and Red Vertosols (Grey, Brown and Red Clays). *Soil Landscape Process: Stagnant Alluvial.*

The lands that support these soils are subject to rare inundation from floods and are mainly located within the Llanillo Land System on the lower landscapes beyond the red ridges and slopes north and north west of Lightning Ridge township and on the higher floodplains to the south and west of the Cocoran Lake system; and within the Nidgerly Land System on the upper floodplains of the Narran River to the north. Soil types are predominantly Grey Vertosols with areas of Red Vertosols, Brown Vertosols and Black Vertosols. Soils are generally uniformly clay throughout, some have self-mulching surfaces, and most are therefore seasonally cracking.

A low / moderate to occasionally moderate / high capability for agricultural development is characteristic of this unit. The soils present few major limitations to cropping and/or pasture improvement apart from possible high soil salinity or soil sodicity. Areas with soil salinity and or sodicity should be identified and slightly depressed cropping yields in some seasons (compared to those of the Grey Vertosols – see below), should be expected.

These lands are subject to rare inundation from floods. Lack of subsoil moisture is a possible constraint to the agricultural use of some of this land. The adoption of conservation farming methods is recommended to ensure long-term sustainability and profitability. These methods are recommended to reduce soil erosion hazards, improve soil organic matter, reduce evaporation and maintain plant water availability and soil fertility.

Grey Vertosols (Grey Clays). *Soil Landscape Process: Lacustrine.*

Soils of this unit are exclusively Grey Vertosols, located mainly within the Rotten Plain Land System. Soils are heavy textured throughout and seasonal cracking of soil profiles is apparent when the lakebeds are dry. These soils are generally fertile, although often sodic at depth.

Capability of this unit for agricultural development is generally low / moderate to occasionally moderate / high, with flood hazard and shallow water tables the major



*Figure 20 – Grey Vertosol Soil
Grey Vertosol on the floodplain showing strong cracking and self-mulching characteristics.*

limitations during those periods. When lake waters have receded and immediately following lake recession, soil water contents down the soil profile are generally at their

highest and ideal for “opportunity cropping”. The adoption of conservation farming methods³⁸ is recommended to maximise cropping yields and ensure long-term sustainability and profitability. These methods are recommended to reduce soil erosion hazards, improve soil organic matter, reduce evaporation and maintain plant water availability and soil fertility.



Figure 21 – Grey Vertosol Soil.
The grey vertosols of the floodplains offer good cropping opportunities in some seasons.

The soil map units discussed above are shown spatially on the soils map in **Appendix 5**.

5.3.3 Native Vegetation

Native vegetation communities were derived from original MBDC 1991 – M305³⁹ digital structural vegetation data showing woody vegetation (>20% canopy cover) and non woody vegetation (<20% canopy cover). This information was then upgraded and enhanced through interpretation of satellite images and supported by field data and verification, historical references, community consultation and aerial photography (1975-1998). These amendments and upgrades were produced by the *Northern Floodplains Planning Committee*⁴⁰.

The following provides a brief description of the major vegetation communities which exist in the study area:

³⁸ Conservation farming methods include full stubble retention and chemical weeds control associated with reduced tillage.

³⁹ M305 Basin Care structural vegetation data (1991-95). *Murray-Darling Basin Commission*.

⁴⁰ Vegetation Communities of the Northern Floodplains, Western Division of Walgett Shire NSW Book 1 April 2004. *Northern Floodplains Planning Committee supported by Natural Heritage Trust*.

Poplar Box/Silver-Leaf Ironbark

This community represents the largest map unit occupying 12,126ha. and is well represented in each of the separate sections of the study area. It consists of predominantly poplar box⁴¹ and silver-leaf ironbark with a shrub understory of budda, ironwood, mulga wilga and wild orange, the latter being an indicator of potential opal bearing land⁴². Beefwood, Needlewood and pine may also be present. The groundcover layer consists of box grass, wire grass and grey beard grass.

The community is restricted to the higher ridges and slopes of harder red kandosols. Production value is restricted to grazing, although the ironbark in places has a commercial value. This community offers flood refuge in good condition (when not overly disturbed), as well as significant habitat and conservation value as it supports a range of threatened and endangered species of plants, reptiles, mammals and birds. Opal mining is strongly associated with this community.

Poplar Box/Pine/Other

Poplar Box/Pine/Other occurs in smaller areas in the Coocoran section however it is mainly located in the Grawin and Glengarry/Sheepyard sections. Its extent totals 2,483ha. Whilst poplar box and pine (mostly white cypress) are most common, other species in either tree or shrub form are also part of the mix, especially wilga, mulga, ironwood, beefwood, whitewood, boonery and supplejack. The shrub layer is dominated by budda or pine. Groundcover is variable with season and grazing pressures, though box grass is persistent.



*Figure 22 – Native Vegetation – Cypress Pine
High mortality of Cypress pine (Lightning Ridge Land System) occurred during the drought years 2015-20.*

Although not greatly modified by clearing for pasture improvement and cropping, most of the large white cypress pine has previously been logged. Dense pine regrowth which may have been associated with lack of regular fires, plus grazing pressures over the years, has been subjected to high mortality rates towards the end of the 2015-20 drought. A

⁴¹ Referred to locally by its alternative common name, Bimble Box.

⁴² Wild orange tree (*Capparis mitchellii*) can have a very deep root system, which provides a passage- way for water which accesses the sandstone and “shincracker” (hard pressed clay) into the soft clay level, where opal may be formed. The plant is also a good source of bush tucker.

deterrent to clearing is the likelihood of a dominance of other species such as mulga and poplar box, with the pine, creating a significant woody weed problem. Grazing of sheep and more recently, goats, has been the main agricultural activity. Hudson pear infestation has reached serious levels, as have a number of additional environmental weeds (including Tiger Pear and Rope Pear). Other land uses include opal mining, quarrying and passive recreation. Poplar box/pine and other communities also has potential for public reserves, native seed collection, bush tucker enterprises and ecotourism.

Poplar Box/Coolibah

Poplar box/coolibah communities contain tree, shrub and pasture layers and are located west of Lightning Ridge township, and around Coocoran Lake, totaling 2,002ha. Trees are poplar box, and coolibah, mixed with belah, boonery and whitewood. The shrub layer includes native cherry, nepine, warrior bush, wilga, wild orange and budda. Groundcover includes neverfail, mitchell grass and box grass.

Agriculturally, this community is mainly used for grazing. Although some land has been cleared for cropping, the patch-work nature of coexisting soil types (see grey/brown/red vertosols) reduce capability in that respect.

Habitat value of the Poplar box/Coolibah association is high, due to its structural and floristic diversity. Large hollow-bearing trees contribute significantly to habitat value, as does the variable-height shrub layer. A mix of plant species that are adapted to the heavy clay soils and lighter soils adds to species diversity. Rises provide important flood refuges for fauna.

Mulga

Mulga vegetation community is relatively minor in extent (147ha total), occupying the north western section of the Glengarry-Sheepyards opal mining fields, with a smaller unit in the far south western section of the Coocoran Lake vicinity. Mulga communities are areas of small trees in dense groves with few other trees and shrub species. Where present, tree species also include punty bush with umbrella mulga. Groundcover species are commonly mulga grass, grey beard grass, beefwood and wire grass.

Occupying the hard-setting red kandosols and red chromosols of the rolling downs and lowlands, mulga is used for grazing. In dry times, trees have in the past been lopped or pushed for fodder. Clearing or thinning for improved pasture has also occurred in the past. Mulga is of high conservation value because of its limited extent and due to its eastern location, which is on the edge of its distribution. Both as a community and as a shrub component in other community types, mulga may be locally important as a food source to fauna, and provides canopy cover, shade and shelter to small birds and reptiles.

Poplar Box/Leopardwood

This community consists of a clear tree, shrub and groundcover structure, existing on a relatively small section of floodplain (160ha), roughly located parallel with the Narran River in the north of the VSS. In most cases, a sparse scattering of trees of poplar box, leopardwood, whitewood and boonery, overlay shrubs of budda, warrior bush and currant bush. Groundcover is mitchell grass, box grass, windmill grass, as well as spiny saltbush, ruby saltbush, climbing saltbush, goathead burr and copper burr.

Occurring on the grey/brown/red vertosols and red kandosols, this unit has commonly been modified for agriculture by pushing, lopping and thinning in a grazing regime. The heavier clay soils may attract clearing and cropping. Where slightly elevated, poplar box /leopardwood vegetation provide flood refuge for domestic stock and native animals. Good structural diversity, plant species diversity, and connectivity between across and between floodplains means high habitat value. Corridors also provide important connectivity for species movement.

Coolibah/Other

The coolibah/other vegetation community occupies a total of 2,171ha in the study area and is located on the lower terrain in the north western section of the mining fields near Lightning Ridge township, on the northern floodplain near the Narran River to the north, and on a narrow, elevated rim around the edge of Coocoran Lake. This community has a diverse tree, shrub, and groundcover layer with an overstory of mainly coolibah, but may include other species of tree such as belah, gidgee, leopardwood, wilga, mulga, black box, river red gum, poplar box, boonery and whitewood. Common shrubs are nepine, wild orange, eurah, river cooba, spotted



*Figure 23 – Native Vegetation – Coolibah
Coolibah regrowth on the eastern margins of Lake Coocoran, shows good species diversity.*

fuchsia bush, budda, spiny saltbush and lignum. Groundcover is dominated by copperburrs, back roly-poly, box grass, windmill grass, and neverfail. As this is a floodplain community, elevation and frequency of flooding determine the mix of species present.

Soil capability for agriculture is high. Where clearing for cropping the grey/red/brown vertosols, and the grey vertosols, this community is a major contributor to the mapping unit *Crops and Annual Pastures*, or if ring-barked or poisoned for pasture improvement, to inclusion within the unit *Standing Dead Timber*. (Both these units are discussed below.)

Where the community is floristically and structurally diverse, habitat values are very high, particularly when accompanied by large old trees with hollows as often occurs. Habitat value should also be considered in relation to flood frequency and flood refuge presence.

The river red gum component where present (eg. along the banks of the Narran River), provide a particularly significant habitat within the floodplain environment and contribute strongly to woodland connectivity. As Coolibah in this area is an *Endangered Ecological Community* (EEC) in NSW legislation⁴³, the potential for creating biobanking credits for financial returns in Coolibah/Other will require consideration in this POM (see below for more information).



Figure 24 – Native Vegetation – Coolibah
Original ringbarking of mature coolibah results in coppiced regrowth.

Barren

This land use category indicates less than 20% canopy cover with very little intact native vegetation. A total of 1,117ha of barren areas are mainly associated with disturbed opal mining fields or some texture contrast soils which can scald badly. Any native vegetation which exists is either greatly modified, or absent, and habitat values are either weak or negligible. However, these areas may contain habitat elements such as water or particular food plants which will be used by some species, and there is evidence that in time, native species have the capacity to re-establish over these areas.



Figure 25 – Native Vegetation – Barren
Barren areas reflect intensive mining activities of the past.

⁴³ Biodiversity Conservation Act 2016.

Grasslands

The Grassland vegetation community is limited to small naturally occurring areas near the south western boundary of the VSS section near Coocoran Lake (totaling 734ha). Although this is essentially a “non-woody” community of treeless grassland plains, it also ranges to areas of open woodland with <20% tree canopy cover. These sparse woody species include myall, coolibah, rosewood, whitewood, blackbox, and poplar box. Shrubs can include spiny saltbush, spring pod cassia, warrior bush, miljee, cottonbush and flowering lignum. Perennial grasses include hoop, curly and barley mitchell grasses, neverfail, whitetop, Queensland bluegrass, kangaroo grass and warrego summer grass.

Located on the range of heavier textured soils, the grasslands are much prized for grazing and cropping, although both regimes require astute management. Some previously cultivated grasslands have reverted to native species, although depending on grazing management, the species composition may be significantly altered. It is noted that the successful natural re-establishment of the Mitchell grasses after cultivation and cropping, may take two decades.

Habitat is open plain with scattered clumps of trees and shrubs. The cracking nature of the soils within this community may be important for small mammals, reptiles and lizards which shelter there. Boundaries between dense grasslands and other habitat types are important foraging sites for species that prefer a more open environment. Grasslands in the more elevated country provide flood refuge to fauna in times of prolonged flooding.

Crops and Annual Pastures

This category has mostly <20% tree canopy cover, which includes areas cleared and subsequently left untouched, areas totally cleared with introduced pasture, and areas cleared for cropping regardless of previous tree cover⁴⁴. This community, covering 3,477ha, represents areas that have been cleared or cropped because of capable soil types (eg. grey clays) or cleared and pasture improved. Crops include wheat, sorghum, sunflowers, chickpeas and lucerne. Pasture improvement uses buffel grass, bambatsi panic and purple pigeon grass.

Although the original vegetation has been significantly altered, these areas have some habitat value either as food (grasses or crops) or shelter for the more common species that have less specific habitat requirements. Bat species may seek habitat from scattered trees if they remain in this community.

⁴⁴ It is likely that the area of Crops/Annual Pastures has expanded significantly since the information was collected within the Northern Floodplains studies in late 1990's/early 2000's, and on which this assessment and report is based.

Standing Dead Timber

Occupying a total of 122ha, standing dead timber areas consist primarily of dead trees from 10cm to 150cm diameter (at chest height) that may be single or multi-stemmed. These died after ringbarking or poisoning which occurred in the latter decades of the 20th century, normally for pasture improvement. Pasture growth is enhanced because of lack of competition from the trees for soil moisture. Depending on the time lag since treatment, there often exists regeneration of coolibah and other woody species. There are several isolated areas of standing dead timber across the Reserve and the extended VSS areas.

The vegetation communities discussed above are represented spatially in **Appendix 6**.

5.3.4 Threatened Species – Communities and Processes

Threatened Species and Threatened Ecological Communities for NSW are listed under the *NSW Biodiversity Conservation Act 2016* (BCA) in Schedule 1 and 2 respectively. There are many threatened species which either occur, or are likely to occur, across the lands of the Reserve and on the grey soil country. Many are listed for the Glengarry and Sheeppark areas of the Reserve, by Spark⁴⁵ (see **Appendix 7**).

Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepain and Mulga Lands Bioregion, is an EEC which potentially occurs on the VSS area, particularly on the foot-slopes and lake rims adjoining the grey soil floodplains (eg. Coocoran Lake). This community is also an EEC under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA).

It is also noted that although *Poplar Box Grassy Woodland on Alluvial Plains* is not an EEC under the BCA, it is an EEC under the EPBCA. The foot-slopes and lake rims adjoining the grey soil floodplains (eg. Coocoran Lake) of the VSS area also support the potential Poplar Box EEC as prescribed by that legislation.

The BCA enables payments to be made in return for the management and conservation of identified high value habitat. This may be in the form of Biodiversity Stewardship Payments (Division 7 of the Act).

Threatening processes are described in Schedule 4 of the BCA, and those which have possible relevance to the Reserve and the grey soil country, are likely to include:

- alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands
- anthropogenic Climate Change

⁴⁵ Conservation Assessment of Box Hollow and Spinifex Communities on the Properties of 'Kurrajong' and 'Barfield' at Lightning Ridge, NSW. *Philip Spark North West Ecological Services 2006*.

- clearing of native vegetation
- loss of hollow-bearing trees.

5.3.5 Hydrological Influences on Agriculture and Conservation Values

The hydrology of this system particularly as it impacts on the floodplain areas of the Reserve, has highly variable flows, driven by summer rainfall runoff in the upper catchment, including into Queensland. Flooding return periods are an indicator of viability for agriculture as cropping is based on stored soil moisture.

Since 1992, there has been a significant reduction in frequency and magnitude of floods reaching the floodplain lake hydrological systems, including Coocoran Lake. The 2000 to 2010 decade has been reported as the driest on record. (*ref: *Narran Lake Nature Reserve Ecological Description 2011 Aust Gov.*)⁴⁶ Nevertheless, during the 2019/20 season, the period during which this POM was developed, Coocoran Lake and hence the potential for opportunity cropping was revised by good soil moisture provision.

In addition to impacts on agricultural potential, the hydrology of the floodplains of the Reserve impacts strongly on conservation values. RAMSAR⁴⁷ wetlands are sites that are recognised under the *Convention on Wetlands of International Importance* (Ramsar Convention) as being of international significance in terms of ecology, botany, zoology, and hydrology. Australia has 65 RAMSAR wetlands including the neighbouring and hydrologically linked Narran Lake Nature Reserve. One section of that site was listed under the Ramsar Convention in 1999, and a further 3104 hectares were added in 2016 to capture more breeding and feeding habitat for waterbirds. It now covers a total area of 8447 hectares, comprising the whole floodplain area within Narran Lake Nature Reserve.

Although Coocoran Lake and other sections of grey soil country that adjoin the boundaries of the Reserve are not part of the Narran Lake Nature Reserve, these areas are nevertheless part of the same ecological character and hydrological landscape. As such, the characteristics and key features of the Narran Lake Nature Reserve RAMSAR site are worthy of some consideration within this POM.

Narran Lake Nature Reserve contains a considerable diversity of habitats, including some of the largest expanses of the native plant lignum in New South Wales. Narran Lake Nature Reserve RAMSAR site also supports three wetland dependent threatened species - Australian bittern, Murray cod and winged peppercress. It is home to 40 migratory bird species, including 19 listed under international agreements, and substantial breeding of waterbirds, including colonial nesting species such as ibises, cormorants, egrets and spoonbills. It provides drought refuge for waterbirds because it retains water for long periods following floods.

⁴⁶ This claim may now be outdated by the more recent drought period.

⁴⁷ Developed at the Iranian Caspian Sea resort of Ramsar, 27 February 1971.

Given that the habitat of many of the grey soil areas in the Coocoran Lake system have by now been modified through cultivation (as will likely continue in the foreseeable future given favourable seasons), the main remaining environmental threats to the site are increased upstream due to water extraction, climate change and mining:

- Increasing flood diversions through works on-ground (eg. drainage and irrigation work) will lead to further reduced vegetation health and loss of habitat for waterbird breeding in times of inundation and recession, as well as reduced value as drought refuge and support of critical life stages of biota (fish and waterbirds).
- Climate change will increase temperature and evaporation and reduce duration of inundation, thus impacting on vegetation health and waterbird breeding opportunities.

5.4 Infrastructure

The Reserve has significant infrastructure to be managed, enhanced and utilised by the public either directly or through tenure.

Former Pastoral Holding Homesteads

These assets arose from the surrendered rural holdings (VSS): Allawah, Rexeen⁴⁸, Wandella and Weetalibah. The Land Manager previously undertook works on the Wandella and Weetalibah houses to ensure they were safe to prepare them for rental. Both these properties are now rented. The Rexeen homestead and some sheds require moderate maintenance work prior to any form of occupation.



Figure 26 – Homesteads
Homesteads at Rexeen (left) and Wandella.



Figure 27 – Infrastructure at Rexeen.

⁴⁸ Rexeen Homestead is included on the basis it will be added to the Reserve at a later date.

Rexeen has recently established sheds and a shearing shed and stock yards

Garule-Wali Reserve

The Garule-Wali Reserve was created on 28 August 1987, and is located within Lot 1952 DP 763834 near Sheeppyard and now forms part of the The Reserve. Garule-Wali was historically used by schools as an outdoor learning environment to educate troubled youth. It consists of a cleared area with several partly constructed poorly maintained living and meeting quarters. Potential is limited without significant expenditure, however, the Dharriwaa Elders Group have expressed an interest in the area in the past.



Figure 28 – Infrastructure - Garule-Wali Reserve.

Notable historical structures

Lunatic Hill open cut mine is acknowledged in the *Walgett Local Environmental Plan 2013* as holding Environmental Heritage significance.

Zac’s⁴⁹ Cottage on the Hammond Hill Opal Field at Glengarry, represents a typical old-style miner’s residence, now vacated and in a state of disrepair. It is not regularly visited due to its state of disrepair which presents dangers to tourists, and as such until essential repairs are undertaken, visitations are not encouraged. The old cottage is listed in the *Walgett Local Environmental Plan 2013* as holding Environmental Heritage significance.

The Historical Pig Sty is a well preserved mine shaft and typical wooden infrastructure at its surface, created by miners in the 1970s reflecting the traditional methods of mining opals. The Pig Sty also represents hazards to visitors because of its poor physical state, and visitations are not encouraged. There has been interest expressed in the preservation of

⁴⁹ Also spelt Sach’s Cottage.

the Pig Sty by the Lightning Ridge Historical Society regarding essential repairs and preservation.

Club in the Scrub and the Sheeppark Inn

The Club in the Scrub at Grawin and the Sheeppark Inn at Glengarry are the two hotels (of the three in the Grawin Opal fields) which are in the Reserve.

The Club offers a range of activities, sporting events, raffles, good food, regular entertainment and community events. It also includes a primitive campground, playground and golf course.



Figure 29 – Infrastructure - Club in the Scrub

Similarly, the Sheeppark Inn offers Opal cutting demonstrations and free camp area providing groceries, gas and local tourist information.

Sheeppark Community War Memorial - Lake Beard

East of the Sheeppark Inn the war memorial was built by miners, many of whom were Vietnam Veterans. The Memorial also include a picnic area, museum and the picturesque Lake Beard.

Heritage shafts

Heritage shafts mainly exist in the Preservation Area around Lightning Ridge and are considered to have potential for tourism especially via self-guided walks. They are currently in a poor state of repair and represent high level dangers to visitors.



Figure 30 – Infrastructure - The Sheepyard Inn

Road and Track network

The Land Manager is responsible for maintaining access tracks and roads within the Reserve. The Land Manager is required to consider which tracks/roads are to be used for certain purposes, and restrict access where required. At present there are no sealed access roads within the Reserve and surfaces vary from dirt to gravel.

Fences

There are over 140km of boundary fencing on the Reserve which needs to be maintained in a stock proof condition. Crown Lands has advised that the Land Manager must undertake external fencing in accordance with the *Dividing Fences Act 1991*, requiring it to pay 50% of the cost of repairs or replacement of any boundary fences. Many subdivision fences also require management for improved stock and pasture management, bushfire management and weed control.

Many of the boundary fences with adjoining landholders have been inspected over recent years and most are in stock proof condition, although age means replacement will be required in the next 2-5 years. Maintenance is an ongoing requirement, especially dealing with fallen trees. Two neighbouring landholders have made enquiries regarding replacement boundary fence sections.



Figure 31 – Infrastructure - Shepyard Community War Memorial and Lake Beard

Bores and watering systems

The reliable supply of water is an essential item of infrastructure for opal mining activities as a vehicle of separation in an agitator process.

Additionally, as the Land Manager has responsibilities for the agricultural management of the Reserve and its resources, water is also required for domestic livestock purposes associated with grazing animals.

A series of dams, where the floodplain areas within the Reserve adjoin the red ridge areas, are supplied by deep bores located nearby which tap the Great Artesian Basin water resource⁵⁰, and minimally, by the collection of runoff from nearby slopes. These structures serve the opal agitator process:

- For mining activities, water is required to be licensed for mining purposes. Excess water may be used for stock and domestic. Otherwise, prescribed trading rules apply.

⁵⁰ These may be shallow and deep aquifer licences, and require verification with the respective regulator.

- Bores located on the Reserve used for mining purposes are shown on Figure 32, occurring at Emus, Olga's and Corrimeela.

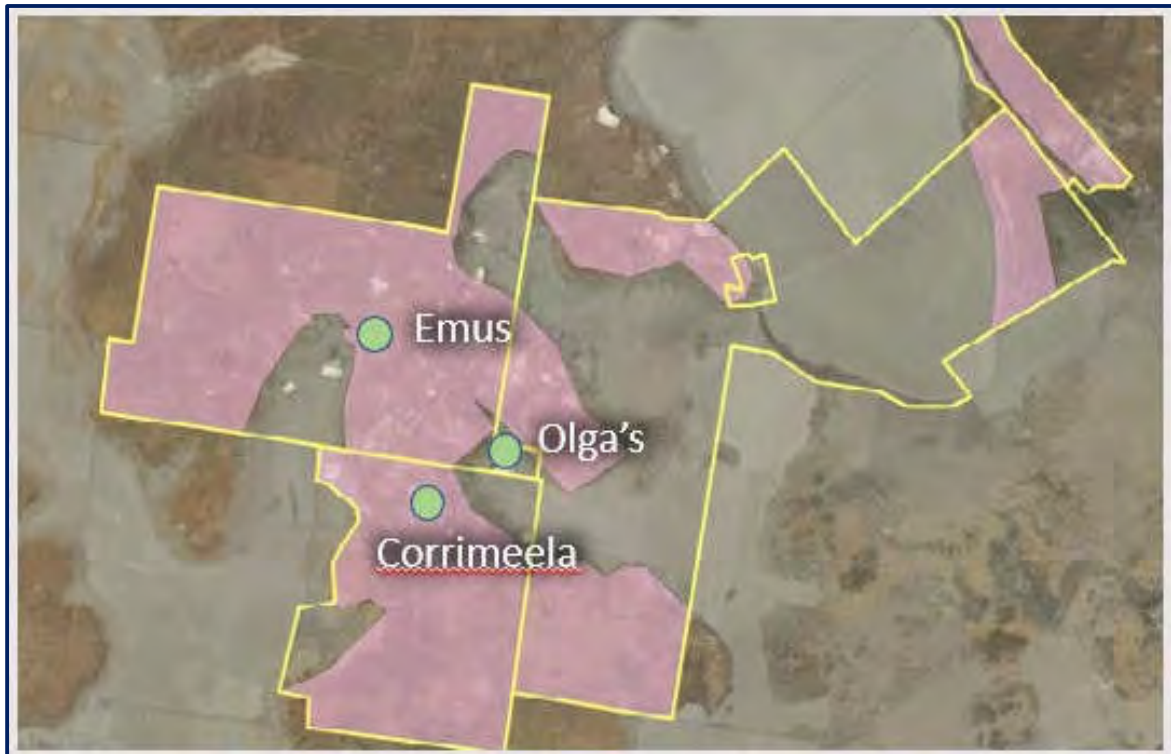


Figure 32 - Bores on the Reserve

Underground polythene piping distributes water supplied by separate bores which also tap the Great Artesian Basin:

- Water entitlement sourced by the Cap and Pipe Scheme⁵¹, remains with title and can only be used for stock and domestic purposes. For those properties surrendered as part of the VSS, this entitlement has transferred to the Land Manager.
- The infrastructure associated with this scheme is shown on Figure 33. Although mainly located on various holdings outside the Reserve boundary, the Angledool Cap and Pipe scheme can be seen crossing the reserve boundary at one point in the north eastern section of the Reserve near Allawah. The Morella Cap and Pipe program seen between Grawin and Coocoran is not located at any point within the Reserve but is within close proximity.

The authorisation for extraction of water is complex with:

- the water licensing database (WLS) managed by WaterNSW.

⁵¹ This water was historically supplied for rural pastoral activities via a wasteful open bore drain network. In recent decades, the bores have been capped, and the water delivered in a closed system, funded in a joint private-government initiative (the *Cap and Pipe* "Bores Scheme").

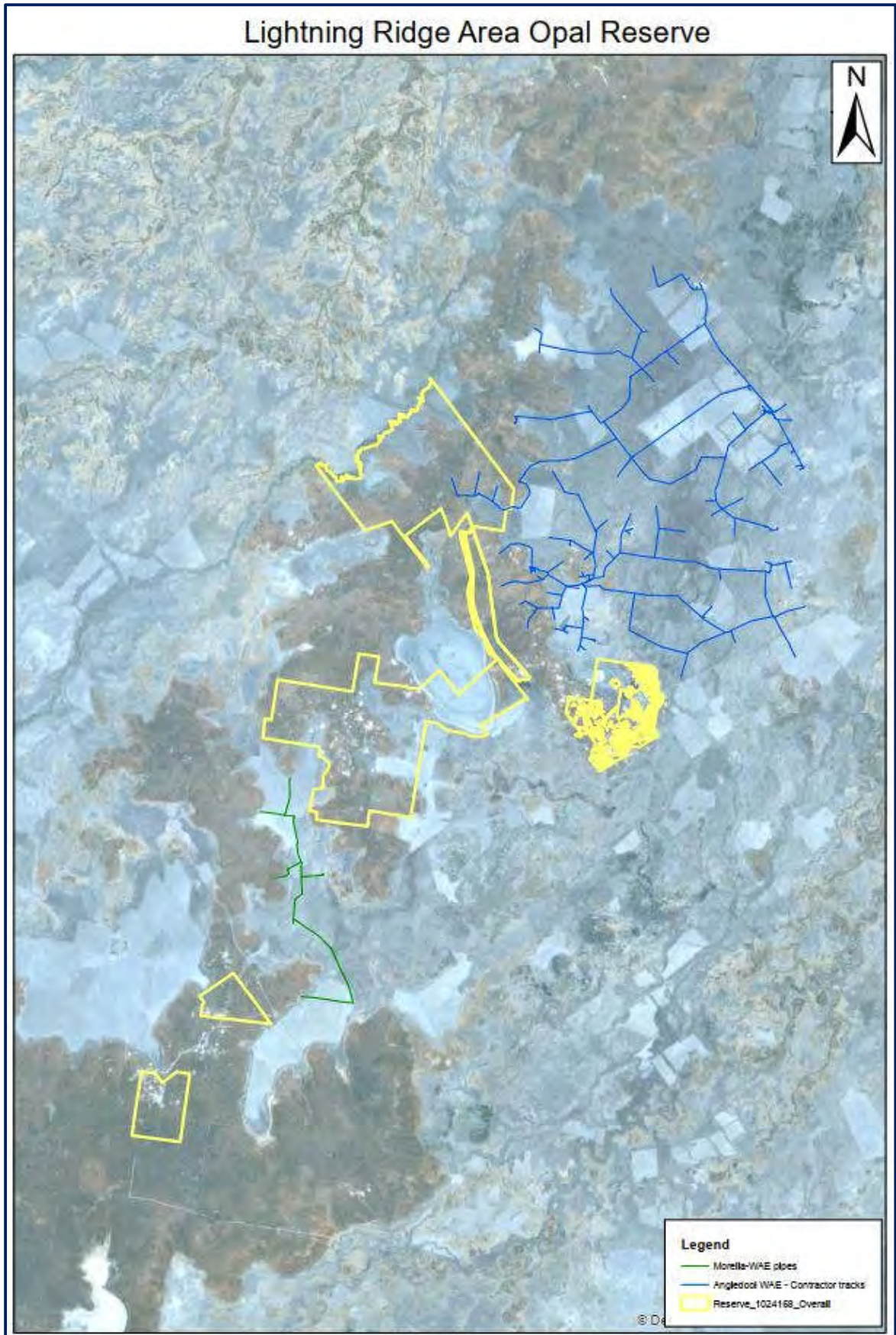


Figure 33 – Angledool and Morella Water Schemes

- water access licence applications by individuals or industry managed by WaterNSW.
- compliance activities for water extraction including for councils, government agencies and mining industries managed by the Natural Resources Access Regulator.
- the Cap and Pipe the Bores systems for stock and domestic supply are administered and managed locally by Bore Trusts with oversight by the Department of Planning and Environment.

Activation of membership of the Cap and Pipe schemes by the Land Manager for stock and domestic purposes, as well as the location and verification of the licencing provisions of aquifer licences required for mining, will be a priority for the Land Manager. This will facilitate identification of appropriate locations for future grazing enterprise.

5.5 Land Management

Noxious and Environmental Weed Management.

There are a number of noxious and environmental weeds which occur on the Reserve however Hudson Pear (*Cylindropuntia pallida/tunicata*) is by far the most significant and is well established across parts of the red ridges and slopes of the Lightning Ridge Land System. Its presence limits grazing potential by greatly reducing pasture composition and quality, and transmission of live plant materials occurs unfettered via roaming livestock, both domestic and wild. Transmission is also occurring vegetatively via runoff in channelised landscape components (creeks, gullies).

“The spikes get caught in their ribs, they put their head round to scratch and then their nose is caught as well. I’ve seen a calf nearly starve to death after it got a spike in its nose and couldn’t suckle its mother,” Neil Warden, farmer, Cumborah⁵².

Driven by the Land Manager, collaborative work between the mining associations, the *North West Local Land Services* and the *Castlereagh Macquarie County Council* has been using chemical control to target infestations of Hudson Pear, with moderate success. More recently, biological control (cochineal *Dactylopius tomentosus*) has shown some success however ongoing control will require concerted coordination and commitment from all participants. Another recent initiative of the Land Manager is its coordination of a petition to government, seeking an acknowledgement of the critical nature of recent alarming spikes of Hudson Pear in the area, the spread of which is threatening the viability of important agricultural land.



Figure 34 – Hudson Pear Biological Control Area, Grawin

Other significant weeds which have similar transmission and invasive characteristics to Hudson Pear include Tiger Pear (*Opuntia aurantiaca*) and Rope Pear (*Cylindropuntia*

⁵² *A Thorny Fight to Stop the Hudson Pear Invasive Species*: NSW Farmers Pub.

imbricata). A full range of weeds which are of various concern to land management around Lightning Ridge, the majority of which are cactus/pear species, are listed as Weeds of National Significance in **Appendix 8**.

Feral Animals

Wild dogs have emerged as an issue across the area in recent years, especially on the *Wandella*, *Rexeen* and *Allawah* blocks. The Reserve falls within the jurisdiction of the Angledool and the Cumborah/Llanillo wild dog control groups. Former pastoralist owners of these lands have been active in working with these groups. The Land Manager will assume this role to ensure the wild dog population is controlled on lands for which it now has responsibility.

Free roaming wild goats occasionally invade the area between *Rexeen* and *Wandella* properties. These goats will require management by the Land Manager, particularly as they are known spreaders of noxious and environmental weeds. However, it is noted that well managed herds have the capacity to create profit and therefore are a valuable source of income for the operations of the Land Manager⁵³.

Soil Erosion

The principal impacts on soils associated with previous land uses are related to erosion, compaction and subsidence. Roads and tracks, traffic, mechanical disturbance, other works and constructions, and overgrazing by livestock, will predispose the soil surface to soil erosion by removing vegetation and concentrating flows. Soil erosion occurs in the following forms⁵⁴:

- gully erosion along roads and tracks where appropriate drainage has not been provided
- gully erosion adjacent to wet puddling operations where surface water flows have become concentrated
- rill or sheet erosion on embankments associated with wet puddling operations or mullock dumps, and
- erosion on the surface of sediment dams
- all forms of erosion associated with agricultural practices.

⁵³ This venture may require extra consideration to fencing and water supply.

⁵⁴ Opal Mining within the Narran-Warrambool Reserve, Lightning Ridge Review of Environmental Factors. 2004 NSW Department of Primary Industry NSW government/Minerals.

Natural remediation of disturbed areas is thwarted by low soil fertility and lack of potential to revegetate, especially when topsoil has been removed. Although mullock materials are particularly susceptible to erosion because of poor fertility and minimal organic matter, natural regeneration of native grasses, shrubs and trees has shown limited potential over a longer time period. Remediation of past soil disturbance may be greatly assisted by mechanical works, reseeding and replanting, in conjunction with moisture conservation strategies (mulching, contour ripping etc.) and nutrient amendments.



*Figure 35 – Rehabilitation
Natural regeneration over a long term on disturbed sites, shows some promise.*



*Figure 36 – Rehabilitation
Dam used as water supply for opal mining wet puddling/agitation (left); Rehabilitation of disturbed site uses contour ripping and reseeding.*

Bushfire Management

The Land Manager has the responsibility under the *Rural Fires Act 1997* to prevent bushfires, extinguish bushfires, and/or notify the fire-fighting authority of a bushfire. This will require sourcing funding for administering bushfire mitigation works to maintain the current bushfire trail network and engage fire authorities to undertake back-burning activities as required in a bushfire management plan. Continued collaboration with authorities, including the *Rural Fire Service* (Coonamble) and Crown Lands (Dubbo), who have assisted in the past with this process, will be required.

It is noted in the NSW Bushfire Prone Land Mapping⁵⁵, many areas across the Reserve are rated as Vegetation Category 2 and Buffer. Vegetation Category 2, a lower ranking than

⁵⁵ <https://www.rfs.nsw.gov.au/plan-and-prepare/building-in-a-bush-fire-area/planning-for-bush-fire-protection/bush-fire-prone-land/check-bfpl>

the Vegetation Category 1 (see western bank of Narran River of the Reserve's north western boundaries), will be given a 30m buffer, having lower combustibility and/or limited potential fire size due to the vegetation area shape and size, land geography and management practices⁵⁶.

Road and Track Management

The *Mining Act 1992* provides that the holder of a mineral claim is entitled to a right of way between the claim and the nearest practicable point of a public road. Many tracks have therefore been constructed by miners into their mineral claims, and others provide arterial linkages for common usage to facilities and services.

The growth of roads and tracks across the Reserve has occurred largely unplanned and often in an unauthorised fashion. None are sealed, and surfaces vary from dirt to gravel. Many are poorly managed and dangerous. On occasions, individuals have installed inappropriate works which increases risks to users. Bare roads and tracks suffer from erosion during rain and wind, generate reduced water quality, and impact cumulatively on native vegetation and other natural resources. The growth on casual visitations (tourism) and its accompanying road traffic, is causing elevated stresses to road surfaces.

The Land Manager is responsible for maintaining access tracks and roads within the Reserve area. The Land Manager may define which tracks are to be used for certain purposes and restrict access to only authorised personnel as required. A small number of track sections have been constructed according to agreed *Access Management Plans* (AMPs) previously authorised under the *Mining Act 1992*⁵⁷. It is also possible that easements for formal access can be created over Crown land under the CLMA⁵⁸.

There are no roads within the Reserve which are public roads under the *Roads Act 1993*, with the tracks providing public access. However, in Lightning Ridge and in the Grawin / Glengarry area the volume of traffic will shortly warrant the creation of new public roads if that condition does not already exist. In Lightning Ridge, the creation of over 1000 Residential Western Lands Leases as replacement for residential mineral claims indicate management of access under processes developed under the Mining Act is no longer valid.

Waste Management/Dumping

The Land Manager is responsible for managing contamination and illegal dumping of rubbish and other materials. The current significant waste management depots at Grawin and Glengarry/Sheepyards (three in total) until recently, appear largely managed by the residing community, and the Land Manager.

⁵⁶ Guide for Bush Fire Prone Land Version 5b November 2015.

⁵⁷ Part 10A *Mining Act 1992*.

⁵⁸ Div. 5.9 *Crown Land Management Act 2016*.

Ongoing burning is an environmental hazard due to air quality issues and drop-off points above excavations (pits) are dangerous to vehicle access. Tourism, and its growth, adds to the pressures of waste disposal on the Reserve through, for instance, patronising of the *Glengarry Hilton, Club in the Scrub, Sheeppark Inn* and an unauthorised *primitive camp site* at Grawin.

The Land Manager has recently issued a 12-month licence to WSC for operation and management of these depots. This is an interim arrangement with the ongoing management to be achieved through:

- a long-term lease to WSC, or
- the appointment of WSC as Crown land manager for those parts of the Reserve, or
- the acquisition of those parts of the Reserve by WSC.



Figure 37 – Waste Management
Waste disposal across the Reserve requires management.

Travelling Stock Reserves

There are three Travelling Stock Reserves (TSRs) that affect the land management responsibilities of the Land Manager, being:

- TSR 509 (notified in the Government Gazette on 15 December 1879)
- TSR 70123 (notified in the Government Gazette on 4 July 1941, with an addition notified on 20 March 1981) and,
- TSR 230002 (notified in the Government Gazette on 6 March 1987).

TSRs are Crown reserves that allow stock owners to transit and graze stock, generally from farm to farm or farm to market. While the majority of TSRs are managed by Local Land Services these reserves default to the management of the Minister for Lands and Water. Given they exist concurrent with the Reserve, effective management remains with the Land Manager.

The TSRs remain available as part of the Reserve for use as approved by the Land Manager, subject to the lands remaining available for lawful use for bona fide passage of travelling stock (i.e., the lawful right would be in the form of a valid stock movement permit issued by Local Lands Services).

Leases, Licences and Contracts

The following tenures currently exist or are in the process of being executed on the Reserve:

- Licences with WSC regarding the ongoing management of waste sites.
- Licence with the Lightning Ridge Historical Society for the ongoing management of the Pigsty on Hammonds Hill.
- Licence with Outback Opal Hunters for film making purposes
- Licence to the Lightning Ridge Miners' Association for grading of specific roads and tracks
- Licence to the Grawin, Glengarry, Sheeppark Miners' Association for grading of specific roads and tracks
- Licence with the Sheeppark Inn to operate a hotel
- Lease to Opal and Stone Pty Ltd for Business Purposes (machinery workshop and storage).

5.6 Cultural Significance

5.6.1 Aboriginal Cultural Significance

The Reserve offers invaluable opportunity for local aboriginal people to access Country, an opportunity that is not readily available in the local area. The entire Reserve holds great significance to aboriginal people, especially the area around Coocoran Lake, which represents part of the Narran Lake system⁵⁹. Examples include:

- widespread and unique evidence of aboriginal people's existence in the area, including many relatively undisturbed aboriginal objects;
- the traditional status of the lakes as a meeting place for the tribes in the region;
- dreaming paths which culminate at the lakes; and
- aboriginal people's need for involvement with land.

Although the Narran Lake Reserve⁶⁰ is not within the bounds of the Reserve, local aboriginal people currently have direct involvement in its management through the *Narran Lake Nature Reserve Aboriginal Co-Management Committee*.

The NSW Government's Aboriginal Heritage Information Management System AHIMS register records many aboriginal sites captured on the government data base, from scar trees to open camps and stone quarry sites in and around the Reserve. 103 have been recorded in the Lightning Ridges area, including 35 sites between Coocoran Lake and Lake Angledool.

The majority of the AHIMS recorded sites within The Reserve are on the Narran River and around Coocoran Lake. These are particularly important areas as noted in Figure 38. However, assessment of the Reserve has been limited and survey is required in order to ensure protection of possibly important sites.

In addition, the local aboriginal groups are populating their own data base – its *Cultural Values Register* - and are a prime source of knowledge for these culturally important sites and ensuring their long-term site security.

A comprehensive listing of native plants and their local aboriginal names has also been developed by the local aboriginal community. This list demonstrates the cultural, medicinal and food properties of these native trees, shrubs and grasses of the area.

Elders highlight the importance of having access to Country and sites for cultural needs including learning and health. In addition to issues of access to Country, there is an

⁵⁹ *Narran Lake Nature Reserve Ecological Character Description May 2011 Commonwealth Government.*

⁶⁰ NSW National Parks and Wildlife Service (2000). *Narran Lake Nature Reserve Plan of Management*. News South Wales National Parks and Wildlife, Narrabri.

identified need for some in the community to “get away” (from town) and in particular, create a situation for the younger aboriginal generation to learn independence, resilience and skills.

