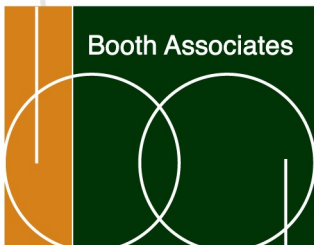


NARRANDERA SHIRE COUNCIL

PLAN OF MANAGEMENT LAKE TALBOT & ENVIRONS



Agribusiness and
Environmental Solutions

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NARRANDERA SHIRE COUNCIL

PLAN OF MANAGEMENT LAKE TALBOT & ENVIRONS

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- Annexure 4:** Issues Paper
- Annexure 5:** Cycling and Walking Trail Network Map
- Annexure 6:** Lake Talbot Water Ski Concept Plan
- Annexure 7:** Lake Talbot Mountain Bike Park Concept Plan

LIST OF ABBREVIATIONS AND ACRONYMS

AHIMS	Aboriginal Heritage Information Management System
GIS	Geographic Information System
LTEC	Lake Talbot and Environs Committee
MIA	Murrumbidgee Irrigation Area
MDBA	Murray Darling Basin Authority
PoM	Plan of Management
RRS	Responsible Resource Stewardship



1.0 EXECUTIVE SUMMARY

Lake Talbot and Environs is an adjoining cluster of Crown Lands on the edge of Narrandera for which Narrandera Shire Council is the Trustee. This Plan of Management (PoM) for Lake Talbot and Environs provides a description of the site, sets out its values, current and proposed use, strategies and action plans.

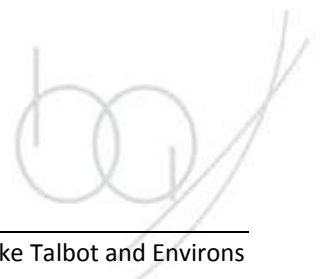
1.1 Key Issues and Values

Over the past 10 years of drought Lake Talbot demonstrated itself to be the most reliable water body for competitive water skiing in south-western New South Wales. The fact is now widely recognised and is drawing a focus on enhancing the facilities and attractiveness of the site as a long-term regional base for the water skiing sector.



Given the added attractions of bushwalking, mountain bike riding, bird watching and wider field naturalist pursuits, the Lake Talbot and Environs Reserves has the strong potential to become the focal point of growing the tourism and urban revival for Narrandera.

Accordingly, the tendered PoM and Action Plan focuses on building upon the available resource base in a structured and prudent manner.



1.2 Strategies and Action Plans

The primary strategy is to develop Lake Talbot and Environs as the foundation for arresting community and commercial decline in Narrandera and then turn this key community resource into the basis of a longer term revival for the Narrandera Community and the wider regional communities which also value the resource for a diverse range of needs.

Sound strategic planning and implementation initially requires a stabilising of the current circumstances, whilst preparing for future growth. Essentially, it is a considered and structured approach to building a business direction which is agreed by all parties and who are motivated to action a strategic plan.

Given the social, environmental, economic and ultimately significant commercial values in Lake Talbot and Environs, a stepped pathway approach to the implementation of a PoM is recommended as follows:

- Initially to operate under Action Plans to maintain and enhance the current resource base whilst developing longer term Strategic Plans; and
- To develop, fund and implement a longer term Strategic Plan which should incorporate and integrate all surrounding community assets such as the swimming complex and the Narrandera Common. The Strategic Plan should also include a substantial regional marketing plan and budget.

This PoM is specifically addressing the first step of Action Plans in accordance with the brief.

The Action Plans for all of the Lake Talbot and Environs are summarised as follows:

- To unite all lands under a common reserve description and to consider incorporating the Narrandera Common, the swimming pool complex and any other land deemed appropriate; and
- To ensure an appropriate risk management process is in place including a documented inspection and maintenance regime, a robust complaints process and be able to quantify the resources allocated to manage all Crown land for which Council is the trustee.

The Action Plans for the land based components of the Lake Talbot and Environs are summarised below:

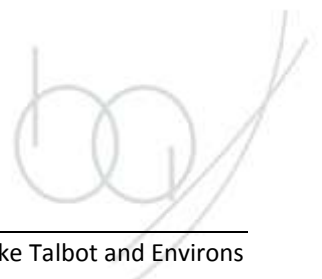
- To maintain and upgrade necessary current bushwalking trails, enhance the experience by the provision of resting areas, signage and even eco-toilets, cost \$20,000 over five years;
- To develop a mountain bike trail system with the assistance of local enthusiasts. Expected funding through grants of \$50,000 over five years;
- To investigate opportunities for a multipurpose open air education facility, expected to be funded through grants of \$50,000 over three years; and
- To exclude and/or limit access, to the subject lands, to motorbike and vehicle access.



The Action Plans for the water-based components of the Lake Talbot and Environs are summarised as:

- To de-silt and/or deepen those sections of the Lake in and around the slalom and ski-jump areas. Expected cost, subject to investigation - \$125,000;
- To reduce the bank batter to 1 in 10 around the slalom and ski-jump areas to control wave bounce-back created by the removal of willow trees. Estimated cost \$50,000 subject to integration with the de-silting of the Lake;
- To construct two boat docks for secure mooring and ingress/egress from boats. Estimated cost \$10,000 each;
- To undertake a detailed hydrological study to assess the best methods of water control to optimise water quality of the Lake. Estimated cost is \$250,000; and
- To construct an integrated eco-toilet, barbeque, shelter facility with judging tower. Estimated cost \$75,000.

The details are set out in the body of this Plan of Management.



2.0 INTRODUCTION

2.1 Background

This document is a Plan of Management (PoM) for an adjoining cluster of Crown Lands managed by the Narrandera Shire Council, used for multiple purposes centred on Lake Talbot, and natural bushlands. The lands are adjacent to the southern and south-eastern section of the township of Narrandera in the Riverina district of New South Wales. Some lots have no Trustee/s and the Council is Trustee for the remainder.

Extensive community and stakeholder consultations have been undertaken to drive the development of this PoM. The consultation and engagement process has ensured its consistency with the needs of the local community and relevant interest groups and its compliance with purposes for which the Crown Lands have been dedicated.

The PoM has been prepared in accordance with:

- Crowns Lands Act, 1989 and Statutory Principles of Crown Land Management;
- Local Government Act, 1993; and
- Relevant land management legislation and policies.

The PoM has no succinct time limit, however it should be formerly reviewed in five to seven years' time from the date of adoption or sooner if circumstances warrant.

2.2 Subject Lands

The Crown Lands incorporating Lake Talbot and Environs underwent a title conversion in late 2010. This resulted in a series of allotments under DP1159952. These lots are listed in Table 1:

Table 1: Lot Description

DP	Lot No	Comments
1159952	7310	North part of the escarpment including part of Lake Talbot. This lot is bounded to the north by the Old Wagga Road.
1159952	7311	Incorporates the western part of the escarpment and bush area bordered by Broad Street, including Rotary Lookout, the Holcim site and part of Lake Talbot.
1159952	7312	Eastern part of Lake Talbot and bush area.
1159952	7313	Eastern part of Lake Talbot and bush area bounded to the north by the Old Wagga Road.
1159952	7316	Long narrow strip running along the south border of the main canal up to the start of Lot 7313.
1159952	7318	Small lot located on the south east corner of the Narrandera Reserve.



DP	Lot No	Comments
41709	317	Bush lot located north of the Old Wagga Road.
751719	117	Former quarry surrounded by Lot 7311.

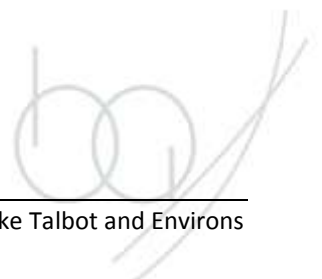
The Lake Talbot area is one of the key recreational and environmental assets for the town of Narrandera and district. The PoM will cover many different aspects of the Lake Talbot area, including its integration with adjacent Crown Lands and Reserves, and in particular the main irrigation canal servicing the Murrumbidgee Irrigation Area (MIA) and the adjacent Narrandera Reserve.

Figure 1 depicts the location of the Crown Lands comprising Lake Talbot and Environs.

Figure 1: Lake Talbot and Environs Crown Land



Lake Talbot and Environs is adjacent to the Narrandera Flora and Fauna Reserve for which a separate PoM was prepared in 2009 (<http://www.boothassociates.com.au/images/stories/pdf/plan%20of%20management%20report.pdf>). The scope for integration is assessed herein.



2.3 Review of Narrandera Reserve Plan of Management

The Narrandera Reserve and Nature Reserve are depicted in Figure 2 below. The Reserve is located south of Lake Talbot and adjoins Lots 7316 and 7318.