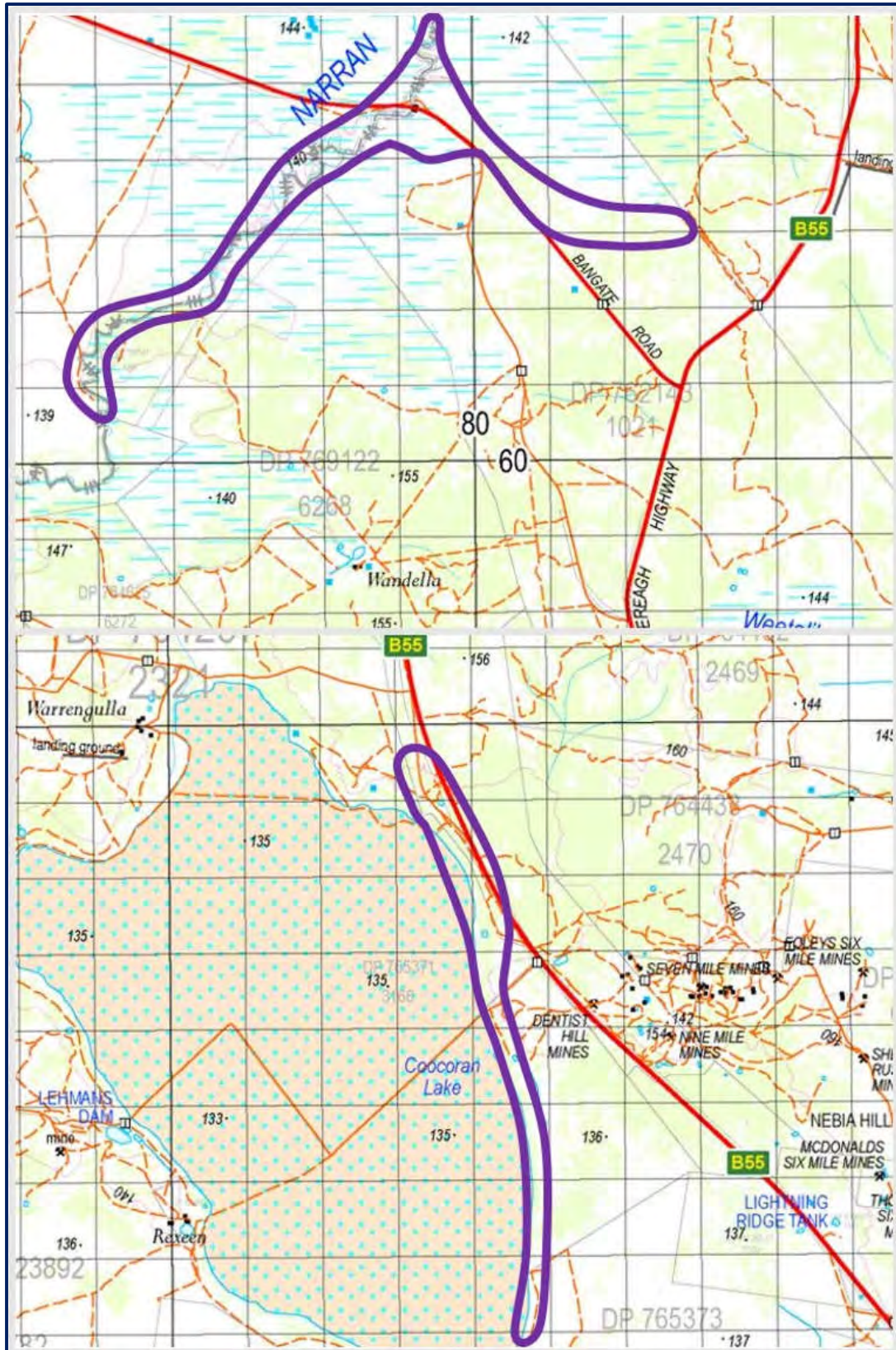


Figure 38 – AHIMS Identified Aboriginal Cultural Areas

This can lead to job opportunities and economic independence. Access to Country is also seen as a way of addressing outstanding health issues evident amongst this group.

5.6.2 Built Heritage Significance

Given the transient nature of life and its harshness living on and near the opal fields over the generations, many dwelling structures have been created with survival as the foremost consideration, driven by the attraction of a big find and ensuing wealth. Buildings of the past, at best, have used locally available materials in many creative ways, supplemented by those that have been carried from other dismantled constructions elsewhere.



Figure 39 – Built Heritage
From left – Zac's Cottage, Pig Sty Mining Shaft

The Reserve demonstrates a plethora of these imaginative constructions such as the notable and previously discussed Zac's Cottage and the Pig Sty. These complement many within the Lightning Ridge township itself such as Paddy O'Hara's Hut (also known as Francis or Rainbow Street Hut), the Bush Nurse Association Cottage (BNA), Spicer's Hut (Heritage Cottage or Graham Brothers), the Old Police Station (Bruce's Home) and many more. The first opal mining shaft sunk at Lightning Ridge by Charlie Nettleton (1902-03) is a rare and historically important item, listed on the Register of the National Estate.

The Lightning Ridge Historical Society has commenced planning *Walking-Self Guided Tours* on the Reserve around historical points of interest in and around the township, interfacing with historical shafts on the Three Mile Road and Lunatic Hill, where Australian author Ion Idriess mined in the early 20th Century:

“We pitched camp near the head of the Three Mile, just up the Hill a little. Here, among tall box-trees, the green of the smaller buddha and spurious sandalwood was beginning to show gaps under the axes of the campers....From here, at knock-off time, we would look down on the activity on the Flat and Three Mile, the red, winding track coming up to us from the bark stores and boarding house which was now at the heart of the field....and now, the Three Mile, just found by Archie Gillespie and developed by Matt Watson ...and others, were to boom and produce the most wonderful opals the world has seen⁶¹.”



Figure 40 – Built Heritage
Commemorative plaque to author Ion Idriess who mined at the Three Mile, early twentieth century.

There are many good historical stories to develop and market to visitors to Lightning Ridge and surrounds based on remaining evidence of a rich heritage. Most “Ridgeites” are rich in stories, as colourful as the opal.

⁶¹ Extract from *Lightning Ridge*, by Ion Idriess, Pub. 1940.

5.7 Planning Controls

Development on the Reserve is permitted without consent for the purposes of implementing this POM under Section 65(2)(d)(ii) of *State Environmental Planning Policy (Infrastructure) 2007*. Although consent is not required, this POM seeks to develop consistent with the intent of the *Walgett Local Environment Plan 2013 (WLEP)*.

Appendix 9 shows the boundaries of the Reserve, at Lightning Ridge town, overlaid on the relevant sections of the WLEP.

The Lightning Ridge area contains land zoned:

- SP1 Special Activities – Mining (majority)
- RU1 Primary Production (significant)
- R1 General Residential (significant)
- IN1 General Industrial (significant)
- RE1 Public Recreation (significant)
- SP3 Special Purposes - Tourist (nominal)

The Coocoran area contains land zoned:

- RU1 Primary Production (majority)
- SP1 Special Activities – Mining (significant)

The Wandella / Weetalibah / Allawah area contains land zoned RU1 Primary Production.

The Grawin / Glengarry area contains land zoned:

- SP1 Special Activities – Mining
- RU1 Primary Production

In addition, a series of additional permitted uses within the Reserve are provided for in the WLEP.

5.8 Competing Land Uses and Influences

Tourism

Although opal mining provides the heart of tourism at Lightning Ridge and is of obvious benefit to the town's businesses, it is often stated that tourism does nothing for the mining industry itself. Indeed, competing demands for both activities exist eg., for roads, privacy etc. Herein lies a source of conflict which this POM will address.

Tourism in the well-established older sections of the Reserve is generally accepted by all, including the mining industry. However, as tourism grows, for reasons of safety, privacy, and disturbances to the mining activity, the mining industry is keen to see that tourists to the "New Area" within the Reserve are precluded. This is the Coocoran and Wandella / Weetalibah / Allawah sections to the north and north west which was added to the Reserve as a result of the VSS of Western Land Leases in 2016. Mining has occurred in those areas for some time, although at the current stage it is generally less intensive and considered the area of growth of mining into the future.

Track and Road Network

The road and track network in the Reserve is utilised by miners, commercial service providers, residents, tourists and government and emergency response authorities. The network throughout the Reserve is, at least to some extent, transitory. Access tracks shift as mining operations shift.

However, roads provide thoroughfare for a large number of casual, or organised tour groups, especially in the Grawin/Glengarry/Sheepyard sections of the Reserve, as well as the around Lightning Ridge. The popular Car Door Tours are also well promoted for tourism on these sites.

Hence, with the growth of non-mining uses, arterial networks within the Reserve have become virtually permanent in nature.

The growth in non-mining usage has exposed anomalies in the funding processes for the maintenance of roads and tracks. MEG collect a road levy from miners for maintaining access for opal miners across Lightning Ridge and the surrounding opal fields. WSC collects rates from holders of Western Lands Leases and Residential Mineral Claims, albeit at a reduced level to general residential rates in built up areas. Presumably WSC also collects rates from commercial businesses. Tourists and Commercial Businesses do not pay the road levy.

The Land Manager has engaged WSC to grade some roads, most recently on the main arterial road into the Grawin area from the east (from the second ramp to the store). It is understood that this section of the road is intended to be opened formally as a road as

permitted under the *Roads Act 1993*. If this occurred, maintenance and regulation thereafter of that section will become the responsibility of WSC.

MEG allocates funding raised by the road levy to proponents wishing to undertake roadworks. The Land Manager is required to authorise any works on the Reserve and ensure they are carried out to a safe and reasonable standard. The proponent needs to apply to the Land Manager for a licence or contract to carry out road works. Conditions which apply also consider environmental impact, cultural site and any impacts on other uses of the land.

Currently, both the Mining Associations - the *Lightning Ridge Mining Association* and the *Grawin-Glengarry-Sheepyards Mining Association* hold (or have held) temporary licences to complete road works after accessing the road levy fund.

Road management issues include:

- Safety due to poor surfaces (see the section on Safety), particularly relevant to visitors
- Inadequate drainage
- Unauthorised tracks and access to residences
- Blocked/restricted access (conflict between miners and WLL holders).



Figure 41 – Track and Road Maintenance
Roads works are inadequate across the Reserve.

These issues may be able to be addressed with:

- The creation of arterial roads managed by the Local Government Authority, WSC, over permanently located access roads utilised by a significant variety of users.
- The maintenance of existing flexibility for the creation of access tracks where the predominant use is mining.

Agriculture

Western Lease Holders (farmers and graziers) who adjoin the mine fields have had an historically variable relationship with the mining industry. There are two areas of concern for rural producers:

Historically, the mining of claims creates a series of issues for land holders whose land adjoins the claims. These issues in the past relate to:

- access and tracks
- fencing
- biosecurity
- spread of noxious and environmental weeds (especially Hudson Pear)
- lack of thorough rehabilitation
- dangerous open shafts on either active or legacy mine shafts, and
- mullock areas.

Also, the major impact of mining activities is the clearing and modification of land, making it unsuitable for grazing. *The Lightning Ridge Land System* (the red country) on which the majority of opal mining occurs, was important to pastoral lease holders as it provided better grass growth response to rain, refuge during times of floods and a source of timber.

Opal mining operations tended to exclude grazing activities for safety reasons as well as the associated loss of grasses in the vicinity of mines. Vegetation is cleared/lost as a result of construction activities. Mullock dumps, puddling operations, vehicle movement, track building and tree removal for mine-propping have occurred. In the past, approval was required from farmers prior to the establishment of puddling operations and mullock dumps⁶² on WLLs.

More recently, another concern has developed. Lack of clarity has been expressed by farmers regarding the established processes to define, manage and maintain the grey soil country. This includes its ongoing agricultural management; how it will be allocated to any independent party (if considered appropriate); and that best management practices (which should be adopted in its management), are implemented for the highest and best agricultural use.

⁶² Opal Mining within the Narran-Warrambool Reserve, Lightning Ridge Review of Environmental Factors 2004. NSW Department of Primary Industries/Minerals.

Mining, Agriculture, Environment, and Aboriginal Cultural Interaction – “the Transitional Zone”

The 2003 *Review of Environmental Factors* (REF) completed for MEG by *Parsons Brinckerhoff* consultants is the current guide for Mineral Claim conditions, including considerations for environmental management and air and water pollution, vegetation clearing, and disturbance of aboriginal artefacts. It is understood that MEG is considering the development of an updated REF which will further consider these issues that have more recently emerged and are strongly represented in other legislation. This will provide clearer directions for MEG in its consent role. In the interim period no further claims will be permitted in new areas⁶³.

A “transitional zone” occupies the foot-slopes between the upslope poorer reddish soils of the *Lightning Ridge Land System*, and the better agricultural floodplain lands of the *Llanillo, Rotten Plains, and Wombiera Land Systems*. This transitional footslope is between a hundred and several hundred metres wide only, and sometimes expresses as a slightly elevated rim or shoreline to the lake systems, well evident at Coocoran Lake. This transitional zone also carries a transitional mix of soils - red, brown and grey clays, often seasonally cracking (typical of the floodplain), as well as lighter texture contrast red-brown soils (typical of the slopes).



Figure 42 – Grey Soil – Red Ridge Transitional Zone
Mining exploration ceases at the bottom of the red slopes of the *Lightning Ridge Land System* (left): Floodplain of the *Rotten Plain Land System* below footslope defines the Transitional Zone.

The uniqueness of this transitional zone is also associated with the following features:

- Coolibah (*E. coolibah*) is present on the lower extremities of the transitional zone, as open woodland where that species dominates the woody vegetation. On its upper extensions Coolibah occurs as a woodland mix with poplar box (*E. populnea*). As discussed previously, coolibah is now a listed (potential) EEC in this area, referred to more completely as *Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain and Mulga Lands Bioregion*. This is declared under the *NSW Biodiversity Conservation Act 2016*, as well as the Commonwealth’s

⁶³ The POM information here is provided so the regulator MEG can make appropriate decisions in building its new framework for consideration of new Mining Claims in this zone. The POM can’t override regulatory responsibilities of NSW Government.

Environment Protection and Biodiversity Conservation Act 1999. (See the accompanying Native Vegetation maps at **Appendix 6.**)

- The transitional zone provides a buffer between the areas disturbed by mining and the grey country by trapping sediment and throttling poor water quality which is likely to result from such disturbance. It also provides a buffer for wildlife on the floodplain, some of which is known to be *vulnerable* or *threatened* and protected by biodiversity legislation. Poor water quality and soil erosion may also result from rises in localised surface salinity⁶⁴ if the deep rooted native permanent or perennial vegetative cover is destroyed by intensive activities.



Figure 43 – Grey Soil – Red Ridge Transitional Zone

Scar tree above the edge of Coocoran Lake, suggests that when the lakes were full as a result of flow out of the Condamine system (Queensland) or from local flooding, food supply was plentiful and aboriginal past occupation would have been concentrated there.

The existence of the cultural landscape of opal mining today is very much based on practices that have had a detrimental impact on Aboriginal cultural sites and places. The transitional zone has a significant aboriginal connection and sites such as scar trees, camp sites and axe quarries may be common around the lake edge, as has been reported in the *Narran Lake Nature Reserve Plan of Management* NSW NPWS, page 22⁶⁵:

⁶⁴ Tests on mullock materials show high levels of salinity in four out of the eight samples: Page 6-7 *Opal Mining within the Narran-Warrambool Reserve*, Lightning Ridge Review of Environmental Factors 2004. NSW Department of Primary Industries/Minerals.

⁶⁵ Coocoran Lake is one of the components of the collective terrain unit referred to as the Narran Lake System.

“Because of its concentrated use, the Narran Lake area, and the nature reserve in particular, contains a very large number and variety of Aboriginal sites ... along the greater Narran Lake shore archaeological material is exposed in every eroded area, indicating that the entire zone has scattered flaked stone, numerous hearth sites and a number of middens...”

5.9 Safety

Safety management is a subject paramount for the Land Manager and this POM. Many of the issues (see Figure 44) have already been covered elsewhere in this document and are briefly described below.

Road and Track condition – The road and tracks within the Reserve are overutilised for their level of maintenance. Many tourists in the area are unused to driving on the standard of road provided, and in many locations, there is inadequate signage. Parts of the mining industry consider there should be separation of road access between tourists and mining.



Figure 44 – Danger on the Reserve:

(Clockwise from top left): Steep and active mullock heaps and tourists are a poor combination; Cracking in top of batters on open cut operation are unstable and a danger to the unwary visitor; unprotected heritage shaft on the Preservation Area; Abandoned test drill hole on the TSR.

Abandoned mine shafts – In a number of locations, spent or abandoned shafts exist, which have not been rehabilitated and stand without protection. Others of heritage quality require appropriate protection, particularly those closer to where frequent visitations from tourists would be expected. It is noted that prospectors are required to backfill test holes in accordance with MEG conditions.

Waste Management - Waste management dumps occur at Grawin and Glengarry, with steep unsigned drop-off pits with no barriers. Management of these sites will be better managed into the future through the licence which now exists between WSC and the Land Manager (see Waste Management subsection in 5.5 above).

Mullock Dumps - Advertised noodling mullock dump sites which tourists occupy amidst working mining machinery and with steep slopes have the potential to slip when excavated below. While the worst of these is outside the Reserve a number within the Reserve do not appear to be secured and/or do not have appropriate tenure arrangement in place.

Visiting the mullock dumps sites in a single visit requires tourists to traverse a section of road outside the Reserve (on Mundaroo Station) adjoining two large and dangerous mullock dumps for noodling purposes. Whilst not on the Reserve, this is an unsustainable situation impacting on the safety of people who visit the Reserve. Unwittingly, promotion of this opportunity for tourists, as well as lack of effective compliance, has elevated this hazard to Reserve visitors.

Open Cut Mines – unsecured, large open cut mines (eg., at Rexeen) are deep with unstable often vertical and long batters (see large surface cracks developing) which is dangerous to casual visitors as well as workers.

Emergency Services - Inability for emergency services (police, SES, ambulance), to locate victims of accidents on report, due to non-existent locational numbering and geo-referencing tools and formal field-based location marking systems.

Hudson Pear – The weed is prevalent on the Reserve and has fierce prickles presenting a danger to the public (see Noxious Weed Management subsection in 5.5).

6 CONSULTATION AND ASSESSMENT

In development, in order to produce a POM which was relevant and targeted, extensive consultations were undertaken with relevant people and organisations who may influence or be impacted by it. Initial discussions were held with the relevant government agencies, bodies which comprise the Land Manager, miners, farmers, aboriginal organisations and the broader community. Full details of these consultations can be found in **Appendix 10**.

The key responses arising from these consultations, the accompanying site research, and the legislative requirements, have isolated a number of **themes** which have influenced the directions of this POM.

These themes are summarised as follows:

1. Opal mining is the principal activity on the Reserve, driving the economy of Lightning Ridge and being a significant contributor to the Region.
2. The POM must consider all reservation purposes as defined in legislations.
3. Tourism is a significant contributor to the local economy however, it must be managed to reduce significant impact on Opal Mining.
4. Safety is a significant issue for the Land Manager and there are significant conflicts between opal mining and tourism, specifically around safety in relation to road use, mullock heaps and mine shafts.
5. In order to manage mining/tourism conflicts there must be sufficient tourism activities available for tourists to remove the desire to attend working claims.
6. Emergency Access for police and ambulance to provide assistance needs to be addressed.
7. The *Grey soil country* and its production potential are key to financing of the Land Manager and its responsibilities.
8. The issue of potential EECs needs to be considered and addressed, particularly on the *grey soil country*. The POM will explore potential of improved management of native vegetation for bio-credit income, as a source of funding other responsibilities.
9. The POM will provide for access to aboriginal people for cultural, health and educational purposes. Any construction undertaken by the Land Manager will need to meet the cultural heritage requirements of the *National Parks and Wildlife Act*. Areas of cultural interest are likely to be on the edges of water courses and lakes, hence along the Narran River and Coocoran Lake.

10. The POM will consider concerns from adjoining Western Lease Holders, regarding agriculture and mining conflict in the past. These issues include the historical issues on the red country (access, tracks, biosecurity, noxious weeds and all weeds of National Significance, fencing, and rehabilitation standards etc.), as well as emerging issues associated with the agricultural use of the grey soil country.
11. It is considered that the POM could seek to lobby Crown Lands and WSC to deliver funding for the acquisition of land (if necessary) and opening of Public Roads in strategic locations. The maintenance and use of “roads” within the Reserve, specifically around the Grawin / Glengarry area needs to be addressed.
12. WSC should be managing the waste control for the villages on an ongoing basis. In this regard the rubbish tips should be managed by WSC as either Crown land manager or by tenure.
13. The Land Manager will support the appropriate authorities in establishing a village in the Grawin and Glengarry areas.
14. The financing of the Reserve must be made sustainable.
15. Parts of the Reserve most likely around Lightning Ridge, have never been subject to Lease. In land of this status native title may be a significant issue to address prior to sale, issuing tenures and the development of public works. The POM will explore this and provide appropriate recommendations.
16. The management of the Reserve with a single employee represents a considerable risk to future management. The POM will address staffing structure.
17. The POM will address the composition of the existing Board if it does not fully represent all impacted people and relevant organisations.
18. The POM will direct a process for ongoing communication between the Land Manager and the community.
19. There appears to be a sense of a devolvement of responsibility from Crown Lands in the appointment of the Land Manager which will be considered in the POM.

PART B – THE PLAN

7 PLAN OBJECTIVES

7.1 Aim

The aim of this POM is to articulate, in one place, how the Reserve is to be managed. It will develop an ongoing land management-based framework that will guide strategic management and decision making of current and future activities across the Reserve.

The POM must be based on the purpose of the Reserve (see 5.1) and its values. Management priorities described within the POM are a response to purpose and values.

7.2 Values

Values may be described as what is important or special about a place. Values which generally embrace social, environmental, economic and financial considerations, help provide a strong foundation for the maintenance, protection and where required, enhancement of the Reserve.

The Values for the Lightning Ridge Area Opal Reserve are:

- Secure Opal Mining
- Respect for Country / Aboriginal cultural values
- Vibrant Tourism
- “Frontier” Culture
- High Yield Agriculture
- Protected Heritage
- Unique Vegetation
- Varied Recreation
- Education Opportunities
- Outback Scenery
- Scientific Endeavour

These Reserve values which provide the foundation for this POM have been condensed from:

- contributions during public consultations with all stakeholders
- consideration of the reservation Purposes
- on-site research during the information gathering process.

7.3 Vision

The Reserve’s Vision is:

**“A Crown Reserve with Opals at its Core,
Sustainably Delivering Gems for the Whole
Community.”**

7.4 Planning Logic

A hierarchy of *Objective, Strategy* and *Action* is used to respond to the nominated issues. This is consistent with the Aims, Purposes, and Values previously discussed, and provides the “working parts” of the POM.

Figure 45 summarises the planning logic from the initial consultations, to finalisation and adoption of the POM.

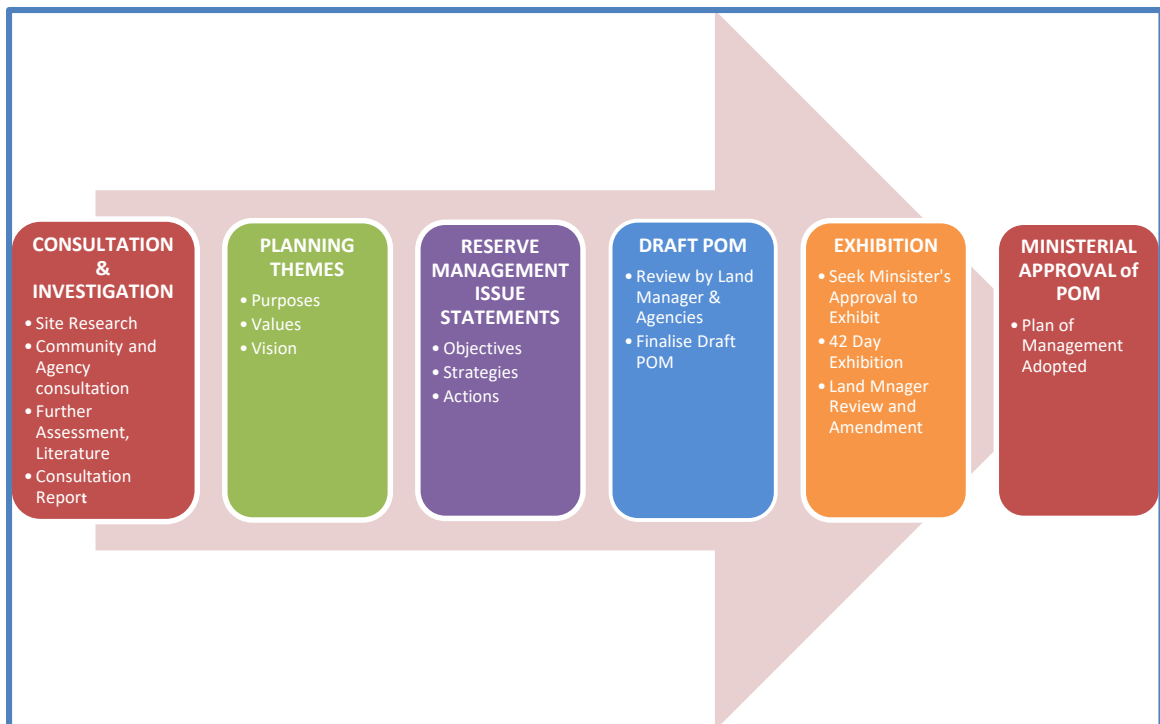


Figure 45 – Planning Logic.

7.5 Reserve Use and Development

Permitted Use

The land subject to this POM has been reserved for the following purposes:

- Village Purposes
- Opal Mining and Exploration
- Public Access
- Access
- Accommodation
- Advertising Site
- Air Strip
- Automatic Weather Station
- Cultivation
- Dam
- Environmental and Heritage Conservation
- Environmental Protection
- Equestrian purposes
- Future Public Requirements
- Government Purposes
- Grazing
- Heritage Purposes
- Public Recreation
- Racecourse
- Residence
- Rural Services
- Sporting Event
- Storage Shed
- Tank
- Tourist Facilities and Services
- Travelling Stock
- Urban Services
- Water Supply

The Reserve may be used or developed for these purposes, for any additional purposes permitted by the Minister by gazettal notification, and purposes within this POM.

It is intended that parts of the Reserve around Lightning Ridge town and Grawin and Glengarry will be used for mixed purposes (any of the purposes listed above or for any additional purposes permitted by the Minister).

It is intended that the parts of the Reserve in the Wandella / Weetalibah / Allawah and Coocoran areas will be used in accordance with Figures 46 and 47 where the areas shaded yellow are primarily⁶⁶ for Opal Mining and Exploration, where the areas shaded green are primarily for Agricultural Purposes and where the areas shaded pink are for mixed use.

⁶⁶ *Primarily* in this sense is not intended to be exclusionary to the appropriate management of the land. It may be that land designated for *Opal Mining and Exploration* would include grazing where ground cover and regrowth needs to be managed or cultural heritage management where cultural sites are identified. Similarly, the land designated for *Agricultural Purposes* may provide offsets or be utilised for scientific research.

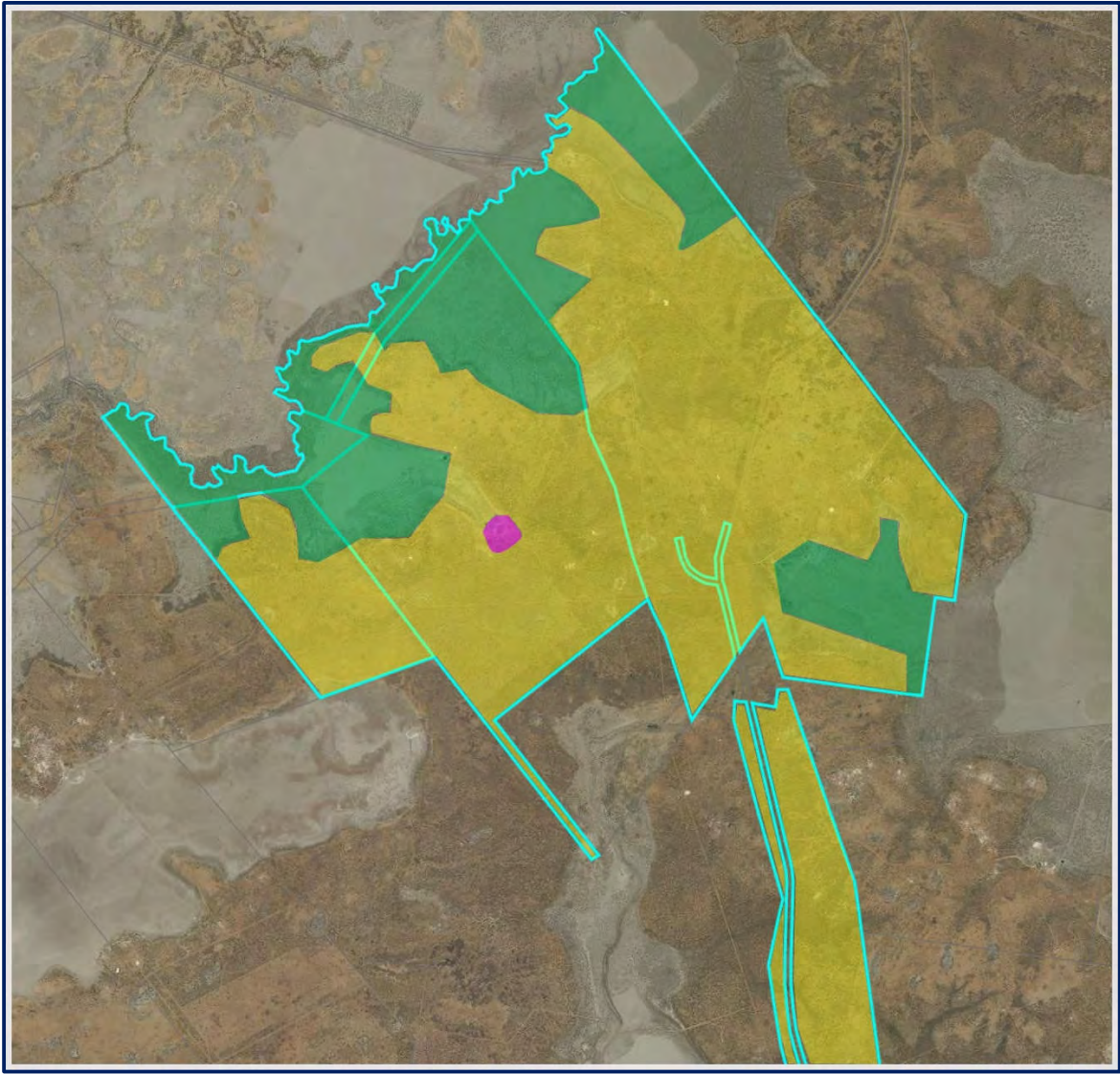


Figure 46 - Primary Use Wandella / Weetalibah / Allawah
Areas shaded yellow are primarily for Opal Mining and Exploration, areas shaded green are primarily for Agricultural Purposes and areas shaded pink are for mixed use

Tenures

Tenures will be issued in accordance with the *Crown Land Management Act 2016* and the *Native Title Act 1993* (Cwlth).

Section 3.27(1) of the *Crown Land Management Act 2016* requires the Land Manager to obtain consent from the Minister prior to issuing lease and licences. In issuing Ministerial consent Crown Lands will ensure the *Native Title Act 1993* requirements are observed. In circumstances where ministerial consent is not required, such as when issuing short term licences, the Land Manager will need to consider Native title.

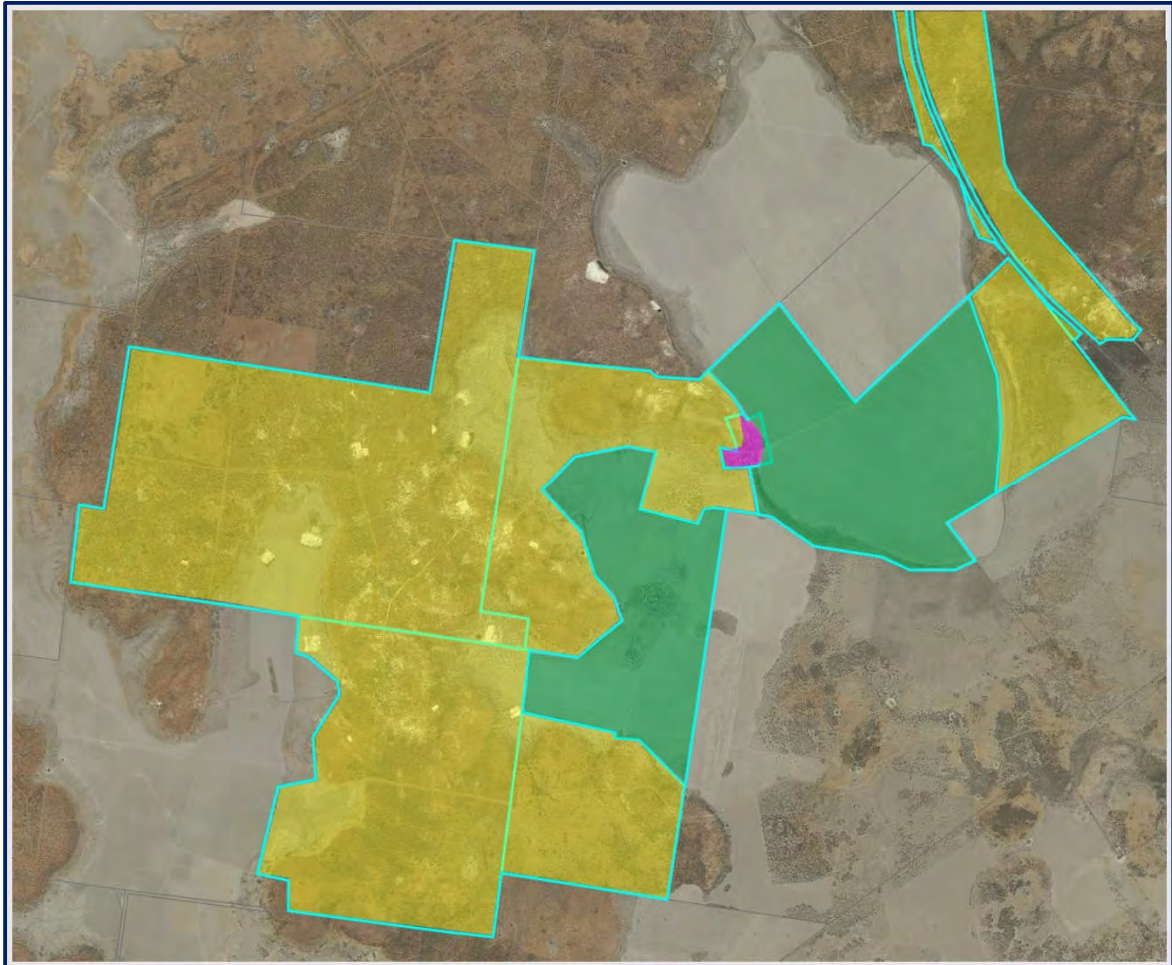


Figure 47 - Primary Use Coocoran

Areas shaded yellow are primarily for Opal Mining and Exploration, areas shaded green are primarily for Agricultural Purposes and areas shaded pink are for mixed use

Section 31 of the *Crown Land Management Regulation 2018* provides that short-term licences (licences for 1 year or less) can be issued under section 2.20 of the *Crown Land Management Act 2016* for:

- access through a reserve
- advertising
- camping using a tent, caravan or otherwise
- catering
- community, training or education
- emergency occupation
- entertainment
- environmental protection, conservation or restoration or environmental studies
- heritage purposes
- equestrian events
- exhibitions
- filming (as defined in the *Local Government Act 1993*)
- functions
- grazing
- hiring of equipment
- holiday accommodation
- markets
- meetings
- military exercises
- mooring of boats to wharves or other structures
- sales
- shows

- site investigations
- sporting and organised recreational activities
- stabling of horses
- storage.



Figure 48 - Reserves 70123 and 230002 and Native Title Crown Land within the area shaded yellow (R.70123) and red (R.230002) requires further investigation prior to undertaking a future act as defined under the Native Title Act 1993. The relevant section of the Reserve is outlined in blue.

The Land Manager considers that the continuance of native title is inconsistent with the issue of Western Lands Leases:

- WLL 5347 and WLL 2928 in the Wandella / Weetalibah / Allawah area;
- WLL 722, WLL 308, WLL 7790 and WLL7952 in the Coocoran Area;
- WLL 4642, WLL 3140 and WLL 3946 in the Lightning Ridge Area, and
- WLL 4121 and WLL 4132 in the Grawin / Glengarry Area

and that native title is likely to have been extinguished over these areas.

However, in parts of Reserves 70123 and 230002 for Travelling Stock (see Figure 48), along the Castlereagh Highway, and in the north of Lightning Ridge town (see Figure 49), native title may continue.

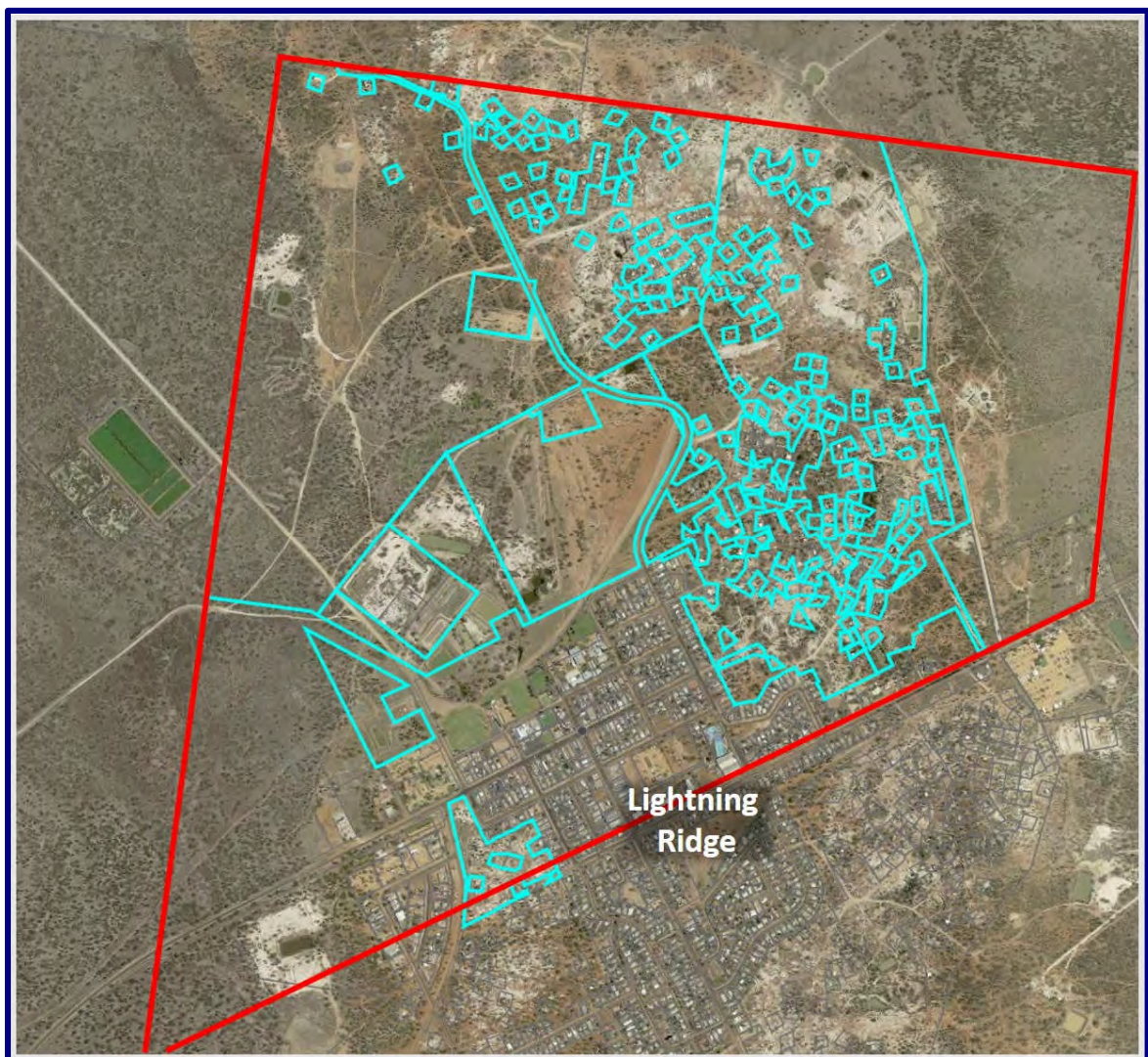


Figure 49 – North Lightning Ridge and Native Title

Crown Land within the area bound in red requires further investigation prior to undertaking a future act as defined under the Native Title Act 1993. The relevant section of the Reserve is outlined in blue.

The Land Manager will not approve development⁶⁷ (subject to the paragraph below) or a lease or other exclusive use agreement on these two areas unless the land meets the definition of *excluded land*⁶⁸ for the purposes of Part 8 of the *Crown Land Management Act 2016* or it satisfies the requirements of Section 24KA of the *Native Title Act 1993*⁶⁹.

Future acts are permitted on these areas in accordance with Section 24JA of the *Native Title Act 1993* as follows:

- On Reserve 230078 for Urban Services, being the area bound in purple, on Figure 50.
- On Reserve 70123 for Travelling Stock adjoining the Castlereagh Highway in the Coocoran Area. (See Figure 48)
- On Reserve 230002 for Travelling Stock adjoining the Castlereagh Highway in the Wandella / Weetalibah / Allawah Area and also through part of lot 1021 in DP 762143. (See Figure 48)
- On Reserve 91317 for Village Purposes, being the area bound in red and green on Figure 50.

⁶⁷ Development for this purpose is defined as:

- the excavation or clearing of any of the land or waters; or
- mining (other than fossicking by using hand-held implements); or
- the construction or placing on the land, or in the waters, of any building, structure, or other thing (other than fencing or a gate), that is a fixture; or
- the disposal or storing, on the land or in the waters, of any garbage or any poisonous, toxic or hazardous substance.

This does not apply to:

- excavation or clearing that is reasonably necessary for the protection of public health or public safety; or
- tree lopping, clearing of noxious or introduced animal or plant species, foreshore reclamation, regeneration or environmental assessment or protection activities.

⁶⁸ *excluded land* means each of the following:

- (a) land subject to an approved determination of native title (as defined in the *Native Title Act 1993* of the Commonwealth) that has determined that—
 - (i) all native title rights and interests in relation to the land have been extinguished, or
 - (ii) there are no native title rights and interests in relation to the land.
- (b) land where all native title rights and interests in relation to the land have been surrendered under an indigenous land use agreement (as defined in the *Native Title Act 1993* of the Commonwealth) registered under that Act.
- (c) an area of land to which section 24FA protection (as defined in the *Native Title Act 1993* of the Commonwealth) applies.
- (d) land where all native title rights and interests in relation to the land have been compulsorily acquired.