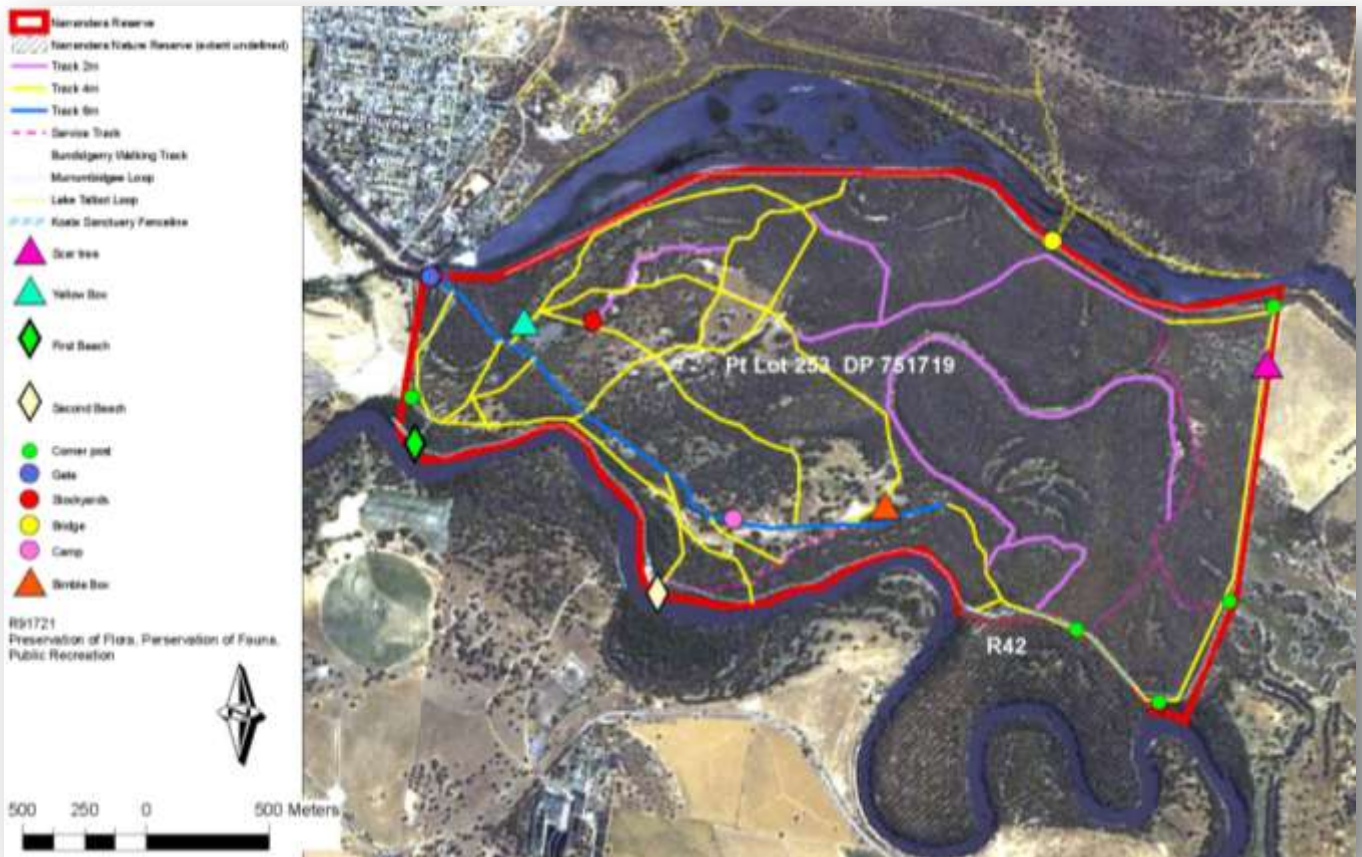
Figure 2: Narrandera Reserve and Nature Reserve



The Narrandera Reserve is in a poor to moderate ecological condition resulting from a history of anthropogenic impact, notably river regulation and grazing. Despite this, the Reserve contains significant values and attributes which should be protected and enhanced, including a viable local Koala population.

The Narrandera Reserve Plan of Management found that the Reserve offers a range of environmental, economic and social opportunities which can be promoted for the benefit of the local and wider community. These opportunities relate to the significant ecological, social, cultural, scientific and educational values of the place, its important riparian and ecological assets and attributes and its position within the landscape.

Figure 3: Existing Features of Narrandera Reserve



The Narrandera Reserve Plan of Management recommended:

- Development should only occur where it does not compromise the core values of the Reserve and its important attributes and assets; and
- Council prepare a master plan for the staged development and rehabilitation of the Reserve and manage and invest in the long term sustainability of the site for the benefit of the Narrandera community and future generations.

The following plates provide a visual appreciation of the attributes of the Narrandera Reserve.



Plate 1: Unauthorised horses on Reserve



Plate 4: Koala



Plate 2: Typical landscape



Plate 5: Picnic table



Plate 3: Typical landscape



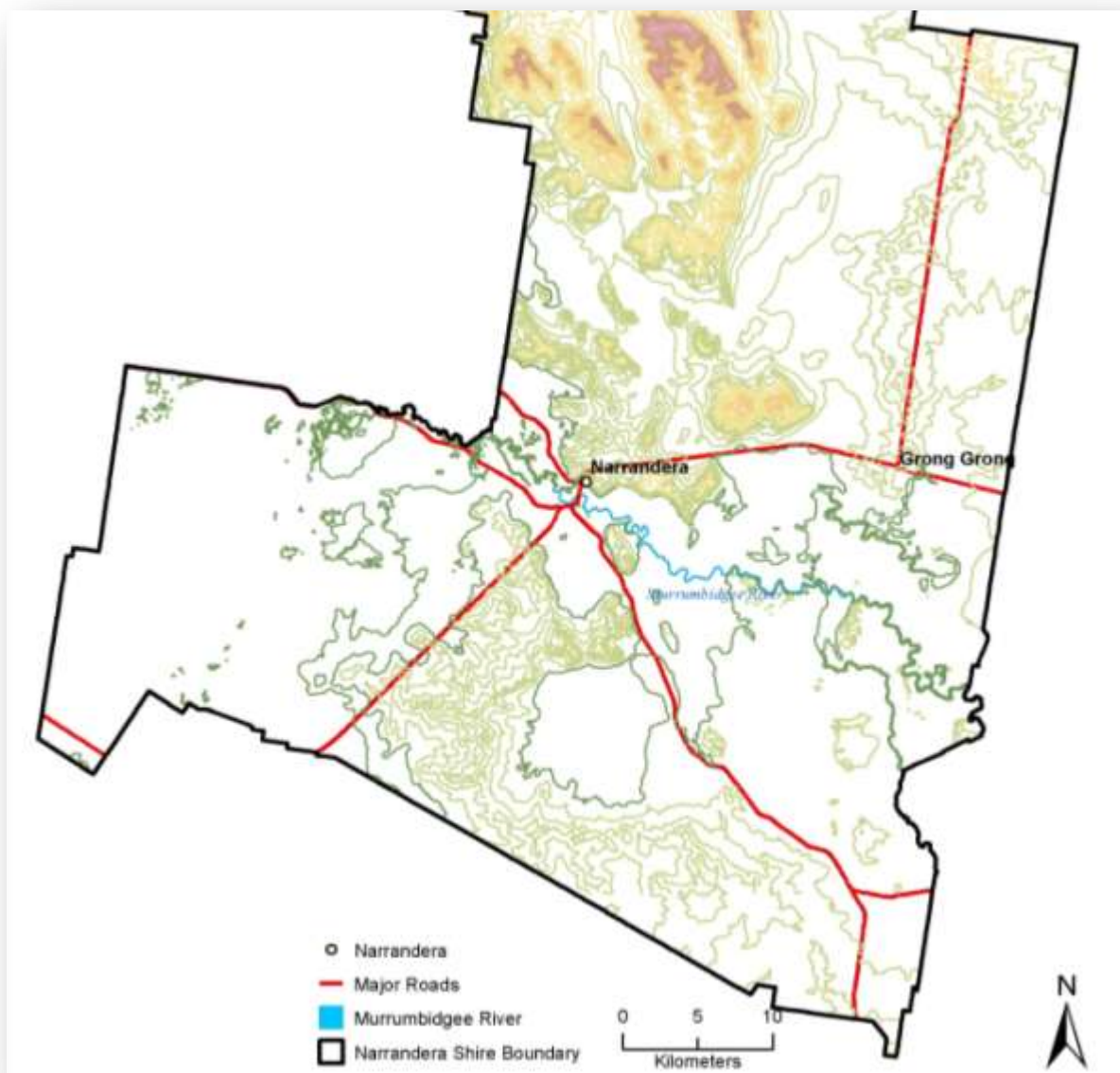
Plate 6: Likely scarred tree



2.4 Surrounding Lands

Lake Talbot and Environs sits on the south east corner of the town of Narrandera. Narrandera is located in the mid-section of the Murrumbidgee Valley with a line of hills running approximately north/south through the township. These hills form a natural “choke” in the Murrumbidgee River system, with a minor flood plain upstream and the opening of a large alluvial valley downstream. These features are depicted via the contour lines in Figure 4.