⁶⁹ Section 24KA permits the following to be constructed, subject to conditions:

- a road, railway, bridge or other transport facility (other than an airport or port);
- a jetty or wharf;
- a navigation marker or other navigational facility;
- an electricity transmission or distribution facility;
- lighting of streets or other public places;
- a gas transmission or distribution facility;
- a well, or a bore, for obtaining water;
- a pipeline or other water supply or reticulation facility;
- a drainage facility, or a levee or other device for management of water flows;
- an irrigation channel or other irrigation facility;
- a sewerage facility, other than a treatment facility;
- a cable, antenna, tower or other communication facility;
- an automatic weather station;
- any other thing that is similar to any one or more of the things mentioned above.

- On Reserve 230031 for Urban Services, being the area bound in pink on Figure 50.
- On Reserve 84117 for Public Recreation and Racecourse, being the area bound in red on Figure 50.
- On Reserve 95758 for Village Purposes, being the area bound in blue on Figure 50.

The areas included in each of these reserves are complex and should be confirmed with Crown Lands prior to utilising Section 24JA.

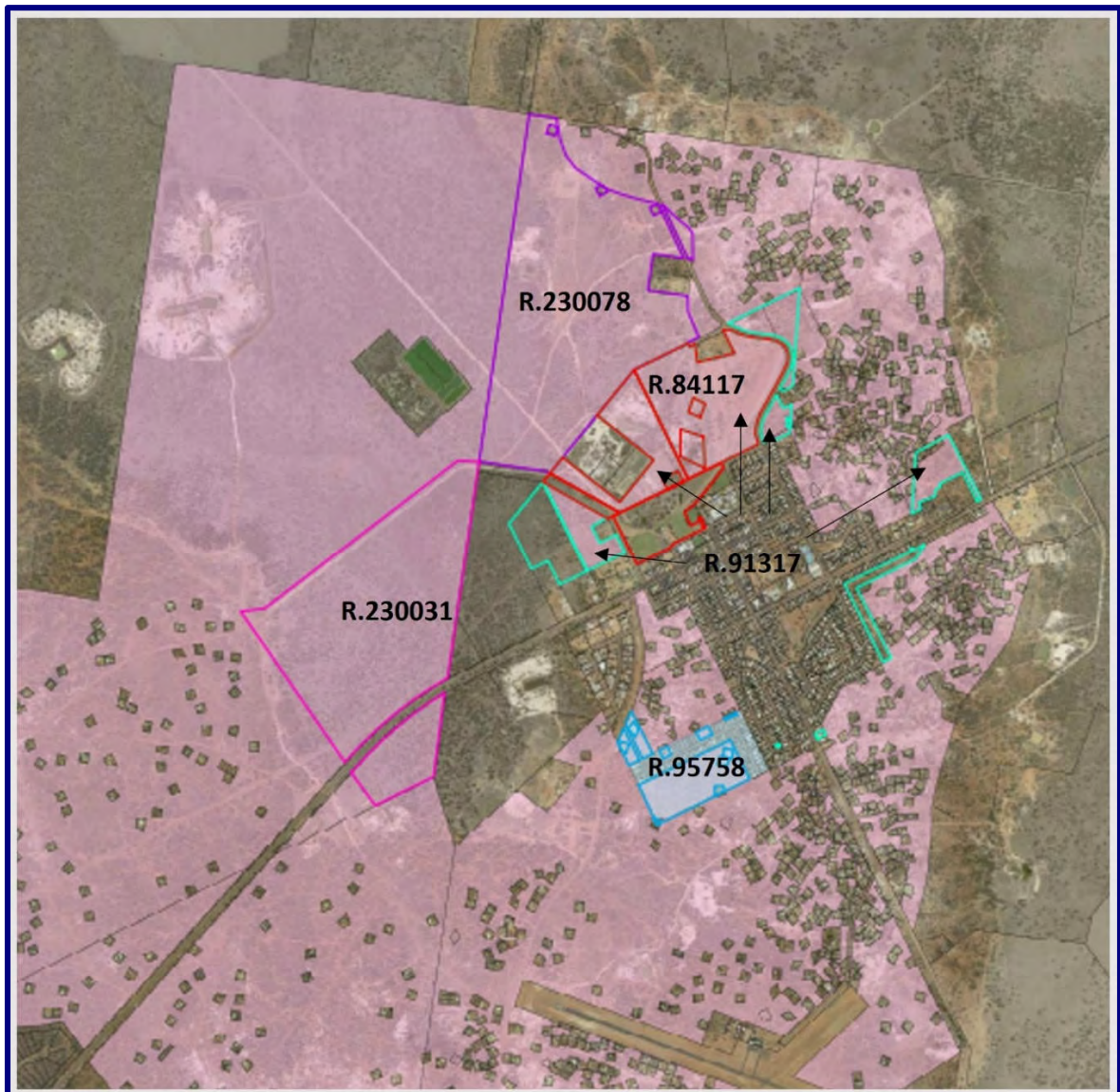


Figure 50 - Lightning Ridge - Other Reserves

8 RESERVE MANAGEMENT

8.1 Tourism

8.1.1 Current Status

Tourism is on the increase with estimates of around 100,000 visitors to Lightning Ridge per year. The *signature experience* is most likely to trace the story of the opals and the interesting characters that opal mining has drawn to Lightning Ridge⁷⁰.

Destination NSW advises there are three strong themes, with key supporting experiences and game changers being:

- Primary theme – *Revealing our Heritage*
- Secondary theme – *Exploring our Nature, Little Places, Big Stories*
- Emerging opportunity – *Celebrating Culture on Country*
- Key supporting experiences – *Art & Culture*
- Game Changers – *Flying tours and private charters, Aboriginal Cultural Tourism, Unearth the Fossils, Night Skies Experience Development.*

The Reserve will be key to delivering some of these opportunities and the Land Manager has the opportunity to work with Destination NSW and WSC to facilitate that delivery.

The extent of tourism creates various pressures on the Reserve in a number of ways. It is important also to acknowledge the important financial contributions it makes to Lightning Ridge and neighbouring towns and communities. However, as with many tourism experiences, as tourist numbers increase, reason for visiting can be eroded, without appropriate management.

It is evident that the opal fields lack a varied range of facilities and options for visitors including a limited rating of accommodation⁷¹, which would generally be available in a prime tourist location.

⁷⁰ Product and experience Audit – Moree – Lightning Ridge Hub – Destination NSW.

⁷¹ A Search for accommodation at Lightning Ridge indicates the following is available:

- Lightning Ridge Outback Resort & Caravan Park
- Opal, Lightning Ridge and Crocodile Holiday / Caravan Parks
- The Wallangulla, Black Opal and Bluey Motels
- Fossickers' cottages
- Lorne Station
- Sonja's Bed and Breakfast
- Outback Glamping – Charlies Camp
- Eight air bnbs.

Further, it is increasingly difficult to maintain the integrity of the opal mining industry, safeguard its operations, and continue to safely provide the *Lightning Ridge experience* to visitors. Visitations by tourists compete with traditional mining uses within the “shared space”. The legacies associated with past mining, and current mining activities, create significant and often unavoidable dangers on and around mining sites, such as on and near agitator sites, mullock dumps etc., and on the track and road network which provide linkages to claims, residences and villages (see below). The growth of tourism increasingly creates significant inequities in terms of meeting the costs of road maintenance⁷² and other services for which tourists currently make no contribution.

It is also recognised that the community which attracted many miners to the area initially is changed by the tourism industry in a way that is not celebrated by many in the mining industry.

Finally, the mechanisms for building and booking a tourist experience in Lightning Ridge need to be established to make it easy prepare a great holiday⁷³. There is very little aggregation of websites in Lightning Ridge and the Land Manager has the opportunity to be pivotal in that delivery. This may facilitate the opportunity to drive tourism income into the Reserve for the use of Reserve infrastructure.

It is important that tourism is managed and controlled in a fashion that:

- provides a range of activities and accommodation experiences that tourists could reasonably expect in a tourism destination
- ensures that tourists pay an appropriate contribution to the maintenance of the destination
- minimises impact on the mining industry
- provides benefit to the local and regional economy
- guides tourists to safe and established sites and away from sites of danger.

⁷² *The Road Levy* is paid by the mining industry for road maintenance. No payments are made by other reserve users.

⁷³ The Great Big Adventure Pass at Dubbo (see <https://dubbo.com.au/visit/great-big-adventure-pass>) and Backstreet Academy in South East Asia (see <https://www.backstreetacademy.com>) are good examples.

8.1.2 Tourism Objectives (A)

- O1. To improve facilities and opportunities for tourists which enhance the *Lightning Ridge experience* for all visitors and manage the mining interface.



Figure 51 – Possible Tourism and Recreation Sites
(Clockwise from Top) Possible Noodling Site, Lightning Ridge – 4-mile road; Playground site, Grawin; Primitive Camp Group site, Grawin.

Strategies

- a. Enhance the *Lightning Ridge opal mining experience* for tourists.

In conjunction with Destination NSW and tourism businesses establish an aggregated website with an online booking system that allows tourists to create their own Lightning Ridge experience.
Provide well sized, regularly stocked “noodling” sites specifically constructed for tourism, on the Reserve around Lightning Ridge and away from the main active mining sites.
Formally establish a primitive campground at Grawin.
Establish toilets and playground area etc. at Grawin, close to campground and golf course.
Establish a high-end (4 star) boutique Hotel in Lightning Ridge.
Establish an annual car door artist event and gallery at Lightning Ridge.



Figure 52 – Possible Tourism and Recreation Sites
Possible sites for accommodation on Morilla, Onyx and Gem Streets.

- b. Promote extra avenues for tourism within existing structures, which do not compete with mining but add value through alternative land-based experiences.

Investigate viability of trails/tours for native birds, plant identification, geological interests, and bush tucker/ food, cultural and medicinal native plants.
Enhance and promote the “Ridge Golf Experience” in association with the boutique hotel accommodation.
Working with the Destination NSW and relevant user groups, investigate utilising a restored Garule-Wali to create an “aboriginal cultural experience”, “outback stargazing experience” or “artist in residence facility” or similar. If not feasible demolish and remove all structures not considered of heritage significance.



Figure 53 – Possible Tourism and Recreation Sites
Possible Site for Hotel lease – Cnr of Gem St and Kopi St.

- c. Achieve financial contributions by tourists which enhance facilities and more equitably offset impact costs on roads, waste and safety measures.

Create a chargeable and obligatory “Reserve Access Permit” (RAP)⁷⁴ process, to be obtained prior to accessing the more developed parts of the Reserve.

- d. Direct tourists on a preset path (probably along existing car door routes) which minimises interaction with the working mining industry, and impacts on the environment, and aboriginal cultural heritage.

In conjunction with Destination NSW and tourism businesses establish an aggregated website with an online booking system that allows tourists to create their own Lightning Ridge experience.

In conjunction with Destination NSW, the Lightning Ridge Tourism Organisation and tourism operators, create the “Black Opal Pass” through the aggregated website which includes the RAP and drives tourists along specific paths.

⁷⁴ The Reserve Access Permit will be established as part of the Black Opal Pass, delivered through a new aggregated website.

The strategies discussed above apply appropriately to the areas within the Reserve where tourism is already well established. However, as tourism grows, for escalating reasons of safety, privacy, and disturbances to the continuity of lawful mining activities, the mining industry and the Land Manager strongly promote the notion that tourists to the “New Area” within the Reserve, be precluded. This is the Wandella / Weetalibah / Allawah and Coocoran sections. Although opal mining has occurred in those areas since the 1980s, at the current stage it is generally less intensive and considered the area of growth of mining into the future.

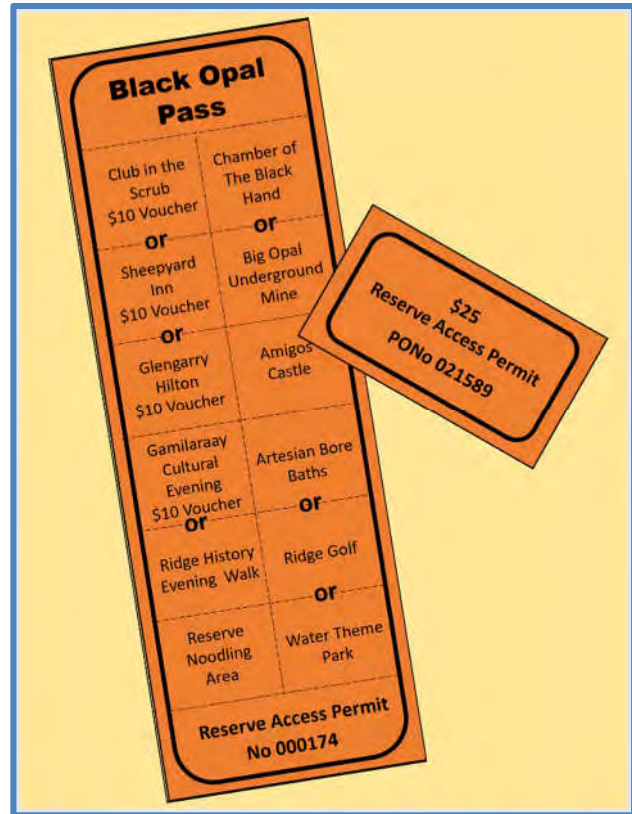


Figure 54 – Reserve Access Permit and Black Opal Pass

This POM therefore requires a separation of tourism and mining activities in the “New Area”, by denying access by individual tourists and organised touring⁷⁵. This does not preclude access by the scientific community for designated studies; rural services; and aboriginal interests on agreement with the Land Manager. Nor does it subjugate the current interaction between tourism and mining industries in other areas of the Reserve where the relationship is well established, somewhat manageable, and well accepted.

- 02. To ensure that personal safety and well-being remains a priority, by excluding organised and casual tourism.

Strategy

- a. Establish criteria for exclusion of tourism from the “New Area” mine fields of Coocoran, Wandella / Weetalibah / Allawah:

Advise the agents of the tourism industry (WSC, tourist information centres, tourism businesses etc.) ensuring exclusion is reflected in any materials and maps.
Develop and erect appropriate signage at access points and other key positions.
Develop an appropriate access agreement to specialist participants who have a scientific and cultural interest which add value to the Reserve through broadening use and interest base, and research/investigations.

⁷⁵ Organised tours in the New Areas may be specifically authorised by the Land Manager.

8.2 Agriculture and the Grey Soil Country⁷⁶

8.2.1 Current Status

The VSS resulted in the purchase of four leasehold properties totaling about 17,500 hectares. Of the areas purchased, the majority were red ridges land, highly suitable for mining and the remainder totaling about 4,500 hectares were grey or greyish floodplain soils, more suitable for ongoing agricultural production.

This land can be broken up into the following four categories⁷⁷:

- a. Land which has previously been cleared, cropped and may be viable for cropping in its own right (shown with a green dot in Figure 55).
- b. Land which has not been cropped but may be viable for cropping in its own right with offsets, as required (shown with a yellow dot in Figure 55).
- c. Land which may not have been cropped and may not be viable for cropping in its own right but may provide offsets for other new cropping land (shown with a red dot in Figure 55).

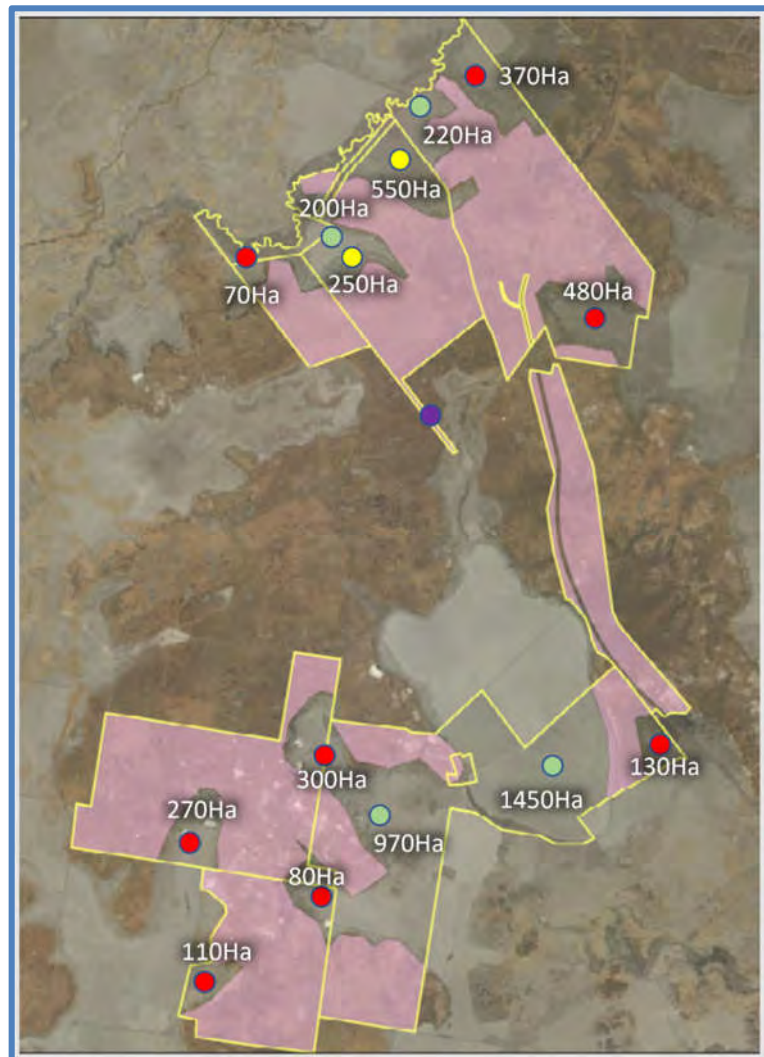


Figure 55 – Grey Soil Country

⁷⁶ The Grey Soil Country has been included on the basis it will be added to the Reserve at a later date.

⁷⁷ This is a conceptual breakdown of future use options of the grey soil country. As Yellow dot areas require removal of native grasses and scattered trees, the Land Manager is required to seek approval from the Local Land Services. This may require a detailed assessment and application, to be assessed under the *Local Land Services Act*. Managed offsets in various like-for-like locations (eg. Red dot areas proposed here) may be required prior to approval and development.

Note that the Land Manager has committed to ensuring that the grey soil country⁷⁸ be put back to agricultural production through an open competitive process, should it be added to the Reserve. To ensure this occurs, it is also required that this POM provide detailed information as to how land use conflict between mining and agriculture would not eventuate in these areas.

To that end, a tight management regime will need to be put in place to ensure the grey soil country is managed for agricultural purposes in low rainfall periods and in high rainfall periods. The land needs to be managed in such a way so that it is ready to maximise agricultural yields (cropping) at opportune times. This may mean significant periods where return on expenditure is limited followed by a high return period.

Agricultural production will be optimised during the critical process of seeking the most appropriate farming operator, and relevant terms of tenure. It is suggested that the expertise of local agribusiness in this recruitment be sought and potentially engaged by the Land Manager to ensure the best outcome.

Optimised agricultural output can be viably achieved through the following methods:

1. A long-term/short-term lease⁷⁹ to an appropriately experienced farmer⁸⁰ with tight conditions during rest or fallow periods which include best-practice locally established conservation farming techniques⁸¹.

This method will provide the Land Manager with a regular and consistent income stream from the land, albeit with a lessor overall income than the other methods suggested.

2. Share farming between an appropriately experienced farmer and the Land Manager where the farmer manages the land in dry periods and undertakes opportunity cropping (in conjunction with best-practice locally established conservation farming techniques), and the Land Manager provides the land.

This method will provide the Land Manager with a higher overall income that is irregular being dependent on the weather.

3. Share farming between an appropriately experienced farmer and the Land Manager where the farmer undertakes opportunity cropping (in conjunction with best-practice locally established conservation farming techniques), and the Land Manager manages the land in dry periods.

⁷⁸ Defined by a land survey line completed in 2020 by the NSW Government, closely approximating the boundary between the foot-slopes of the red side-slopes (*Lightning Ridge Land System*), and the areas of lower topographies of variable soil types, a component of which is seasonally inundated.

⁷⁹ Processes, procedures and templates for grazing land adopted by Crown Lands should be utilised for inviting and issuing tenures.

⁸⁰ The conditions of tenure will need to include that the appropriately experienced farmer will regularly attend and work the land and demonstrate a knowledge and experience of local farming practices.

⁸¹ Conservation farming techniques include full stubble retention and chemical weeds control associated with reduced tillage.

This method will provide the Land Manager with a highest possible income (given existing capacity) that is irregular being dependent on the weather but also increase the workload of the Land Manager significantly.

8.2.2 Agriculture Objective (B)

03. That the Crown lands referred to as the *grey soil country* resulting from the VSS, be managed as Crown land for the purposes of highest and best use agricultural production.

Strategies

- a. Ensure the *grey soil country* resulting from the VSS, be used for the purposes of highest and best use agricultural production, to be managed by the Land Manager.

Negotiate with Crown Lands to have Agriculture added as a permitted purpose for the Reserve.
In discussion with Local Land Services, investigate the clearing of “Yellow dot” lands potentially using “Red dot” lands for offsets (as required) and obtain approval under the <i>Local Lands Services Act 2013</i> for their development.

- b. Appropriately manage the *grey soil country* on the Reserve.

Identify priority grey soil grazing areas, especially the <i>Wombiera Land Systems</i> .
Fence identified areas.
Ensure capable stock watering systems are in place where required.
Facilitate opportunity cropping of more capable components of the grey soil country – the <i>Llanillo, Rotten Plains and Nidgery Land Systems</i> ⁸² (see Appendix 3) - to achieve highest and best agricultural use, ensuring the adoption of <i>Best Management Practice</i> ⁸³ .
Engage an appropriate expert local agribusiness to design and manage the tender process consistent with best practice.
Use an appropriate tender process consistent with guidelines and procedures to allocate the agricultural production enterprise (cropping, grazing) to the rural industry, ensuring the market-place test suitability of agricultural enterprise and management system.

⁸² Expansion of cropping subject to consideration under NSW *Local Land Services Act 2013*.

⁸³ Best Management Practice is based on principles of conservation farming (stubble retention, reduced tillage), endorsed by the Western Local Land Services.

8.3 Aboriginal Culture – Access, Use and Site Protection

8.3.1 Current Status

The red ridges and slopes, and the area around Coocoran Lake which represents part of the Narran Lake system, hold great significance for local aboriginal people. The lake system and adjoining landscapes are particularly important with many examples of aboriginal people's existence including relatively undisturbed aboriginal objects; the traditional status of the lakes as a meeting place of the tribes in the region; dreaming paths which culminate at the lakes and aboriginal people's need for involvement with land⁸⁴.

Aboriginal people who, keenly pursue maintenance of culture and the educational and healing values of Country, believe access to land within the Reserve has historically been difficult. Note that the VSS and the reservation of the grey soil country, now provides opportunities to address a component of this need, due to available farm infrastructure which may be suitable for this purpose. The Rexeen homestead near Coocoran Lake, and its outbuildings, provides an almost immediate opportunity to facilitate access for various means, by providing accommodation and training venues. This also provides a means of management and maintenance of this valuable infrastructure, which will be also available for use by a non-aboriginal population with eco/environmental/scientific interests.

8.3.2 Aboriginal Access Objectives (C)

04. To acknowledge and support aboriginal cultural heritage and education on the Reserve.

Strategies

- a. Improve the ability for access to the Reserve for cultural, spiritual, and educational needs of aboriginal people.

Develop an MOU between the appropriate aboriginal bodies and the Land Manager which identifies aboriginal cultural precincts on the Reserve and encourages access to them by the aboriginal community.

- b. Create access to the Reserve which supports employment training, health and welfare of aboriginal people.

Develop a management plan for *Rexeen* homestead and associated infrastructure, in consultation with potential users/interest groups, for occupation for purposes which may include a training centre for youth activities, aboriginal culture, wellbeing, TAFE activities etc. referencing a recognised and successful model of delivery⁸⁵.

⁸⁴ Narran Lake Nature Reserve Ecological Character Description May 2011 Commonwealth Government.

⁸⁵ The *Backtrack Program* is an example of delivery of these types of programs.

Create a tourism experience as part of the Black Opal Pass which highlights the aboriginal cultural heritage.

Working with the Destination NSW and relevant user groups investigate utilising a restored Garule-Wali to create an “aboriginal cultural experience”, “outback stargazing experience” or “artist in residence facility” or similar. If not feasible demolish and remove all structures not considered of heritage significance.

05. To protect aboriginal heritage sites on the Reserve.

- a. Protect existing/acknowledged cultural heritage sites around the Coocoran Lake and elsewhere on the Reserve.

With the aboriginal community design a priority list of areas requiring heritage surveys and seek grants to have survey work undertaken.

Cost and provide an annual allocation to conduct surveys for aboriginal artifacts across the Reserve and/or seek external funding eg., Environmental Heritage Trust.

When significant sites are identified engage a heritage expert to advise on the appropriate method of protection and request advice from local aboriginal groups as a planning and management resource for the land.

- b. Ensure development and land management protects aboriginal sites and cultural values.

Any projects approved by the Land Manager meet the requirements of the *National Parks and Wildlife Act 1974*, and the *Mining Act 1992*.

8.4 Transitional Areas

8.4.1 Current Status

At the time of writing this POM, the regulator MEG was issuing no further mining consents into some new areas, including the “Transitional zone” between the red ridges and side-slopes and the lake beds, and the lake beds themselves. This appears to be based on some uncertainty as to the impacts of mining on a range of existing natural values⁸⁶, aboriginal heritage values, and on the existing agricultural industry, especially when the land in question is of higher grazing capability.⁸⁷ In consequence, the current impasse creates uncertainty to both the mining and agricultural industries, as well as aboriginal interests. Although this POM has no regulatory role in these instances, it has the capacity to exert influences on the decision-making frameworks of the regulator. MEG is currently considering whether the transitional zones can be mined, and if so, under what conditions.

8.4.2 Transitional Areas Objectives (D)

- O6. To provide certainty for the mining and agriculture industries, and aboriginal interests, in the expansion of mining into new areas.

Strategy

- a. Create certainty by completing a review of the REF regarding future opal mining interests in the *new areas* in a timely fashion:

Lobby the regulator MEG to:

- fully consider mining interests, aboriginal heritage, the natural environment and agricultural capability with the issuing of consents and conditions for mining leases in new areas such as the Transitional zone.
- Complete the review in a timely fashion to create certainty.

All approvals and concurrences given by the Land Manager to be consistent with Part 6 of the *National Parks and Wildlife Act 1974*.

⁸⁶ From the Objects of the *Mining Act 1992*: “to ensure mineral resources are identified and developed in ways that minimise impacts on the environment”.

⁸⁷ It is noted there is not conflict of land use between the mining and cropping industries.

8.5 Road and Track Management

8.5.1 Current Status

For the purposes of this POM Roads and Tracks are defined as follows:

- A public road is a road defined under the *Roads Act 1993*.
- A road is a dirt or gravel formation generally utilised by miners, tourists, residents (who are not miners), government authorities and the general community.
- A track is a dirt or gravel formation generally utilised by miners.

The current location of primary, secondary and tertiary roads within the Reserve are depicted in **Appendix 12**.⁸⁸ There are no sealed access roads or tracks within the Reserve⁸⁹ and the surfaces which vary from dirt to gravel are managed with inadequate resourcing. Many roads and tracks have been constructed by miners to their mineral claims. None of the existing roads and tracks within the Reserve are public roads under the *Roads Act 1993*. Safety signage is poor or non-existent.

Road management is a significant safety and liability issue for the Land Manager and miners, a hazard which is increased by the use of unregistered vehicles⁹⁰ by some miners on tracks and roads. Section 68(1) of the *Road Transport Act 2013* provides that *A person must not use an unregistered registrable vehicle on a road.*

The quality of roads and tracks within the Reserve has a contributive effect to the costs of maintaining registration of mining vehicles.

MEG collects a road levy for maintaining access for opal miners across Lightning Ridge and the surrounding opal fields. The Land Manager will be responsible for maintaining access tracks and roads within the Reserve. To date the majority of road and track maintenance across the Reserve has been undertaken by the miners' associations utilising the road levy funds provided by MEG. The previously mentioned agreement with WSC will also see a continuation and elevation of financial support for roads maintenance and construction.

Given the increasing activity of tourists and non-mining residents on roads, ongoing funding by the miners alone is unreasonable and unsustainable. An ongoing funding mechanism for road maintenance is required to be developed.

WSC has recently assumed some maintenance responsibility for a section of the road

⁸⁸ Appendix 12 shows roads as primary (red), secondary (yellow) and tertiary (blue). The terms primary, secondary and tertiary relate to the maintenance schedule.

⁸⁹ Sealed road through the Allawah section of the Reserve was dedicated as Public Road on 29 November 2019 and forms part of the Castlereagh Highway and Bangate Road being lots 15 and 20 DP 1237470. This is yet to be captured in the spatial system. See Appendix 11 for the relevant sections of DP 1237470.

⁹⁰ The *Road Transport Act 2013* says a **road** means an area that is open to or used by the public and is developed for, or has as one of its main uses, the driving or riding of motor vehicles.

within the main arterial access into the Grawin area (between second ramp and shop) and graded roads in Lightning Ridge. It is noted that Section 24 of the *Local Government Act 1993* provides that *A council may provide goods, services and facilities, and carry out activities, appropriate to the current and future needs within its local community and of the wider public.*

Table 1 shows the current contribution to road maintenance by various users, and proposed arrangements which are more equitable and reflective of responsibility.

Table 1 - Road and Track Management Contribution

	Current Contribution Method	Current Maintenance Method	Proposed Contribution Method	Proposed Collection Method	Proposed Maintenance Method
Public Road User					
Miner (residential and mining only)	NA	NA	Nil	NA	WSC
Non mining Resident	NA	NA	Rates	Existing Rate System	
Business	NA	NA	Rates	Existing Rate System	
Tourist	NA	NA	Nil	NA	
Road User					
Miner (residential and mining only)	Road levy through MEG	Miners' Associations using road levy under licence from Land Manager. WSC periodic grading of some roads	Road levy through MEG	As per existing. Current Mineral Claims are accepted as RAPs	Land Manager using Road levy, contributions by WSC and RAP Funds
Non mining Resident	Nil		Contribution by WSC through rates	Existing Rate System	
Business / Facility User	Nil		Contribution by WSC through rates	Existing Rate System	
Tourist	Nil		RAP ⁹¹	Collected by Tourism operators, Tourist Information Centre or issued by Land Manager	
Track User					
Miner (residential and mining only)	Road levy through MEG	Miners' Associations using road levy on tracks under licence from Land Manager	Road levy through MEG	As per existing	Miners' Associations using road levy on tracks under licence from Land Manager

⁹¹ Reserve Access Permit – see section 8.1.2.

The major issues for roads and tracks across the Reserve are broadly:

- Undesignated/unauthorised road and track development between settlements, mines and working plant, residences and tourist attractions
- Use of unregistered vehicles
- Maintenance costs and standards, including signage, and cost sharing equity
- Dangers represented to all users, including miners, residents and visitors by poor condition and signage, and shared usage
- Drainage, water quality, erosion and cumulative impact on other natural resources.



Figure 56 – Public Roads – Grawin / Glengarry

8.5.2 Roads Objectives (E)

07. To ensure that roads and key tracks are identified and managed by the appropriate authority in accordance with legislation and/or agreed use.

Strategies

- a. In consultation with WSC and Crown Lands, identify arterial roads within the Reserve which are in general community use, to be opened as Public Roads⁹² or managed under licence to WSC.

Request WSC open a public road⁹³ at Grawin, between Wilby Wilby Road and the shop and then between the shop and the village dump as shown on Figure 56.

⁹² Figure 56 proposes (1) the current entry road section (from 2nd ramp off Wilby Wilby Road, via the Grawin store to southern Reserve boundary of the Grawin opal fields and the current road to the Grawin Rubbish Dump (2) the current road from Lake Beard to the Sheeppark Inn and thence the Glengarry Hilton.

⁹³ Or agree to Crown Lands opening a public road.

- b. In consultation with Crown Lands create easements for access, if required.

Consider an easements for access across the Floodplain at Coocoran Lake (see Figure 57).

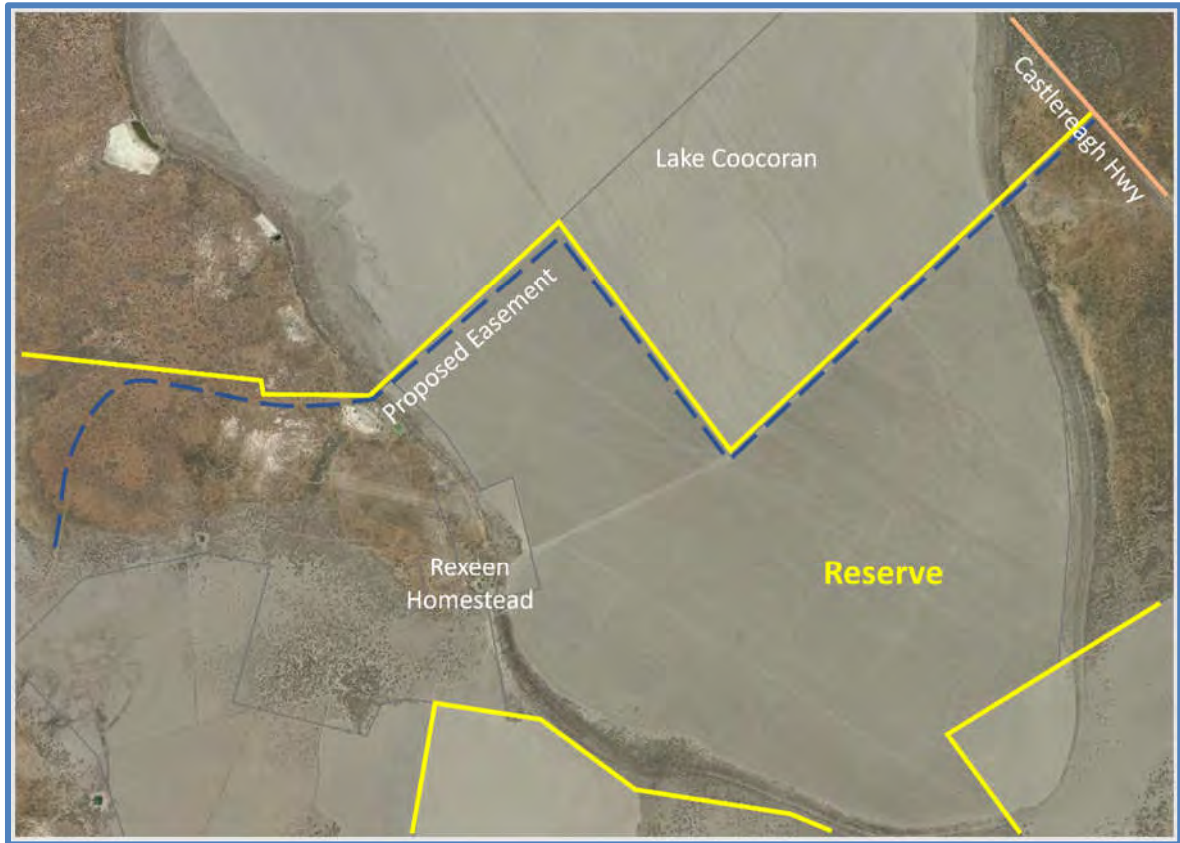


Figure 57 – Proposed Easement for Access across Coocoran Lake

- O8. To ensure the roads⁹⁴ and tracks across the Reserve are satisfactorily maintained in order to improve road safety and reduce environmental impacts.

Strategies

- a. Conduct regular inspections of Reserve roads and tracks and after major rainfall events.

Conduct regular inspections of public roads and roads managed under licence by WSC and advise WSC of the need for maintenance.
Conduct regular inspections of tracks and advise MAs of the need for maintenance.
Conduct regular inspections of other roads and undertake maintenance as necessary and in accordance with the maintenance schedule shown in Appendix 12.
Ensure road maintenance practices accord with acceptable water management and soil conservations standards.

⁹⁴ The location of roads and their respective maintenance schedules are depicted in **Appendix 12**.

- b. Select and install suitable signage for road users on suitable roads (speed limits, surface condition etc.).

Seek advice from road regulators (eg. WSC) regarding acceptable road signage standards which address safety measures.

Create signage plan for critical road track sections and implement.

- c. Achieve improved mining vehicle safety standards.

Provide written support to the mining associations in seeking regulatory change for Mining vehicles similar to that provided to primary production under Section 6 Schedule 1 of the <i>Road Transport (Vehicle Registration) Regulation 2017</i> when accessing space on the Reserve's roads and tracks ⁹⁵ .
--

Ensure signage in appropriate locations is placed on the Reserve to advise all Reserve users that unregistered vehicles are not permitted on "roads" as defined under the <i>Road Transport Act 2013</i> .
--

- O9. To ensure funding for road maintenance is equitably shared.

Strategy

- a. Develop an equitable recurrent funding mechanism for roads and tracks within the Reserve (such as that noted in Table 1) which includes contribution from tourists as part of the RAP process.

Utilise the Reserve Access Permit monetary contribution as a component of funds required for road maintenance.
--

Negotiate with WSC whereby rates paid by all residents on the Reserve adequately reflects a fair contribution to road repairs/maintenance.
--

- O10. To ensure that road maintenance contracts are issued in accordance with purchasing requirements of the NSW Government.

Strategy

- a. Establish a process for the awarding of contracts in accordance with buy.nsw requirements.

The Land Manager should understand the requirements of the NSW Government Procurement Policy Framework and ensure it is adopted for contracts that are issued for the Reserve.
--

All contracts issued for work to be undertaken on the Reserve are to be approved by the Land Manager or its delegated officers.

⁹⁵ This process is publicly supported by NSW Police.

8.6 Waste Management

8.6.1 Current Status

Mining sites are often characterised by ad hoc development and can be littered with discarded machinery and other waste including old car bodies and old mining equipment. Under the conditions to hold a mineral claim (*Mining Act 1992*), miners are required to maintain the site in reasonable order and that those found to be breaching the legislative requirements could be liable to fines. Much of this waste is of an historical nature.

The many residents on the Reserve significantly contribute to waste through household refuse, general waste, vehicles and building materials. Visitors to the opal fields which include organised tours of individuals, also contribute to the waste stockpiles as they patronise the pubs, clubs and the campground within Grawin / Glengarry components of the Reserve.

Waste management is currently largely self-managed and well-intended. However, methods and procedures are unauthorised, and often unsafe.

WSC is the local authority responsible for coordinating appropriate waste management from towns and villages. Discussions between WSC and a consultant are current, and it is understood that a Waste Disposal Strategy (WDS) is being finalised to mitigate the problem of waste on the Reserve. Recently signed licences between the Land Manager and WSC will see an improved commitment to the ongoing management of waste sites at Grawin and Glengarry.

8.6.2 Waste Management Objectives (F)

O11. To ensure waste management sites on the Reserve are appropriately managed, consistent with all legislative requirements.

Strategies

- a. Complete and Implement the Waste Management Strategy.

In discussions with WSC complete and adopt the Waste Management Strategy (including dumping) which will deliver a manageable waste disposal site network across the Reserve.
Design and construct waste disposal sites which can be easily rehabilitated and restored in such a manner that they will not be easily distinguishable from the surrounding landscape after restoration.

- b. Ensure responsibilities for waste management on the Reserve are appropriately allocated on a long-term basis.

Negotiate with WSC the transfer of management of significant dump sites at Grawin and Glengarry either by long term lease, transfer of Reserve Management or land acquisition.
--

O12. To ensure costs⁹⁶ of managing waste across the Reserve are appropriately apportioned.

Strategy

- a. Allocate a component of a Reserve Access Permit fee (proposed elsewhere in this POM) to offset the cost of waste management across the Reserve.

Utilise the Reserve Access Permit monetary contribution as a component of funds required for management of waste.

WSC to allocate appropriate proportional component of annual rate levy, to waste management on the Reserve.

O13. To maintain a sense of “community ownership” of the waste management problems of the Reserve amongst the people who live and work there.

Strategy

- a. Involve the community by initiating an annual clean-up campaign.

Establish an annual “Clean up the Reserve Day” to be jointly organised by the Land Manager, MAs and residents to remove derelict machinery, vehicle parts and other materials.
--

⁹⁶ It is proposed in this Objective that additional fees for waste management potentially come from two sources – rate notices, and tourist induction returns. The former is governed by WSC’s appetite to assume lawful responsibility, which will impact on the requirement of the latter.

8.7 Infrastructure Maintenance

8.7.1 Current Status

The physical works and structures across the Reserve, those that currently exist and those that are initiated by this POM, will require ongoing management on a routine basis. It is important to capture these ongoing commitments as objectives, strategies and actions here. A decline in the physical status of infrastructure will ultimately mean a more costly commitment for the Land Manager. In the case of essential water supply infrastructure, commitment is required to establish legal access and utilisation of that resource to enable its ongoing management.

Major infrastructure assets currently include:

- Three homesteads
- Picnic areas, playgrounds and other recreational facilities
- *Garule-Wali* site
- War Memorial at Lake Beard
- *Zac's Cottage* and the *Pig Sty* heritage sites⁹⁷
- All major gates, ramps and fences
- Safety works (eg. bollards, viewing areas, waste disposal sites)
- Maintenance of safety measures such as signage, protective barriers (eg. fenced historical shafts)
- Water infrastructure (bores, piping etc.)
- Tracks and Roads.

⁹⁷ These are items of heritage significance, which exist within current mining licence claim areas. *Zac's Cottage* is also listed as a heritage item in the WLEP and referred to as "*Zac's Cottage*".

8.7.2 Maintenance Objectives (G)

O14. To maintain important infrastructure across the Reserve.

Strategy

- a. Complete essential maintenance on the Reserve's major assets and infrastructure.

Develop a costed Maintenance Schedule for all significant assets (current and proposed) across the Reserve.

Implement Maintenance Schedule as part of an annual works program on all existing and introduced priority assets across the Reserve.
--

Discuss with MEG, WSC, Lightning Ridge Historical Society, future management responsibilities and options of historically significant infrastructure such as Zac's Cottage, Bodel's Hut and Pig Sty.
--

Strategy

- b. Establish location of water supply infrastructure and manage sustainable water supply for both mining and agriculture.

Geographically locate Cap and Pipe infrastructure and negotiate re-entry to Angledool scheme, and manage accordingly.

Geographically locate all active aquifer bores associated with the mining industry, liaise with the appropriate regulator regarding licence provisions and continue to manage to conditions accordingly.
--

8.8 Land Management

Land management is the process of management, use and development of land resources. It considers the impacts of the management practices adopted, on the resources of the land, when deriving economic returns from it. Good land management techniques require an understanding of the ecological processes that affect soils, weeds, feral animals, growth of grasses and crops, shrubs and trees, bushfire control, and water management. Unmanaged land can be affected by inappropriate clearing, reduced cover, overgrazing, uncontrolled fires, failed crops, soil erosion, poor water quality and poor standards of biosecurity.