Figure 4: Murrumbidgee “Choke” at Narrandera

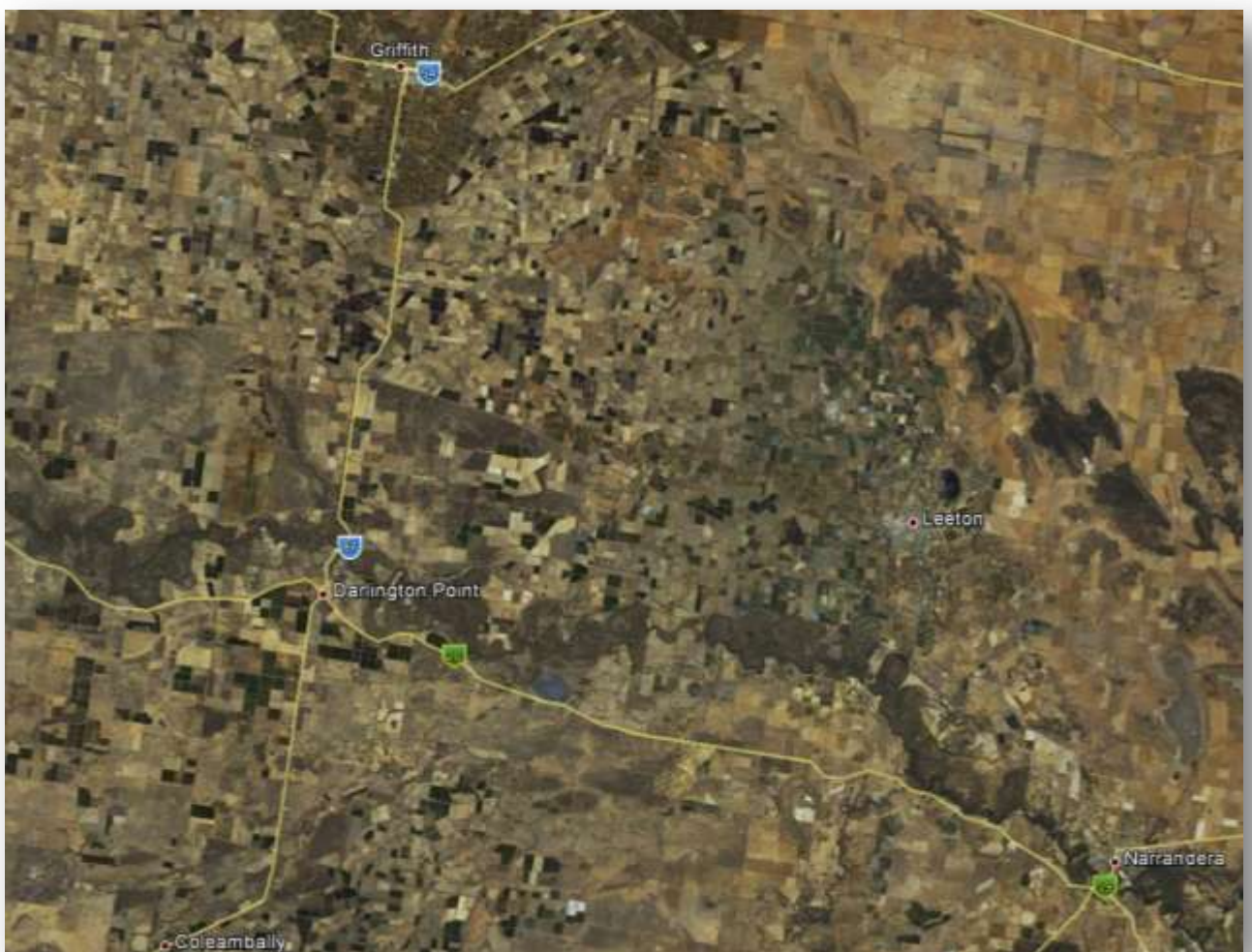




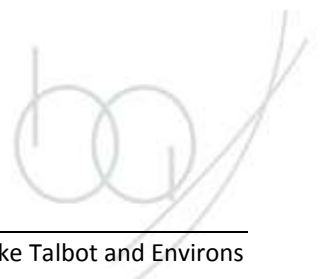
To the north-west of Narrandera is the Murrumbidgee irrigation Area (MIA) and to the south-west the Coleambally irrigation Area (CIA). Both of these irrigation areas source their water from the Murrumbidgee River.

The main water supply to the MIA is diverted into a canal upstream of Narrandera at Berembed Weir. The main canal passes alongside Lake Talbot and around the southern fringes of the town of Narrandera before heading off to the north-west into the MIA. It is this main canal that services the water supply into Lake Talbot with regulators both upstream and downstream of the Lake Talbot and Environs area.

Figure 5: Riverine Plains Downstream of Narrandera depicting the intensive irrigation development in an around the Murrumbidgee and Coleambally Irrigation Areas



Source: Google Images





The natural “choke” in the Murrumbidgee River system at Narrandera, and the upstream floodplains of the River, direct water across a large proportion of Lake Talbot and Environs Crown Land areas. These flood waters have created significant Red Gum forests which form part of the major flora systems within the Lake Talbot and Environs.

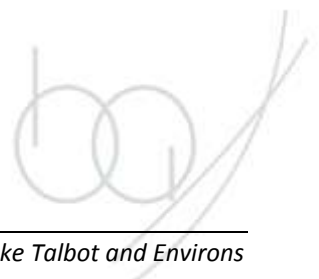


The line of hills along the northern edges of the Lake Talbot and Environs carry a range of other endangered ecosystems which when combined with the floodplain ecosystems enable visitors and naturalists to view diverse ecosystems over short distances and within the one environs area.

Lake Talbot adds further diversity with the aquatic ecosystem and also provides a water source for other recreation pursuits such as water skiing, jet skiing, swimming as well as habitat for a diverse range of native, aquatic and terrestrial flora and fauna.

2.5 Planning Context

The Lake Talbot reserve is zoned RE1 Public Recreation under the draft Narrandera Local Environmental Plan 2012 (the draft LEP). The previous zoning of the reserve was 2(v) Village under the Narrandera Local Environmental Plan 1991. The draft LEP also proposes to zone the Narrandera nature reserve to the south to RE1 Public Recreation. This is due to the fact that whilst both reserves have distinct natural habitat values, they also exhibit strong passive and potentially active recreation uses. This PoM aims to balance those attributes to ensure sustainability.





Lake Talbot itself is proposed to be zoned W2 Recreational Waterways, which recognises its primary purpose.

The planning context of the Lake Talbot reserve is one of an area of land zoned for public recreation with concurrent natural values which contribute to the amenity of the recreational area.

2.6 Historical Management

2.6.1 Lake Talbot

Lake Talbot originally formed from gaps in the Main Canal. In previous years there were a series of large gaps in the canal wall which provided much more integration of the Lake with the canal. This also meant that that the Lake level fell seasonally due to irrigation needs and during maintenance periods when the canal was mostly drained.

In more recent times Murrumbidgee Irrigation have repaired the main canal wall and created a canal opening on the upstream (eastern) end to the Lake and an outlet back to the Canal on the downstream end. The canal openings have control structures.

In 2010 a management protocol for the Lake was developed jointly between Murrumbidgee Irrigation, the Council and NSW Fisheries. The control structures remain open to promote water flow through the Lake, unless the canal water height is to be lowered, in which case the control structures are closed to preserve the Lake level. NSW Fisheries are to be contacted in certain circumstances.

The control structures are not complex but can be difficult to access and operate, particularly in the case of the upstream structure which requires two persons in a small boat to carry out the drop board procedure.

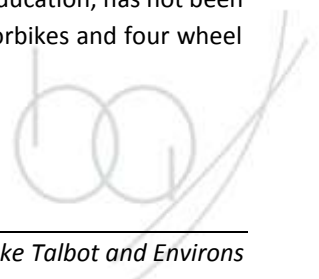
Currently the Lake is used and managed for water based recreation, including powered and unpowered boating, water skiing, swimming, canoeing and fishing

2.6.2 Lake Talbot Reserve

The Lake Talbot reserve was previously used, in part for many years as a quarry, in the area adjacent to the current Holcim batching site. The quarry was partially rehabilitated and regraded by the former Department of Land and Water Conservation. Substantial regrowth of native vegetation has occurred, however more rehabilitation work is necessary.

The majority of the reserve has remained undeveloped and managed as a natural area, apart from the creation of walking trails during the 1980's, and the recent introduction of mountain bike tracks.

Land in the eastern part of the reserve - land reserved for National Fitness and Physical Education, has not been used for that purpose for some time, but instead has had some undesirable use by motorbikes and four wheel drive vehicles, causing erosion on the steep slopes.





Generally the management of the different individual reserves and titles has been passive, in keeping with the natural values, although some rehabilitation of former walking tracks has been attempted. An increase in activity and use of the reserves will require more active involvement from the Council and stakeholders.

Section 3.7 of this PoM discusses the current formal management committees which assist the Council in management of the Reserve.

2.7 Purposes and Usages

Whilst each component of the Lake Talbot and Environs Crown Lands may have their own identifiable purpose, the overall general theme is that of a nature reserve recreational and aquatic facility immediately adjacent to the town of Narrandera. The following documented usages are listed in Table 2.

Table 2: Formal Documented Uses of the Lake Talbot and Environs Crown Lands

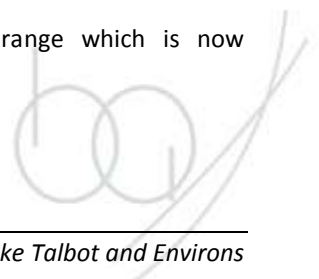
Lot	DP	Primary Use	Other Use
7312	1159952	Public recreation	Bush walking
7311	1159952	Public recreation	Bush walking, water skiing
7310	1159952	Public recreation (old rifle range)	Bush walking
317	41709	Drainage, Native flora/fauna	Not defined
7318	1159952	Not defined	Not defined
7316	1159952	Not defined	Not defined
7313	1159952	National fitness, Physical Education	Not defined

The actual usages are exemplified as:

- Lake for water skiing, general boating and jet skiing;
- Bicycle pathways;
- Walking and hiking pathways;
- Nature reserve for the preservation of native flora and fauna; and
- Camping and fishing.

Adjacent to Lake Talbot and Environs is a separate swimming pool and water theme park which is an essential part of the whole Lake Talbot and Environs experience.

Historically one section of the Lake Talbot and Environs was used as a rifle range which is now decommissioned.