8.8.1 Current Status

Land management responsibilities in NSW are commonly underpinned by legislatively based requirements. However, many routine land management activities are unbound by immediate controls and operate as codes of practice, exemptions, or common-sense best management practices within the regulatory framework.

All land management responsibilities across the Reserve are the responsibility of the Land Manager. The result of the VSS is that an additional 17,500 hectares is now managed under the Land Manager's direct control, with potentially a further 4,500 hectares – the grey soil country. This creates an elevated requirement that the Land Manager be fully informed of these responsibilities and adequately resourced for their undertaking.

The immediate land management priorities are⁹⁸:

- The control of Hudson Pear is a key land management concern. Cooperation between the Land Manager and Castlereagh/Macquarie Weeds County Council has been positive, though there may be some resourcing, methodology and coordination constraints in the way the biological control initiative is being promulgated.
- The regulation of the clearing of native vegetation on rural land, including Crown land, is a significant issue for the region, and on the Reserve. Depending on the *reservation purpose*, or the designated local government zoning, controls are stipulated within the *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017*, and for rural lands (RU1), the *Local Lands Services Act 2013*.
- The management and control of bushfires is an important consideration for the Land Manager. Bushfire management is an annual and ongoing consideration and will include the implementation of appropriate bushfire mitigation strategies and works in conjunction with other authorities and the appropriate Bushfire Management Plan.

⁹⁸ Note that **waste management**, and **soil erosion control** are also key land management considerations. However, both are discussed elsewhere in this section.

- Many of the boundary fences with adjoining landholders have been inspected over recent years and most are in stock proof condition, although age means replacement will be required in the next 2-5 years. Maintenance is an ongoing requirement for fences, especially dealing with fallen trees and ensuring good biosecurity (eg., spread of noxious weeds) by controlling livestock movements. Two neighbouring landholders have made enquiries regarding replacement boundary fence sections, and the Castlereagh Highway boundary at *Allawah* will require refencing.
- Development of fencing strategy and plan consistent with aspiring agricultural management (grazing).

8.8.2 Land Management Objectives (H)

O15. The Land Manager is well informed of land management responsibilities.

Strategy

- a. Improve Committee member and staff awareness of all legislative requirements for land management.

Conduct training workshops on key legislative responsibilities for land management (vegetation and clearing, soils, water, feral animals, bushfires, environmental weeds, biosecurity etc.).

O16. Ensure a collaborative approach to Land Management on the Reserve by forming and maintaining relevant networks with other organisations.

Strategies

- a. Enhance collaboration with the Castlereagh Macquarie Weeds County Council.

Continue to be proactive on Hudson Pear control in conjunction with the Castlereagh Macquarie Weeds County Council through joint field activities.

- b. Enhance collaboration with region-based feral animal control bodies.

Continue to collaborate with the established groups (Angledool and the Cumborah/Llanillo wild dog control groups) including neighbouring western lease landholders, for control of wild dogs, goats and pigs.

- c. Establish linkages and collaborative projects with the Western Local Lands Services.

Establish a regular dialogue with Western Local Lands Services.
When required, develop joint projects with Western Local Lands Services.
Explore potential for Western Local Lands Services linkage to Land Manager eg., through relevant subcommittee structure.

- d. Maintain collaboration with bushfire management authorities.

Establish a regular dialogue with Lands particularly in relation to funding opportunities for implementing required bushfire management plan components.
Engage with relevant bushfire management committees and the RFS to undertake works, including back burning activities, as required by the relevant Bushfire Management Plan.

- O17. Land Management responsibilities are planned, appropriately resourced and undertaken by the Land Manager.

Strategies

- a. Ensure sufficient recurrent and grant funding is available for land management on the Reserve.

Allocate annually from the recurrent budget for land management requirements.
Develop targeted funding submissions to relevant land management funding bodies (Western Local Land Services grants, National Heritage Trust, Crown Reserve Improvement Fund (CRIF) etc.) for specific non-recurrent requirements such as Hudson Pear mitigation, bushfire management etc.

- b. Plan for and meet land management requirements.

Develop and implement an annual land management plan for the Reserve, highlighting priority actions and resourcing needs.
Develop and implement a fencing strategy aimed at establishing a viable grazing program.
Develop an annual maintenance program for boundary and subdivision fences, water supply facilities, sheds, buildings, water troughs and pipes, and other infrastructure.
Collaborate with Crown Lands and/or Public Works on VSS Fencing requirements.

- O18. Ensure adoption of best land management practice (BMP) on pastoral and cropping lands.

Strategy

- a. Ensure that grazing and cropping practices adopted on the Reserve accord with the highest and best management practices.

Grey soil country farming (cropping) to adopt appropriate conservation farming practices – including stubble retention, minimum tillage, moisture conservation practices.
Ensure groundcover levels on lands allocated for pastoral activities never fall below 40% ⁹⁹ .

⁹⁹ See www.nswskn.com/groundcover/

8.9 Natural Resource Management

Natural resource management (NRM) is the management, protection and improvement of environmental assets such as soils, water, vegetation and biodiversity with a particular focus on the quality of life for both present and future generations. As such, there is some overlap with Land Management discussed above. However, NRM specifically focuses on a scientific and technical understanding of resources and ecology and the life-supporting capacity of those assets.

8.9.1 Current Status

The major impacts on the values of natural resources across the Reserve (especially flora and fauna) are attributed mainly to the clearing of native vegetation within the Lightning Ridge Land System (ridge country) for agriculture and mining purposes. Mining sites, roads and tracks, mullock dumps and wet puddling sites etc. have all occurred at the expense of NRM. The modifications made to the natural environment by the agricultural pursuits over time (over-grazing, clearing etc.), have also contributed in a significant way.

Mining activities are currently regulated via the *Mining Act 1992* and managed through a compliance approach. However, this control becomes less effective as the number of registered claims within localised areas increase significantly. Hence the priority to review the current REF to address emerging and key NRM issues, and to account for the cumulative impacts and provide certainty for the mining industry regarding future mining aspirations.

As such, this POM cannot override MEG's regulatory responsibilities. However, it does provide support that issues of direct concern to NRM, be considered in this process.

The past history of clearing on the Reserve more recently resulted in an elevated consideration of the values of remnants of particular native vegetation communities, woody and grassed-based. Some communities, (such as Coolibah communities on floodplain areas) have the potential to be classified as EECs¹⁰⁰. This may therefore be a consideration as a possible means of generating bio-credits or stewardship payments¹⁰¹ as a source of income for the Land Manager.

8.9.2 Natural Resource Management Objectives (I)

O19. To conserve biodiversity and maintain ecosystem function and habitat across the Reserve.

¹⁰⁰ Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain and Mulga Lands Bioregion - Biodiversity Conservation Act 2016.

¹⁰¹ Biodiversity Conservation Act 2016.

Strategy

- a. Engage with the MEG to ensure appropriate environmental management conditions for mineral claim approvals in new areas across the Reserve with specific consideration of key flora and fauna as required under the *Mining Act 1992*.

Discuss key issues with MEG representative on Land Manger committee to ensure new REF considers the requirements of the natural environment.
--

- O20. To ensure the Reserve's natural state and setting is maintained as current and protected as required.

Strategy

- a. Identify and protect iconic NRM values across the Reserve.

Using available NRM information undertake field survey to spatially locate iconic vegetation on the Reserve.
--

Select and fence iconic vegetation, prioritising areas where excessive pressures from grazing animals and/or traffic exist.

- b. Explore the income generation possibilities of management of *potential* EEC vegetation through *Biobanking* credits and stewardships as permitted by the *NSW Biodiversity Conservation Act 2016*.

Contract accredited expert to assess EEC on the Reserve from available coolibah communities (prioritising the area near the edge of Coocoran Lake).

Where possible, establish bio-credits or stewardship payments and an accompanying income stream for managed EEC with the relevant agencies.

- O21. To provide for community use of and access to the land minimising and/or mitigating any disturbance caused by human intrusion.

Strategy

- a. Broaden the tourist experience into areas of unique and highest natural resource value for which the Land Manager has responsibility.

Provide appropriate signage and printed information for visitors which describe the significance of NRM priorities (suggest the riparian vegetation on riparian zone of the Narran River – <i>Upper Darling Land System</i> , Goodooga Road).

Include this tourist experience and aboriginal cultural heritage experience on the Black Opal Card.

8.10 History and Heritage

8.10.1 Current Status

Amongst some in the Lightning Ridge community, there is a strong acceptance of responsibility to ensure the region’s history is acknowledged, maintained and told. The tourist industry has, in part, developed around the sense of intrigue to understand the history of black opal mining, as well as that of the original inhabitants. These avenues do provide an opportunity for recognition and financial support for ongoing needs.

The Lightning Ridge Historical Society has commenced planning *Walking-Self Guided Tours* on the Reserve around historical points of interest in Lightning Ridge, interfacing with historical shafts on the Three Mile Road and Lunatic Hill. Heritage shafts which occur in the Preservation Area around Lightning Ridge are considered to have potential for tourism especially via self-guided walks. They are currently in a poor state of repair and represent high level dangers to visitors.

Accessing funding for new and ongoing projects will be an immediate challenge for the preservation and exhibition of items with historical significance not only within the Lightning Ridge township, but also on the Reserve.

The relationship between the Historical Society and the Land Manager is through representation on the committee. A stronger collaborative approach which prioritises *in-principle* support from the Land Manager for the projects of the Historical Society will assist in strengthening its future funding submissions and directions. It is also a significant consideration for the Land Manager that it may be currently legally exposed, due to unsafe remnants of the mining industry, such as open shafts of historical significance which require immediate attention.

It is noted that *The Australian Opal Centre* proposal on Lunatic Hill, will also interface well with the historical aspects of opal mining at Lightning Ridge.

8.10.2 History and Heritage Objectives (J)

O22. To ensure that key historical sites are protected and safe for visitors.

Strategy

a. Identify and protect key historical sites.

In conjunction with the Historical Society conduct an audit of key sites of historical significance including shafts, and prioritise for retention and exhibition or rehabilitation.
Immediately fence and protect priority shafts.
Advise MEG of the requirement to rehabilitate derelict and abandoned shafts in the Preserved Fields.

When significant sites are identified engage a heritage expert to advise on the appropriate methodology to making key historical sites safe and approachable.
Implement site protection plans.
Ensure other historical sites (including Zac's Cottage, Bodel's Hut and the Pig Sty) on the Reserve are presented in a safe manner.
Ensure appropriate safety signage are placed at historical sites.

O23. That the history of the mining industry is part of the visitor experience.

Strategy

- a. Support the Historical Society in its continuing development of *Walking-Self Guided Tours* on Lunatic Hill in Lightning Ridge.

In conjunction with the Lightning Ridge Historical Society prepare strategy for protection and presentation of historical sites in Lightning Ridge.
Jointly submit appropriate submissions for funding.
Consider establishing guided walking tours as part of the Black Opal Pass.

8.11 Mining

8.11.1 Current Status

As previously noted in this POM Opal Mining is the primary element for the Reserve. The Land Manager will work to secure opal mining and the mining culture that has developed around it. This will mean that the Land Manager will work with the Mining Industry to ensure:

- regulatory requirements are met to the degree that will least impact the industry.
- the mining industry does not bear more than an equitable share of the burden of managing the Reserve.
- the mining industry receives opportunity to benefit from the growth of other industries on the Reserve.
- consideration is given to add to the reserve through appropriate WLL acquisition.

Mining impacts on lifestyle reflects a rich and unique history and it provides the synergy for wealth creation across the region, either through what it yields, or what it attracts, and in doing so, contributes to the financial status of the Land Manager enabling it to achieve its responsibilities. This POM seeks to ensure the Reserve supports the ongoing sustainability of the opal mining industry in Lightning Ridge and the surrounding areas.

However, mining applies a number of *pressures* to other values and considerations which can see them compromised. Safety to humans, impacts on natural values such as native vegetation, biodiversity, soil erosion and water quality, and agricultural production, are examples of these considerations which are compromised because of the competitive presence of mining on the landscape. These impacts are often cumulative and may not be well considered by site-specific regulatory control. Mining also has the potential to compromise aboriginal culture and ready access of aboriginal people to country.

Finally, mining also *indirectly* causes a necessary planning reaction, ensuring decisions are made to adjust and accommodate its impacts. For instance, road maintenance and waste management are examples where condition is in part, an indirect response to mining, and not necessarily caused by mining. Other examples are associated with the responsibilities of the Land Manager in its custodial role as a good manager of the land rather than a specific response to mining. Although many land management responsibilities are consistent with good practice, some have a legislative basis.

Mining therefore impacts in various ways on the issues (see **Consultations and Assessment** above) which are now addressed in this POM.

The objectives in this section relate directly to mining. The objectives in later sections may also relate to mining, albeit in an indirect manner.

8.11.2 Mining Objectives (K)

- O1. To improve facilities and opportunities for tourists which enhance the *Lightning Ridge experience* for all visitors and manage the mining interface.

Strategies

- a. Enhance the Lightning Ridge opal mining experience for tourists.

Provide well sized, regularly stocked “noodling” sites specifically constructed for tourism, in the Lightning Ridge area of the Reserve and away from the main active mining sites.

- c. Achieve financial contributions by tourists which enhances facilities and more equitably offsets impact costs on roads, waste and safety measures.

Create a chargeable and obligatory “Reserve Access Permit” process, to be obtained prior to accessing the more developed parts of the Reserve.

- d. Direct tourists on a preset path (probably along existing car door routes) which minimises interaction with the working mining industry.

In conjunction with Destination NSW, the Lightning Ridge Tourism Organisation and Operators, create the “Black Opal Pass” which includes the Reserve Access Permit and drives tourists along specific paths.

- O2. To ensure that personal safety and well-being remains a priority, by excluding organised and casual tourism.

Strategy

- b. Establish criteria for exclusion of tourism from the “*New Area*” mine fields of Coocoran and Wandella / Weetalibah / Allawah.

Advise the agents of the tourism industry (WSC, tourist information centres, tourism businesses etc.) ensuring exclusion is reflected in any materials and maps.

Develop and erect appropriate signage at access points and other key positions.

- O8. To ensure the roads and tracks across the Reserve are satisfactorily maintained in order to improve road safety and reduce environmental impacts.

Strategies

- a. Conduct regular inspections of Reserve roads and tracks and after major rainfall events.

Conduct regular inspections of public roads and roads managed under licence by WSC and advise WSC of the need for maintenance.
Conduct regular inspections of tracks and advise MAs of the need for maintenance.
Conduct regular inspections of other roads and undertake maintenance as necessary.
Ensure road maintenance practices accord with acceptable water management and soil conservations standards.

- b. Select and install suitable signage for road users on all roads (speed limits, surface condition etc.).

Seek advice from road regulators (eg. WSC) regarding acceptable road signage standards which address safety measures.
Create signage plan for critical road track sections and implement.

- c. Achieve improved mining vehicle safety standards.

Provide written support to the mining associations in seeking regulatory change for mining vehicles similar to that provided to primary production under Section 6 Schedule 1 of the <i>Road Transport (Vehicle Registration) Regulation 2017</i> when accessing space on the Reserve’s roads and tracks.
Ensure signage in appropriate locations is placed on the Reserve to advise all Reserve users that unregistered vehicles are not permitted on “roads” as defined under the <i>Road Transport Act 2013</i> .

- O9. To ensure funding for road maintenance is equitably shared.

Strategy

- a. Develop an equitable recurrent funding mechanism for roads and tracks within the Reserve (such as that noted in Table 1) which includes contribution from tourists as part of the RAP process.

Create a Reserve Access Permit as part of a Black Opal Pass with a monetary component which becomes available for road maintenance.
Negotiate with WSC whereby rates paid by all residents on the Reserve adequately reflects a fair contribution to road repairs/maintenance.

O24. Support the mining industry to maintain the traditions of opal mining while recognising new opportunities.

Strategy

a. Facilitate new entry to the industry.

Workshop with the Mining Industry Associations the benefits and ways to encourage new entrants to the industry and promote opal mining.

b. Facilitate mining tourism.

Investigate the requirements for tourist inspection of working mines.

Work with miners to establish some tourism businesses in working claims.
--

Develop tenure conditions in association with Crown Lands and MEG.
--

c. Facilitate protection of the industry by acquiring appropriate land.

Discuss with the Crown Lands and MEG opportunities to acquire WLLs where significant deposits of black opal exist.
--

Establish a land acquisition fund aimed at acquiring land to grow the mining industry and remove the possibility of conflict with the agriculture industry.

8.12 Planning and the Provision of Services

8.12.1 Current Status

The Reserve makes up the significant component of lands available in Lightning Ridge, Grawin and Glengarry. Making land available for the provision of services, in accordance with appropriate planning instruments is fundamental to the growth of these communities.

The intent of the Local Government Authority (WSC) for future development of an area is demonstrated in its *Local Environmental Plan*. As noted in Section 2.3 under the *Walgett Local Environmental Plan 2013 WLEP*:

- The Lightning Ridge area contains land zoned:
 - SP1 Special Activities – Mining (majority)
 - RU1 Primary Production (significant)
 - R1 General Residential (significant)
 - IN1 General Industrial (significant)
 - RE1 Public Recreation (significant)
 - SP3 Special Purposes - Tourist (nominal)
- The Coocoran area contains land zoned:
 - RU1 Primary Production (majority)
 - SP1 Special Activities – Mining (significant)
- The Wandella / Weetalibah / Allawah area contains land zoned RU1 Primary Production.
- The Grawin / Glengarry / Sheeppark area contains land zoned:
 - SP1 Special Activities – Mining
 - RU1 Primary Production

There are also additional permitted uses of dwelling and business around Lightning Ridge, Grawin and Glengarry.

In Lightning Ridge, the WLEP indicates an intent for further residential and industrial land release on the Reserve. An indicative layout at Figure 58 provides an estimated 120 residential and 11 industrial allotments which could be released over the life of this POM. Initially 3 lots on Fantasia Street should be able to be subdivided and released.

Sale of land will be subject to approval of the Minister.

The current development level of Grawin to include a post office, village store, pub,

camping ground, playground, bus stop, golf course together with about 400 residential claims indicates it may be appropriate to include a RU5 Village zone from the village store to the Club in the Scrub and the proposed primitive campground.



Figure 58 – Indicative Residential and Industrial Land Subdivision, Lightning Ridge



Figure 59 – Development Land, Lightning Ridge

(Clockwise from top left) Residential land with existing kerb and gutter, Fantasia Street; Industrial land on the Three Mile Road; Residential land with sealed road along Halley's Comet Street; "Green Field" Residential land off Halley's Comet Street and Lappkalle Street.

8.12.2 Provision of Services Objectives (L)

- O25. To provide a supply of residential and industrial parcels of land in accordance with existing land zones for the development of Lightning Ridge.

Strategy

- a. Develop and sell readily available residential land at Lightning Ridge to create a capital fund.

Obtain “in principle” approval from Crown Lands for the sale of subdivided residential and industrial land.

Initiate a three-lot residential subdivision in Fantasia Street Lightning Ridge through an application with WSC.
--

Place the land on the market and utilise the funds for the development and sale of future lands.
--

- b. Build a program of development and sale of land¹⁰² to facilitate an ongoing capital budget for the life of this POM.

Engage a surveyor or planner to provide feasibility investigation into the indicative costs and program for the development and subdivision of land zoned R1 and IN1 within the Reserve.
--

If feasible, prepare an ongoing program of development required for the sale of the land over the life of this plan and beyond.

¹⁰² Including the land with a purple dot on Figure 50.

- O26. To ensure the Reserve is appropriately zoned to cater for the future needs of the community.

Strategy

- a. Review and amend land zones.

With WSC and Crown Lands conduct a review of the land zones of the Reserve with a view to rezoning at the next making or amendment of a Local Environmental Plan.

Consider requesting WSC to incorporate a RU5 Zone at Grawin in the next revision of the Walgett Local Environmental Plan.

Specifically consider rezoning the following parcels:

- Pt Lot 433 DP 1076808 (being the frontage to Morilla Street, Lightning Ridge) from SP1 - Mining to B2 – Local Centre.
- Pt Lot 4 DP 1163616 (being the frontage to Sherman’s Way, Lightning Ridge) from SP1 – Mining to SP3 Tourist.
- Pt Lot 4 DP 1230996 (being land adjacent to the land zoned IN1 – Industrial, Lightning Ridge) from RU1 - Primary Production to IN1 – Industrial.
- Pt Lot 2 DP 1271292 (being land adjoining the Lightning Ridge Outback Resort & Caravan Park facing Onyx Street, Lightning Ridge) from RU1 Primary Production to SP3 Tourist).
- Pt Lot 2 DP 1153975 (being land at the corner of Kopi Street and Woolaroo Rd, Lightning Ridge) from RE1 Recreation to SP3 Tourist.

8.13 Ownership and Occupation

8.13.1 Current Status

The Reserve currently provides access to holders of Western Lands Leases and Mineral Claims that are located within the external boundaries of the Reserve. In the majority of cases the Reserve bounds the entirety of these tenures. Some of the tenures are undertaking activities which are outside the authority that has been provided and others are encroaching onto the Reserve without authority. This situation represents a risk to the Reserve given that in any litigation on these lands the Land Manager may well become a first or second respondent. Compliance management for the Reserve therefore is a significant issue to be resolved.

Compliance management within the context of the Lightning Ridge area is a complex social problem for the Crown Land Manager of the Reserve and its employees given the isolation, size and culture of the local community. An appropriate mechanism for compliance activities is needed that provides for the Crown Land Manager Board and employees to be able to live comfortably within the community¹⁰³.

The Land Manager has the ability to enter into leasing or licencing agreements for the use or occupation of the reserved land or part thereof (excluding tenures pursuant to the *Mining Act 1992*) on a temporary or ongoing basis, and/or contracts for works to be undertaken on the Reserve for the Land Manager. Tenures can only be issued for activities consistent with the reserved purpose of the Reserve or as provided by a POM endorsed by the Minister for Lands and Water.

Any proposed tenure, other than temporary licences will require the Minister's consent (or delegated officer).

Subject to Section 7.4 appropriate tenures will need to be established for current and future occupations. This will allow the Board to ensure adequate insurance is in place for commercial and non-commercial activities.

The significant issues to be addressed are:

- unauthorised occupation of the Reserve by commercial enterprises and non-commercial groups and individuals
- unauthorised mining activities on the Reserve
- encroachment by Western Lands Lessees onto the Reserve
- distribution of income derived from authorisation of occupation.

¹⁰³ Templates available at Crown Lands - Dubbo may be of assistance, such as the standard warning letter issued for unlawful use and/or occupation of land.

It should be noted that authorisation of occupation is an issue of risk and an issue of financial return.

8.13.2 Ownership and Occupation Objectives (M)

O27. Unauthorised occupation of the Reserve is eliminated.

Strategies

a. Ensure mining activities are appropriately authorised.

Undertake a regular desktop audit to determine any unauthorised mullock heaps, agitator sites and dams on the Reserve and advise MEG of the unauthorised occupation.
Request MEG advise when these unauthorised occupations have been addressed.
Request that NSW Resources Regulator undertake an annual inspection of the Reserve in relation to compliance of Mineral Claims and for the Regulator to provide a report to the Land Manager.
Advise in writing the NSW Resource Regulator of any abandoned and open shafts with a request that they are made good.

b. Ensure that tenures issued by Crown Lands do not encroach on the Reserve.

Request that Crown Lands conduct an annual inspection of Residential Western Lands Leases in the Lightning Ridge town to manage encroachment.
Negotiate with Crown Lands on compliance arrangements for tenures over the Reserve, based on existing and demonstrated models.

c. Ensure non-mining occupation of the Reserve is appropriately authorised.

Negotiate tenures on the Reserve for unauthorised or inappropriately authorised occupation.
Ensure any tenures issued are valid acts under the <i>Native Title Act 1993</i> .
Ensure tenures are issued for a market value subject to the statutory minimum annual rent.
Negotiate with Crown Lands on compliance arrangements for tenures over the Reserve.
Undertake regular inspections and an annual desktop audit of occupation authorised by the Land Manager.

O28. Tenures are appropriately issued.

Strategies

a. Ensure Tenures are issued in accordance appropriate legislation.

Obtain the concurrence from Crown Lands that the continuance of native title is inconsistent with the issue of Western Lands Leases: WLL 5347 and WLL 2928 in the Wandella / Weetalibah / Allawah area; WLL 722, WLL 308, WLL 7790 and WLL7952 in the Coocoran Area; WLL 4642, WLL 3140 and WLL 3946 in the Lightning Ridge Area, and WLL 4121 and 4132 in the Grawin / Glengarry Area.

Where any tenure proposed to be issued in Lightning Ridge North as described in Figure 49 or on TSRs 70123 and 230002 investigation into the requirements of the <i>Native Title Act 1993</i> should be undertaken.

Prior to issuing any lease licence (excepting for a short-term licence) the Land Manager is to obtain the consent of the Minister under Section 3.27 of the <i>Crown Land Management Act 2016</i> .

Tenures must be issued in accordance with the reservation purpose or in accordance with this POM.

b. Tenures satisfy probity requirements.

The Land Manager ensures it knows of the probity requirements through obtaining training workshops or undertaking Crown Reserve Manager induction training.

Ensure tenures are issued for a market value subject to the statutory minimum annual rent.
--

Ensure tenures are issued in accordance with buy.nsw requirements.
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8.14 Safety

8.14.1 Current Situation

Safety is an important consideration within a range of separate themes and strategies discussed within this POM. However, because of its critical relationship to human operations and health, as well as its legal and legislative significance, safety is worthy of representation here in its own right.

Issues of safety for people who visit, live and work on the Reserve must be addressed by the Land Manager. In addition to the obvious *body and limb* injury issues to exposed individuals, this becomes a serious liability issue for the Land Manager which needs to demonstrate reasonable levels of due diligence.

Given the nature of mining, emergency access is of extreme importance to and for the people who work and live on the Reserve. However, emergency access to accident victims, or others requiring emergency health support is often difficult due to the lack of an effective emergency tracking system which is required by police, ambulances, and other emergency service personnel. There are no named streets or numbered residences, and other locality identification tools are informal and inappropriate for these means. Emergency workers need to be overly reliant on good local knowledge and experience in locating people in need. This system is not effective in such critical times.

Safety related issues on the Reserve include but are not limited to:

- Poor road and track quality
- Use of unregistered vehicles on roads and tracks
- Insufficiently protected open, non-current, mine shafts
- Hudson Pear
- Mullock Heaps
- Relationship with current mining operations adjacent and within the Reserve
- Emergency service access
- Management of rubbish dump sites.

8.14.2 Safety Objectives (N)

- O1. To enhance the *Lightning Ridge experience* for all visitors, in a safe way.

Strategies

- a. Enhance the *Lightning Ridge opal mining experience* for tourist visitors.

Provide well sized, regularly stocked “noodling” sites specifically constructed for tourism, in the Lightning Ridge area of the Reserve and away from the main active mining sites.

In conjunction with Destination NSW, the Lightning Ridge Tourism Organisation and Operators create the “Black Opal Pass” which includes the Reserve Access Permit and drives tourists along specific paths.

Provide appropriate safety information with the sale of the Black Opal Pass and/or the Reserve Access Permit.

- O2. To ensure that personal safety and well-being remains a priority, by excluding organised and casual tourism from areas on the Reserve not considered safe.

Strategies

- a. Establish criteria for exclusion of tourism from the “*New Area*” mine fields of Coocoran and Wandella / Weetalibah / Allawah:

Advise the agents of the tourism industry (WSC, tourist information centres, tourism businesses etc.) ensuring exclusion is reflected in any materials and maps.
--

Develop and erect appropriate signage at access points and other key positions.

- O8. To ensure the roads and tracks across the Reserve are satisfactorily maintained in order to improve road safety and reduce environmental impacts.

Strategies

- a. Conduct regular inspections of reserve roads and tracks and after major rainfall events.

Conduct regular inspections of public roads and tracks managed under licence by WSC and advise WSC of the need for maintenance.

Conduct regular inspections of tracks and advise MAs of the need for maintenance.

Conduct regular inspections of other roads and undertake maintenance as necessary.
--

Ensure road maintenance practices accord with acceptable water management and soil conservations standards.

- b. Select and install suitable signage for road users on all roads (speed limits, surface condition etc.).

Seek advice from road regulators (eg. WSC) regarding acceptable road signage standards which address safety measures.

Create signage plan for critical road track sections and implement.

- c. Achieve improved mining vehicle safety standards.

Provide written support to the mining associations in seeking regulatory change for Mining vehicles similar to that provided to primary production under Section 6 Schedule 1 of the <i>Road Transport (Vehicle Registration) Regulation 2017</i> when accessing space on Reserve’s roads and tracks.

Ensure signage in appropriate locations is placed on the Reserve to advise all Reserve users that unregistered vehicles are not permitted on “roads” as defined under the <i>Road Transport Act 2013</i> .
--

O21. To ensure that key historical sites are protected and safe for visitors.

Strategy

- a. Identify and protect key historical sites

In conjunction with the Historical Society conduct audit survey of key sites of historical significance including shafts, and prioritise for retention and exhibition or rehabilitation.
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Immediately fence and protect priority shafts.
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Advise MEG of the requirement to rehabilitate derelict and abandoned shafts in the Preserved Fields.
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When significant sites are identified engage a heritage expert to advise on the appropriate methodology to making key historical sites safe and approachable.

Implement site protection plans.

Ensure other historical sites (including Zac’s Cottage, Bodel’s Hut and the Pig Sty) on the Reserve are presented in a safe manner.

Ensure appropriate safety signage are placed at historical sites.

O29. To create an improved system for rapidly locating residents, workers and visitors impacted by trauma.

Strategy

- a. Develop an improved emergency response strategy across the Reserve.

Convene initial discussion between all relevant participants and contributors (Crown Lands, MEG Emergency Services, Police, Ambulance, and the Mining Associations) to develop an appropriate system for rapid tracking of people on the Reserve.

Consider preparing a template for reserve users which enables emergency services to locate users in times of emergency.

8.15 Land Manager Structure

8.15.1 Current Status

The Reserve is large, varied and complex from a land management, financial and cultural perspective. Management of the Reserve would present challenges for a well-resourced and supported management structure. To ensure viability and success in management the structure needs to be strengthened and supported.

With a single employee, the Land Manager is significantly dependent on the capability and durability of that employee. The loss of that employee represents a considerable risk to the Land Manager's effectiveness as well as its accountability. The current lack of depth of employment inhibits the activities which may see it progress towards a self-funding model to effectively achieve its charter.

The current structure can be strengthened by:

- resourcing, at least one, further employee
- utilising the skills and expertise of the whole of the existing Board
- coopting assistance from other parts of the community
- increasing diverse representation on the Board.

The staffing structure should be established so:

- management of the Reserve can continue when the existing staff takes recreation leave or sick leave.
- knowledge of the everyday management requirements of the Reserve can be passed on from one employee to another.
- the everyday management of the Reserve is not forced into the hands of the volunteer board members.
- the retirement or resignation of a staff member does not represent a significant issue for the management of the Reserve.

The office holders of the Reserve Board carry an unnecessary burden that can be distributed to the whole of the Board. The Board should be restructured to include a subcommittee layer (on a needs basis) where subcommittee members have a more hands-on involvement for the specific function. This way, progress and accountability can be measured. Other community participants can also be brought in casually to more broadly contribute to getting the actions of the Land Manager scoped and achieved.

The Land Manager requires strengthening in terms of its public profile and community image. The "office" of the Land Manager is currently located 30 kilometers north west of Lightning Ridge in circumstances not conducive to business management. The Land Manager needs to be seen publicly with a physical presence (business centre) where impacted or interested people can receive advice and services, and exchange information.

8.15.2 Structure Objectives (O)

O30. To improve the effectiveness of the way the Land Manager performs by providing additional funded staffing and volunteer support.

Strategy

a. Assess existing staff structure.

Development of a staff structure with two or three staff providing:

- grant funding applications for Tourism development, Reserve management and aboriginal cultural assessment.
- mentoring and staff development.
- administrative support.
- the option of management control for other administrative tasks currently performed by Lands Department eg. licences and leases.

b. Create targeted support structures for Land Manager Board utilising existing members and other volunteers as required.

Establish priority single-issue (non-decision making) subcommittees of the Land Manager Board¹⁰⁴ and other parties with initial Safety, Communication and Business Development subcommittees as priority.

Each subcommittee to be given a charter or task to return to the Board for decision making in a similar fashion to Local Council Subcommittees.

O31. To elevate the physical presence of the Land Manager in the community.

Strategy

a. Establish a point of contact for clients and provide a focal centre for Land Manager's administration.

Open an independently¹⁰⁵ located business office of the Lightning Ridge Area Opal Reserve in Lightning Ridge township, using existing appropriate vacant space.

¹⁰⁴ Nominated subcommittees may be constructed for quick turn-around and disbandment on task achievement, or perpetual.

¹⁰⁵ Independence in this instance refers to an office which is not co-located with users or tenants of the Reserve.

- O32. To improve the effectiveness of the Land Manager by ensuring its composition fully reflects community priorities and needs.

Strategy

- a. Ensure Committee membership reflects interests in accordance with reservation purpose.

Encourage nominations within standard membership recruitment process.

8.16 Finance

8.16.1 Current Status

The cost of managing the Reserve will be substantial and at present, sources of income are limited.

Land Manager Income

The Land Manager's current income is primarily from compensation for impact of mining provided to land holders under the *Mining Act 1992*. For the last three financial years this represents between 73.6% and up to 77.1% of income received. Other income is generated from homestead rentals, Government agency Hudson Pear mitigation fund and from the interest derived from the Reserve's establishment fund.

In FY2020 significant expenditure items include:

- Wages and Salaries (47.6%)
- Administration (3.2%)
- Motor Vehicle (6.4%)
- Land Management including Hudson Pear Mitigation (30.9%)
- Homestead Repairs (7.8%).

A breakdown of income and expenditure on the Reserve can be found in Table 3.

Reserve Income Generation by other Authorities

An estimated \$1.59M income is generated by Government Authorities from the Reserve as set out in Table 2. The Land Manager receives approximately \$200k or 12.6% to manage the Reserve.

Table 2 - Monies Generated by Government Agencies on the Reserve

MEG			
1831 Mineral Claims			
		Rate ¹⁰⁶	Annual
Admin Levy ¹⁰⁷		\$100.00	\$183,100.00
Road Levy		\$25.00	\$45,775.00
Rehabilitation Levy		\$10.00	\$18,310.00
Mullock Dump Levy		\$10.00	\$18,310.00
Landholder Compensation		\$109.00	\$199,579.00
			\$465,074.00
Crown Lands			
1050 Western Lands Leases			
		Rate ¹⁰⁸	Annual
Rent		\$505.00	\$530,250.00
			\$530,250.00
WSC			
1768 Residential Assessments, 49 Business Assessments			
		Rate ¹⁰⁹	Annual
Rates - Residential		\$318.29	\$562,742.75
- Business		\$581.30	\$28,483.36
			\$591,226.11
			\$1,586,550.11

MEG

The regulatory responsibilities of MEG are discussed in the Legislative and Policy Requirements section, under *Mining Act 1992* and its objects. The more pertinent regulatory functions and fee generation potentials are more fully discussed here.

The foundation structure of regulation and levying of fees is the Lightning Ridge Mineral Claims District and the *Narran-Warrambool Reserve*, developed under that legislation. The *Narran-Warrambool Reserve* covers approximately 500 square kilometres and was established as an administrative area in 1989 by the then Department of Mineral Resources, to preserve the area for small scale miners and to provide a spatial basis to regulate mining activity for an expanding opal mining industry.

The *Narran-Warrambool Reserve* is divided into four Opal Prospecting Areas. The Reserve occupies a large component of the Narran-Warrambool Reserve, which also encompasses adjoining freehold land and Western Land Leases (WLL).

¹⁰⁶ Rates obtained from “Lightning Ridge Fees and charges” at https://www.resourcesandgeoscience.nsw.gov.au/miners-and-explorers/applications-and-approvals/opal-mining/mining_act_fees accessed 15 January 2021.

¹⁰⁷ It is noted that monies collected by MEG, excepting the Admin Levy, is held in trust, to be applied for nominated purposes over the Mineral Claims Area.

¹⁰⁸ Rates obtained from “Rents – Minimum annual rent and consumer Price Index value” at [Rents - Crown land in New South Wales \(nsw.gov.au\)](https://www.nsw.gov.au/rents-crown-land) accessed 15 January 2021.

¹⁰⁹ Rates obtained from “Fees and Charges for Rates – 16/17 Statement of Rates” at [Fees and Charges for rates - WSC \(nsw.gov.au\)](https://www.nsw.gov.au/fees-and-charges-for-rates-wsc) accessed 15 January 2021 and extrapolated at 1.8% per annum to allow for a rate pegged increase.

Opal Prospecting Licences issued by MEG enable access, test drilling and other forms of prospecting within *Opal Prospecting Blocks*, which are components of the larger *Opal Prospecting Areas*. These licences are active for a 28-day period, or 3 months, depending on the area.

Ordinary Mineral Claims and Residential Mineral Claims (where residential occupation can occur) enable mining and residences ancillary to mining. Up to two Mineral Claims can be issued per individual or company. Each claim occupies a maximum of 50 m by 50 m in extent. A Mineral Claim lasts for a period of one to five years and must be renewed to remain active. Residential Mineral Claims are only permitted on the Preserved Fields.

A Mineral Claim requires that a **Security Bond** be paid to MEG. After Mineral Claims have been cancelled or expired, the claim holder is required to rehabilitate any disturbance caused by mining activity including all excess mullock including the top veneer of any compacted mullock to designated mullock dumps and backfill all shafts and auger holes. In areas specified as Preserved Fields, rehabilitation requirements can stipulate the retention and preservation of mullock piles and machinery for its important tourism and sociocultural values. Any shafts and holes not backfilled on Preserve Fields must be covered and fenced to maintain public safety.

Mineral Claims holders currently have no obligation under law to undertake any rehabilitation in the form of replanting native species.

If the claim holder is seen to meet all the obligations set by MEG on removing mullock if necessary, and making a site safe, the claim holder will be refunded the Security Bond. If the claim holder has not met the required MEG standards, the claim holder will forfeit the Security Bond.

The rehabilitation standards in the *Narran-Warrambool Reserve* have evolved over time and in the past, claim holders were not required to remove mullock from claims. Mineral claim holders are required to pay an **Environmental Levy** which enables further rehabilitation of those areas to remove the excess mullock, bring older areas up to current standards and maintain opal fields where mining activity has diminished.

Note that the Security Bond held by MEG for developments such as communal processing sites, and open cut mines where they exist, is significantly larger than the smaller Mineral Claims, as are the rehabilitation requirements. Forfeiture of any Security Bond monies goes to the **Legacy Mines Program** for rehabilitation and can be applied by MEG to meet rehabilitation outcomes.

Mineral Claim holders are also required to pay a Communal **Mullock Dump Levy** to enable the industry to maintain, establish and rehabilitate jointly used mullock dumps.

All Mineral Claim holders pay a **Road Levy** which is a contribution for the maintenance of roads and tracks used by miners to travel between sites whilst going to work or moving their mining equipment and ore. This levy raises around \$46,000 per annum. MEG makes funding available on application, to support safe access to the opal fields.

Finally, all Mineral Claim holders pay **Compensation** to compensate landholders for disturbance and loss of income which is distributed to the landholders by MEG. Several landholders hold (or have held) Mineral Claims over their properties.

Funds received by the Miners' Associations: The Lightning Ridge Miners' Association and the Glengarry, Grawin, Sheeppark Miners' Association access the road maintenance funds directly from MEG, and under a licence issued by the Crown land manager undertake road works on the roads and tracks used by miners on the Reserve.

Crown Lands

Previously, Mineral Claims and residents occupied the WLL's of agricultural landholders. In relatively recent times, **Residential Western Land Leases** have been created under the *Camps on Claims Scheme* (the Scheme) to holders of valid Residential Mineral Claims, on the Preserved Fields around Lightning Ridge township. The Scheme was a response to the MEG policy of not issuing any further or new Residential Mineral Claims. The areas under lease under the former *Western Lands Act 1902* and the *Crown Land Management Act 2016* by Crown Lands have been based on MEG surveys. Since 2006, the Scheme has created around 1050 leases. This had the effect of removing approximately \$50,000 from the Levies raised by MEG for road maintenance, mullock management and rehabilitation.

Western Lands Lease attract, at least, a statutory minimum rent – currently \$505 per annum.

At this stage, there are no plans to extend this process to the 700 (approximately) Residential Mineral Claims, which still exist on the Grawin/Glengarry and other opal fields. Any further granting of WLL's will require the concurrence of the Land Manager to remove or revoke these areas from the Reserve.

Residential Tenure inequity

This creates an inequity for residential tenures whereby Residential Western Lands Lease cost \$505 per annum (none of which is returned to the Reserve) and Residential Mineral Claims cost \$254 per annum (of which \$154¹¹⁰ is available to the Reserve).

To ensure monies raised by Crown Lands also return a similar amount for the Land management it is proposed that \$126 per WLL (or 25%) is remitted to the Land Manager. This can be achieved by vehicles available in the *Crown Land Management Act 2016*.

¹¹⁰ \$154 relates to the amount levied for Road (\$25), Rehabilitation (\$10), Mullock Dump (\$10) on application and Landholder Compensation (\$109).

WSC

All Residential WLL holders and Residential Mineral Claim holders pay rates to WSC.

Residential rates set by WSC in the Preserved opal fields are approximately 60% of those paid in “full service” residential communities at Walgett and Lightning Ridge.

The reduction in rates means that WSC does not provide residential streets, recycling and rubbish or sewage and water supply is non-existent.

WSC continues to provide regional services such as main roads outside the Reserve, parks, gardens, swimming pools and waste disposal sites at Walgett, Lightning Ridge and Cumborah are also available.

Crown Reserve Improvement Fund (CRIF)

Limited funding on a competitive basis is available on application from the *Crown Reserve Fund* (formerly *Public Reserve Management Fund*). These Crown Lands grants are available for land management (eg. Hudson Pear, feral animal management, bushfire management etc.) and new infrastructure plus repairs and maintenance.

Sale of lands

Crown land may be sold. However, sale of any part of the Reserve will require written consent from the Minister for Lands and Water (or delegated officer). The Land Manager will need to refer such proposals to Crown Lands for preliminary consideration and advice, detailing evidence of the need to sell lands, and that due consideration of Native Title, Aboriginal land claims, and the principles of Public Competition have been made. Approval that the proceeds from the sale of Reserve land be retained by the Land Manager may be pursued in accordance with s. 3.16, s. 3.27, s. 5.2 and s. 5.9 of the *Crown Land Management Act 2016*.

Resource Requirements

Active management of the Reserve has been restricted by the limitation of recurrent revenue.

As noted in previous sections there is significant work required in the Reserve to meet Land Manager’s responsibilities.

Whilst the financial statements of the Land Manager are clearly well managed, they reflect the historical approach to the management of the Reserve. In order to confront the challenges and full cost considerations of appropriate management, revenue and expenditure needs to be significantly increased. One-off cash payments from Government

is not a sustainable financial model for the Reserve.

Additionally, the land management pressures have never been higher with:

- the recent establishment of the Land Manager accompanied by legislatively based responsibilities
- increasing pressures by elevated tourism as they impact on services and the landscape
- increased safety considerations, particularly with increased usage and visitations
- emergence of strong cultural heritage awareness and needs in the way the Reserve is used
- elevated environmental responsibilities particularly due to emerging legislation (native vegetation, weeds, feral animals etc.)
- a much larger land management responsibility commensurate with a greatly increased land area and boundary ratio, for which the Land Manager has direct responsibility.

Existing funding streams now require review and consolidation, and new recurrent and capital funding streams are required to meet responsibilities and take advantage of opportunities.

Table 3 shows existing and indicative proposed revenue and expenditure streams to facilitate the programs anticipated within this POM¹¹¹.

¹¹¹ Tables exclude expenditure anticipated returns for all agricultural operations including cropping the grey soil country, since the dimensions of this component of the business, and the processes for securing these components are multi-optional and cannot be currently described.

Table 3 - Indicative Financial Requirements

Income	2019	2020	Existing Annual (est.)	Proposed Annual (est.)
MEG Levies	\$196,914	\$190,839	\$200,000	\$200,000
Crown Lands (25%)				\$130,000
Interest	\$8,580	\$12,585	\$12,500	\$12,500
Rent			\$9,000	\$56,000
Development				\$250,000
Reserve Access Permits				\$100,000
Signage	\$8,832			\$5,000
Grant income	\$53,314	\$43,996	\$45,000	\$65,000
TOTAL	\$267,640	\$247,420	\$266,500	\$818,500

Expenditure	2019	2020	Existing Annual (est.)	Proposed Annual (est.)
Employee	\$52,849	\$75,582	\$92,790	\$225,000
Advertising & Promotion	\$340	\$1,364	\$1,500	\$8,000
Bank Charges	\$0	\$5	\$20	\$20
Consultancy fees	\$39	\$1,336	\$18,000	\$83,000
Administration	\$6,574	\$5,012	\$9,300	\$35,300
Utilities	\$142	\$544	\$600	\$600
Land and NR Management	\$15,515	\$48,972	\$51,000	\$205,000
Insurance	\$1,054	\$2,852	\$3,000	\$10,000
Motor Vehicle	\$4,673	\$10,202	\$10,000	\$10,000
Development	\$0	\$0		\$165,000
Real Estate	\$16,042	\$12,373	\$16,500	\$16,500
Safety Equipment	\$759	\$0	\$1,000	\$2,000
Travel	\$867	\$500	\$1,000	\$2,000
TOTAL	\$98,854	\$158,742	\$204,710	\$762,420

Insurance and Risk

Increased financial risk and liability accompany increased responsibility and are a potential cost consideration. All Crown Land managers are provided quite liberal insurances at no cost through the Treasury Manager Fund for standard activities. However, conditions and exclusions¹¹² do apply, and Crown Land Managers that are not eligible for cover for these exclusions, must obtain, at their own cost, adequate insurance cover for property, employees, volunteers and liability.

¹¹² The insurance requirements for Crown land managers can be found at <https://reservemanager.crownland.nsw.gov.au/administration/insurance>.

8.16.2 Finance Objectives (P)

- O1. To improve facilities and opportunities for tourists which enhance the *Lightning Ridge experience* for all visitors and manage the mining interface.

Strategies

- a. Enhance the *Lightning Ridge opal mining experience* for tourists.

In conjunction with Destination NSW and tourism businesses establish a website with an online booking system that allows tourists to create their own Lightning Ridge experience.
Establish a high-end (4 star) boutique Hotel in Lightning Ridge.

- b. Promote extra avenues for tourism within existing structures, which do not compete with mining but add value through alternative land-based experiences.

Investigate viability of trails/tours for native birds, plant identification, geological interests, and bush tucker/ food, cultural and medicinal native plants.
Enhance and promote the “Ridge Golf Experience” in association with the accommodation above.
Working with Destination NSW and suitable user groups, investigate utilising a restored Garule-Wali to create an “aboriginal cultural experience”, “outback stargazing experience” or “artist in residence facility” or similar. If not feasible demolish and remove all structures not considered of heritage significance.

- c. Achieve financial contributions from tourists which enhance facilities and more equitably offset impact costs on roads, waste and safety measures.

Create a chargeable and obligatory “Reserve Access Permit” process, to be obtained prior to accessing the more developed parts of the Reserve.
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- d. Direct tourists on a preset path (probably along existing car door routes) which minimises interaction with the working mining industry.

In conjunction with Destination NSW and tourism businesses establish a website with an online booking system that allows tourists to create their own Lightning Ridge experience.
In conjunction with Destination NSW, the Lightning Ridge Tourism Organisation and Operators, create the “Black Opal Pass” which includes the Reserve Access Permit and drives tourists along specific paths.

O.24 To provide a supply of residential and industrial parcels of land in accordance with existing land zones for the development of Lightning Ridge.

Strategies

- a. Develop and sell readily available residential land at Lightning Ridge to create a capital fund.

Obtain “in principle” approval from Crown Lands for the sale of subdivided residential and industrial land.

Initiate a three-lot residential subdivision in Fantasia Street Lightning Ridge through an application with WSC.
--

Place the land on the market and utilise the funds for the development and sale of future lands.
--

- b. Build a program of development and sale to facilitate an ongoing capital budget for the life of this POM.

Engage a surveyor or planner to provide feasibility investigation into the indicative costs and program for the development and subdivision of land zoned R1 and IN1 within the Reserve.
--

If feasible, prepare an ongoing program of development required for the sale of the land over the life of this plan and beyond.

O33. To ensure recurrent funding is available adequate to meet current responsibilities of the Land Manager.

Strategies

- a. Ensure the Compensation Fund is sustained, audited and is effectively managed.

Undertake an annual desktop audit to determine any unauthorised mullock heaps, agitator sites and dams on the Reserve and advise MEG of the unauthorised occupation.
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Request MEG advise when these unauthorised occupations have been addressed.

Request annual report from MEG regarding number of mineral claims at specific points in time and reconcile against funding received.
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b. Grow recurrent funding streams from a variety of reliable sources.

Ensure rental from the Land Manager’s owned dwellings returns a true market value and is appropriately documented.
Negotiate tenures on the Reserve for unauthorised or inappropriately authorised occupation.
Ensure tenures are issued for a market value subject to the statutory minimum annual rent.
Negotiate with the Minister to direct a portion of the money raised in residential Western Lands Leases utilising S 2.18 of the <i>Crown Land Management Act 2016</i> ¹¹³ to the Land Manager ¹¹⁴ .
Identify appropriate locations for the agistment of grazing animals (including goats) and call for expressions of interest for these activities in accordance with best practice.
Identify appropriate locations for the storage of road base materials and call for expressions of interest for sale in accordance with best practice.
By EOI and in accordance with principles of probity, initiate a sharecropping program of nominated areas within the grey soil country ¹¹⁵ .
Engage accredited specialist to explore income generation potential of bio-credits and stewardships on managed potentially <i>Endangered Ecological Communities</i> (such as Coolibah on the rims of Coocoran Lake).

O34. To grow capital income streams to strengthen Land Manager’s ability to respond to future acquisition and development challenges and to strengthen recurrent income.

Strategy

a. Ensure the Land Manager has the capacity to identify, apply and win grant funding.

Ensure employee expertise and time is provided to capitalise on available grants programs such as the CRIF Grants, Community Building Partnership Program fund etc.
Grow staff resources with experience in grant identification and application.
Place grant funding as a standard agenda item for Board meetings.
Allocate a specific time allocation to grant searching and application.
Regularly liaise with various Federal and NSW government agencies including Destination NSW, Create NSW, the NSW Premiers Department, Crown Lands, Sports NSW and Local Lands Services.

¹¹³ Section 2.18(4) provides “The proceeds from a relevant interest are to be applied as directed by the Minister and, without limitation, a direction may include (b) *if the relevant interest is granted over dedicated or reserved Crown land with a Crown land manager—a direction that the proceeds (or part of the proceeds) be paid to the manager or to another Crown land manager*”.

¹¹⁴ The Land Manager will need to demonstrate that essential issues such as human safety, rehabilitation, aboriginal access and training, roads, historical preservation, tourist camping facilities, environmental works etc. are being addressed.

¹¹⁵ Initially focusing on higher capability lands such as those of the *Rotten Plains Land System* (eg. at Coocoran Lake); subject to cultivation permits under the *Crown Land Management Act 2016* and other approvals such as authority under the Act for native vegetation clearing, as required under the *Local Land Services Act 2013*, and ensuring adoption of best management practices.

- b. Develop Rexeen Cottage into a multi-purpose community facility which includes youth education, cultural transfer and eco-tourism.

Engage an ecotourism / education specialist to explore the requirements of establishing and operating a self-funding facility.
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If feasible develop a funding model through the employment of capital resources and grant funding.
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- c. Investigate the development of a boutique hotel in Lightning Ridge.

Engage a tourism specialist to explore the requirements of locating, establishing and operating a 4-star hotel.

If considered viable, in conjunction with Crown Lands, define methodology for attracting an appropriate developer and operator.

- O35. To ensure the funds and securities of the Land Manager are adequately protected and liabilities are minimised.

Strategy

- a. Acknowledge and apply available insurances for statutory bodies with the responsibility for Crown land management.

The executive of the Land Manager committee become aware of the stipulations of Land Manager portal on Crown Lands' website, pertaining to Insurances ¹¹⁶ .
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- O36. The Land Manager has the required capability and capacity to manage financial arrangements of the Reserve appropriately.

Strategy

- a. Improve Land Manager's ability to internally respond to all financial management needs.

Appoint Finances Subcommittee to compile and manage an investment plan to consolidate existing business and capitalise on new commercial opportunity.

Prepare annual budget in April / May of each year.
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Exercise good financial management including formal minuting of at least two signatories for any Land Manager meetings and continue to provide two signatures/approvals per transaction from the Land Manager's accounts.

Maintain fee-for-service external audit arrangement with a reputable provider.
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¹¹⁶ This can be found on the following link: [Insurance summary table \(nsw.gov.au\)](https://www.nsw.gov.au/insurance/summary-table)

8.17 Reserve Communication and Support

8.17.1 Current Status

Communication between management bodies and the public is regularly a challenge in managing Crown land. The consultation process in the preparation of this POM raised issues of communication with the Land Manager and observed constraints in the sharing of consistent information. This occurs both within the Board itself, as well as across the broader community, and especially amongst groups who have an important role and dependency on the management of the Reserve. There appeared to be a lack of understanding of the existence and the role of the Land Manager. Important liaison groups include:

- the opal mining industry
- the agricultural sector
- the tourist and accommodation sector
- emergency services including ambulance and police
- the wider aboriginal communities, and
- the agencies and authorities.

This POM and its strategies and actions will be the tool to be communicated and marketed, however a specific communication plan will promote how the POM is meeting the objectives of the Land Manager. This is most important to enlist broad support for the POM and the Land Manager's effectiveness.

A *Communication Strategy* is an effective way to inform the public of Land Manager responsibilities, priorities, progress, and its personality. It is noted that the current lack of a local newspaper is a constraint to communication across the broader community.

The relationship between the Land Manager and principal government authorities should represent a true partnership of land management and service delivery. At present there is concern that the establishment of the Crown land manager represents a model of devolvement.

The level of support provided by Crown Lands, MEG and WSC needs to be clarified, recognising the unique nature of the Reserve and built into the annual planning process.

8.17.2 Communication and Support Objectives (Q)

O37. To enhance ongoing communication between the Land Manager and the wider community.

Strategies

- a. Development of the Land Manager’s *Communication Strategy* (Action - to be developed fully by appointed Land Manager subcommittee. See 9 easy steps to developing a Communications Plan ¹¹⁷).

Develop the *Lightning Ridge Area Opal Reserve Communication Strategy* and review annually.

- b. In response to the *Communication Strategy*, inform the community of the role and progress of the Land Manager.

Develop <i>LRAOR News</i> - a Newsletter for circulation after key meetings for ready distribution through established outlets.
Develop the aggregated website for the Lightning Ridge Area Opal Reserve.
Using the web-based mechanism post minutes after each meeting of the Committee.
Develop a system of social media posts.
Hold public forums/meetings on selected key subjects.
Conduct walk-in walk-out sessions on themes, issues, progress etc. seeking views.
Advertise public attendance sessions at conclusion of nominated General Meetings.

O38. To enhance communication within the Board and with key stakeholder organisations.

Strategies

- a. Conduct training forums on areas of information and responsibility within the committee, as required.

Conduct training workshops on legislative requirements of the Land Manager Board and staff for key Natural Resource Management, Land Management, Commercial, Aboriginal Heritage and Tourism issues.
As required, conduct “whole of Board” inspections of areas for critical decision making.
Undertake Board induction refresher courses on a bi-annual basis and /or Conduct workshop, initially, and after each membership intake, aimed at familiarising all members with corporate responsibilities and codes of conduct.
Establish appropriate subcommittee responsible for coordination of all communications from the Board.
Subcommittee structure to coopt expertise from various organisations, as required.

¹¹⁷ [communication-toolbox-template-develop-a-communication-plan.pdf \(crs.org\)](http://communication-toolbox-template-develop-a-communication-plan.pdf)

O39. Ensure the Board is appropriately supported in its management of the Reserve.

Strategies

- a. To clearly identify the support mechanisms provided to the Board from Crown Lands, MEG, Resources Regulator NSW and WSC.

Develop an appropriate Memorandum of Understanding between Land Manager and Crown Lands in regards compliance, legal, land status, funding and other support mechanisms.
Develop an appropriate Memorandum of Understanding between Land Manager and NSW Resources regulator and MEG in regards Mineral activity compliance and rehabilitation support.
Develop an appropriate Memorandum of Understanding between Land Manager, WSC, Emergency Services in regards Traffic control and safety management support.
Conduct a meeting between the Board and senior officers from Crown Lands and MEG and WSC specifically to address the financial structure of this POM and the mechanisms required for successful implementation.
Conduct an annual / biannual meeting between the Board and senior officers from Crown Lands, MEG ¹¹⁸ and WSC specifically to address support and communication issues for the Reserve.

¹¹⁸ In order to appropriately address support and communication issues the officers representing Crown Lands and MEG should not be the regular Departmental contact officers for the Reserve. This may be a role for the Crowns Land Commissioner and similar from MEG.

9 IMPLEMENTATION PLAN

Table 4 sets out a number of actions required to implement the identified Management Strategies and Performance Targets within the Reserve. These actions are the means of achieving the objectives of the PoM.

A clear indication of how the completion of the aims will be assessed is also provided in the table under Performance Evaluation.

Table 4 - Implementation Table

Management Objectives	Management Strategies	Actions	Performance Evaluation
O1. To improve facilities and opportunities for tourists which enhance the <i>Lightning Ridge experience</i> for all visitors and manage the mining interface.	a. Enhance the Lightning Ridge opal mining experience for tourists.	1. In conjunction with Destination NSW and tourism businesses establish an aggregated website with an online booking system that allows tourists to create their own Lightning Ridge experience.	<ul style="list-style-type: none"> Website established Online booking system functional with growing utilisation by business and visitors “Black Opal Pass” created through the aggregated website which includes the RAP (2024) “Noodling sites established at Lightning Ridge (2023) and Glengarry (2025) Section 68 approval received for campground (2023) Toilets and playground installed (2023) Hotel established in Lightning Ridge (2025) Event organised and operating (2023)
		2. Provide well sized, regularly stocked “noodling” sites specifically constructed for tourism, on the Reserve around Lightning Ridge and away from the main active mining sites.	
		3. Formally establish a primitive campground at Grawin.	
		4. Establish toilets and playground area etc. at Grawin, close to campground and golf course.	
		5. Establish a high-end (4-star) boutique Hotel in Lightning Ridge.	
		6. Establish an annual car door artist event and gallery at Lightning Ridge.	
	b. Promote extra avenues for tourism within existing structures, which do not compete with mining but add	7. Investigate viability of trails/tours for native birds, plant identification, geological interests, and bush tucker/ food, cultural and medicinal native plants.	<ul style="list-style-type: none"> Investigation into non-mining tourism on the Reserve complete. (2022) Ridge Golf Experience established
		8. Enhance and promote the “Ridge Golf Experience” in association with the boutique hotel accommodation.	

Management Objectives	Management Strategies	Actions	Performance Evaluation
	value through alternative land-based experiences.	9. Working with the Destination NSW and relevant user groups, investigate utilising a restored Garule-Wali to create an “aboriginal cultural experience”, “outback stargazing experience” or “artist in residence facility” or similar. If not feasible demolish and remove all structures not considered of heritage significance.	(2026)
	c. Achieve financial contributions from tourists which enhance facilities and more equitably offset impact costs on roads, waste and safety measures.	10. Create a chargeable and obligatory “Reserve Access Permit” process, to be obtained prior to accessing the more developed parts of the Reserve.	<ul style="list-style-type: none"> • “Black Opal Pass” created through the aggregated website which includes the RAP (2024)
	d. Direct tourists on a preset path (probably along existing car door routes) which minimises interaction with the working mining industry.	11. In conjunction with Destination NSW and tourism businesses establish an aggregated website with an online booking system that allows tourists to create their own Lightning Ridge experience. 12. In conjunction with Destination NSW, the Lightning Ridge Tourism Organisation and tourism operators, create the “Black Opal Pass” through the aggregated website which includes the RAP and drives tourists along specific paths.	<ul style="list-style-type: none"> • Website established • Online booking system functional with growing utilisation by business and visitors • “Black Opal Pass” created through the aggregated website which includes the RAP (2024)
O2. To ensure that personal safety and well-being remains a priority, by excluding organised and casual tourism.	a. Establish criteria for exclusion of tourism for from the “New Area” mine fields of Coocoran and Wandella / Weetalibah / Allawah.	13. Advise the agents of the tourism industry (WSC, tourist information centres, tourism businesses etc.) ensuring exclusion is reflected in any materials and maps. 14. Develop and erect appropriate signage at access points and other key positions. 15. Develop an appropriate access agreement to specialist participants who have scientific and cultural interests which add value to the Reserve through broadening use and interest base, and research/investigations.	<ul style="list-style-type: none"> • Tourists visiting only those parts of the Reserve which are safe and appropriate (2022) • Exclusion signage erected (2023) • Access agreements negotiated and in place (2025)
O3. That the Crown lands referred to as	a. Enable the Crown lands referred to as the <i>grey</i>	16. Negotiate with the Crown Lands to have Agriculture added as a permitted purpose for the Reserve.	<ul style="list-style-type: none"> • Agricultural activities undertaken

Management Objectives	Management Strategies	Actions	Performance Evaluation
the grey soil country resulting from the VSS, be retained as Crown land for the purposes of highest and best use agricultural production.	<i>soil country</i> resulting from the VSS, be retained as Crown land for the purposes of highest and best use agricultural production, to be managed by the Land Manager.	17. In discussion with Local Land Services, investigate the clearing of “Yellow dot” lands potentially using “Red dot” lands for offsets (as required) and obtain approval under the <i>Local Lands Services Act 2013</i> for their development (See Figure 55).	<ul style="list-style-type: none"> on the reserve have appropriate authorisation (2022) Grey Soil areas are protected and operated for highest and best use agricultural production. (2022) Clearing approvals obtained (2026)
	b. Appropriately manage the <i>grey soil country</i> on the Reserve.	18. Identify priority grey soil grazing areas, especially the <i>Wombiera Land Systems</i> .	<ul style="list-style-type: none"> Grey Soil areas are protected and operated for highest and best use agricultural production (2022) Tender process operating effectively (2022) Appropriate land management subdivision fences in place (2023) Land capable for grazing have adequate stock watering facilities (2026)
		19. Fence identified areas.	
		20. Ensure capable stock watering systems are in place where required.	
		21. Facilitate opportunity cropping of more capable components of the grey soil country – the <i>Llanillo, Rotten Plains and Nidgerly Land Systems</i> (see Appendix 3) - to achieve highest and best agricultural use, ensuring the adoption of <i>Best Management Practice</i> .	
		22. Engage an appropriate expert local agribusiness to design and manage the tender process consistent with best practice.	
	23. Use an appropriate tender process consistent with guidelines and procedures to allocate the agricultural production enterprise (cropping, grazing) to the rural industry, ensuring the market-place test suitability of agricultural enterprise and management system.		
O4. To acknowledge and support aboriginal cultural heritage and education on the Reserve.	a. Improve the ability for access to the Reserve for cultural, spiritual, and educational needs of aboriginal people.	24. Develop an MOU between the appropriate aboriginal body and the Land Manager which identifies aboriginal cultural precincts on the Reserve and encourages unfettered access to them by the aboriginal community.	<ul style="list-style-type: none"> Access is available to the Reserve for aboriginal people for cultural, spiritual, and educational purposes (2022)
	b. Create access to the Reserve which supports employment training, health and welfare of aboriginal people.	25. Develop a management plan for <i>Rexeen</i> homestead and associated infrastructure, in consultation with potential users/interest groups, for occupation for purposes which may include a training centre for youth activities, aboriginal culture, wellbeing, TAFE activities etc. referencing a recognised and successful model of delivery.	<ul style="list-style-type: none"> Rexeen Management plan developed (2023) Access is available to the Reserve for aboriginal people for cultural, spiritual, and educational purposes

Management Objectives	Management Strategies	Actions	Performance Evaluation
		<p>26. Create a tourism experience as part of the Black Opal Pass which highlights the aboriginal cultural heritage.</p> <p>27. Working with the Destination NSW and relevant user groups investigate utilising a restored Garule-Wali to create an “aboriginal cultural experience”, “outback stargazing experience” or “artist in-residence facility” or similar. If not feasible demolish and remove all structures not considered of heritage significance.</p>	<ul style="list-style-type: none"> The Reserve supports and is available for aboriginal cultural heritage tourism (2024) Garule-Wali is either refurbished and operated as an experience site or existing delapidated structures are removed (2025)
O5. To protect aboriginal heritage sites on the Reserve	a. Protect existing / acknowledged cultural heritage sites around the Coocoran Lake and elsewhere on the Reserve.	28. With the aboriginal community design a priority list of areas requiring heritage surveys and seek grants to have survey work undertaken.	<ul style="list-style-type: none"> Aboriginal heritage sites on the Reserve are known, documented and protected Survey undertaken on the basis of 5% of the Reserve per year Heritage expert engaged on a triannual basis should sites be found in the preceding three years
		29. Cost and provide an annual allocation to conduct surveys for aboriginal artifacts across the Reserve and/or seek external funding eg. Environmental Heritage Trust.	
		30. When significant sites are identified engage a heritage expert to advise on the appropriate method of protection.	
	b. Ensure development, land management and mining, protects aboriginal sites.	31. Any projects approved by the Land Manager meet the requirements of the <i>National Parks and Wildlife Act 1974</i> , and the <i>Mining Act 1992</i> .	<ul style="list-style-type: none"> Approvals for all projects include documentation of due-diligence test for aboriginal objects
O6. To provide certainty for the mining and agriculture industries, and aboriginal interests, in the expansion of mining into new areas.	a. Create certainty by completing a review of the REF regarding future opal mining interests in the new areas in a timely fashion.	<p>32. Lobby the regulator MEG to:</p> <ul style="list-style-type: none"> fully consider mining interests, aboriginal heritage, the natural environment and agricultural capability with the issuing of consents and conditions for mining leases in new areas such as the Transitional zone. Complete the review in a timely fashion to create certainty. 	<ul style="list-style-type: none"> MEG completes and releases REF Approvals for all projects include documentation of due-diligence test for aboriginal objects
		33. All approvals and concurrences given by the Land Manager to be consistent with Part 6 of the <i>National Parks and Wildlife Act 1974</i> .	

Management Objectives	Management Strategies	Actions	Performance Evaluation
O7. To ensure that roads and key tracks are identified and managed by the appropriate authority in accordance with legislation and/or agreed use.	a. In consultation with WSC and Crown Lands, identify arterial roads within the Reserve, which are in general community use, to be opened as Public Roads or managed under licence to WSC.	34. Request WSC open a public road at Grawin, between Wilby Wilby Road and the shop and then between the shop and the village dump as shown on Figure 56.	<ul style="list-style-type: none"> Public Road opened
	b. In consultation with Crown Lands identify easements for access if required.	35. Consider an easement for access across the Floodplain at Coocoran Lake.	
O8. To ensure the roads and tracks across the Reserve are satisfactorily maintained in order to improve road safety and reduce environmental impacts.	a. Conduct regular inspections of Reserve roads and tracks and after major rainfall events.	36. Conduct regular inspections of public roads and roads managed under licence by WSC and advise WSC of the need for maintenance.	<ul style="list-style-type: none"> Inspections and advice documented and noted in Land Manager minutes (2022)
		37. Conduct regular inspections of tracks and advise MAs of the need for maintenance.	
		38. Conduct regular inspections of other roads and undertake maintenance as necessary and in accordance with the maintenance schedule shown in Appendix 12.	
	b. Select and install suitable signage for road users on all roads (speed limits, surface condition etc.).	39. Ensure road maintenance practices accord with acceptable water management and soil conservations standards.	<ul style="list-style-type: none"> Inspections and requirements in accordance with best practice documented and noted in Land Manager minutes (2022)
		40. Seek advice from road regulators (eg. WSC) regarding acceptable road signage standards which address safety measures.	
	c. Achieve improved mining vehicle safety standards.	41. Create signage plan for critical road track sections and implement.	<ul style="list-style-type: none"> Signage plan completed (2022) Signage plan implemented (2023)
42. Provide written support to the mining associations in seeking regulatory change for Mining vehicles similar to that provided to primary production under Section 6 Schedule 1 of the <i>Road Transport (Vehicle Registration) Regulation 2017</i> when accessing space on the Reserve's roads and tracks.			

Management Objectives	Management Strategies	Actions	Performance Evaluation
		43. Ensure signage in appropriate locations is placed on the Reserve to advise all Reserve users that unregistered vehicles are not permitted on “roads” as defined under the <i>Road Transport Act 2013</i> .	
O9. To ensure funding for road maintenance is equitably shared.	a. Develop an equitable recurrent funding mechanism for roads and tracks within the Reserve which includes contribution from miners, residents, commercial operators and tourists as part of the RAP process.	44. Utilise the Reserve Access Permit monetary contribution as a component of funds required for road maintenance.	<ul style="list-style-type: none"> Funds raised from the Reserve Access Permit contribute to Road maintenance (2026) WSC contributes to Road maintenance on a regular and equitable basis (2022)
		45. Negotiate with WSC whereby rates paid by all residents on the Reserve adequately reflects a fair contribution to road repairs/maintenance.	
O10. To ensure that road maintenance contracts are issued in accordance with purchasing requirements of the NSW Government.	a. Establish a process for the awarding of contracts in accordance with buy.nsw requirements.	46. The Land Manager should understand the requirements of the NSW Government Procurement Policy Framework and ensure it is adopted for contracts that are issued for the Reserve.	<ul style="list-style-type: none"> Land Manager has documented in its minutes the requirements for awarding contracts Road maintenance is appropriately contracted
		47. All contracts issued for work to be undertaken on the Reserve are to be approved by the Land Manager or its delegated officers.	
O11. To ensure waste management sites on the Reserve are appropriately managed, consistent with all legislative requirements.	a. Complete and Implement the Waste Management Strategy.	48. In discussions with WSC complete and adopt the Waste Management Strategy (including dumping) which will deliver a manageable waste disposal site network across the Reserve.	<ul style="list-style-type: none"> Waste Management Strategy completed and implemented (2022)
		49. Design and construct waste disposal sites which can be easily rehabilitated and restored in such a manner that they will not be easily distinguishable from the surrounding landscape after restoration.	
	b. Ensure responsibilities for waste management on the Reserve are appropriately allocated on a long-term basis.	50. Negotiate with WSC the transfer of management of significant dump sites at Grawin and Glengarry either by long term lease, transfer of Reserve Management or land acquisition.	<ul style="list-style-type: none"> WSC managing significant Waste management sites on the Reserve (2023)

Management Objectives	Management Strategies	Actions	Performance Evaluation
O12. To ensure costs of managing waste across the Reserve are appropriately apportioned.	a. Allocate a component of a Reserve Access Permit fee to offset the cost of waste management across the Reserve.	51. Utilise the Reserve Access Permit monetary contribution as a component of funds required for management of waste.	<ul style="list-style-type: none"> Funds raised from the Reserve Access Permit contribute to Waste Management (2026)
		52. WSC to allocate appropriate proportional component of annual rate levy, to waste management on the Reserve.	<ul style="list-style-type: none"> WSC contributes to Waste Management on a regular and equitable basis either through direct management or with financial contribution (2022)
O13. To maintain a sense of “community ownership” of the waste management problems of the Reserve amongst the people who live and work there.	a. Involve the community by initiating an annual clean-up campaign.	53. Establish an annual “Clean up the Reserve Day” to be jointly organised by the Land Manager, MAs and residents to remove derelict machinery, vehicle parts and other materials.	<ul style="list-style-type: none"> Clean up day established (2023)
O14. To maintain important infrastructure across the Reserve.	a. Complete essential maintenance on the Reserve’s major assets and infrastructure.	54. Develop a costed Maintenance Schedule for all significant assets (current and proposed) across the Reserve.	<ul style="list-style-type: none"> Infrastructure Maintenance Schedule established (2022)
		55. Implement Maintenance Schedule as part of an annual works program on all existing and introduced priority assets across the Reserve.	<ul style="list-style-type: none"> Works program established annually
		56. Discuss with MEG, WSC, Lightning Ridge Historical Society, future management responsibilities and options of historically significant infrastructure such as Zac’s Cottage and Pig Sty.	<ul style="list-style-type: none"> Built framework for future responsibilities in managing historical assets (2022)
	b. Establish location of water supply infrastructure and manage for sustainable water supply for both mining and agriculture.	57. Geographically locate Cap and Pipe infrastructure and negotiate re-entry to Angledool scheme, and manage accordingly.	58. Geographically locate all active aquifer bores associated with the mining industry, liaise with the appropriate regulator regarding licence provisions and continue to manage to conditions accordingly.

Management Objectives	Management Strategies	Actions	Performance Evaluation
O15. The Land Manager is well informed of land management responsibilities.	a. Improve Committee member and staff awareness of all legislative requirements for land management.	59. Conduct training workshops on key legislative responsibilities for land management (vegetation and clearing, soils, water, feral animals, environmental weeds, biosecurity etc.).	<ul style="list-style-type: none"> Undertake workshops annually as part of meeting infrastructure and document in Land Manager minutes
O16. Ensure a collaborative approach to Land Management on the Reserve by forming and maintaining relevant networks with other organisations.	a. Enhance collaboration with the Castlereagh Macquarie Weeds County Council.	60. Continue to be proactive on Hudson Pear control in conjunction with the Castlereagh Macquarie Weeds County Council through joint field activities.	<ul style="list-style-type: none"> Build an annual land management program in association with the various agencies and participants which includes timing of grant application and allocation of funds (2022) addressing: <ul style="list-style-type: none"> Weed and Feral Animal Control Fencing Water Supply Hudson Pear areas reduced over a five year program (2027) Fencing requirements in place (2027) Infrastructure Maintenance Schedule established (2022)
	b. Enhance collaboration with region-based feral animal control bodies.	61. Continue to collaborate with the established groups (Angledool and the Cumborah/Llanillo wild dog control groups) including neighbouring western lands leaseholders, for control of wild dogs, goats and pigs.	
	c. Establish linkages and collaborative projects with the Western Local Lands Services.	62. Establish a regular dialogue with Western Local Lands Services.	
		63. When required, develop joint projects with Western Local Lands Services.	
	d. Maintain collaboration with bushfire management authorities	64. Explore potential for Western Local Lands Services linkage to Land Manager eg. Through relevant subcommittee structure.	
		65. Establish a regular dialogue with Lands particularly in relation to funding opportunities for implementing required bushfire management plan components.	
O17. Land Management responsibilities are planned, appropriately resourced and undertaken by the Land Manager.	a. Ensure sufficient recurrent and grant funding is available for land management on the Reserve.	66. Engage with relevant bushfire management committees and the RFS to undertake works, including back burning activities, as required by the relevant Bushfire Management Plan.	
		67. Allocate annually from the recurrent budget for land management requirements.	
	b. Plan for and meet land management	68. Develop targeted funding submissions to relevant land management funding bodies (Local Land Services grants, National Heritage Trust, Crown Reserve Improvement Fund (CRIF) etc.) for specific non-recurrent requirements such as Hudson Pear mitigation, bushfire management etc.	
69. Develop and implement an annual land management plan for the Reserve, highlighting priority actions and resourcing needs.			

Management Objectives	Management Strategies	Actions	Performance Evaluation
	requirements.	<p>70. Develop an annual maintenance program for boundary and subdivision fences, water supply facilities, sheds, buildings, water troughs and pipes and other infrastructure.</p> <p>71. Collaborate with Crown Lands and/or Public Works on VSS Fencing requirements.</p>	
O18. Ensure adoption of best land management practice (BMP) on pastoral and cropping lands.	a. Ensure that grazing and cropping practices adopted on the Reserve accord with the highest and best management practices.	<p>72. Grey soil country farming (cropping) to adopt appropriate conservation farming practices – including stubble retention, minimum tillage, moisture conservation practices.</p> <p>73. Ensure groundcover levels on lands allocated for pastoral activities never fall below 40%.</p>	<ul style="list-style-type: none"> • Grey soil country cropping occurs consistent with best-practice conservation farming relevant to the region (2022) • Appropriate level of groundcover is maintained in all seasons, on pastoral lands
O19. To conserve biodiversity and maintain ecosystem function and habitat across the Reserve.	a. Engage with the MEG to ensure appropriate environmental management conditions for mineral claim approvals in new areas across the Reserve with specific consideration of key flora and fauna as required under the <i>Mining Act 1992</i> .	74. Discuss key issues with MEG representative on Land Manger committee to ensure new REF considers the requirements of the natural environment.	<ul style="list-style-type: none"> • Discussions with MEG occur and REF conditions (2023)
O20. To ensure the Reserve’s natural state and setting is maintained as current and protected as required.	<p>a. Identify and protect iconic NRM values across the Reserve.</p> <p>b. Explore the income generation possibilities of management of</p>	<p>75. Using available NRM information undertake field survey to spatially locate iconic vegetation on the Reserve.</p> <p>76. Select and fence iconic vegetation, prioritising areas where excessive pressures from grazing animals and/or traffic exist.</p> <p>77. Contract accredited expert to assess EEC on the Reserve from available coolibah communities (prioritising the area near the edge of Coocoran Lake).</p>	<ul style="list-style-type: none"> • Iconic natural vegetation located (2023) • Iconic natural vegetation protected (2026) • Accredited expert assessment completed (2023)

Management Objectives	Management Strategies	Actions	Performance Evaluation
	<i>potential EEC vegetation through Biobanking credits and stewardships as permitted by the NSW Biodiversity Conservation Act 2016.</i>	78. Where possible, establish bio-credits or stewardship payments and an accompanying income stream for managed EEC with the relevant agencies.	<ul style="list-style-type: none"> If possible, bio-credits or stewardship payments commenced (2027)
O21. To provide for community use of and access to the land minimising and/or mitigating any disturbance caused by human intrusion.	a. Broaden the tourist experience into areas of unique and highest natural resource value for which the Land Manager has responsibility.	79. Provide appropriate signage and printed information for visitors which describe the significance of NRM priorities.	<ul style="list-style-type: none"> Printed information and signage aimed at educating visitors on NRM has been created (2024) The Reserve supports and is available for NRM tourism (2024)
		80. Include this tourist experience and NRM tourist experiences on the Black Opal Card.	
O22. To ensure that key historical sites are protected and safe for visitors.	a. Identify and protect key historical sites.	81. In conjunction with the Historical Society conduct an audit of key sites of historical significance including shafts and prioritise for retention and exhibition or rehabilitation.	<ul style="list-style-type: none"> Framework for future responsibilities in managing historical assets established (2022) Audit complete (2021) Priority Shafts fenced and protected (2021) MEG advised of derelict and abandoned shafts (2021)
		82. Immediately fence and protect priority shafts.	
		83. Advise MEG of the requirement to rehabilitate derelict and abandoned shafts in the Preserved Fields.	
		84. When significant sites are identified engage a heritage expert to advise on the appropriate methodology to making key historical sites safe and approachable.	<ul style="list-style-type: none"> Site Protection Plans prepared (2022) Funds allocated to Site protection plan implementation (2022) Site Protection Plans incorporated into Asset Management Plans (2023) Grant application sought for the protection of Zac’s Cottage and the Pig Sty (2022)
		85. Implement site protection plans.	
		86. Ensure other historical sites (including Zac’s Cottage and the Pig Sty) on the Reserve are presented in a safe manner.	
		87. Ensure appropriate safety signage are placed at historical sites.	

Management Objectives	Management Strategies	Actions	Performance Evaluation	
O23. That the history of the mining industry is part of the visitor experience.	a. Support the Historical Society in its continuing development of Walking-Self Guided Tours on Lunatic Hill in Lightning Ridge.	88. In conjunction with the Lightning Ridge Historical Society prepare strategy for protection and presentation of historical sites in Lightning Ridge.	<ul style="list-style-type: none"> • Framework for future responsibilities in managing historical assets established (2022) • Grant application sought for the protection of Zac’s Cottage and the Pig Sty (2022) • The Reserve supports and is available for historical cultural heritage tourism (2024) 	
		89. Jointly submit appropriate submissions for funding.		
		90. Consider establishing guided walking tours as part of the Black Opal Pass.		
O24. Support the mining industry to maintain the traditions of opal mining while recognising new opportunities.	a. Facilitate new entry to the industry.	91. Workshop with the Mining Industry Associations the benefits and ways to encourage new entrants to the industry and promote opal mining.	<ul style="list-style-type: none"> • Workshop conducted and findings noted in Land Manager minutes (2022) • Requirements established (2022) • Mining Tourism tenure conditions established (2023) • The Reserve supports and is available for mining tourism (2024) 	
		b. Facilitate mining tourism.		92. Investigate the requirements for tourist inspection of working mines.
				93. Work with miners to establish some tourism businesses in working claims.
	c. Facilitate protection of the industry by acquiring appropriate land.	94. Develop tenure conditions in association with Crown Lands and MEG.		<ul style="list-style-type: none"> • Establish a list of priority properties for acquisition and note in Land Manager minutes (2022) • At next senior officer meeting establish the process requirements for acquisition with Crown Lands • Establish land allocation account (2022)
		95. Discuss with the Crown Lands and MEG opportunities to acquire WLLs where significant deposits of black opal exist.		
		96. Establish a land acquisition fund aimed at acquiring land to grow the mining industry and remove the possibility of conflict with the agriculture industry.		
O25. To provide a supply of residential and industrial parcels of land in accordance with existing land zones for the	a. Develop and sell readily available residential land at Lightning Ridge to create a capital fund.	97. Obtain “in principle” approval from Crown Lands for the sale of subdivided residential and industrial land.	<ul style="list-style-type: none"> • “In principle” approval obtained from Crown Lands for the sale of subdivided residential and industrial land and retention of monies (2022) 	
		98. Initiate a three-lot residential subdivision in Fantasia Street Lightning Ridge through an application with WSC.		
		99. Place the land on the market and utilise the funds for the development and sale of future lands.		

Management Objectives	Management Strategies	Actions	Performance Evaluation
development of Lightning Ridge.	b. Build a program of development and sale of land to facilitate an ongoing capital budget for the life of this POM.	<p>100. Engage a surveyor or planner to provide feasibility investigation into the indicative costs and program for the development and subdivision of land zoned R1 and IN1 within the Reserve.</p> <p>101. If feasible, prepare an ongoing program of development required for the sale of the land over the life of this plan and beyond.</p>	<ul style="list-style-type: none"> Subdivision approval obtained (2022) Land sold (2023) Feasibility plan completed (2022) Annual development and sale program in place (2023 onwards)
O26. To ensure the Reserve is appropriately zoned to cater for the future needs of the community.	a. Review and amend land zones.	<p>102. With WSC and Crown Lands conduct a review of the land zones of the Reserve with a view to rezoning at the next making or amendment of a Local Environmental Plan.</p> <p>103. Consider requesting WSC to incorporate a RU5 Zone at Grawin in the next revision of the <i>Walgett Local Environmental Plan</i>.</p> <p>104. Specifically consider rezoning the following parcels:</p> <ul style="list-style-type: none"> Pt Lot 433 DP 1076808 (being the frontage to Morilla Street, Lightning Ridge) from SP1 - Mining to B2 – Local Centre. Pt Lot 4 DP 1163616 (being the frontage to Sherman’s Way, Lightning Ridge) from SP1 – Mining to SP3 Tourist. Pt Lot 4 DP 1230996 (being land adjacent to the land zoned IN1 – Industrial, Lightning Ridge) from RU1 - Primary Production to IN1 – Industrial. Pt Lot 2 DP 1271292 (being land adjoining the Lightning Ridge Outback Resort & Caravan Park facing Onyx Street, Lightning Ridge) from RU1 Primary Production to SP3 Tourist. Pt Lot 2 DP 1153975 (being land at the corner of Kopi Street and Woolaroo Rd, Lightning Ridge) from RE1 Recreation to SP3 Tourist. 	<ul style="list-style-type: none"> Preferred future lands zones within the Reserve agreed and noted in Land Manager minutes (2023) Preferred land zones submitted to WSC as part of next Local Environmental Plan amendment.
O27. Unauthorised occupation of the Reserve is eliminated.	a. Ensure mining activities are appropriately authorised.	<p>105. Undertake a regular desktop audit to determine any unauthorised mullock heaps, agitator sites and dams on the Reserve and advise MEG of the unauthorised occupation.</p> <p>106. Request MEG advise when these unauthorised occupations have been addressed.</p> <p>107. Request that NSW Resources Regulator undertake an annual inspection of the Reserve in relation to compliance of Mineral Claims and for the Regulator to provide a report to the Land Manager.</p>	<ul style="list-style-type: none"> Desktop audit undertaken (annually) and on ground inspection undertaken periodically, and results noted in Land Manager minutes. MEG, Crown Lands and NSW Resources Regulator regularly supplied with list of any

Management Objectives	Management Strategies	Actions	Performance Evaluation	
	b. Ensure that tenures issued by Crown Lands do not encroach on the Reserve.	108. Advise in writing to the NSW Resource Regulator of any abandoned and open shafts with a request that they are made good.	<ul style="list-style-type: none"> unauthorised occupation or compliance issues. Land Manager receives advice from authorities when unauthorised occupations etc. have been addressed and removed from list. Compliance arrangements with Crown Lands agreed and documented (2022) 	
		109. Request that Crown Lands conduct an annual inspection of Residential Western Lands Leases in the Lightning Ridge town to manage encroachment.		
		110. Negotiate with Crown Lands on compliance arrangements for tenures over the Reserve, based on existing and demonstrated models.		
	c. Ensure non-mining occupation of the Reserve is appropriately authorised.		111. Negotiate tenures on the Reserve for unauthorised or inappropriately authorised occupation.	<ul style="list-style-type: none"> Develop list of current unauthorised occupations and noted in Land Manager minutes (2022) Crown Lands advice received in relation to whether it would approve tenures based on the listed WLLs being inconsistent with the continuance of native title. (2022) Minister’s consent received for the issuing of tenures as required and noted in Land Manager minutes. Native title is a standard header for reports approving the issue of tenures (2022) All occupations on the Reserve are authorised or removed (2023) with tenures at market rent. Online Crown Reserve Manager induction training completed biannually and noted in Land Manager minutes
			112. Ensure any tenures issued are valid acts under the <i>Native Title Act 1993</i> .	
			113. Ensure tenures are issued for a market value subject to the statutory minimum annual rent.	
			114. Negotiate with Crown Lands on compliance arrangements for tenures over the Reserve.	
			115. Undertake regular inspections and an annual desktop audit of occupation authorised by the Land Manager.	
	O28. Tenures are appropriately issued.	a. Ensure Tenures are issued in accordance appropriate legislation.	116. Obtain the concurrence from Crown Lands that the continuance of native title is inconsistent with the issue of Western Lands Leases: WLL 5347 and WLL 2928 in the Wandella / Weetalibah / Allawah area; WLL 722, WLL 308, WLL 7790 and WLL7952 in the Coocoran Area; WLL 4642, WLL 3140 and WLL 3946 in the Lightning Ridge Area, and WLL 4121 and 4132 in the Grawin / Glengarry Area.	
			117. Where any tenure proposed to be issued in Lightning Ridge North as described in Figure 49 or on TSRs 70123 and 230002 investigation into the requirements of the <i>Native Title Act 1993</i> should be undertaken.	
118. Prior to issuing any lease licence (excepting for a short-term licence) the Land Manager is to obtain the consent of the Minister under Section 3.27 of the <i>Crown Land Management Act 2016</i> .				