2.8 Relevant Legislation

Legislation relevant to the management of the Reserves includes:

- Commonwealth Environmental and Biodiversity Conservation Act (EPBC) 1999;
- Commonwealth Native Title Act, 1993;
- NSW Crown Lands Act, 1989;
- Part 5 of the NSW Crown Lands Regulation, 2006;
- Guidance and Requirements outlined in the Department of Lands, July 2009, "Trust Handbook, A Handbook for Trusts Managing Crown Land Reserves and Commons and Trustees of Schools of Arts";
- NSW Aboriginal Land Rights Act, 1983;
- NSW Native Vegetation Act, 2003;
- NSW Local Government Act, 1993;
- NSW Environmental Planning and Assessment Act, 1979;
- NSW Heritage Act, 1997;
- NSW Protection of the Environment Operations Act, 1997;
- NSW National Parks and Wildlife Act, 1974;
- NSW Threatened Species Conservation Act (TSC Act), 1995;
- NSW Rural Management Act, 2000;
- NSW Water Act, 2000;
- NSW Rivers and Foreshores Improvement Act, 1948;
- NSW Noxious Weeds Act, 1993;
- NSW Fires Act, 1997;
- NSW Fisheries and Management Act, 1994;
- Murrumbidgee Catchment Action Plan; and
- Native Title Act, 1993.

It is not intended to go into a detailed discussion of each of the relevant legislation and policy matters.

This PoM recognises the relevant legislation and to makes recommendations under the PoM which recognises the principles of responsible resource stewardship (RRS) which in turn are sympathetic to the ongoing enhancement of the natural, native and social responsibilities required of diligent and caring trustees.

3.0 RESERVE ASSESSMENTS

3.1 Flora and Fauna

Almost all the Lake Talbot and Environs site has been identified as sensitive natural resources – biodiversity, by the Office of Environment and Heritage as depicted in Figure 6.

Figure 6: Lake Talbot and Environs Biodiversity



Given the high prevalence of sensitive biodiversity, a specific Flora and Fauna Evaluation for this POM, was undertaken by Hamilton Environmental Services (HES), and is attached as Annexure 1. The HES report divided the Lake Talbot Reserves into four contiguous blocks of land in the main section of the Reserve with a separate parcel south of the Narrandera Reserve. The Reserve forms a contiguous parcel of lands sympathetic to the Lake Talbot and Environ Reserves (see Section 2.3).

The following broad site characteristics were noted:

- The north and central block carried considerable general rubbish, rabbits and goats;
- The collection of timber for firewood was impacting on native fauna habitat;
- All the blocks of land carried varying but consistently significant populations of invasive weed species;
- Boundary fences were not always evident;
- Significant evidence of rocks being collected for (what is presumed) to be domestic landscaping purposes; and
- Substantial litter along bushwalking tracks and bicycle pathways were noted.

There are five plant communities identified in the HES survey. These communities have distinct boundaries according to their position within the general landscape and are:

- Dwyer's Red Gum and White Cyprus Pine Woodland on the high rocky outcrops;
- Grey Box and White Cyprus Pine Woodland on the flat areas at the top and bottom of the escarpment;
- A mixed woodland comprising mostly River Red Gum mixed with a range of other species including Yellow Box found as an intermediate community between the other communities;
- River Red Gum forest found on the lower parts of the Reserve and floodplain; and
- Cumbungi and Common Reed communities interspersed with aquatic herblands and open waters found on Lake Talbot.

In NSW Communities 2 and 3 above are considered endangered and Community 4, due to the presence of Yellow Box is classified as vulnerable.

In total, the field survey noted 125 indigenous plant species and 68 introduced plant species. Threatened Species Database searches indicated there had been 17 threatened flora species reported within the Reserve or within 5km around it.

In general the Reserve contained a large and abundant array of weed species which require control. Many of these weeds are considered to be beyond the point of control. The woody weed threats of blackberries, cacti, European Olive, White Cedar-Pine and the occasional planted Canary Island Date Palms could be controlled by means of a cut and paint strategy. The HES survey noted that some areas of the Reserves could be re-vegetated with native species which in time will assist in the minimisation of the spread of weeds and assist in overall fauna habitat renewal and plant community rehabilitation.

Plate 7: A cleared patch in Central Block dominated by Patersons Curse



A total 74 indigenous and five introduced fauna were observed across the Reserves. A Threatened Species Database search indicated there had been 57 species was observed within the Reserve or within 5km around the Reserve. It was noted that the koala population has been increasing within the Murrumbidgee corridor and particularly in and around the contiguous Narrandera Common.

Plate 8: An Eastern Bearded Dragon in the Central Block.



The key recommendations and conclusions arising out of the flora and fauna evaluation were the need for:

- Removal of grazing by exotic species such as goats, sheep and other domesticated animals;
- Reduction of the rabbit population, feral goats and red foxes;
- Prevention of removal of any bush rock;
- Prevention of the clearing of native vegetation and the removal of dead wood and trees for firewood or other purposes; and
- Remove rubbish and consider rationalisation of bushwalking and bicycle tracks, in particularly in the north and central blocks.

3.2 Landscape

The context of the Lake Talbot and Environs site has been more broadly covered in Sub-Section 2.4 Surrounding Lands. This section covers the specific site landscape issues. The topography of the Lake Talbot and Environs is depicted via the contour lines in Figure 7.

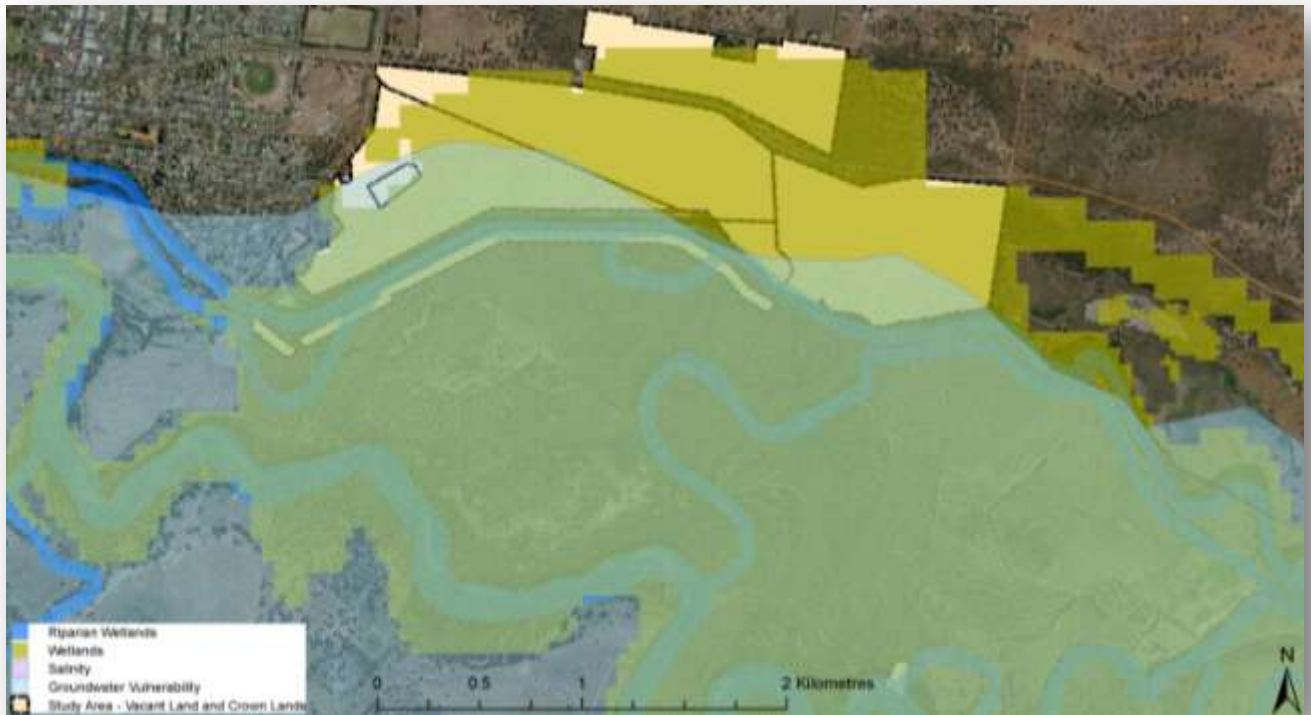
Figure 7: Lake Talbot & Environs - Local Features





The northern and western sections of Lake Talbot and Environs are characterised by a modest sized rocky hill with a relatively narrow transition zone along the southern/eastern fringes before entering into the flooded zones of the Lake and associated main floodplain of the Murrumbidgee River. There has been no observed salinity and/or significant recharge/discharge zones within this landscape. The lower sections of the area are subject to groundwater vulnerability and broadly nominated as wetlands as depicted in Figure 8.

Figure 8: Lake Talbot Sensitive Natural Resources



The hills being close to town are a useful site from which to extract rocks for landscaping within urban gardens. Rock removal is not ecologically sound and is a practice that the trustees must actively prevent.

Access is relatively easy for townspeople of Narrandera and visitors to that town. Bicycle paths and walkways are readily accessible from the town and other recreational parks within and adjacent to Lake Talbot and Environs.





3.3 Climate

The climate for Narrandera is summarised in Table 3.