Management Objectives	Management Strategies	Actions	Performance Evaluation
		119. Tenures must be issued in accordance with the reservation purpose or in accordance with this POM.	
	b. Tenures satisfy probity requirements.	120. The Land Manager ensures it knows of the probity requirements through obtaining training workshops or undertaking Crown Reserve Manager induction training.	
		121. Ensure tenures are issued for a market value subject to the statutory minimum annual rent.	
		122. Ensure tenures are issued in accordance with buy.nsw requirements.	
O29. To create an improved system for rapidly locating residents, workers and visitors impacted by trauma.	a. Develop an improved emergency response strategy across the Reserve.	123. Convene initial discussion between all relevant participants and contributors (Crown Lands, MEG Emergency Services, Police, Ambulance, and the Mining Associations) to develop an appropriate system for rapid tracking of people on the Reserve.	<ul style="list-style-type: none"> • Workshop convened and responsibilities allocated to relevant authorities (2022) • Participate in the implementation of the system proposed as required
		124. Consider preparing a template for reserve users which enables emergency services to locate users in times of emergency.	
O30. To improve the effectiveness of the way the Land Manager performs by providing additional funded staffing and volunteer support.	a. Add to existing staff structure.	125. Development of a staff structure with two or three staff providing: <ul style="list-style-type: none"> • grant funding applications for Tourism development, Reserve management and aboriginal cultural assessment. • mentoring and staff development. • administrative support. • assume management control for other administrative tasks currently performed by Land Department eg. licences and leases. 	<ul style="list-style-type: none"> • Proposed Staff Structure developed (2022) • New staff engaged (2023)
	b. Create targeted support structures for Land Manager Board utilising existing members and other volunteers as required.	126. Establish priority single-issue (non-decision making) subcommittees of the Land Manager Board and other parties with initial Safety, Communication and Business Development subcommittees as priority.	<ul style="list-style-type: none"> • Subcommittee structure with charters and reporting mechanisms established (2022) • Members to initial subcommittees appointed (2022)
		127. Each subcommittee to be given a charter or task to return to the Board for decision making in a similar fashion to Local Council Subcommittees.	

Management Objectives	Management Strategies	Actions	Performance Evaluation
O31. To elevate the physical presence of the Land Manager in the community.	a. Establish a point of contact for clients and provide a focal centre for Land Manager’s administration.	128. Open an independently located business office of the Lightning Ridge Area Opal Reserve in Lightning Ridge township, using existing appropriate vacant space.	<ul style="list-style-type: none"> Office opened (2024)
O32. To improve the effectiveness of the Land Manager by ensuring its composition fully reflects community priorities and needs.	a. Ensure Committee membership reflects interests in accordance with reservation purpose.	129. Encourage nominations within standard membership recruitment process.	<ul style="list-style-type: none"> Meeting with Crown Lands on Land Manager membership undertaken and results noted in Land Manager minutes (2022)
O33. To ensure recurrent funding is available adequate to meet current responsibilities of the Land Manager.	a. Ensure the Compensation Fund is sustained, audited and is effectively managed.	130. Undertake an annual desktop audit to determine any unauthorised mullock heaps, agitator sites and dams on the Reserve and advise MEG of the unauthorised occupation.	<ul style="list-style-type: none"> Compensation Funds received from MEG reconciles with number of mineral claims (Annual)
		131. Request MEG advise when these unauthorised occupations have been addressed.	
	b. Grow recurrent funding streams from a variety of reliable sources.	132. Request annual report MEG regarding number of mineral claims at specific points in time and reconcile against funding received.	<ul style="list-style-type: none"> All occupations on the Reserve are authorised or removed (2023) with tenures at market rent
		133. Ensure rental from the Land Manager’s owned dwellings returns a true market value and is appropriately documented.	
	134. Negotiate tenures on the Reserve for unauthorised or inappropriately authorised occupation.		
	135. Ensure tenures are issued for a market value subject to the statutory minimum annual rent.		
	136. Negotiate with the Minister to direct a portion of the money raised in residential Western Lands Leases utilising S 2.18 of the <i>Crown Land Management Act 2016</i> to the Land Manager.		<ul style="list-style-type: none"> Land Manager receives appropriate compensation on a recurrent basis for WLL use of Reserve (2023)

Management Objectives	Management Strategies	Actions	Performance Evaluation
		137. Identify appropriate locations for the agistment of grazing animals (including goats) and call for expressions of interest for these activities in accordance with best practice.	<ul style="list-style-type: none"> • Agistment locations identified and prioritised (2022) • Additional agistment paddocks fenced and supplied with water on the basis of (tbd) ha per annum (commencing 2023)
		138. Identify appropriate locations for the storage of road base materials and call for expressions of interest for sale in accordance with best practice.	<ul style="list-style-type: none"> • Road base storage locations identified (2025)
		139. By EOI and in accordance with principles of probity, initiate a sharecropping program of nominated areas within the grey soil country.	<ul style="list-style-type: none"> • Sharecropping location identified (2022) • Program established (2022)
		140. Engage accredited specialist to explore income generation potential of bio-credits and stewardships on managed potentially <i>Endangered Ecological Communities</i> (such as Coolibah on the rims of Coocoran Lake).	<ul style="list-style-type: none"> • Bio credit specialist engaged (2025)
O34. To grow capital income streams to strengthen Land Manager’s ability to respond to future development challenges and strengthen recurrent income.	a. Ensure the Land Manager has the capacity to identify, apply and win grant funding.	141. Ensure employee expertise and time is provided to capitalise on available grants programs such as the CRIF Grants, Community Building Partnership Program fund etc.	<ul style="list-style-type: none"> • Proposed Staff Structure developed (2022) • New staff engaged (2023) • Grant funding on standard agenda (2022) • Grant funding applications increased (2023) • Revenue increased from grant funding year by year (2023)
		142. Grow staff resources with experience in grant identification and application.	
		143. Place grant funding as a standard agenda item for Board meetings.	
		144. Allocate a specific time allocation to grant searching and application.	
	145. Regularly liaise with various Federal and NSW government agencies including Destination NSW, Create NSW, the NSW Premiers Department, Crown Lands, Sports NSW and Local Lands Services.		
b. Develop Rexeen Cottage into a multi-	146. Engage an ecotourism / education specialist to explore the requirements of establishing and operating a self-funding facility.	<ul style="list-style-type: none"> • Tourism Specialist engaged to 	

Management Objectives	Management Strategies	Actions	Performance Evaluation
	purpose community facility which includes youth education, cultural transfer and eco-tourism.	147. If feasible develop a funding model through the employment of capital resources and grant funding.	<ul style="list-style-type: none"> consider either or both Rexeen cottage and 4-star hotel location (2022) • Future of Rexeen cottage decided (2023) • Development of management Rexeen cottage area completed and in place (2024)
	c. Investigate the development of a boutique hotel in Lightning Ridge.	148. Engage a tourism specialist to explore the requirements of locating, establishing and operating a 4-star hotel. 149. If considered viable, in conjunction with Crown Lands, define methodology for attracting an appropriate developer and operator.	<ul style="list-style-type: none"> • Tourism Specialist engaged to consider either or both Rexeen cottage and 4-star hotel location (2022) • If appropriate, methodology for development and operation agreed with Crown Lands (2022) • Boutique Hotel approved and operating (2025)
O35. To ensure the funds and securities of the Land Manager are adequately protected and liabilities are minimised.	a. Acknowledge and apply available insurances for statutory bodies with the responsibility for Crown land management.	150. The executive of the Land Manager committee become aware of the stipulations of Land Manager portal on Crown Lands’ website, pertaining to Insurances.	<ul style="list-style-type: none"> • Requirements for insurance noted in Land Manager minutes (2022)
O36. The Land Manager has the required capability and capacity to manage financial arrangements of the Reserve appropriately.	a. Improve Land Manager’s ability to internally respond to all financial management needs.	151. Appoint Finances Subcommittee to compile and manage an investment plan to consolidate existing business and capitalise on new commercial opportunity. 152. Prepare annual budget in April / May of each year. 153. Exercise good financial management including formal minuting of at least two signatories for any Land Manager meetings and provide two signatures/approvals per transaction from the Land Manager’s accounts.	<ul style="list-style-type: none"> • Finance subcommittee established (2022) • Financial plan established to meet requirements of new commercial opportunities establishing recurrent and capital requirements (2022)

Management Objectives	Management Strategies	Actions	Performance Evaluation	
		154. Maintain fee-for-service external audit arrangement with a reputable provider.	<ul style="list-style-type: none"> Financial plan requirements incorporated into annual budgets Annual budget in place by May each year Accounts signed off annually by accredited auditor 	
O37. To enhance ongoing communication between the Land Manager and the wider community.	a. Development of the Land Manager’s Communication Strategy.	155. Develop the <i>Lightning Ridge Area Opal Reserve Communication Strategy</i> .	<ul style="list-style-type: none"> Lightning Ridge Area Opal Reserve Communication Strategy established and annually reviewed (2023) Website Established (2023) with: <ul style="list-style-type: none"> Online booking system (2024) “Black Opal Pass” which includes the RAP (2024) LRAOR News - with minutes, news, events and opportunities etc. (2023) Initial public forum conducted, and ongoing viability assessed (2023) 	
	b. In response to the Communication Strategy, inform the community of the role and progress of the Land Manager.	156. Develop LRAOR News - a Newsletter for circulation after key meetings for ready distribution through established outlets.		157. Develop the aggregated website for the Lightning Ridge Area Opal Reserve.
		158. Using the web-based mechanism, post minutes after each meeting of the Committee.		159. Hold public forums/meetings on selected key subjects.
		160. Conduct walk-in walk-out sessions on themes, issues, progress etc., seeking views.		161. Advertise public attendance sessions at conclusion of nominated General Meetings.
		162. Conduct quarterly training workshops on legislative requirements of the Land Manager Board and staff for key Natural Resource Management, Land Management, Commercial, Aboriginal Heritage and Tourism issues.		163. As required, conduct “whole of Board” inspections of areas for critical decision making.
		164. Undertake Board induction refresher courses on a bi-annual basis and /or Conduct workshop, initially, and after each membership intake, aimed at familiarising all members with corporate responsibilities and codes of conduct.		165. Establish appropriate subcommittee responsible for coordination of all communications from the Board.
O38. To enhance communication within the Board and with key stakeholder organisations.	a. Conduct training forums on areas of information and responsibility within the committee, as required.		<ul style="list-style-type: none"> Initial training session held (mid 2022) Board inspections to be noted as standard item of general meeting (2022) Online Crown Reserve Manager induction training completed biannually and noted in Land Manager minutes Subcommittee structure with charters and reporting 	

Management Objectives	Management Strategies	Actions	Performance Evaluation
		166. Subcommittee structure to coopt expertise from various organisations, as required.	mechanisms established (2022) <ul style="list-style-type: none"> Members to communication subcommittee appointed (2022)
O39. Ensure the Board is appropriately supported in its management of the Reserve	a. To clearly identify the support mechanisms provided to the Board from Crown Lands, MEG, Resources Regulator NSW and WSC.	167. Develop an appropriate Memorandum of Understanding between Land Manager and Crown Lands in regards compliance, legal, land status, funding and other support mechanisms.	<ul style="list-style-type: none"> MOUs established with: <ul style="list-style-type: none"> Crown Lands (2022) MEG and the NSW Resources regulator (2023) WSC and local Emergency Services (2022) Regular senior officer meeting structure including Crown Lands, MEG and WSC established (2022)
		168. Develop an appropriate Memorandum of Understanding between Land Manager and NSW Resources regulator and MEG in regards Mineral activity compliance and rehabilitation support.	
		169. Develop an appropriate Memorandum of Understanding between Land Manager, WSC, Emergency Services in regards Traffic control and safety management support.	
		170. Conduct a meeting between the Board and senior officers from Crown Lands and MEG and WSC specifically to address the financial structure of this POM and the mechanisms required for successful implementation.	
		171. Conduct an annual / biannual meeting between the Board and senior officers from Crown Lands, MEG and WSC specifically to address support and communication issues for the Reserve.	

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11 APPENDICES

1. Land applying to this Plan of Management (Reserves, Lots/DPs etc.)
2. Other Relevant Legislation impacting on the Lightning Ridge Area Opal Reserve
3. Western Land Systems of the Lightning Ridge Area Opal Reserve – Maps
4. Western Land Systems of the Lightning Ridge Area Opal Reserve – Toposequences
5. Soils of the Lightning Ridge Area Opal Reserve - Maps
6. Vegetation Communities of the Lightning Ridge Area Opal Reserve - Maps
7. List of Threatened Species for parts of the Lightning Ridge Area Opal Reserve
8. List of Nationally Significant Weeds recorded in the Lightning Ridge locality
9. Land Use Zonings (*Walgett Local Environmental Plan 2013*) – around Lightning Ridge section of the Lightning Ridge Area Opal Reserve
10. Consultation for the production of this Plan of Management
11. Easement for Access proposal, Wandella area
12. Road location and grading schedule

Appendix 1

Land to which this Plan of Management Applies

1) **Reserve 95758** for Village Purposes and Advertising Site.

The parcels of land subject to Reserve 95758 are show in Table 5. Figure 60 shows the gazette diagram.

Table 5 - Land subject to Reserve 95758

Lot	DP	Gazette Date	Area
31, 44, Pt 18, Pt 30, Pt 32, Pt 37, Pt 42, Pt 43,	1076808	24 Dec 1981	Lightning Ridge
Pt 2	1164755	24 Dec 1981	Lightning Ridge
Pt 4	1230996	24 Dec 1981	Lightning Ridge
8001	1169647	24 Dec 1981	Lightning Ridge

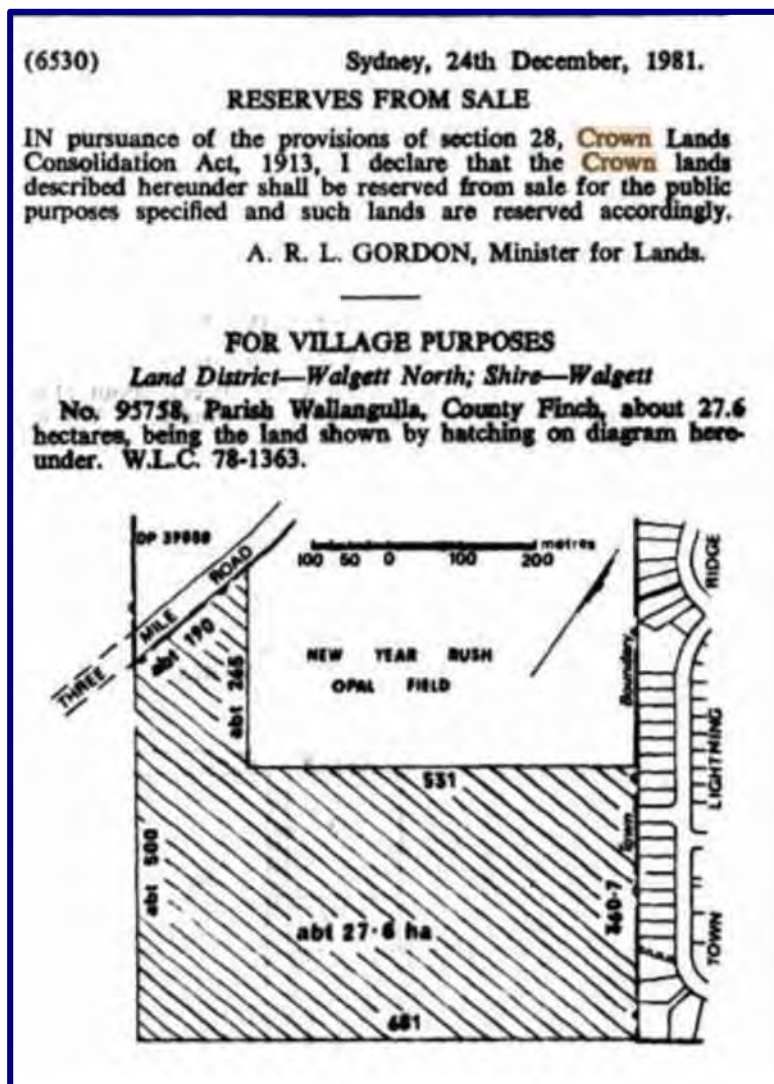


Figure 60 – NSW Government Gazette Notice - Creation of Reserve 95758

- 2) **Reserve 1024168** for Opal Mining and Exploration and Public Access, Access, Accommodation, Advertising Site, Air Strip, Automatic Weather Station, Cultivation, Dam, Environmental Protection, Future Public Requirements, Government Purposes, Grazing, Heritage Purposes, Public Recreation, Residence, Rural Services, Sporting Event and Tourist Facilities & Services.

The parcels of land subject to Reserve 1024168 are shown in Table 6. Figures 61 and 62 show the gazette diagrams where part lots are indicated.

Table 6 - Land subject to Reserve 1024168

Lot	DP	Gazette Date	Area
1, 4	1230996	21 Dec 2018	Lightning Ridge
Pt 6782, Pt 6781	823892	22 Oct 2016	Coocoran
2	1062072	22 Oct 2016	Wandella / Weetalibah / Allawah
Pt 6268	769122	22 Oct 2016	Wandella / Weetalibah / Allawah
Pt 6272	764625	22 Oct 2016	Wandella / Weetalibah / Allawah
Pt 1021	762143	22 Oct 2016	Wandella / Weetalibah / Allawah
Pt 1	1145838	22 Oct 2016	Coocoran
Pt 2	1191202	22 Oct 2016	Coocoran
41	1076808	27 May 2016	Lightning Ridge
251	1076808	5 Feb 2016	Lightning Ridge
312, 394	1076808	1 May 2015	Lightning Ridge
182	1076808	29 Au 2014	Lightning Ridge
433	1076808	11 Nov 2011	Lightning Ridge
226	1076808	5 Feb 2015	Lightning Ridge
360	1076808	24 Jun 2016	Lightning Ridge
113	1073508	5 Feb 2016	Lightning Ridge
33	1063047	13 Nov 2015	Lightning Ridge
74	1120765	5 May 2015	Lightning Ridge
81	1057617	27 Jun 2014	Lightning Ridge
1	1145840	08 Jun 2012	Grawin/Glengarry
2	1164755	11 Nov 2011	Lightning Ridge
4	1163616	4 Dec 2009	Lightning Ridge
3	1158025	4 Dec 2009	Lightning Ridge
1952	763834	4 Dec 2009	Grawin/Glengarry
1	1167811	4 Dec 2009	Lightning Ridge
8001	1169647	4 Dec 2009	Lightning Ridge
2	1153975	4 Dec 2009	Lightning Ridge
1000, 1003	1117849	4 Dec 2009	Lightning Ridge
2	1194722	4 Dec 2009	Lightning Ridge
128	1118679	4 Dec 2009	Lightning Ridge

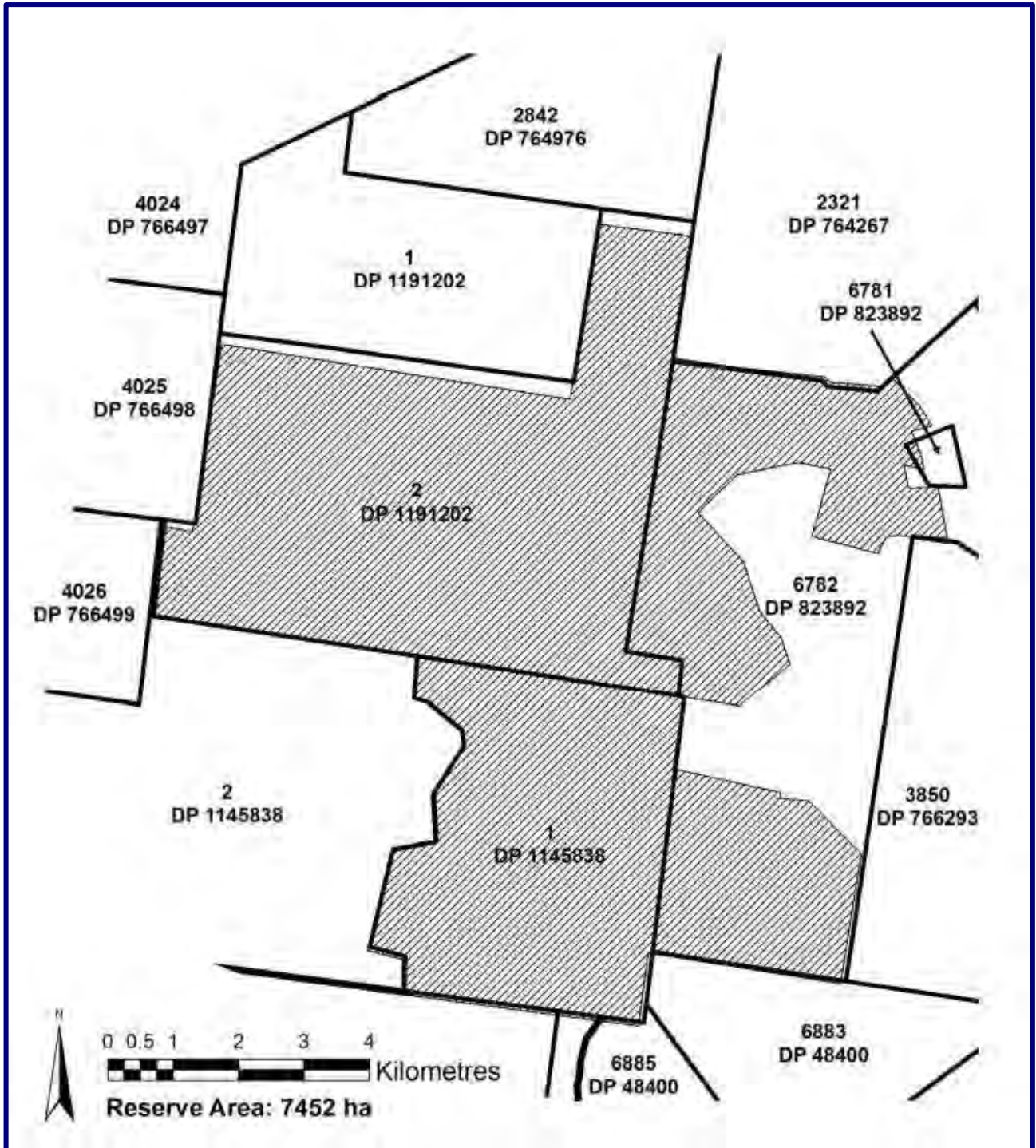


Figure 61 – NSW Government Gazette Notice - 7 December 2018 - Addition to Reserve 1024168 (1)

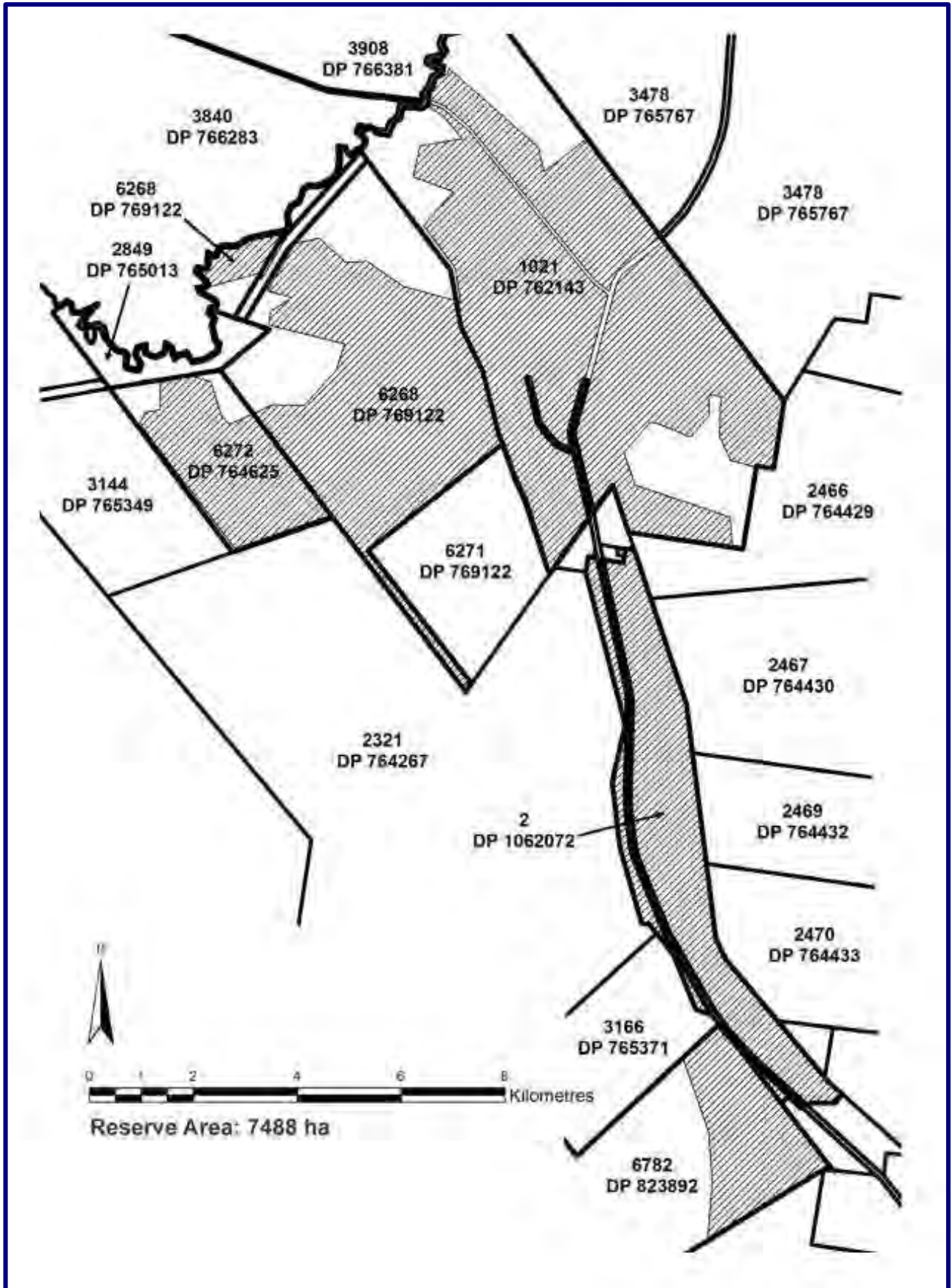


Figure 62 – NSW Government Gazette Notice - 7 December 2018 - Addition to Reserve 1024168 (2)

3) Other Reservations

Table 7 shows other reservations which cover parts of the Reserve. The Land Manager has not been appointed as Crown land manager for these reserves. These reserves are managed as shown in the Table. Where WSC is noted as the manager of these Reserves there is effectively joint management of the parcel identified.

Table 7 – Other Reservations

Lot/DP	Reserve	Purpose	Gazettal Details	Management
Part 1003/1117849	230078	Urban Services	Notified - 1 Nov 1991	Minister
Part 2/1062072	70123	TSR	Notified - 4 July 1941	
Part 2/1194722 WH 2/1194722	230031 Part R1012588	Public Recreation	Notified - 11 Sept 1987	WSC Minister
Part 1021/762143	Part R230002	TSR	Notified – 6 Mar 1987	Minister
Part 128/1118679 WH 128/1118679	Part R91317 Part R1012588	Village purpose	Notified – 17 Nov 1978	Minister Minister
Part 1/1145840	Reserve 65400	Water Supply	Notified – 9 Aug 1935	Minister
WH 433/1076808	Part R1012588			Minister
WH 2/1164755	Part R1012588			Minister
WH 1000/1117849 Pt 1000/1117849 Pt 1000/1117849	Part R1012588 Part R84117 Part R91317	Public Recreation & Racecourse Village Purposes	Notified – 21 Dec 1962 Notified – 17 Nov 1978	Minister WSC Minister
Pt 2/1153975 WH 2/1153975 Pt 2/1153975	Part R84117 Part R1012588 Part R91317	Public Recreation & Racecourse Village Purpose	Notified – 21 Dec 1962 Notified 17 Nov 1978	WSC Minister Minister

Appendix 2

Other Relevant Legislation

Local Government Act 1993

Section 7 provides that the purposes of the *Local Government Act 1993* are to:

- provide the legal framework for the system of local government for New South Wales
- to set out the responsibilities and powers of councils, councillors and other persons and bodies that constitute the system of local government
- to provide for governing bodies of councils that are democratically elected
- to facilitate engagement with the local community by councils, councillors and other persons and bodies that constitute the system of local government
- to provide for a system of local government that is accountable to the community and that is sustainable, flexible and effective.

Section 24 of the *Local Government Act 1993* provides that:

A council may provide goods, services and facilities, and carry out activities, appropriate to the current and future needs within its local community and of the wider public, subject to this Act, the regulations and any other law.

Pertinent to the land to which this POM applies, under the *Local Government Act 1993*, Council may:

- acquire and manage land for required purposes (essential community works including sewage, waste management and roads etc.)
- consider and approve developments of the Crown, individuals and business via regulations which provide controls on the use and operation of land
- levy rates and charges to landowners
- allocate grants and other funding for new works, maintenance and recreation
- administer conditions for prescribed and approved occupation of land
- allocate areas on public or acquired land for recreational purposes including camping parks and gardens, vehicle parking, etc.

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* provides the overarching control of planning and development in NSW. The *Environmental Planning and Assessment Act 1979* creates three levels of Environmental Planning Instruments being:

- State Environmental Planning Policies
- Local Environmental Plans, and
- Development Control Plans.

The *Environmental Planning and Assessment Act 1979* is the enabling legislation for many of the roles and responsibilities of local governments in NSW. Under Division 3.4 (3) (b) councils are authorised to make *Local Environmental Plans* (LEPs). Division 4.2 ensures a council has the power of a consent authority for nominated developments within the local area over which the council has jurisdiction. This also permits councils to implement and manage (where applicable), any POM on Crown land as required by the CLMA. In the Walgett Shire Council Local Government Area, the Environmental Planning Instruments with significant impact on the management of Crown land are the *State Environmental Planning Policy (Infrastructure) 2007*, the *Walgett Local Environmental Plan 2013* and the *Walgett Regional Development Control Plan 2016*.

Additionally, and most importantly for opal mining, Part 5 of the *Environmental Planning and Assessment Act 1979* requires that when considering an “activity”, a determining authority must: “*examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.*”¹¹⁹

Roads Act 1993

The *Roads Act 1993* provides objects including:

- the rights of members of the public to pass along public roads, and
- the rights of persons who own land adjoining a public road to have access to the public road, and
- the procedures for the opening and closing of a public road, and
- the declaration of Transport for NSW and other public authorities (including councils) as roads authorities for both classified and unclassified roads, and

¹¹⁹ The Department of Regional NSW - Mining, Exploration and Geoscience (MEG) remains the public authority responsible for the regulation of the granting of a mineral claim or opal prospecting licence under the *Mining Act 1992*.

- the distribution of the functions conferred by the *Roads Act 1993* between Transport for NSW and other roads authorities (including councils).

Section 7(4) provides that the council of a local government area is the roads authority for all public roads within the area, other than—

- a. any freeway or Crown road, and
- b. any public road for which some other public authority is declared by the regulations to be the roads authority.

Section 10 and 12 of the *Roads Act 1993* provide the powers of the council and the Minister administering the *Crown Land Management Act 2016* to open public roads respectively.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* contains provisions that relate to the protection of native terrestrial fauna and some flora. Its objects are:

- the conservation of nature, including, but not limited to
 - the conservation of habitat, ecosystems and ecosystem processes
 - and biological diversity at the community, species and genetic levels
 - and landforms of significance, including geological features and processes
 - and landscapes and natural features of significance including wilderness and wild rivers
- the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to:
 - places, objects and features of significance to aboriginal people, and
 - places of social value to the people of New South Wales, and
 - places of historic, architectural or scientific significance
- fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation
- providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation.

Under the *National Parks and Wildlife Act 1974* it is an offence to take or pick protected flora and harm protected fauna. It is important to note that all threatened fauna is also protected fauna. However, not all threatened flora is protected. Harming of protected flora and fauna is allowed if

the activity is carried out by a determining authority within the meaning of Part 5 of the EPAA.

Part 6 of the *National Parks and Wildlife Act 1974* provides for the protection of aboriginal objects and aboriginal places. All aboriginal objects are protected under Section 86 of the *National Parks and Wildlife Act 1974*. Sites of traditional significance that do not necessarily contain archaeological materials may be gazetted as *Aboriginal places* and are protected under Section 84 of the Act.

Under S. 91AA, the Chief Executive may order that an action is to cease if he/she is of the opinion that any action being taken, is likely to significantly affect:

- protected fauna or native plants or their environment, or
- an aboriginal object or aboriginal place, or
- any other item of cultural heritage situated on land reserved under this Act.

Native Title Act 1993 (Commonwealth)

Native title describes the communal, group or individual bundle of rights and interests held by aboriginal or Torres Strait Islander peoples. Matters relating to native title fall within the Commonwealth jurisdiction of the Commonwealth *Native Title Act 1993*.

The *Native Title Act 1993* sets out how native title rights are to be recognised and protected, making provisions for aboriginal and Torres Strait Islanders establishing the existence of native title, lodging native title claims, determining and validating the extinguishment of native title, and dealing with land and waters where native title may not have been extinguished.

On Crown land native title rights and interests must be considered unless native title has been extinguished, surrendered, or determined by a court to no longer exist.

Dealings in land or water that affect (impair or extinguish) native title are referred to as 'future acts' and these acts must be done in compliance with the *Native Title Act 1993*. The *Native Title Act 1993* specifies procedures that must be followed before future acts can be done legally.

Some examples of acts which may affect native title on Crown land managed by the Land Manager or Council may include:

- construction of new buildings and other facilities such as toilet blocks, walking tracks, campgrounds and playgrounds
- construction of extensions to existing buildings
- construction of new roads or tracks

- installation of infrastructure such as powerlines, sewerage pipes, etc.
- creation of an easement
- issue of a lease or licence
- the undertaking of major earthworks.

On Crown land, a future action undertaken on the LRAOR by the Land Manager , or Council, which is not covered by one of the Future Act subdivisions of the NTA, will be invalid.

Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act* (BCA) provides a strategic approach to conservation in NSW, while supporting improved farm productivity and sustainable development.

The BCA:

- Lists critically endangered and endangered species plant and animal species, vulnerable species, ecological communities or key threatening processes
- Allows for the Minister to make a Biodiversity Conservation Investment Strategy
- Enables Biodiversity stewardship agreements between the Minister and landholders who enter biodiversity stewardship agreements conservation measures on eligible
- Establishes a biodiversity offsets scheme
- Establishes a system for creation and transfer biodiversity credits.

Environment Protection and Biodiversity Conservation Act 1999

The Environment Protection and Biodiversity Conservation Act 1999 (EPBCA) is the Australian Government's central piece of environmental legislation. The EPBCA provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places—defined in the EPBCA as matters of national environmental significance. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.

Local Lands Services Act 2013

The *Local Land Services Act 2013* established Local Land Services which became operational in 2014. The *Local Land Services Act 2013*:

- ensures the proper management of natural resources in the social, economic and environmental interests of the State, by applying sound scientific knowledge to achieve a fully functioning and productive landscape
- encourages collaboration and shared responsibility by involving communities, industries and non-government organisations in making the best use of local knowledge and expertise in relation to the provision of local land services
- establishes the mechanisms for the charging of rates, levies and contributions on landholders and fees for services
- provides a framework for financial assistance and incentives to landholders, including, but not limited to, incentives that promote land and biodiversity conservation
- prioritises any State-wide standards and targets for Local Land Services, and any State and national priorities, for agricultural production, biosecurity, natural resource management or emergency management
- regulates the clearing of vegetation on rural land, including Crown land, unless that land is dedicated or reserved under the CLA for similar public purposes which already conserve and manage native vegetation¹²⁰.

Protection of Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (PEOA) is the principal legislation for regulation of activities that have the potential to pollute the environment. The PEOA provides for a single integrated licence for activities impacting on air, water and noise pollution and waste management with a single integrated licence. The PEOA has four main objects which impact on opal mining:

- to protect, restore and enhance the quality of the environment within NSW
- to provide increased opportunities for public involvement and access to information
- to ensure that the community has access to relevant and meaningful information about pollution: and

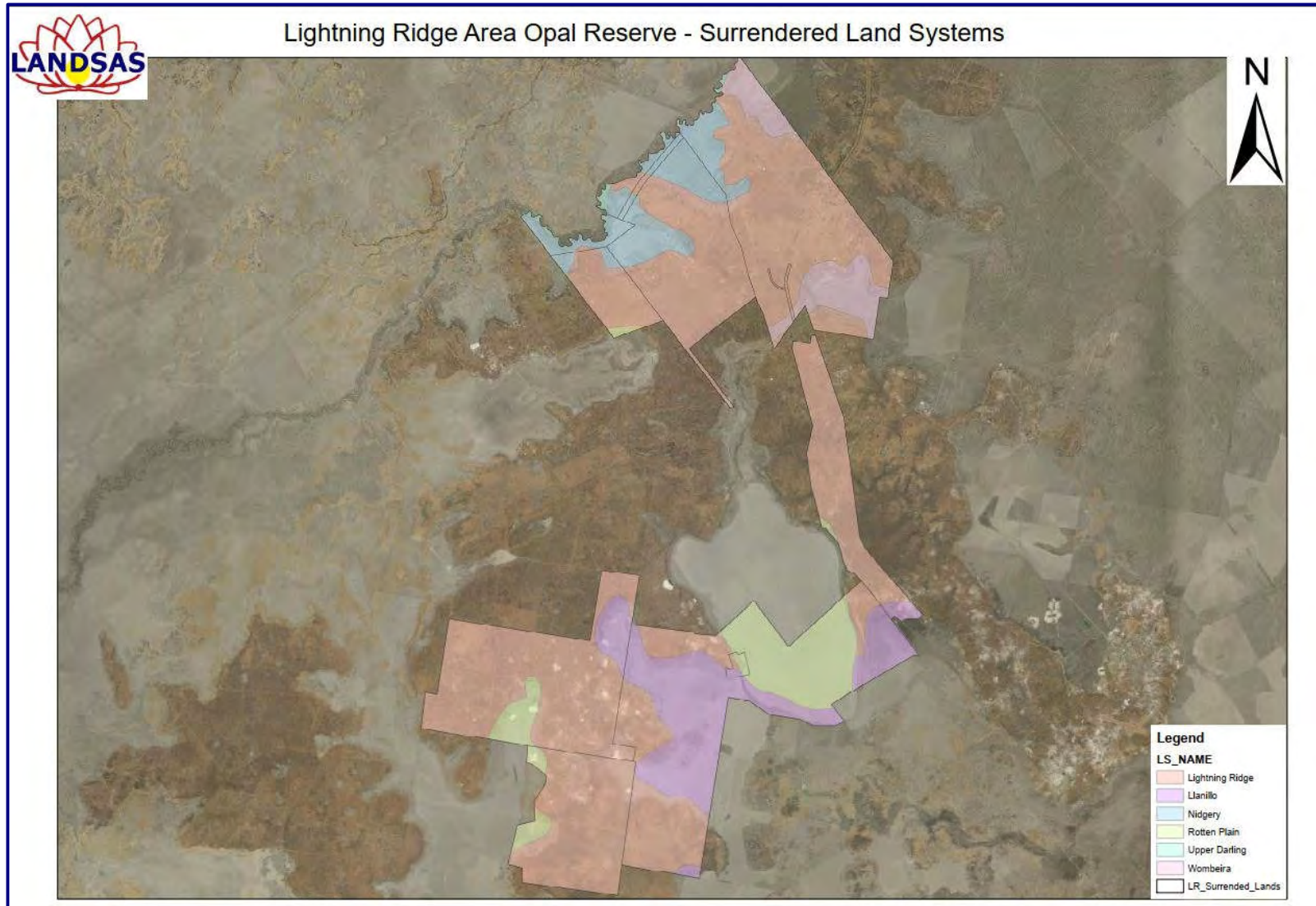
¹²⁰ Otherwise, where clearing of native vegetation on rural land (zoned RU1) is required on Crown land reserved for other purposes, the Crown Land Manager may apply to the relevant Local Lands Services for either development consent or approval of a Property Vegetation Plan. The Reservation purpose: *Village purposes* is covered by the *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017*, as are the zonings SP1 (mining areas), RE1 (Public Recreation).