Table 3: Summarised Climatic Data for nearby Narrandera Golf Club

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
Mean Max °C	32.5	32.0	28.4	23.5	18.8	15.0	14.1	15.9	19.1	23.1	27.3	30.4	23.3
Mean Min °C	17.1	17.4	14.1	10.0	6.8	4.3	3.2	4.1	6.1	9.0	12.4	15.1	10.0
Mean Rainfall (mm)	37.7	40.3	29.7	39.0	41.0	39.7	40.7	43.9	41.4	47.8	37.3	37.2	475.7
Mean rainy days	4.7	4.2	4.1	5.4	6.9	8.7	9.7	9.7	8.6	7.4	6.0	5.0	80.4
Mean cloudy days	4.9	4.4	5.0	5.8	9.6	11.7	12.3	10.5	8.3	7.7	6.7	5.7	92.6

In broad terms the climatic data of relatively dry, sunny and warm to hot days over summer, demonstrates why aquatic recreational pursuits are a favoured pastime for both the local community as well as for passing and other general traffic. In fact, the Lake itself is a destination for regional water-skiing enthusiasts who have established ski jumps and other needs for the power boat sector. The proximity to the township of Narrandera further adds to the attraction.

3.4 Heritage

Based on research undertaken by Narrandera Shire Council for the review of their LEP, there are no known sites of buildings or places of heritage significance within the Lake Talbot and Environs Crown Lands. There are identified heritage items in Narrandera, refer to Figure 9.

Figure 9: Heritage Items





3.5 Cultural

Lot 317, north of the Old Wagga Wagga Road has an Aboriginal Land Claim pending which was lodged in August 2009. A further Aboriginal Land Claim is pending of the old quarry site on Lot 117, which was lodged in November 2004. The Department of Primary Industries (Catchment and Lands) advises that these registered Aboriginal land claims will not impact on the preparation of this PoM.

Attached hereto is Annexure 2 which is an Aboriginal Heritage Information Management System (AHIMS) database search with the sites plotted on the map in Figure 10.

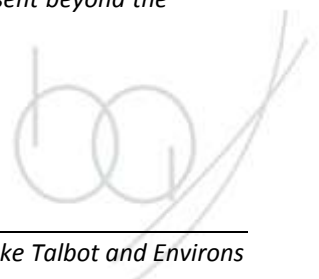
Figure 10: Aboriginal Heritage Sites – Narrandera



Only one registered site is to be found within or close to the Lake Talbot and Environs Reserves.

A specific archaeological survey is not required for this PoM. However a scoping survey for a proposed urban main drainage line across the north east section of the Reserves was undertaken by Black Mountain Projects in late 2012. A copy of the Black Mountain Projects scoping report is attached as Annexure 3. This survey concluded:

“The site visit yielded no evidence of past Aboriginal use within the development area. It is possible that some Aboriginal scarred trees or stone artefact scatters may be present beyond the boundaries of the development area”





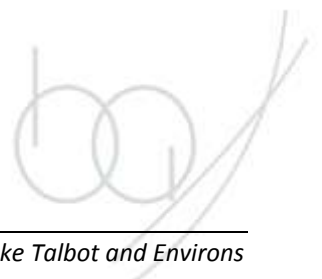
Thus it will be necessary to identify, report and protect any sites, places and artefacts of indigenous significance, if any works or other impacts are to be undertaken.

The protection of and respect for items of indigenous culture and heritage will need to extend to informing the public who use the Reserves.

Plate 9: **Likely Scarred Tree**



It was agreed that there are likely to be a number of other sites, places and areas of Aboriginal significance throughout the whole Reserve which will require a detailed investigation prior to recreation or other works being carried out. The relative proximity of high ground for camping and the lower lands plus river would be expected to have resulted in a relatively high activity level by indigenous Australians pre-European settlement.



3.6 Fire and Flood

Bushfire prone land is depicted in Figure 11

Figure 11: Lake Talbot Bushfire Prone Land



Virtually all the lands comprising the Lake Talbot and Environs are prone to bushfire. Being so close to the township itself the Lake Talbot and Environs provide a significant risk of promoting fire damage to the township and hence it would be incumbent upon the trustees to have a bushfire control and management plan.

The lower sections of Lake Talbot and Environs are subject to flooding as depicted in Figure 12.

Figure 12: Lake Talbot Flooding



Figure 12 indicates all the lower lands which comprise the Lake Talbot and Environs are prone to substantial flooding risk. It is incumbent upon the trustees to ensure that there is no works undertaken which could exacerbate the impacts of flooding events.

In the major flood event of early 2012, there were substantial movements of significant volumes of timber debris which had accumulated across floodplains upstream of Narrandera during the prior extended drought.

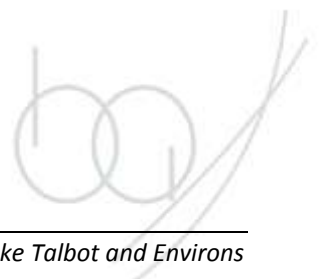
Advice by the Lake Talbot & Environs Committee is that the Lake itself is not subject to flooding. Thus flood debris will not create a hazard, for boating within the Lake itself.

3.7 Management

The Narrandera Shire Council through the Crown Reserve Trust is the formal trustee for Lots 7312, 7311, 7310 and 317. Lots 7313, 7316 and 7318 are vacant Crown Land and Narrandera Shire Council is trustee by default for those lands.

Council interacts with the community on the management of these lands via the following Section 355 Committees:

- Lake Talbot and Environs Advisory Committee;
- Narrandera Koala Regeneration Centre Committee; and
- Narrandera Wetlands Advisory Committee;





A number of community based entities take varying levels of interest in the Lake Talbot and Environs reserves and in doing so provide valuable feedback and day to day assistance to Council in managing the reserves. Examples of communities providing active support to Council include, but are not limited to:

- Lake Talbot Tournament Water Ski Club;
- Murrumbidgee Field Naturalists;
- Narrandera Anglers Club; and
- Narrandera Landcare Group.

In essence, Council manages the reserves as trustee in collaboration with the broader community and in particular those with special interest in the reserve and its environs.

3.8 Community Usages

The primary usages of the Lake Talbot and Environs reserves are for public recreation, drainage management, national fitness and physical education and for the preservation of native flora and fauna. In practice the actual usages are as follows:

- Bushwalking for recreational and fitness outcomes;
- Bicycling for fitness, recreational and sporting pursuits;
- Fishing;
- Water Skiing;
- Canoeing
- Bird Watching and Field Naturalist pursuits;
- Koala spotting;
- Camping; and
- Swimming.

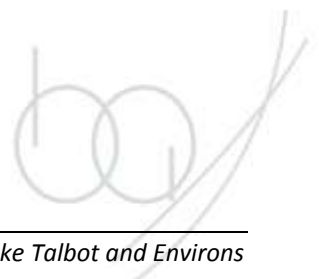


Plate 10: Bike riding



Historically Lot 7310 was used as a rifle range and various sections of the community have used the reserves as a source of rock for private garden landscaping.

Water skiing is a major pastime on Lake Talbot and the slalom and jump courses are significant training facilities for these recreational pursuits. The fact that access to the ski ramp and slalom course areas is by boat only, or on foot, is seen as beneficial by the Lake Talbot Ski Club. The main facility upgrades desired by the Ski Club are the deepening of the Lake to 1.5+ metres around the ski jump and slalom course, extending the slalom course by 100 metres, installation of docks to tie up boats, flattening of Lake batters to 1 in 10 around the slalom and jump course areas and the installation of a judging tower.

Plate 11: Water Skiing





The Lake Talbot Ski Club representatives (Mr P Carmichael, in personal communication), emphasised the importance of Lake Talbot to the skiing fraternity, by stating:

- For a number of years, during the recent 10 plus year drought, this was the only reliable ski lake open in most of south-western New South Wales; and
- The provision of enhanced facilities will cement the focus on this Lake as a key skiing destination.

Plate 12: Lake Talbot



As the caravanning industry expands there has been a trend towards free camping in and around public reserves within the immediate environs of the town of Narrandera and these include the Lake Talbot and Environs. This trend can be expected to increase. Bushwalking and bicycling riding is also expected to increase in line with the wider interest in personal health by the community. The escarpment above Lake Talbot provides broad opportunities to develop purpose built walking and mountain bike trails.

3.9 Social Issues

From the community consultation process in preparation of the PoM, the key issues of importance for the community is to have assets such as walking tracks upgraded, toilets, signage, resting places and rubbish bins within the Lake Talbot and Environs reserves enhanced. It is seen as a means of encouraging and enhancing the tourism experience and will align with the Koala Population Regeneration Project and the Lake Talbot Aquatic Centre. Where possible, disabled access should be provided to encourage wider usage at the site.

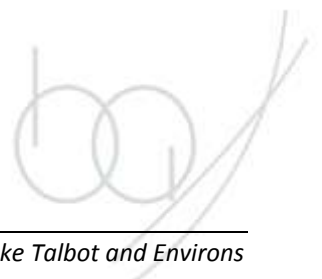
If assets such as Lake Talbot and Environs can be best and sustainably utilised, Narrandera is expected to grow as a significant tourist destination for water related activity, bushwalking and general relaxation for passing traffic. The Reserve contains boat ramps for access for to and from Lake Talbot, water ski jumps, toilets, picnic area and access to power.



Plate 13: Lake Talbot Boat Ramp with Aquatic Centre in the Background



Plate 14: Lake Talbot





3.10 Potential Conflicts

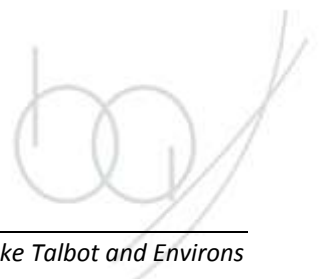
From the public consultation and issues identification process for this PoM it was determined that conflicts of significant interest relate more to misperceptions, than to underlying key problems. Some examples are as follows:

- Management of water levels and issues surrounding siltation creating additional habitat for aquatic weeds especially Cumbungi. The increased Cumbungi reportedly increases native fish habitat within Lake Talbot, whereas the siltation and suspended sediment adversely affects native fish health;
- Concerns expressed by the water skiing fraternity on the dangers associated with siltation and reduced water depth;
- Concerns by the water skiing fraternity on the problems of wave bounce-back following the clearing of willow trees which could be overcome by flattening embankment batters to 1 in 10;
- The damage to habitat for native fauna and flora by illegal rock harvesting and firewood collection;
- The use of the Reserves by domesticated animals and particular the use of goats to control weeds on what is known as Snake Island; and
- Conflict between motor craft and other users of Lake Talbot.

In general these conflicts are not considered major.

3.11 Other

The use of the Lake Talbot and Environs Reserve for the dumping of rubbish and the growth in feral animals numbers and exotic plant species, are problems that will have to be rectified under the implementation of the proposed PoM.





4.0 COMMUNITY ENGAGEMENT

Attached as Annexure 4 is a copy of the Plans of Management Issues Paper including that for Lake Talbot and Environs Reserves.

4.1 Community Interest Groups

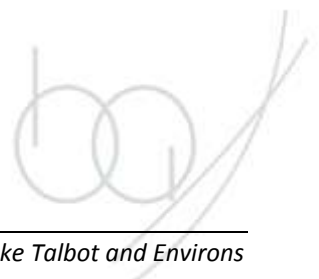
Groups with specific interests in Lake Talbot and Environs Crown Reserves are as follows:

- Lake Talbot Tournament Water Ski Club;
- Murrumbidgee Field Naturalists;
- Narrandera Shire Council and staff including representatives on their Noxious Weeds Committee;
- Parks and Recreation;
- Tourism and Technical Services;
- Lake Talbot Environs Committee;
- Narrandera Landcare Group;
- Narrandera Rotary Club;
- The Wetlands Committee for Narrandera Shire;
- Narrandera Forests Nursery;
- Narrandera Swimming Club;
- Murrumbidgee Irrigation; and
- New South Wales Fisheries.

Contact was made with representatives of each of the above listed entities and individuals.

4.2 Engagement Process

Council staff provided the initial contact list which was refined in the process of undertaking the consultation. Where possible, contact was made initially by telephone and/or email as was deemed most appropriate for the situation. The initial contact was followed up with a direct face-to-face meeting wherever possible.



4.3 Engagement Outcomes

These may be summarised as follows:

- Potential drainage dam – The aim of Council is to divert storm water currently flooding the central business area of Narrandera during larger storm events. The location, visibility and potential impact of this drainage will be across a section of the northern part of Lot 7310 and into Lot 7311. The details are still being investigated and will need to be monitored. The Narrandera Landcare Group and Lake Talbot and Environs Committee (LTEC) have expressed concerns that the potential drainage dam could adversely impact Lake Talbot and Environs in terms of erosion, increased sedimentation, water quality deterioration and the degree of engineering input required. For any such proposed progress all these potential inputs would need to be addressed;
- Access Trails – A common theme during consultation was that walking and bicycle tracks require upgrading, particularly in the steeper areas. Some degraded tracks need to be closed and remediated. A community working party has prepared a master plan for these tracks including an expansion of the marketing for increased local usage and wider tourism to use these tracks. Disabled access should be constituted to broaden the appeal of the site;
- Pests – Both terrestrial and aquatic weeds are a significant problem. Of the aquatic weeds, Cumbungi is expanding across the Lake, capturing sediment, congesting waterways and changing water flow;
- Fish – Sedimentation and weeds are a major concern and NSW Fisheries released 5,000 Murray Cod and 5,000 Golden Perch fingerlings into the Lake to assist with re-stocking;
- Lake Water Quality – Sedimentation and regulator controls are raised as a concern. However, Murrumbidgee Irrigation and Council have reached an agreed management protocol to facilitate improved water quality which is attached as Annexure 4 within the Issues Paper as Annexure 4 to this report. That protocol clearly sets out the obligations of each party. The LTEC and others see this protocol as a short term or “minor temporary fix” and have expressed strong reservations about the long term benefits of the protocol. The LTEC see a pressing need for further control structures between the Lake and the main canal to the MIA to quantify this a detailed engineering study is required;
- Lake Improvement – The Ski Clubs notes the incidence of back waves leading to bank erosion following removal of Willows from the Main Canal wall have increased. Capital works will be required to dissipate the action and to remove sedimentation building up around the ski jump practice area;
- Rocky Waterholes Area – Stakeholders desire re-engineering of the entrance road for greater stability and the banning of 4WD vehicles. They would also like to see a canoe launching area, toilet, barbeque and shelter to be constructed;
- Protocols to assess the merits of any proposed development were requested by the LTEC. These protocols could be as simple as any proposal must demonstrate it will not negatively impact on Lake Talbot and Environs current purpose and usage as described in Section 2.7 of this Plan of Management;



- Snake Island – The community claim that the island has potential as a picnic area if a boardwalk could be constructed from the boat ramp side of the Lake. However, there are some counter claims that the snake risk may be elevated, the foot bridge could be prohibitively expensive and that the constant human access could threaten the refuge values of the existing flora and fauna. Goats have been de-pastured on the site to control weed regrowth although this is not a preferred management approach by some sections of the community;
- Risk Management – Ski Club recently prepared a Risk Management Plan noting water hazards such as stumps and water vegetation. Fire risk management will need further work.
- Aboriginal Land Claims – Two land claims have been lodged over Lots 317 and 117, the outcomes of which are pending beyond the date of preparation of this PoM;
- Recreational Asset Development – A widespread desire exists to further develop mountain bicycle tracks and natural habitat which incorporates the escarpment views and which could be the basis of a sporting and leisure hub for stopover and destination travellers. Respondents requested a concept plan be developed for this leisure hub as a part of the PoM;
- Motor craft tend to dominate Lake Talbot over the summer. The option to set aside one day per month for other users of the Lake over summer, such as paddle craft, was raised. This could best be addressed by all users of the Lake, perhaps through LTEC;
- A multipurpose open air education facility could be erected to encourage student groups to access and study the site and provide information through interpretive signage and smartphone apps to visitors to the site about the site's historical, cultural and environmental values;
- Forestry Nursery – NSW Forestry has a nursery on nearby adjacent Crown Land and has indicated that the site is listed for closure. Council is desirous of considering using the nursery site as part of a wider recreation precinct around Lake Talbot;
- Holcim Batching Plant – There is a partially rehabilitated quarry on Lot 117. Quarry rehabilitation needs to be considered in the PoM. The batching plant is not on Crown Land, however the batching plant is an incompatible land use with the environmental values of Lake Talbot and Environs. Council should consider the option of purchasing this land and facilitating the relocation of the batching plant to a more appropriate area; and
- There is some community interest in firewood collection. Having regard for the strong environmental values of the site Council will need to determine if it has the legislative right to allow for the managed collection of the wood.

The issues of greatest concern to the community appear to be that of water quality, sedimentation and the spread of Cumbungi in the Lake with depth of the ski area in the Lake of particular additional concern of the Ski Club.

It has been specifically requested by the LTEC and the remainder of the community appear to be in firm agreement, that a key recommendation of this PoM should be that a hydrological study be undertaken which specifically examines options to consistently improve water quality with an emphasis on including means of enhancing water movement into, through and out of the Lake from the MIA Main Canal.

5.0 MANAGEMENT PLANS

5.1 Future Goals – Sustainability

The Lake Talbot and Environs Reserves, in conjunction with the adjacent Narrandera Fauna and Flora Reserve (also known as the Narrandera Common) are critical to the capacity of the Town of Narrandera to drive future growth and Shire sustainability.

To ensure the Shire sustainability it is critical that the Lake Talbot and Environs be likewise sustainable in an integrated environmental, social and economic context. Key to that integrated sustainability is the need to have on-going assured water quality with the core aspects of suspended solids, siltation, nutrient balances and freedom from contamination being responsibly addressed. Ongoing management by Council needs to minimise risks to the public and control pests.

Lake Talbot itself is a recognised off-river water body in the Murray Darling Basin where such water bodies are suffering environmentally, socially and economically. Hence a healthy Lake Talbot has wider implications and benefits than that of the immediate needs of Narrandera and the region.

In recognition of the need for integrated sustainability, the following core plans and actions are recommended to be addressed:

- Hydrological study – to be undertaken as soon as adequate funding support has been approved and settled. Sources of funding could include but not be limited to the Murray Darling Basin Authority (MDBA), NSW Fisheries and other agencies yet to be identified. The project specifications are to be determined by a suitably qualified and experienced hydrologist. Indicative cost is preliminarily estimated at \$250,000;
- Lakebed mapping – to be undertaken at a relatively early date to provide a guide on the level of siltation and the impediments and otherwise to water flow. This task may be undertaken using a jet ski suitably equipped with an appropriate GPS and depth sounder as has been used the map the base of large man-made irrigation water storages in northern NSW. Preliminary cost estimate \$10,000;
- Potential urban and peri-urban drainage plan – there is significant objection to this not as yet affirmed proposal, which has not yet passed an initial scoping phase to assess the benefits and the adverse implications of the concept. Given that as a town Narrandera has a reported drainage problem in sections of the urban and peri-urban lands and that the concept of “integrated and total water resource management” is a key driver of funding allocations, the concept of best managing the urban water should not be dismissed too quickly. Options to consider in planning and assessing the potential works and their future operations include but are not limited to:
 - Capturing and diverting first level run-off for alternative management;
 - Developing protocols for measuring, monitoring, assessing and managing water quality;



- Integrating the works and their management within the overall Lake Talbot and Environs PoM within sympathetic and mutually beneficial bounds;
- Estimated investigation costs \$350,000; and
- Council investigate if they have the legislative right to allow for the controlled collection of firewood. Should Council have this right a permit system providing limited and managed firewood collections could be introduced.