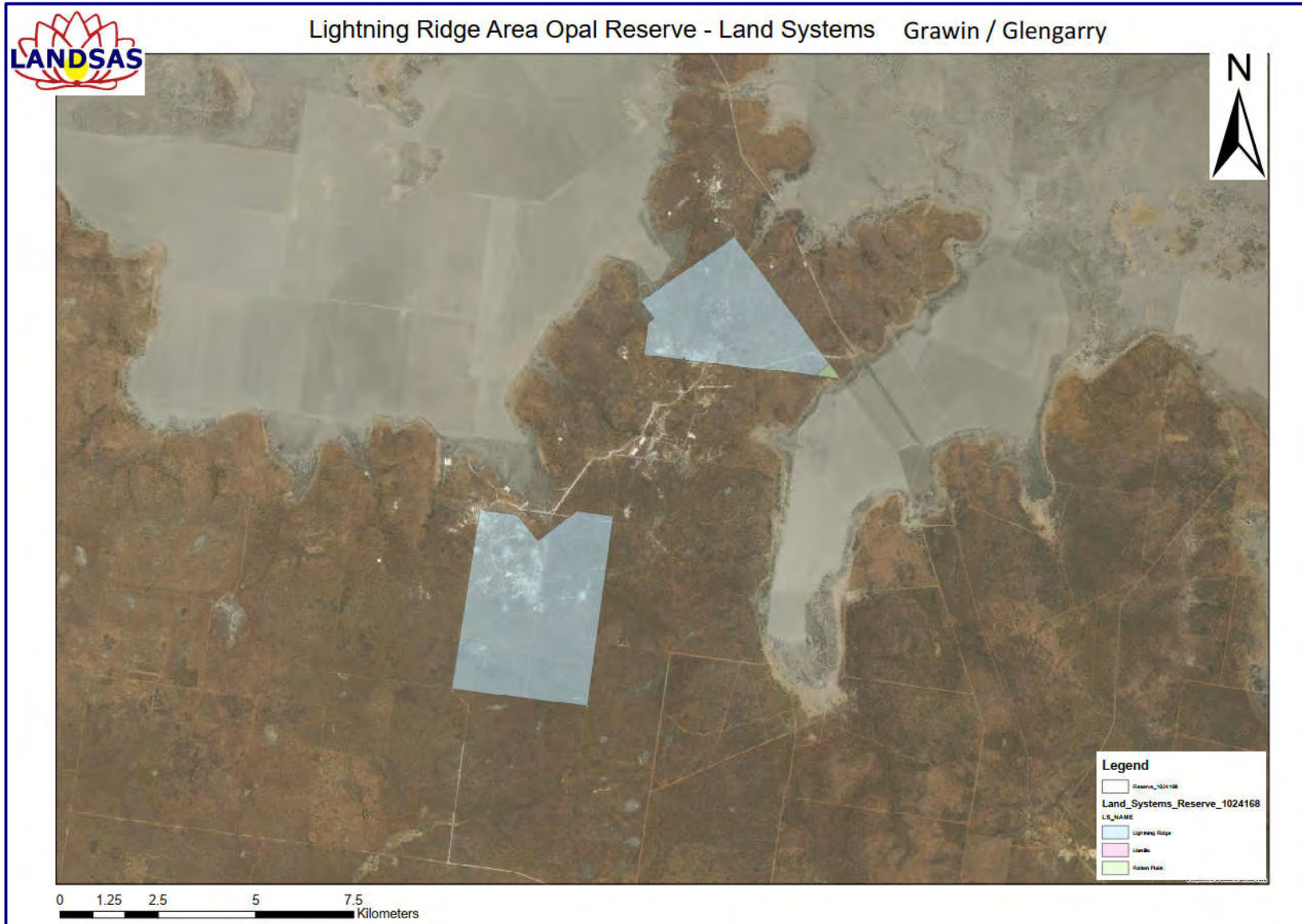
- to reduce risks to human health and prevent degradation of the environment.

Activities requiring licensing include: *“Mines that mine, process or handle minerals (being minerals within the meaning of the Mining Act 1992 other than coal) and that have disturbed, are disturbing or will disturb a total surface area of more than 4 hectares of land associated with a mining lease or mineral claim or subject to a Section 8 notice under the Mining Act 1992 by:(1) clearing or excavating, or (2) constructing dams, ponds, drains, roads, railways or conveyors, or (3) storing or depositing overburden ore or its products or tailings.”*

As the majority of opal mining is carried out on claims less than 50 metres by 50 metres hectares), licensing under the PEOA by MEG, is generally not required for opal mining operations. However, facilities such as wet puddling operations or mullock dumps may require licensing.

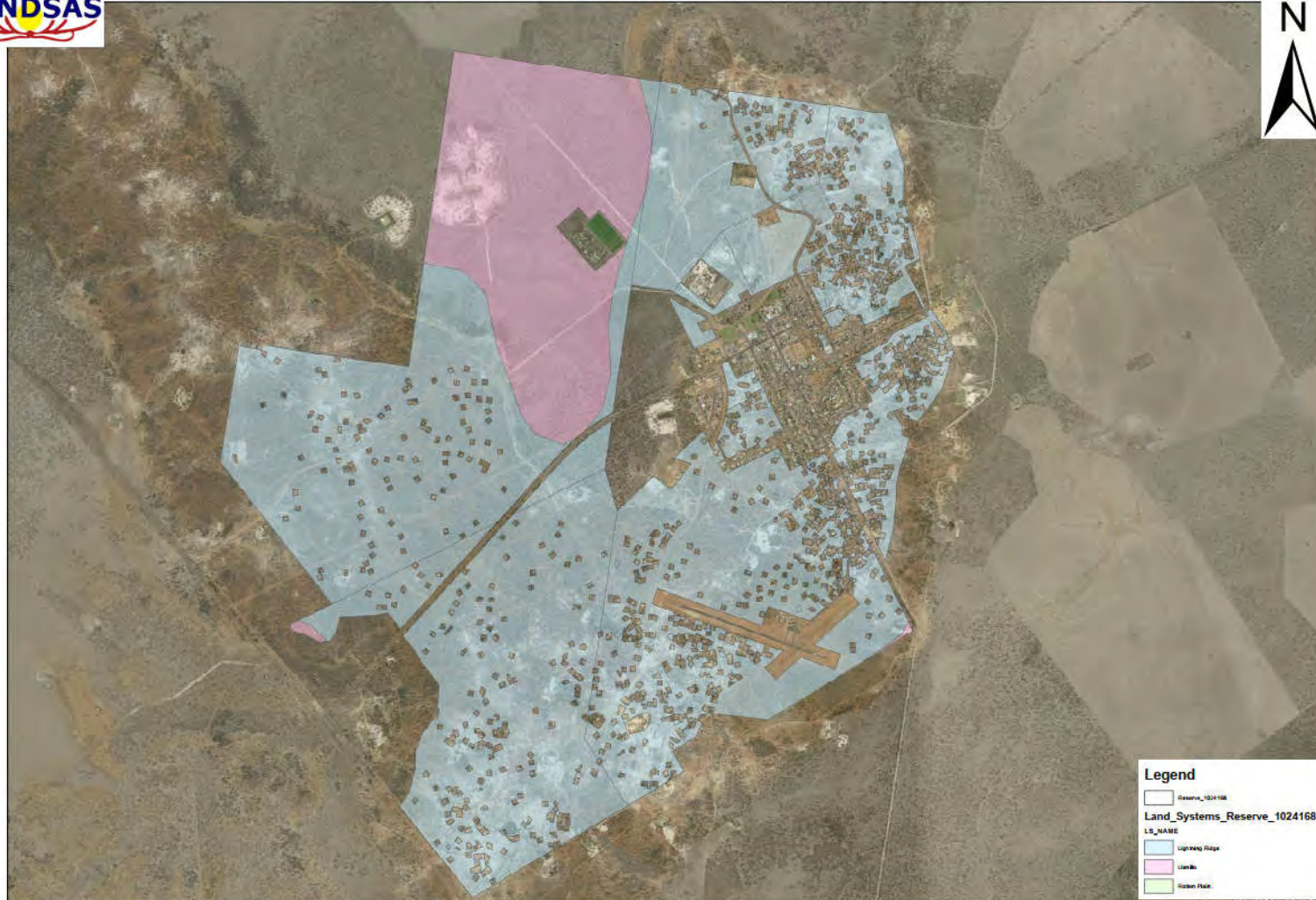
Appendix 3







Lightning Ridge Area Opal Reserve - Land Systems surrounding Lightning Ridge



0 0.5 1 2 3 Kilometers

Legend

- Reserve_1024168
- Land_Systems_Reserve_1024168
- LS_NAME
- Lightning Ridge
- Lands
- River Flats

Appendix 4

Western Land Systems of the Planning Area - Toposequences

LIGHTNING RIDGE LAND SYSTEM

General

Gravelly red ridges with sandy plateaux and drainage lines, in the vicinity of Lightning Ridge.

Geomorphology

Undulating ridges of Cretaceous claystone, siltstone and sandstone, with slightly sloping sandy plateaux, narrow dendritic drainage lines and small rounded pans; relief to 20 m.

Soils and Vegetation

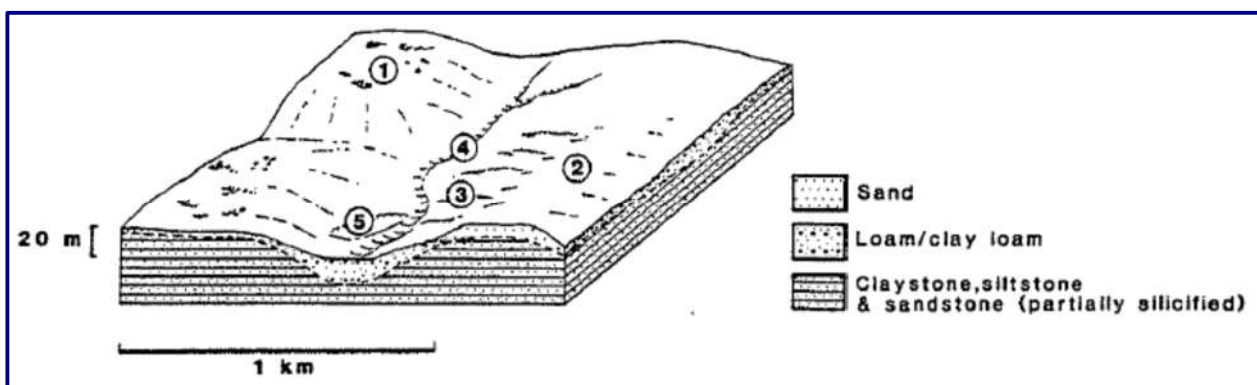
Shallow to moderately deep red earths, sands and lithosols, with moderate to dense white cypress pine, bimble box, mulga and silver-leaf ironbark; clumps of budda; wire grass, wanderrie grass, buck spinifex, mulga grass, galvanized burr and forbs.

Erosion

Minor to moderate watersheeting; some rilling on gravelly ridges.

Land Management Considerations

Pasture management; water erosion control; woody weed control; Hudson Pear and galvanized burr control.



Unit	Landform	Soils	Erosion	Vegetation
1	Ridges: rounded. Slope to 4% and 1km long; relief to 20m.	Shallow to moderately deep red earths with sandy topsoils or	Moderate watersheeting and rilling (stony areas);	Dense to moderate white cypress pine (<i>Callitris columellaris</i>), mulga (<i>Acacia aneura</i>), bimble box (<i>Eucalyptus populnea</i>) and silver-leaf ironbark (<i>E.</i>

Unit	Landform	Soils	Erosion	Vegetation
		variable siliceous shallow stony soils.	minor watersheeting (sandy areas).	melanophloia); dense clumps of budda (<i>Eremophila mitchellii</i>), sparse wild lemon (<i>Canthium oleifolium</i>), emu bush (<i>Eremophila longifolia</i>) and silver cassia (<i>Cassia artemisioides</i>); tall copperburr (<i>Sclerolaena convexula</i>), wanderrie grass (<i>Eriachne helmsii</i>); bandicoot grass (<i>Monachather paradoxa</i>), galvanized burr (<i>Sclerolaena birchii</i>) and forbs.
2	Sandy plateaux and slopes: slope to 1%; relief to 3m.	Moderately deep sands and red earths with loamy sand to sandy loam topsoils; red texture-contrast soils with hard-setting topsoils.	Minor watersheeting.	Moderate to dense mulga, white cypress pine, silver-leaf ironbark, bimble box, coolibah apple (<i>Angophora melanoxylon</i>) and ironwood (<i>Acacia excelsa</i>); sparse wild lemon, sandplain wattle (<i>Acacia murrayana</i>) and quinine bush (<i>Alstonia constricta</i>); areas of buck spinifex (<i>Triodia mitchellii</i>); No. 9 wire grass (<i>Aristida jerichoensis</i>).
3	Foot-slopes: slopes to 2% and 1km long; relief to 5m.	Moderately deep red earths, with sandy topsoils or mantle of siliceous stones.	Minor to moderate watersheeting.	Dense stands of white cypress pine, moderate bimble box, wilga (<i>Geijera parviflora</i>), ironwood and mulga; dense clumps of budda, scattered wild lemon, turpentine (<i>Eremophila sturtii</i>) and quinine bush, isolated clumps of narrow-leaf hopbush (<i>Dodonaea attenuata</i>); galvanized burr, grasses and forbs.
4	Drainage lines: level, dendritic, to 500m wide.	Deep red earths.	Minor watersheeting.	Dense bimble box, white cypress pine, wilga and ironwood; dense clumps of budda, shrubby rice-flower (<i>Pimelea microcephala</i>) and turpentine; galvanized burr, tar vine (<i>Boerhavia diffusa</i>), rock fern (<i>Cheilanthes tenuifolia</i>), grasses and forbs.
5	Drainage depressions: small, level, rounded, depressed to 1m.	Deep grey-brown non-cracking clays and red earths.	Nil.	Moderate to dense bimble box, wilga and rosewood (<i>Heterodendrum oleifolium</i>); tar vine, galvanized burr, sida (<i>Sida</i> spp.) and forbs.

LLANILLO LAND SYSTEM

General

Timbered floodplain of the upper Barwon River.

Geomorphology

Extensive floodplain of older (brown) and younger (grey) Quaternary alluvium; relief to 1 m.

Soils and Vegetation

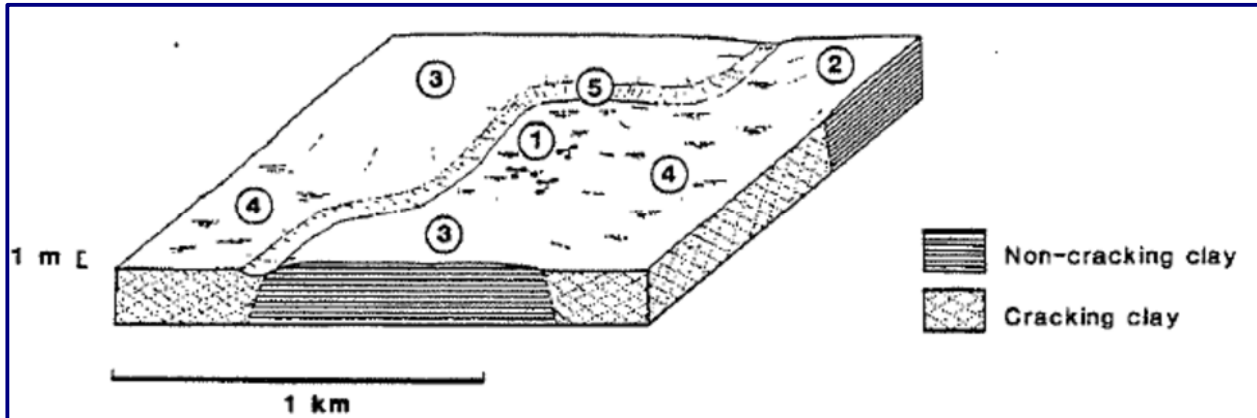
Grey cracking and non-cracking clays, brown texture-contrast soils; dense to scattered coolibah, belah, bimple box, myall and whitewood; scattered to moderate budda, warrior bush, nepine and thorny salt-bush; mitchell grasses, neverfail, annual saltbushes, copperburrs, grasses and forbs.

Erosion

Minor to moderate scalding or pseudo-scalding of texture-contrast soils and non-cracking clays.

Land Management Considerations

Pasture management; scald reclamation; woody weed control.



Unit	Landform	Soils	Erosion	Vegetation
1	Plains: level, slightly elevated above floodplain, relief to 1m.	Brown texture-contrast soils.	Minor to moderate scalding.	Dense to scattered leopardwood (<i>Flindersia maculosa</i>), bimple box, (<i>Eucalyptus populnea</i>), belah (<i>Casuarina cristata</i>), whitewood (<i>Atalaya hemiglauca</i>), and wilga (<i>Geijera parviflora</i>); moderate budda (<i>Eremophila mitchellii</i>), warrior bush (<i>Apophyllum anomalum</i>) and nepine (<i>Capparis lasiantha</i>); mitchell grasses (<i>Astrebla</i> spp.) windmill grass (<i>Chloris truncata</i>), copperburrs (<i>Sclerolaena</i> spp.) and forbs.

Unit	Landform	Soils	Erosion	Vegetation
2	Plains: level, slightly elevated above flood-plain; relief less than 1m.	Deep non-cracking structured clays.	Minor pseudo-scalding.	Scattered myall (<i>Acacia pendula</i>), rosewood (<i>Heterodendrum oleifolium</i>), whitewood and leopardwood; scattered warrior bush, nepine and thorny saltbush (<i>Rhagodia spinescens</i>); mitchell grasses, goathead burr (<i>Sclerolaena bicornis</i>), mueller's saltbush (<i>Atriplex muelleri</i>), streaked poverty-bush (<i>Sclerolaena tricuspis</i>), other grasses and forbs.
3	Plains: level, relief to 1m.	Deep non-cracking structured clays.	Minor pseudo-scalding.	Moderate to dense coolibah (<i>Eucalyptus microtheca</i>), bimble box and belah; scattered to moderate budda, warrior bush, nepine and wild orange (<i>Capparis mitchellii</i>); goathead burr, neverfail (<i>Eragrostis setifolia</i>), button grass (<i>Dactyloctenium radulans</i>), curly windmill grass (<i>Enteropogon acicularis</i>), mitchell grasses, other grasses and forbs.
4	Floodplain: level, subject to variable inundation.	Deep grey cracking clays with crabholes; fringing brown cracking clays.	Nil.	Dense to scattered coolibah, belah, myall, rosewood; scattered budda and warrior bush; mitchell grasses (where not frequently flooded), mueller's saltbush, rigid panic (<i>Panicum prolutum</i>), neverfail, annual saltbushes (<i>Atriplex</i> spp.), dark roly-poly (<i>Sclerolaena muricata</i>) and forbs.
5	Warrambools: level, to 100m wide; depressed to 3m.	Deep grey cracking clays.	Nil.	Moderate coolibah and river cooba (<i>Acacia stenophylla</i>); dense lignum (<i>Muehlenbeckia cunninghamii</i>); dark roly-poly, warrego summer grass (<i>Paspalidium jubiflorum</i>), other grasses and forbs.

NIDGERY LAND SYSTEM

General

Floodplains associated with the Bogan, Culgoa and lower Barwon Rivers.

Geomorphology

Extensive plains of grey and minor slightly elevated red-brown Quaternary alluvium; minor narrow, poorly defined drainage lines and swamps; relief to 1 m.

Soils and Vegetation

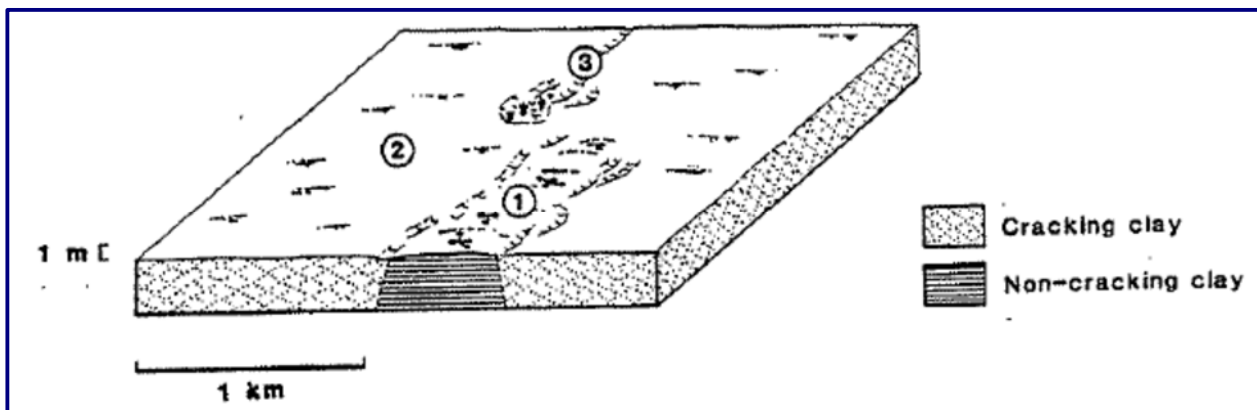
Deep grey cracking clays and minor red-brown texture-contrast soils; dense to open coolibah, black box, belah and myall; scattered lignum and swamp wilga; neverfail, warrego summer grass, copperburrs, annual saltbushes, other grasses and forbs.

Erosion

Severe scalding of texture-contrast soils.

Land Management Considerations

Pasture management; scald reclamation; control of excess timber.



Unit	Landform	Soils	Erosion	Vegetation
1	Rises: slightly elevated above floodplain; relief to 1m.	Red and brown texture-contrast soils.	Severe scalding, most topsoil removed.	Scattered clumps of black box (<i>Eucalyptus largiflorens</i>), and coolibah (<i>E. microtheca</i>) ledges); isolated small clumps of warrior bush (<i>Apophyllum anomalum</i>) and lignum (<i>Muehlenbeckia cunninghamii</i>); copperburrs (<i>Sclerolaena</i> spp.) annual saltbushes (<i>Atriplex</i> spp.) and forbs.
2	Floodplain: level, extensive; relief to 1m.	Grey cracking clays with crabholes; greyish brown non-cracking clays.	Nil.	Dense to sparse coolibah and black box with belah (<i>Casuarina cristata</i>) and myall (<i>Acacia pendula</i>); sparse lignum; neverfail (<i>Eragrostis setifolia</i>), copperburrs, forbs, other grasses.
3	Drainage lines and swamps: narrow, poorly defined; depressed to 1m.	Grey cracking blocky clays.	Nil.	Moderate black box; moderate swamp wilga (<i>Eremophila bignoniiflora</i>); warrego summer grass (<i>Paspalidium jubiflorum</i>), neverfail, dark roly-poly (<i>Sclerolaena muricata</i>) and forbs.

ROTTEN PLAIN LAND SYSTEM

General

Drainage plains with cracking clay soils, around Lightning Ridge.

Geomorphology

Low-lying back-plains of Quaternary alluvium, periodically partially inundated by local run-off or floodwaters; depressed to 4m.

Soils and Vegetation

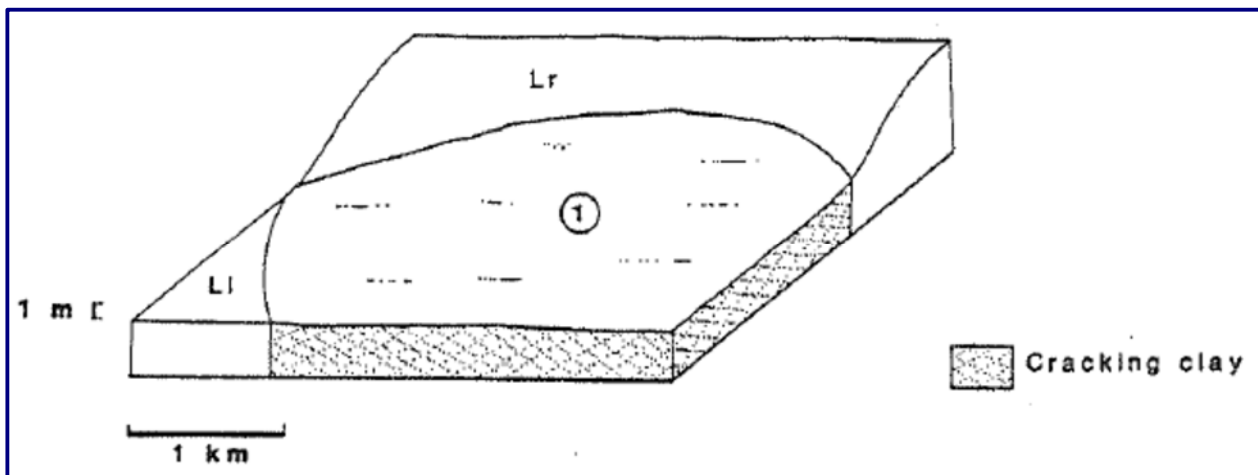
Deep grey cracking clays, minor non-cracking clays; open with fringing coolibah and swamp wilga; copperburrs, dark roly-poly and forbs.

Erosion

Nil.

Land Management Considerations

Pasture management.



Unit	Landform	Soils	Erosion	Vegetation
1	Plains: level, depressed to 3m, to 4km and occasionally 10km wide, subject to occasional partial inundation.	Deep grey cracking clays; some non-cracking structured plastic clays.	Nil.	Treeless except for fringing coolibah (<i>Eucalyptus microtheca</i>) and swamp wilga (<i>Eremophila bignoniiflora</i>); buckbush (<i>Salsola kali</i>), dark roly-poly (<i>Sclerolaena muricata</i>), copperburrs (<i>Sclerolaena</i> spp.), medics (<i>Medicago</i> spp.) and forbs.

WOMBEIRA LAND SYSTEM

General

Extensive, highly-channelised floodplains along tributaries of Barwon River.

Geomorphology

Extensive floodplain with dense network of incised shallow, stable channels of grey Quaternary alluvium; areas of slightly elevated, yellow and red-brown Quaternary alluvium; relief to 1 m.

Soils and Vegetation

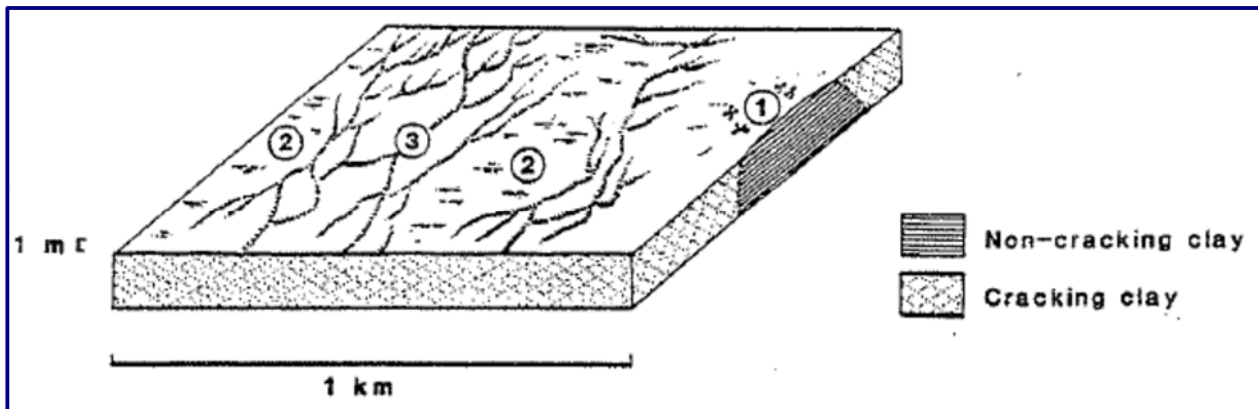
Grey cracking clays, small areas of texture-contrast soils; generally treeless, with areas of scattered coolibah, whitewood and colane; miljee, lignum, thorny, saltbush, golden goosefoot, nitre goosefoot, cottonbush and old man saltbush; mitchell grasses, rigid panic, neverfail, warrego summer grass, annual saltbushes, copperburrs and forbs.

Erosion

Severe scalding of texture-contrast soils.

Land Management Considerations

Pasture management Control of lignum Scald reclamation.



Unit	Landform	Soils	Erosion	Vegetation
1	Scalds: to 1km in extent, slightly-elevated above floodplain; relief to 1m.	Non-cracking plastic clays; yellow texture-contrast soils with sandy loam topsoils; small areas of red-brown texture-contrast soils.	Locally severe scalding.	Generally treeless; sparse nitre goosefoot (<i>Chenopodium nitriaceum</i>); pale poverty-bush (<i>Sclerolaena divaricata</i>), goathead burr (<i>S. bicornis</i>) and forbs.

Unit	Landform	Soils	Erosion	Vegetation
2	Floodplains: extensive; relief to 1m.	Grey cracking clays with abundant crab-holes.	Negligible.	Generally treeless with areas of scattered coolibah (<i>Eucalyptus microtheca</i>), whitewood (<i>Atalaya hemiglauca</i>) and colane (<i>Owenia acidula</i>); areas of scattered to moderate lignum (<i>Muehlenbeckia cunninghamii</i>), miljee (<i>Acacia oswaldii</i>), thorny saltbush (<i>Rhagodia spinescens</i>), golden goosefoot (<i>Chenopodium auricomum</i>), cottonbush (<i>Maireana aphylla</i>) and old man saltbush (<i>Atriplex nummularia</i>); curly mitchell grass (<i>Astrebula lappacea</i>), barley mitchell grass (<i>A. pectinata</i>), warrego summer grass (<i>Paspalidium jubiflorum</i>), neverfail (<i>Eragrostis setifolia</i>), copperburrs (<i>Sclerolaena</i> spp.), annual saltbushes (<i>Atriplex</i> spp.) and forbs.
3	Channels: continuous, frequently inundated; edge slopes to 1/2%; depressed to 1m.	Grey cracking clays with abundant crab-holes.	Negligible.	Treeless; lignum: rigid panic (<i>Panicum prolutum</i>), warrego summer grass, dark roly-poly (<i>Sclerolaena muricata</i>) and forbs.

UPPER DARLING LAND SYSTEM

General

Tributaries and distributaries of the Darling-Barwon Rivers, including the Culgoa, Birrie, Bokhara, Narran and Bogan Rivers.

Geomorphology

Sinuuous, perennial major drainage tracts and associated floodplains of grey Quaternary alluvium, to 1 km wide; relief to 2 m; channels depressed to 15 m.

Soils and Vegetation

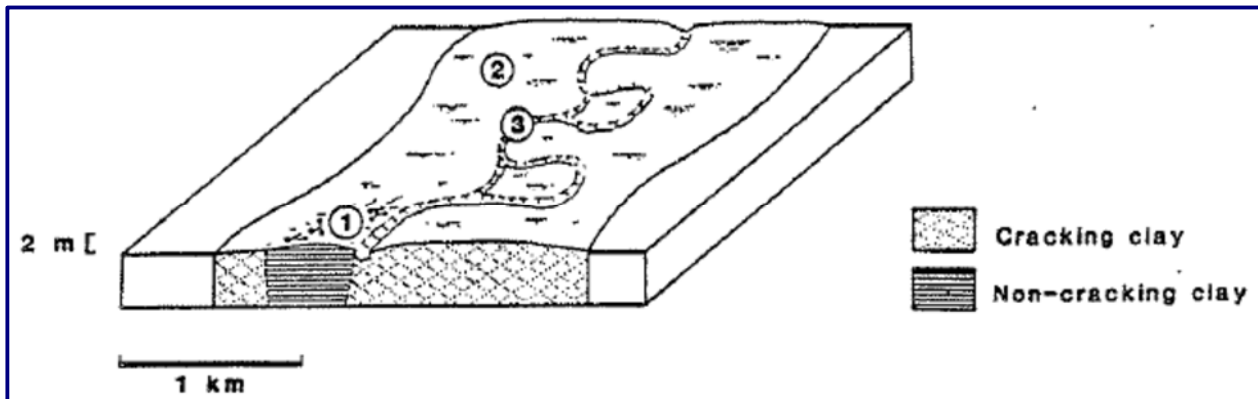
Grey cracking clays, small areas of texture-contrast soils; moderate to dense river red gum, coolibah, black box and river cooba; swamp wilga and lignum; neverfail, Warrego summer grass, panics, copperburrs, annual saltbushes and forbs.

Erosion

Moderate rilling of channel banks; localised gullyng and scalding.

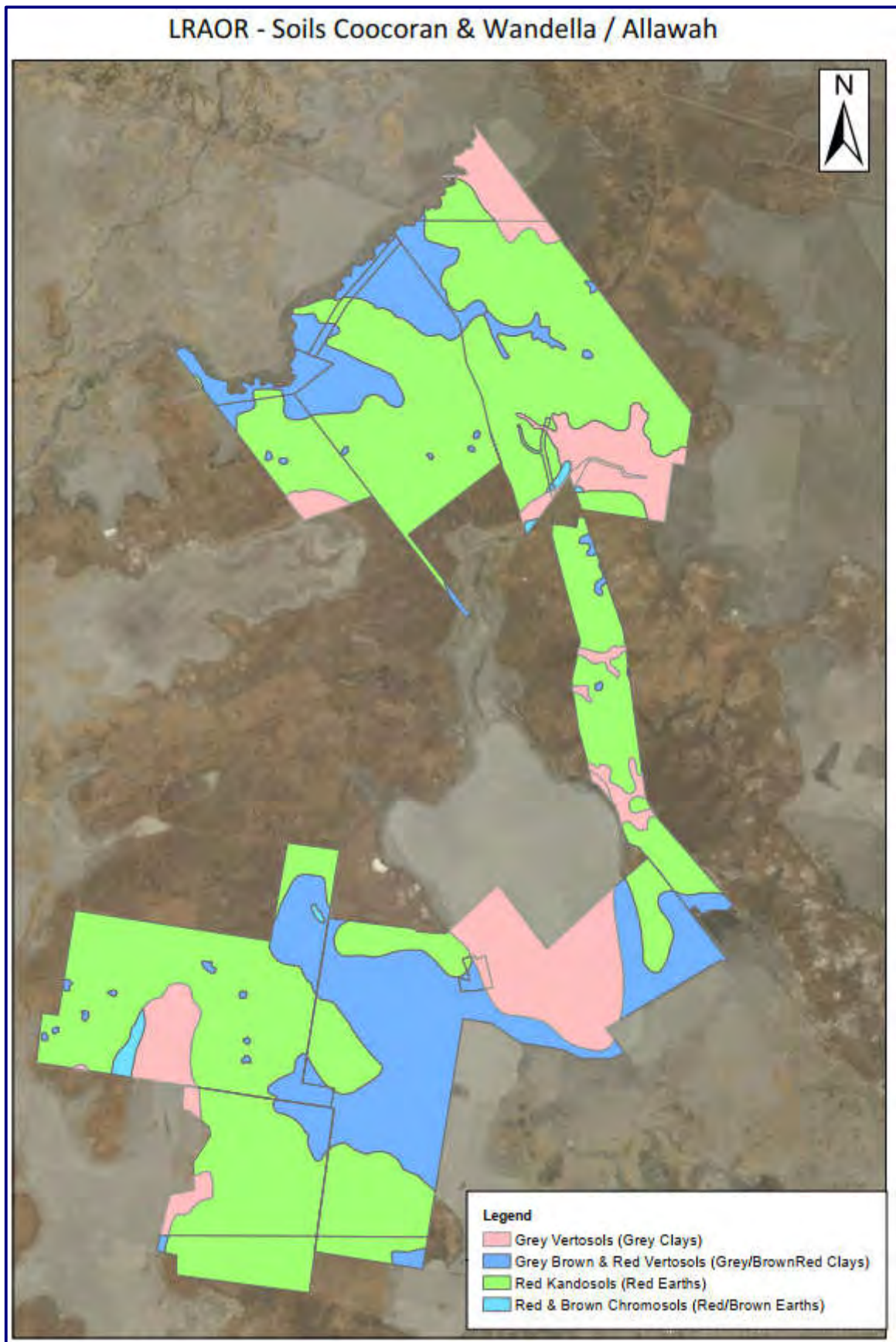
Land Management Considerations

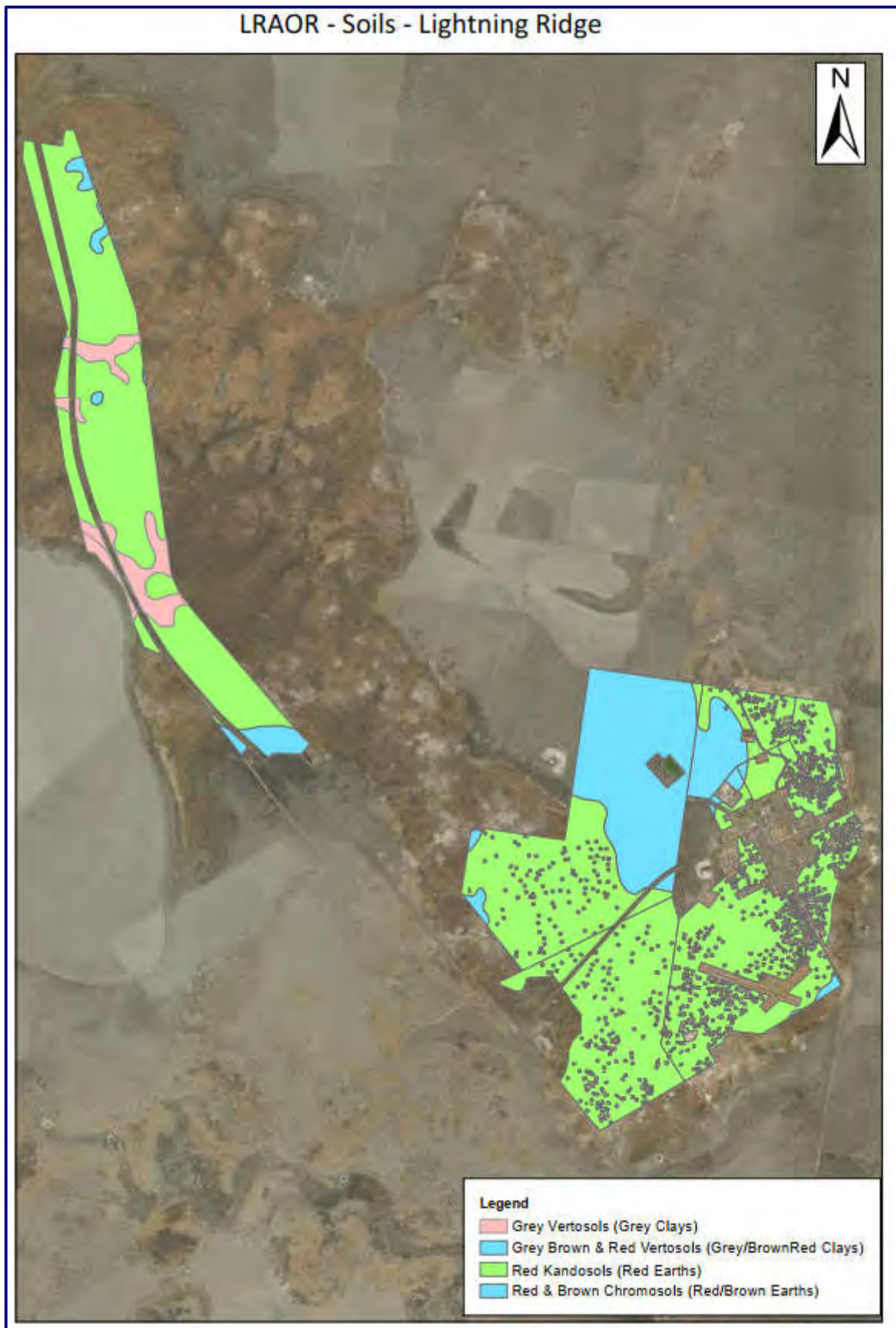
Pasture management; erosion control; control of excess timber.



Unit	Landform	Soils	Erosion	Vegetation
1	Slightly elevated areas: to 500m in extent; slope to 1%; relief to 1m.	Non-cracking clays; red brown texture-contrast soils; yellow texture-contrast soils.	Severe scalding and localised rilling.	Sparse gidgee (<i>Acacia cambagei</i>); sparse lignum (<i>Muehlenbeckia cunninghamii</i>); goathead burr (<i>Sclerolaena bicornis</i>), pale poverty-bush (<i>S. divaricata</i>), pop saltbush (<i>Atriplex spongiosa</i>) and forbs.
2	Floodplain: level with some minor channels; to 1km in extent; relief to 2m.	Grey cracking clays.	Minor rilling and gullyng.	Variable coolibah (<i>Eucalyptus microtheca</i>), black box (<i>E. largiflorens</i>), river cooba (<i>Acacia stenophylla</i>) and gidgee; scattered lignum, swamp wilga (<i>Eremophila bignoniflora</i>), areas of old man saltbush (<i>Atriplex nummularia</i>); neverfail (<i>Eragrostis setifolia</i>), warrego summer grass (<i>Paspalidium jubiflorum</i>), curly windmill grass (<i>Enteropogon acicularis</i>), dark roly-poly (<i>Sclerolaena muricata</i>), streaked poverty-bush (<i>S. tricuspis</i>), galvanized burr (<i>S. birchii</i>), annual saltbushes (<i>Atriplex</i> spp.) and forbs.
3	Major drainage tracts: Sinuous; bank slopes to 60%, U-shaped, to 50m in width; entrenched to 15m.	Grey cracking clays, locally gilgaid.	Moderate rilling and localised gullyng of banks.	Fringing river red gum (<i>Eucalyptus camaldulensis</i>), black box, coolibah, river cooba and areas of river paper bark (<i>Melaleuca trichostachya</i>); shrub-free; neverfail, warrego summer grass, panics (<i>Panicum</i> spp.), pale poverty-bush, other grasses and forbs.