It is only with sound facts that the sustainability of the Lake Talbot and Environs can be effectively planned for and managed accordingly. The planning will minimise the operational risks and likewise limit future operational costs such as the need to undertake costly and environmentally damaging de-siltation works.

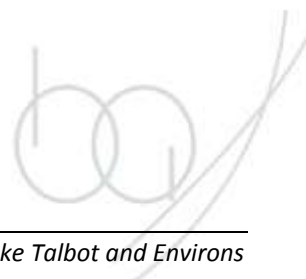
5.2 Future Goals – Concept Plans

To tap into the significant social and tourism opportunities offered at Lake Talbot and Environs by the confluence of the range of natural features, as described in Section 3.0, two concept plans were prepared. The concept plans focus on enhancement of Lake Talbot as a premier water skiing facility and the development of a mountain bike park to build upon the “Proposed Narrandera Cycling and Walking Trails Network”, as depicted in Annexure 5.

The concept plans are based on best practice sustainable development including:

- Eco friendly facilities;
- All works on and adjacent to the Lake to be approved by Department of Primary Industries (Fisheries); and
- Mountain bike trails to be built according to International Mountain Bike Association standards.

The concept plans are included as Figure 13 and Figure 14 and for more detail included as Annexure 6 and Annexure 7.



5.2.1 Lake Talbot Water Ski Park Concept Plan

The Concept Plan for the Lake Talbot Water Ski Park is included as Figure 13. Figure 13 is also provided as Annexure 6 to this report.

Figure 13: Lake Talbot Water Ski Park Concept Plan



Lake Talbot is already recognised as a premier and drought-proof water-skiing destination. The works required in the Concept Plan as presented in Figure 13 include:

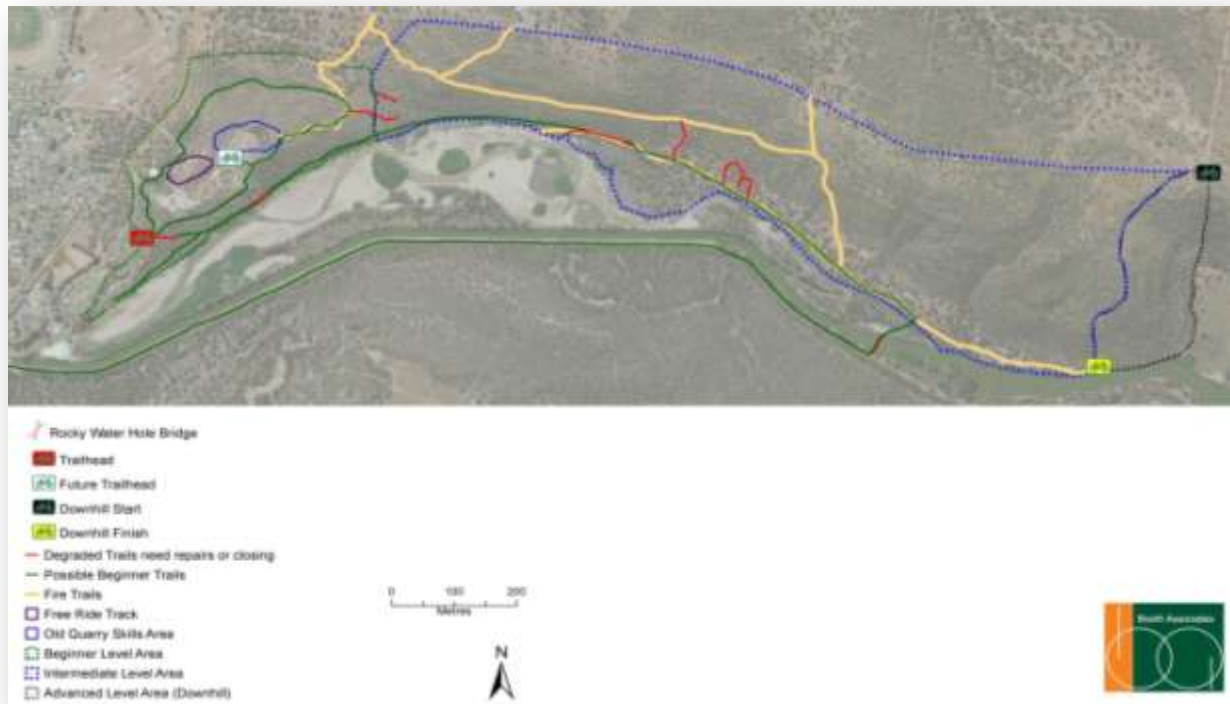
- Two floating docks accessible by boat only;
- Wave barrier and shoreline batter flattening to prevent shoreline erosion (250m);
- Dredging of the area around the ski-jump and the extensions to the slalom course (subject to approval by Fisheries);
- Judging tower; and
- Toilet, barbeque and shelter facilities.

To enhance the water quality of Lake Talbot for all users, adequate flow of water through the Lake is required. This can be achieved through the operation protocol for the Lake which is included as Annexure 4 of the Issues Paper (Annexure 4 of this PoM).

5.2.2 Lake Talbot Mountain Bike Park

The Concept Plan for the Lake Talbot Mountain Bike Park is presented as Figure 14. Figure 14 is also provided as Annexure 7 to this report.

Figure 14: Lake Talbot Mountain Bike Park Concept Plan



The natural features of the escarpment above Lake Talbot lent themselves to the creation of a Mountain Bike Park, using best practice sustainable trail designs, in accordance with International Mountain Bike Association standards.

The Concept Plan for the proposed Mountain Bike Park is included as Figure 14. Features include:

- Trail head at Rotary Lookout with the option to relocate to the old quarry site in the future;
- Free ride track area and skills area; and
- Areas zoned for beginners, intermediate and advanced levels.

The escarpment has sufficient area and varying terrain to allow for the construction of a range of cross-country circuits and downhill mountain bike.



The trails would be constructed in a manner sympathetic with the environmental values of the site and around walking trails to allow uninterrupted access for other users of the area. Motorbikes would need to be excluded from accessing the bike trails.

The mountain bike trails will link in with the soon to be installed Rocky Waterholes Bridge to allow bike users access to the Narrandera Reserve and link in with the other trails to sites through the Narrandera Cycling and Walking Trails network as depicted in Annexure 7.

The mountain bike trails would need to be constructed around the existing fire trails to ensure they do not conflict with bushfire management control. There are a number of degraded trails identified within the Concept Plan in Figure 13 which need to be remediated or closed to prevent further erosion issues.

5.3 Action Plans

5.3.1 Lake Talbot Water Skiing

The Lake Talbot Tournament Water Ski Club are proactive in the development of the water ski facilities at Lake Talbot and are preparing a grant application proposal for further upgrades to the ski area and associated facilities.

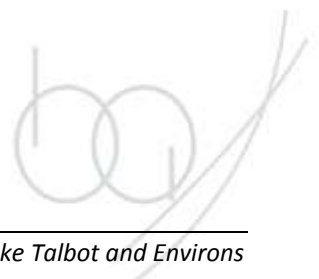
The Ski Club have made it plain that Lake Talbot was effectively the only ski-able water body in south-western New South Wales in the recent big drought and as such, is a key resource for the skiing fraternity. Council and the Narrandera community stand to substantially benefit from this resource certainty and with the expected climatic change, to see these benefits grow.

Therefore such a club should be actively supported as is most appropriate in preparing funding application/s and in the enhancement of existing facilities.

The Ski Club members appear to be a highly motivated group and it is anticipated that with the right community support, they will continue to be motivated to provide significant in-kind support.

The Action Plan for the water skiing facilities at Lake Talbot are summarised below:

- Council to continue liaising with the Ski Club representatives;
- The Ski Club to continue with preparation of the grant funding proposal in consultation with Council; and
- Council and the Ski Club to co-ordinate the works to be funded to optimise the outcomes.





5.3.2 Mountain Bike Park

The Lake Talbot Mountain Bike Park development will need to be driven by a local mountain bike group to ensure the trails best meet user's requirements. Successful examples of locally built and operated mountain bike trails include Geurie Bald Hill Reserve and The Beechworth Mountain Bike Park. Such a group in Narrandera would work in conjunction with the Lake Talbot and Environs Advisory Committee, to ensure all works do not conflict with other users of the area.

Council could support development of the Mountain Bike Park with equipment, materials and staff for trail construction. In addition, Council could assist in accessing grants to construct and operate the trails. Council also needs to address the trails that need to be remediated or closed, as identified in Figure 14, the Concept Plan.

Maintenance of the trails, if well designed and constructed, will be minimal and is generally carried out by trail users. Council could provide support periodically.

The Action Plan for the development of the Lake Talbot Mountain Bike Park is summarised below:

- Council to identify and address trails in need of remediation or closure;
- Formation of a local mountain bike group;
- Design of trails with input from Council and Lake Talbot and Environs Advisory Committee;
- Development of a staging plan for trail construction;
- Source grants to assist with trail construction; and
- Construct trails as per staging plan as funds and resources allow.

5.4 Risk Management

To manage risk associated with the civil liabilities act, Council for all Crown Land for which Council is the trustee needs to:

- Ensure all Crown Land for which Council is the trustee is identified;
- Be able to demonstrate all such Crown Land (for which council is trustee) is managed in the same way as all Council owned and operated land. This Crown Land and any rewards received for managing this land;
- Ensure a documented inspection and maintenance regime is in place for all such Crown Land to minimise risks to the public; and
- Ensure a robust complaints process is in place to capture and address any substantive community concerns in relation to such Crown Lands.

Ultimately Council need to be able to demonstrate each Crown Land parcel for which Council is the trustee is kept in a reasonable and safe condition in line with the site's land use and values.



5.4.1 Lake Talbot Water Skiing

The potential risks and mitigation measures relating to water skiing facilities and operation at Lake Talbot are summarised in Table 4.

Table 4: Risk Management – Water Skiing

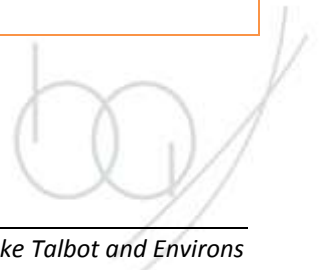
Potential Risk	Mitigation Measures
Conflict with other users	<ul style="list-style-type: none"> ▪ Maintain ongoing liaison with other park users and managers. ▪ Prioritisation of the water ski area for water skiing on skiing days and the need to access the dock areas only will assist. ▪ Consider setting aside certain days for non-motor craft.
Periodic risk assessments	<ul style="list-style-type: none"> ▪ The ski area is subject to siltation and reduced water depths; ▪ Regular sounding of key zones to the skiing area to be undertaken.
Bank erosion	<ul style="list-style-type: none"> ▪ Protocols for speed limits in areas prone to erosion; ▪ Repair eroded areas and ensure appropriate bank batters.

5.4.2 Mountain Bike Park

Potential risks and mitigants for the Lake Talbot Mountain Bike Park are outlined in Table 5.

Table 5: Risk Management - Lake Talbot Mountain Bike Park

Potential Risk	Mitigation Measures
Conflict with other users	<p>Consultation with other users during the design phase. Design of trails that are sympathetic to other users and the local topography.</p> <p>Trail users to adhere to the following conditions:</p> <ul style="list-style-type: none"> ▪ Cyclists yield to walkers and horse riders; ▪ Always wear a helmet; ▪ Ride to conditions; ▪ Ride within your capabilities; ▪ Carry sufficient water; ▪ Ensure your equipment is well maintained eg: Brakes and saddles.
Unsustainable trails that lead to erosion or damage to the environment	Design standards in accordance with International Mountain Bike Association best practice sustainable trail design.
Damage to the trails from weather	<ul style="list-style-type: none"> ▪ Design standards in accordance with International Mountain Bike Association best practice sustainable trail design; ▪ Ongoing maintenance by trail users.
Damage to the trails by motorbikes	<ul style="list-style-type: none"> ▪ Design standards that discourage motorbike use; ▪ Council controls; and ▪ Physical barriers.





5.5 Periodic Reviews

In addition to an annual performance monitoring program, a full review of this Plan of Management should be undertaken after five years and no later than seven years from the date of implementation.

5.6 Prescription for Management

The following table identifies the various issues and the recommended prescriptions for management.

For some issues, there will need to be a policy response by Council. If this PoM is adopted by Council, the policies mentioned here should be included in Council's Policy Register.

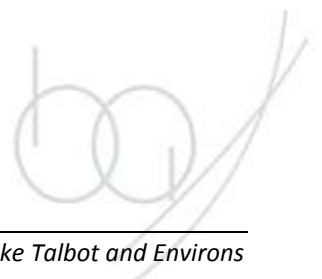


Table 6: Specific Additional Issues and Prescriptions for the Management of Lake Talbot and Surrounds

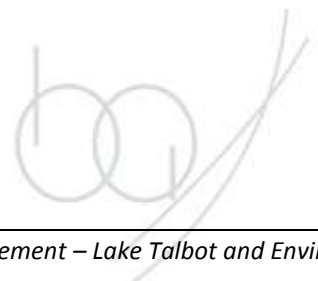
Issue	Strategy	Action	Policy
Strategic Planning	The Reserve is to be developed and managed strategically and sustainably so that the values and attributes are protected and local and visitor experiences optimised.	Trustees to prepare a master plan for the development of the site in accordance with the recommendation of this report.	Development of the Reserve is to be in accordance with the POM and master plan as adopted.
Monitoring and Management	Trustees shall ensure appropriate monitoring and management of the Reserve ensures objectives and long term sustainability are not compromised.	Council periodically review the Works Programme to ensure its continuing relevance. Council via SOE reporting identify and change to the ecological health of the Reserve and its values, attributes and assets	Trustees shall adopt adaptive management in relation to the Reserve.
Core Koala Habitat	The adjacent Narrandera Reserve is Core Koala Habitat. The future development of the Lake Talbot and Surrounds Reserve provides opportunities to augment and expand core koala habitat values and thus enhance the sustainability of the local koala population.	The Plan of Management for the Narrandera Reserve is to be endorsed by DECCW (NPWS). Council to undertake a planning review of the existing zoning of the site, the values and vision expressed in this POM with a view to recommending future environmental protection zoning of the Reserve. MCMA and NPWS provide key information for inclusion into the draft POM for the Reserve.	All Reserve site revegetation and rehabilitation programs to consider the application and recommendations of SEPP 44 in promoting a sound ratio of eucalypt koala feed trees within a biodiverse complex vegetation structure. Dogs on site shall be required to be leashed. National Koala Conservation Strategy to be considered in planning and management decisions involving the Reserve.
Bushfire management	Ensure fire management strategies take into account potential impacts on and risks to the nearby existing koala population		
Cultural Heritage	Indigenous and European cultural heritage values and assets of the Reserve be identified and conserved. The rich Indigenous cultural and European of the overall LGA be showcased and promoted at the site	Trustees to liaise with the Local Aboriginal Land Council and NPWS to facilitate a cultural heritage assessment of reserves and any significant associated sites. Trustees to engage with the community to identify and record stories that showcase how the Reserve has been used by the local and indigenous communities over the years. Trustees to erect interpretive signage at key places and sites and a cultural heritage interpretative facility at location in accord with the proposed master plan.	The level of detail to be commensurate with the needs and role of the particular reserve. Maintain and enhance the involvement of Indigenous and European representatives in identifying and maintaining sites of significance.
Tourism, Promotion and Branding	The Reserve is to be managed as a local and regional tourist asset. The Reserve shall be promoted for its unique combination of environmental, cultural and social values and attributes.	Provide facilities to primary and secondary visitor areas, commensurate with their usage as indicated in this POM (and market research of eco-tourism) Redesign and reconstruct limited designated entrances to the Reserve with appropriate signage. Trustees decide on design standards prior to the master plan being finalised and work initiated and in conjunction with the wider community, will decide on how the Reserve will be renamed, rebadged and marketed. The Council Visitor Information Centre should promote and market the Reserve as a tourist destination and to promote community awareness of its values	Council to ensure that the Lake Talbot and Surrounds is marketed as part of a package of Reserves in and around the town.

Local and Visitors Usage	The Reserve is to be managed and developed so that local and visitor use opportunities are to be enhanced and promoted.	Reserve to be promoted at the entrance gateway; Council should promote events utilising the Reserve – for example on Koala Count Day” canoe facilities may be available for hire and Kiosk facilities made available at second beach. The day could also include a triathlon event incorporating the Lake Talbot complex.	
Facilities	Primary and Secondary Visitor Areas are to be developed so that recreational and social exchange opportunities are promoted through the provision of appropriate facilities.	The Reserve Primary Visitor Area is to include at least the following facilities: Potable water supply Short term camping area BBQ facilities Composting toilet Rubbish receptacles Shelter “Jamboree” or campsite Recreational playground Emergency equipment and first aid supplies;	
Surface and Groundwater Management	Ensure land-use within the catchment is managed to protect the supply and quality of surface and groundwater resources. Wetland and riparian habitats to be rehabilitated in accordance with agreed reference conditions.	Trustees to monitor with reporting in Council’s SOE reports, the hydrological health of reserves with reference to recruitment events, rehabilitation works implemented and policies adopted and implemented. Liaise with MCMA, MI and DECCW to identify whether there is an opportunity to provide NSW Riverbank Program to important Reserve ecological communities. Undertake physical, macro-invertebrate and chemical monitoring of water quality in the lake. Investigate opportunities to implement an improved flow regime to and through Lake Talbot for enhancing Reserves riparian and floodplain environment and to improve the aquatic sporting outcomes.	Trustees to develop a surface and groundwater management policy.
Vegetation Conservation and Management	Protect, enhance and manage the ecological and environmental resources of reserves for the benefit of the existing community and future generations.	Include native flora in the proposed master plan for the staged development of the site, including priority areas for rehabilitation and revegetation works. Liaise with MCMA and other agencies and actively source funding opportunities for proposed rehabilitation works. Rehabilitate and enhance both the terrestrial and riparian environments of Lake Talbot and surrounds in accordance with the master plan and including its integration with the adjacent Narrandera Reserve.	Unique landscaping and revegetation treatments shall be provided for cycling and pedestrian trails so that each are visually distinguishable.



6.0 BIBLIOGRAPHY

Kabaila, P, Moffitt, K, 2012, *Due Diligence Heritage Assessment Proposed Channel, Lake Talbot Narrandera NSW* Black Mountain