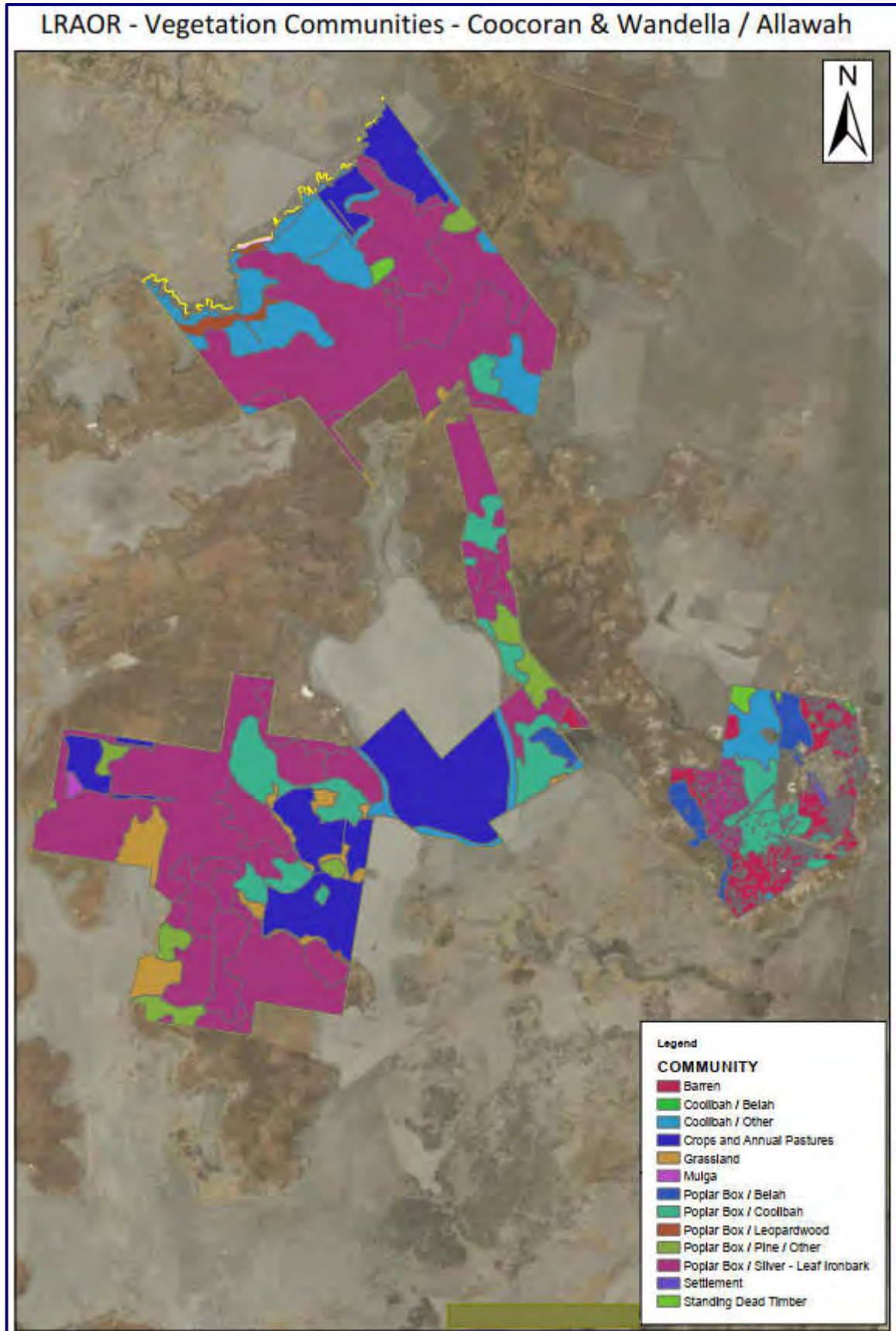
Appendix 5



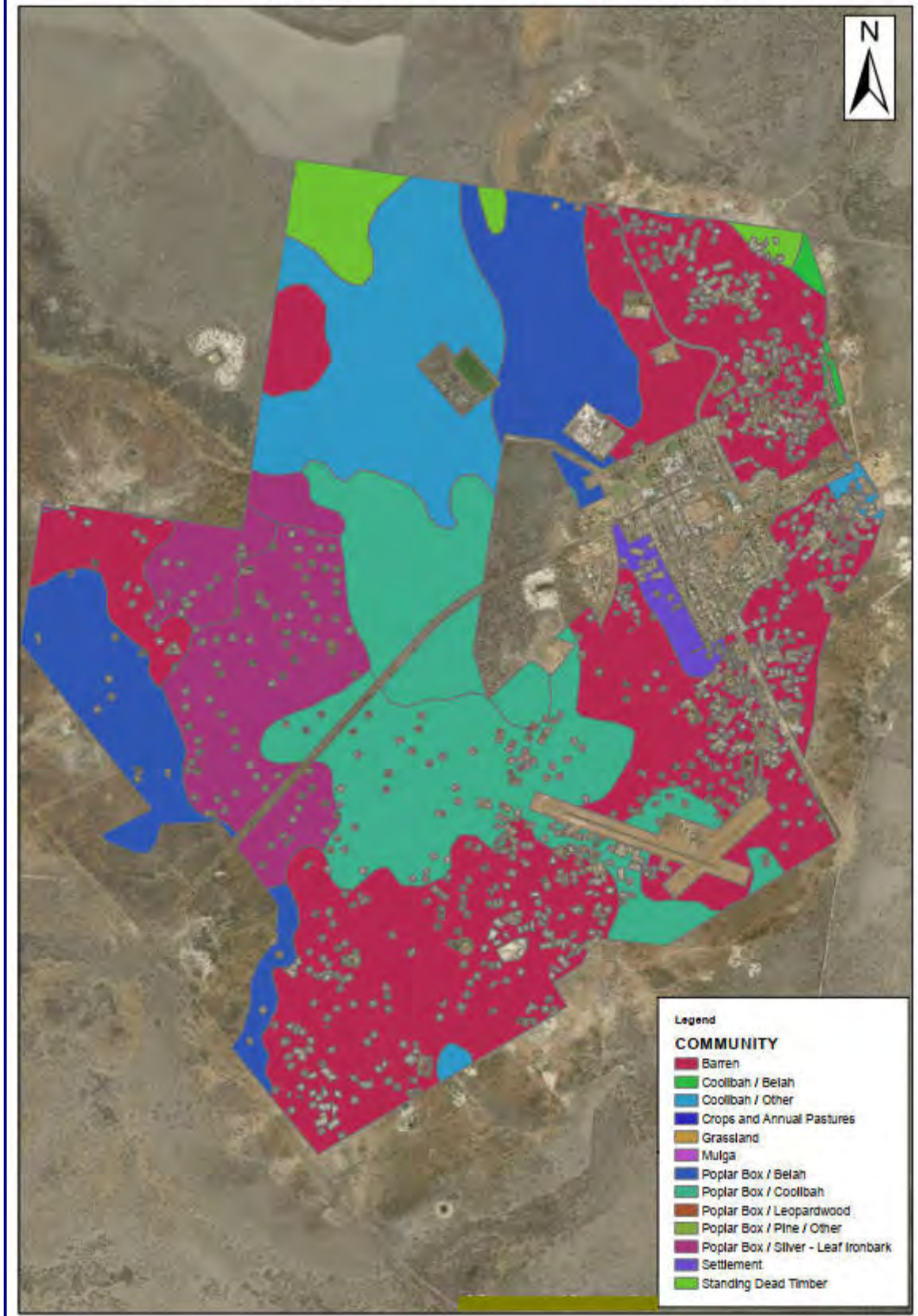




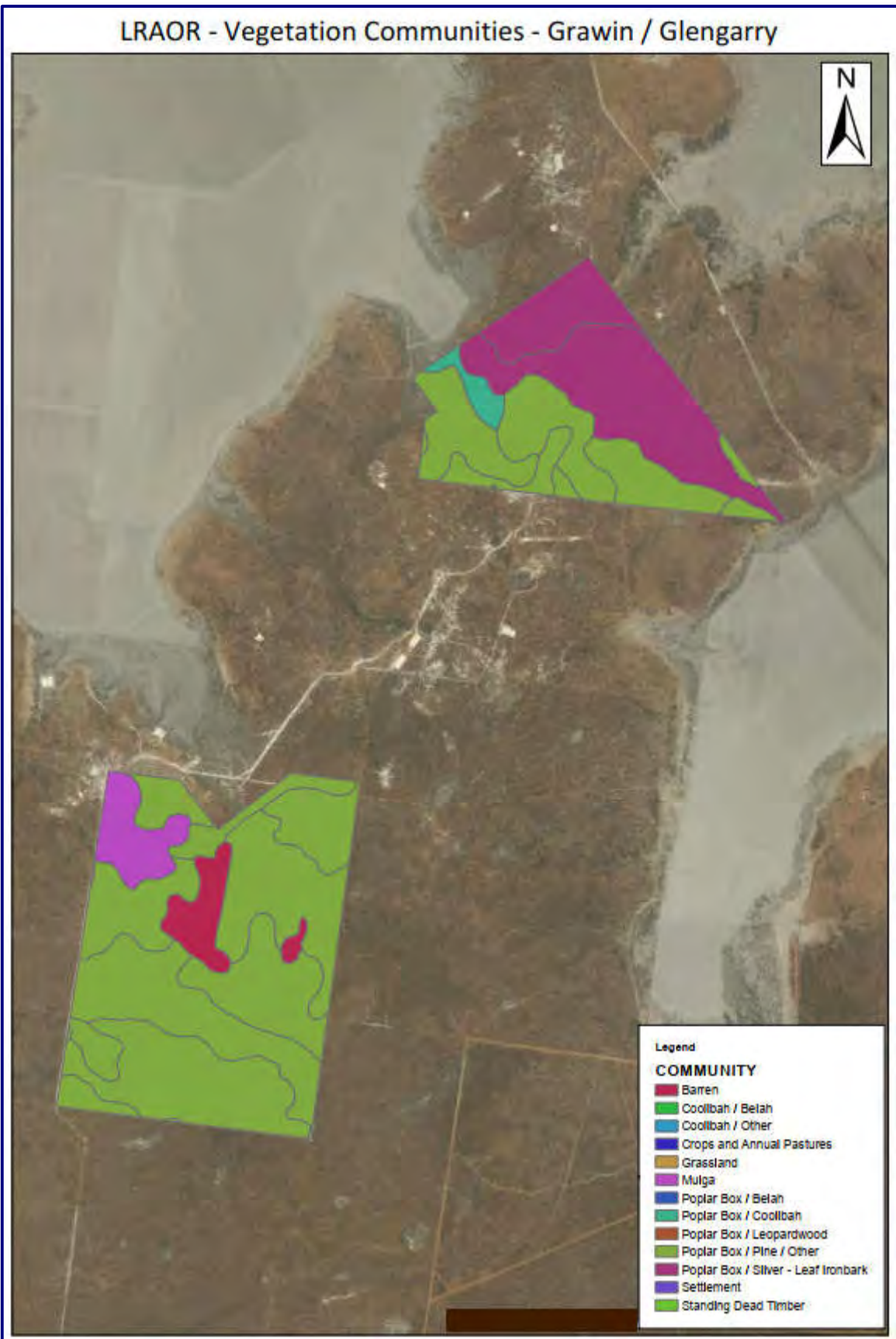
Appendix 6



LRAOR - Vegetation Communities - Lightning Ridge



LRAOR - Vegetation Communities - Grawin / Glengarry



Appendix 7

A listing of some Threatened Species for parts of the planning area

Threatened fauna species known, likely and possibly occurring in the Cumborah locality – Box-Hollow and Spinifex Communities¹²¹

Common Name/ Scientific Name/ Status/ Occurrence

Red-tailed Black Cockatoo/ *Calyptorhynchus banksia*/ Vulnerable/ Known
Glossy Black Cockatoo *Calyptorhynchus lathami* Vulnerable/ Known
Major Mitchell Cockatoo/ *Cacatua leadbeateri*/ Vulnerable/ Known
Superb Parrot/ *Polytelis swainsonii*/ Vulnerable/ Possibly
Bourke's Parrot/ Vulnerable/ Possibly
Black-chinned Honeyeater/ *Melithreptus gularis*/ Vulnerable/ Likely
Painted Honeyeater/ *Grantiella picta*/ Vulnerable/ Known
Pied Honeyeater/ *Certhionyx variegatus*/ Vulnerable/ Known
Hooded Robin/ *Melanodryas cucullata* /Vulnerable Known
Grey-crowned Babbler/ *Pomatostomus temporalis* /Vulnerable/ Known
Barking Owl/ *Ninox connivens* /Vulnerable/ Known
Grass Owl /*Tyto capensis*/ Vulnerable/ Possibly
Bush Stone Curlew/ *Burhinus grallarius* /Endangered/ Known
Australian Bustard /*Ardeotis australis*/ Endangered/ Possibly
Grey Falcon /*Falco hypoleucos*/ Vulnerable/ Possibly
Square-tailed Kite/ *Lophoictinia isura*/ Vulnerable/ Possibly
Blue-billed Duck/ *Oxyura australis*/ Vulnerable/ Likely
Freckled Duck/ *Stictonetta naevosa*/ Vulnerable// Likely
Brolga/*Grus rubicundus*/ Vulnerable/ Likely
Black-necked Stork /*Ephippiorhynchus asiaticus*/ Endangered /Likely
Painted Snipe/ *Rostratula benghalensis*/ Vulnerable /Likely

Common Name/ Scientific Name/ Status Occurrence

Kultarr/ *Antechinomys laniger*/ Endangered /Possibly
Koala /*Phascolarctos cinereus*/ Vulnerable/ Known
Strip-faced Dunnart/ *Sminthopsis macroura*/ Vulnerable /Likely
Greater Long-eared Bat/ *Nyctophilus timoriensis*/Vulnerable/ Known
Inland Forest Bat/ *Vespadelus baverstocki* /Vulnerable /Known
Little Pied Bat/ *Chalinolobus picatus*/ Vulnerable /Known
Yellow-bellied/ Sheath-tail Bat/ *Saccolaimus flaviventris* / Vulnerable/ Known
Beccari's Freetail Bat/ *Mormopterus beccari*/ Vulnerable/ Likely
Hairy-nosed Freetail Bat/ *Mormopterus sp* / Endangered/ Likely

¹²¹ Phillip Spark: Lightning Ridge Conservation Assessment North West Ecological Services Sept 2006.

Threatened plant species potentially occurring in Glengarry area.

Sedge/ *Cyperus conicus*. Widespread to the east of the area and potentially occurring in the moister areas around Glengarry e.g., Box hollow communities.

Narrow Godenia/ *Goodenia macbarronii*. Widespread to the east of the area but potentially occurring in the moister areas around Glengarry e.g., Box hollow communities.

Desert Cow Vine/ *Ipomoea diamantinensis*. Mostly to the west of the area but potentially occurring in the moister areas around Glengarry e.g., Box hollow communities.

Winged Peppergrass/ *Lepidium monophlooides*. A widespread species potentially occurring in the moister areas around Glengarry e.g., Box hollow communities.

Slender Darling Pea/ *Swainsona murrayana*. A widespread species potentially occurring in the moister areas around Glengarry e.g., Box hollow communities.

Rice Flower/ *Pimelea elongate*. Generally occurs further west but potentially occurring in the moister areas around Glengarry.

Native Milkwort/ *Polygala linariifolia*. A widespread species potentially occurring in the moister, sandier areas around Glengarry.

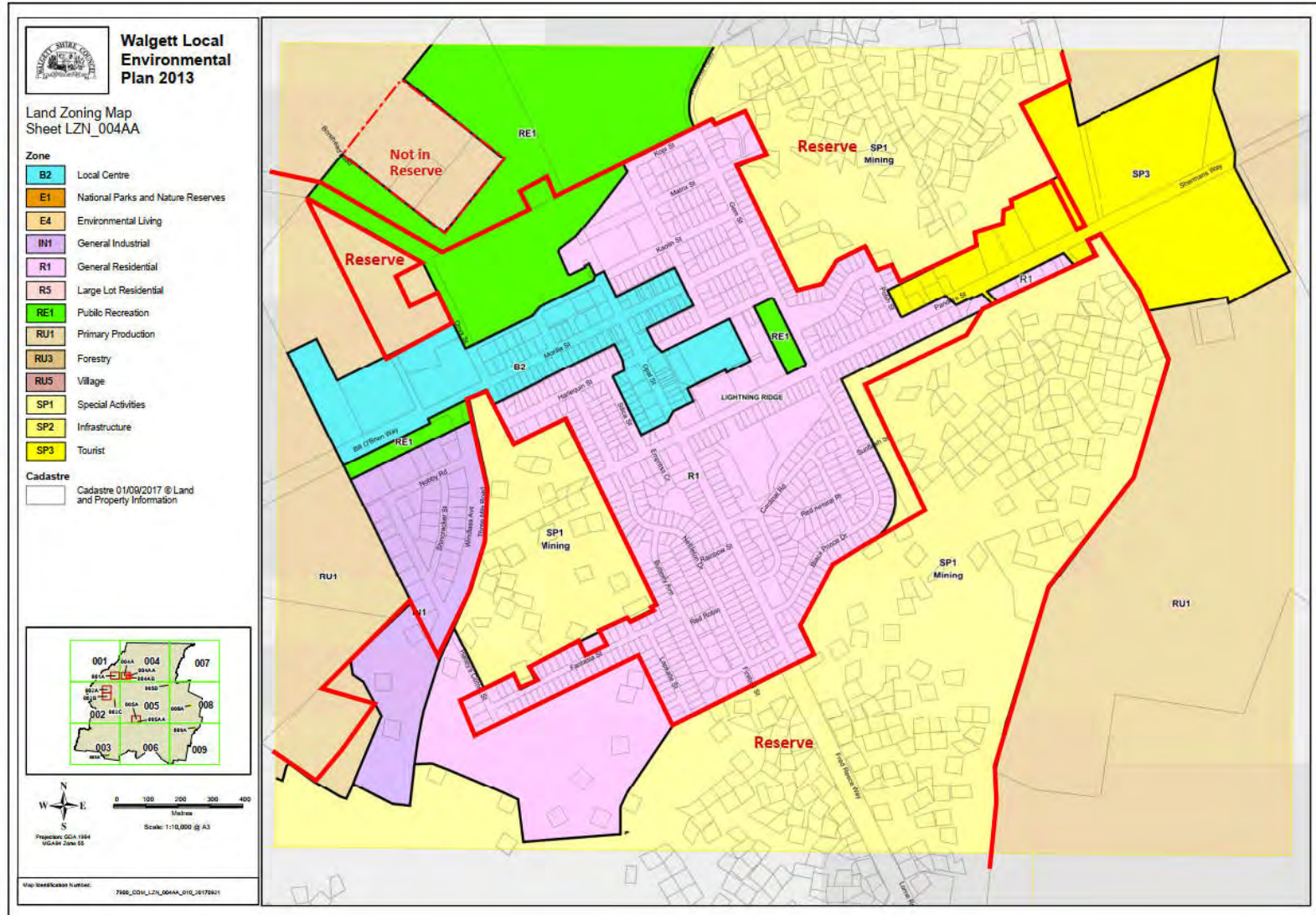
Appendix 8

Weeds of National Significance recorded in the Lightning Ridge Locality

Aaron's beard prickly pear (*Opuntia leucotricha*)
African Boxthorn (*Lycium ferocissimim*)
Boxing glove cactus (*Cylindropuntia fulgida* var. *mamillata*)
Wheel cactus (*Opuntia robusta*)
Velvety tree pear (*Opuntia tomentosa*)
Tiger pear (*Opuntia aurantiaca*)
Smooth tree pear (*Opuntia monacantha*)
Silverleaf nightshade (*Solanum elaeagnifolium*)
Blind cactus (*Opuntia rufida*)
Common pear (*Opuntia stricta*)
Hudson pear (*Cylindropuntia pallida*)
Madeira vine (*Anredera cordifolia*)
Parkinsonia (*Parkinsonia aculeata*)
Parthenium weed (*Parthenium hysterophorus*)
Prickly pears – *Cylindropuntias* (*Cylindropuntia* species)
Prickly pears – *Opuntias* (*Opuntia* species)
Riverina pear (*Opuntia elata*)
Rope pear (*Cylindropuntia imbricata*)

Land Zoning Map

Appendix 9



Appendix 10

Consultation for the production of this Plan of Management

Prior to developing this POM, it was considered by the Land Manager that producing a plan which was to be relevant and targeted, required extensive consultations with relevant people and organisations who may influence or be impacted by it. Initial discussions were therefore held with the following key agencies who have a regulatory responsibility in the management of the Reserve:

- Department of Regional NSW - Mining, Exploration and Geoscience (MEG)
- Department of Planning and Environment - Crown Lands (Crown Lands)

On-site consultations were subsequently conducted between 24-27 October 2020 with the following groups/organisations at Lightning Ridge, Grawin and Walgett:

- Lightning Ridge Miners' Association
- Lightning Ridge community (walk-in session)
- Grawin / Glengarry-Sheepyard community (walk-in session)
- Dharriwaa Elders Group, Walgett
- WSC

In addition, a number of individuals and organisations were invited¹²² to attend a Community Workshop at Lightning Ridge, where key issues were listed, and contributions made by participants to assist development of the values and vision to be endorsed in the Plan of Management (POM). Groups at that workshop included:

- Lightning Ridge Miners' Association *
- Glengarry, Grawin, Sheepyard Miners' Association
- Lightning Ridge Tourism Association *
- Dharriwaa Elders Group *
- Lightning Ridge Historical Society *
- Lightning Ridge Local Aboriginal Land Council *
- Walgett Local Aboriginal Land Council
- The Australian Opal Centre *
- Aboriginal Education Consultative Group *
- Barriekneal Housing*
- NSW Police *
- NSW Ambulance Service
- The Hon. John Barilaro MP
- Mr. Roy Butler MP

Invitations were also sent to the following government agencies, inviting specific interest

¹²² * Indicates that the group/organisation attended the workshop.

contributions to the planning process:

- Department of Regional NSW - Mining, Exploration and Geoscience (MEG)
- Department of Planning, Industry and Environment - Crown Lands
- Department of Planning, Industry and Environment - Biodiversity and Conservation and Science Directorate
- NSW Environmental Protection Authority
- NSW Fire and Rescue
- Local Land Services
- NSW Rural Fire Service – North West
- NSW State Emergency Service

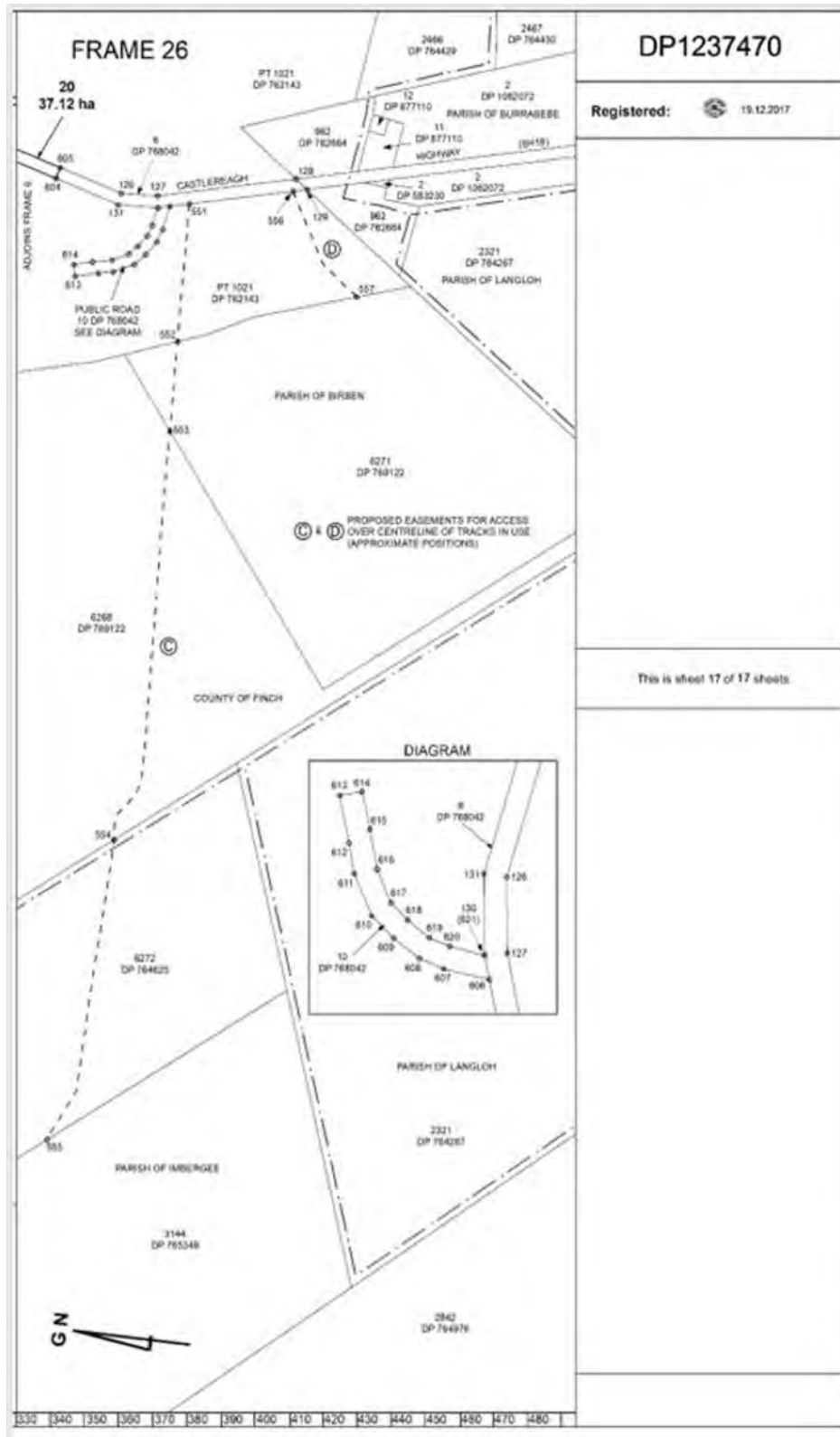
Finally, a number of individual written submissions were received after the consultations on-site had concluded.

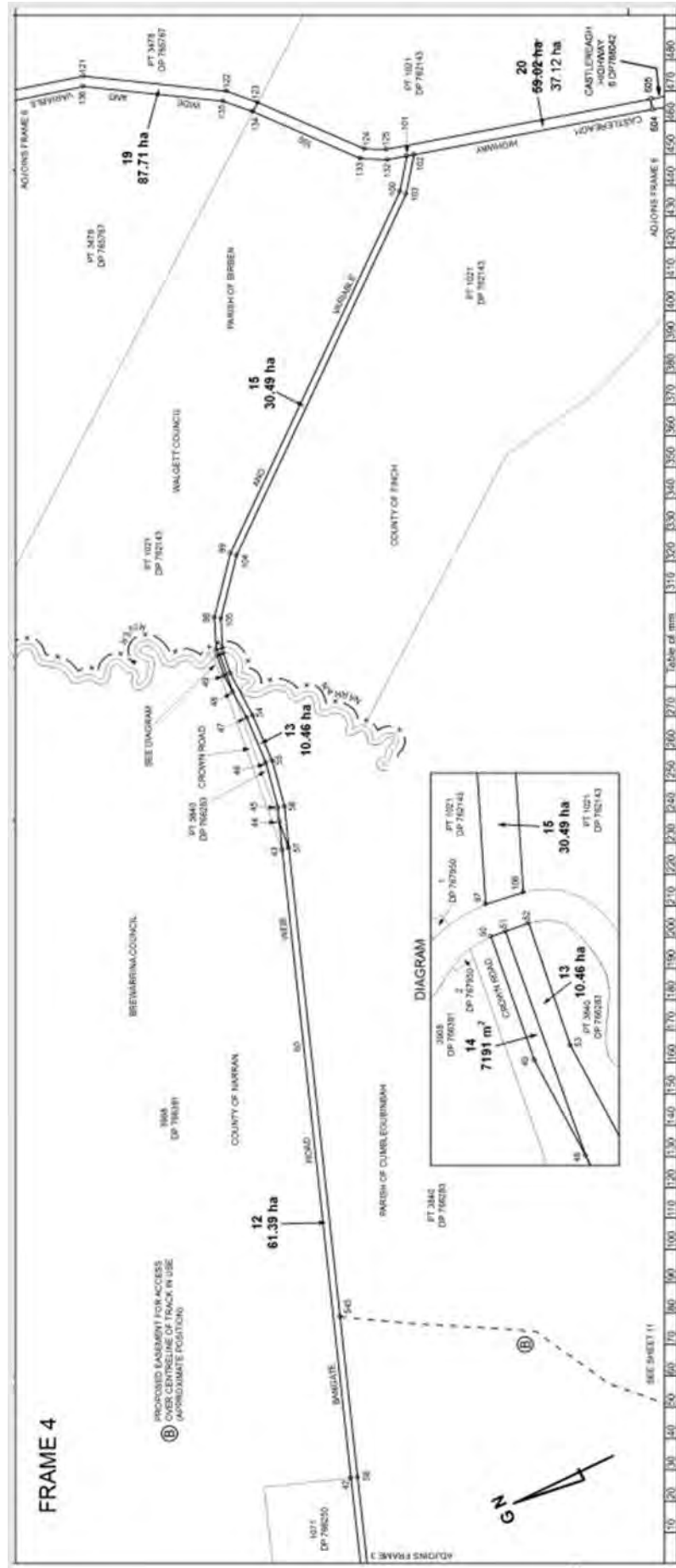
Subsequent consultation discussions were held with:

- NSW Farmers Federation
- Destination NSW

Appendix 11

DP 1237470 – Easement for Access

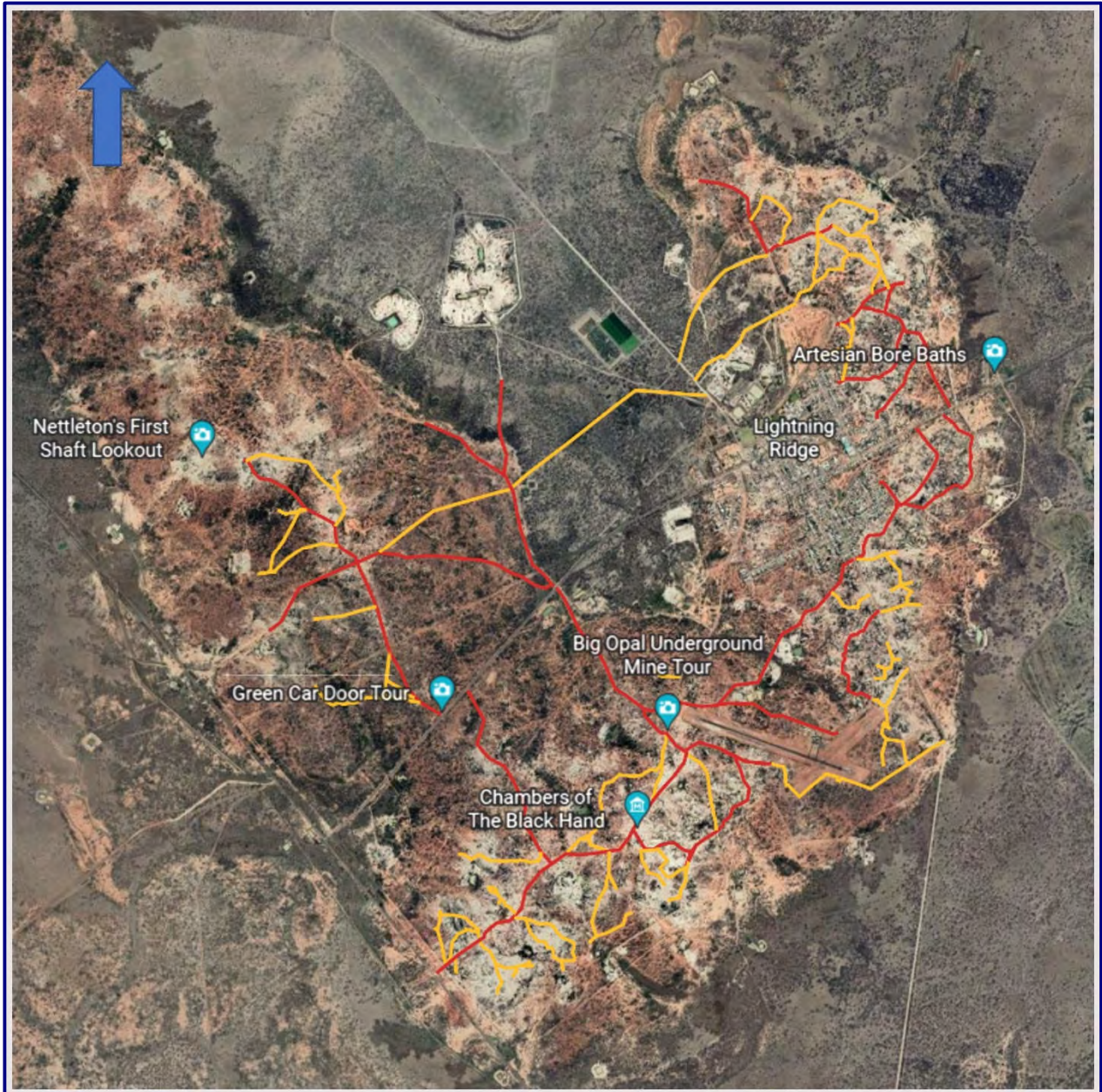




Appendix 12

Road Locations

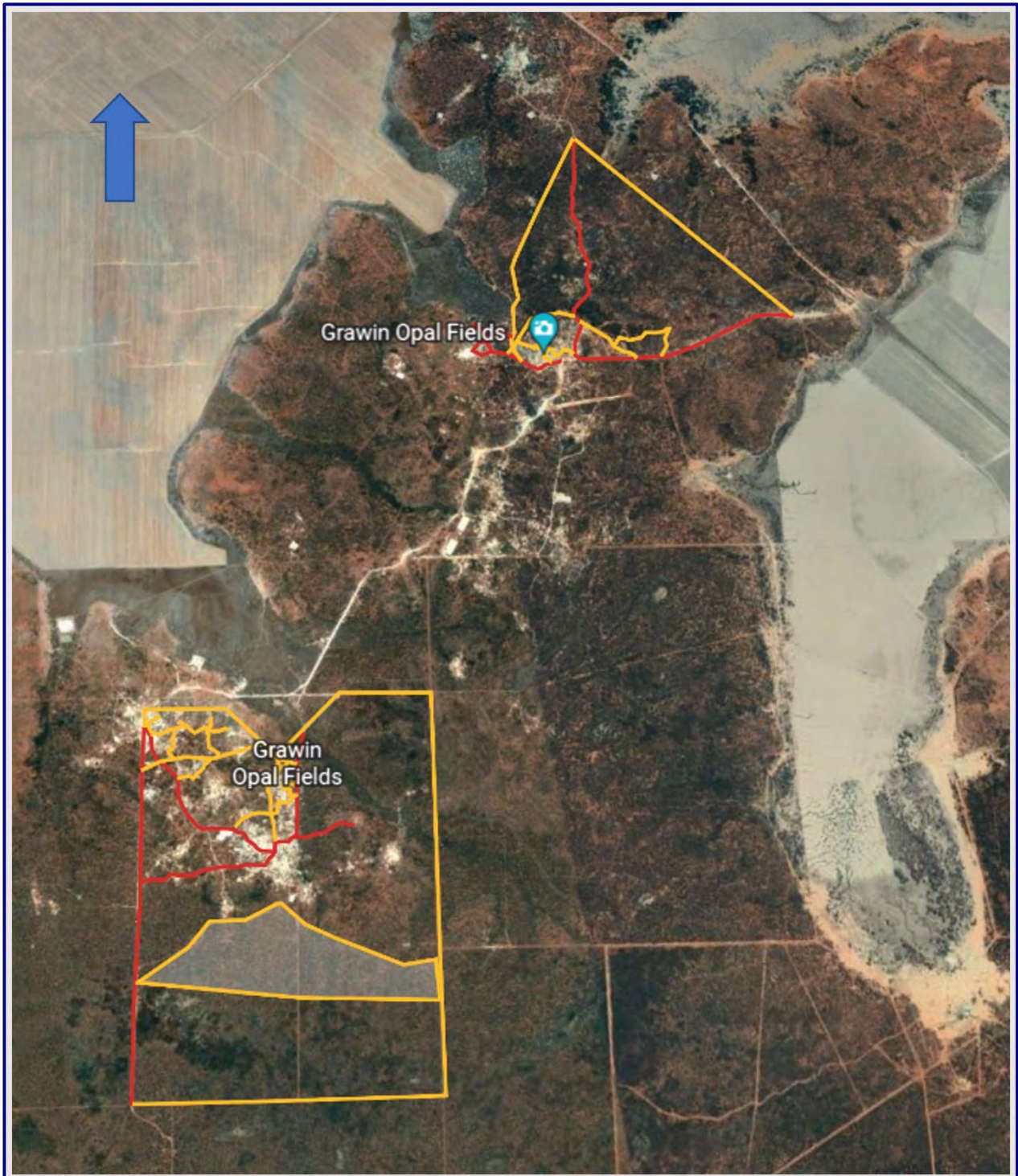
Roads Lightning Ridge



Red – Primary Road

Yellow – Secondary Road

Roads Grawin

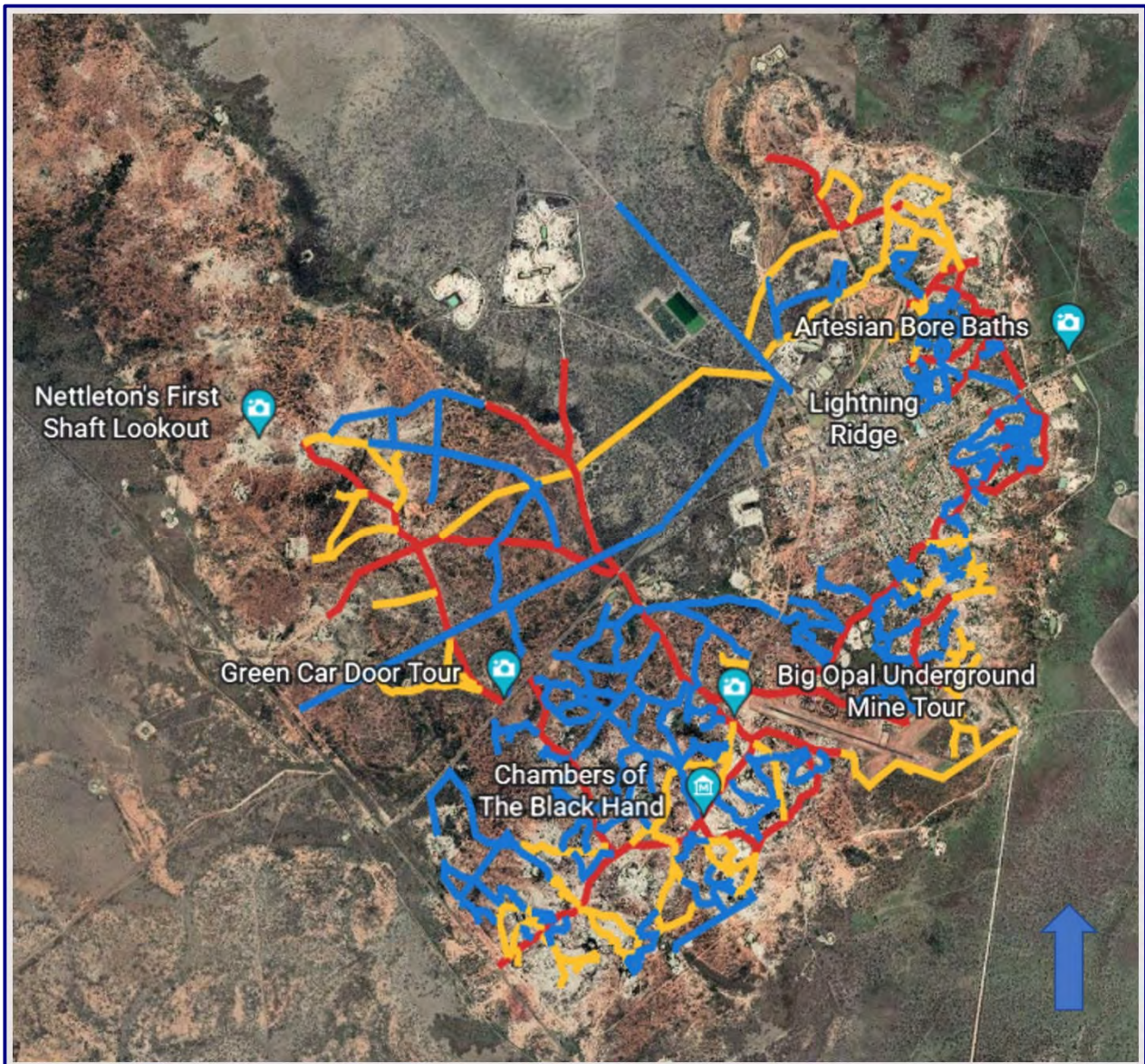


Red – Primary Road
Yellow – Secondary Road

Road – Grading Schedules

Roads are divided into 3 categories; Primary, Secondary and Third Tier

Primary Roads (shown red)	Graded: <ul style="list-style-type: none"> - once every three months/as needed - Before Public Holidays - Before School Holidays - Before Major events in town
Secondary Roads (shown yellow)	Graded: <ul style="list-style-type: none"> - as needed and - for bushfire trail maintenance
Third Tier (shown blue)	Graded once a year



Lightning Ridge - Primary Roads (red)

1. Stoneys Rd – 2.5km
2. Airport Rd – 2km
3. Old Nobby – 831m
4. 3 Mile/4 Mile – 2.6km
5. Ants Nest Rd – 2.3km
6. Post Office Loop Rd – 955m
7. Hidden Valley to 3 Mile Rd – 1.26km
8. Peter Tunin Rd – 1.25km
9. Green Car Door Tour Rd – 1.24km
10. Benny Walford North Rd – 412m
11. Red Car Door Tour Rd – 755m
12. Road to Amigo's Castle- 951m
13. Pistol Club Rd – 765m
14. Bore Bath to Cactus Garden – 742m
15. Blue Car Door Tour – 654m
16. Council Tip Rd – 655m
17. Shotgun Club Rd – 663m
18. Canfell's Hill Rd – 568m
19. Canfell's Hills Rd 2 – 501m
20. 3 Mile/Benny Walford - 264m

Lightning Ridge - Secondary Roads (yellow)

- A. Post Office Power Line Rd – 965m
- B. Powerline Rd – 1.19km
- C. Canfell's Hill Rd 3 – 634m
- D. Canfell's Hill Rd 4 – 642m
- E. Blue Car Door Tour Rd to Council Tip – 647m
- F. Back of Tip Rd - 547m
- G. Front of Tip Rd - 1.96km
- H. New Chum/Old Chum – 2.9km
- I. Stoney's Rd - 2.27km
- J. Stoney's Rd - 2.27km
- K. Kangaroo Hill - 1.28km
- L. Airport to Lorne Rd - 2.05km
- M. 3 Mile Residential Rd - 1.07km
- N. Off Shoot/Wreckers/ 3 Mile Rd - 567m
- O. 3 Mile/Hidden Valley Rd - 1.99km
- P. Hawks Nest - 341m
- Q. 3 Mile Off Shoots – 4.1km
- R. 4 Mile Offshoots – 2.1km
- S. Nebia Hill Residential Roads – 6km
- T. Kangaroo Hill West – 600m
- U. End of Airport 550m
- V. Airport South – 1.5km
- W. Stoney's Offshoot – 500m

Grawin - Primary Roads (red)

21. Entrance Grawin Rd – 2.3km
22. Club in the Scrub Tip Rd – 2.3km
23. Hammonds Hill – 1.2km
24. Pub / War Memorial Loop Rd – 6km?
25. Grawin Back Rd Entrance – 3km
26. Grawin Tip Rd – 2.2km
27. Wildcat Rd – 1.8km

Grawin - Secondary Roads (yellow)

- X. Boundary Fire Trail - 2.4km
- Y. Grawin Residential Rd – 2km
- Z. Golf Course / Fire Break Rd – 1.5km
- AA. Fire Break / Hudson Pear Access – 1.1km
- BB. Boundary Fire Break
- CC. War Memorial / Hilton Back Rd – 2.2km
- DD. Grawin Res Rd – 2.5km
- EE. Grawin Res Rd – 1.3km
- FF. Fire Break – 3km
- GG. Fire Trail – 8km
- HH. Fire Trail 2 – 4km

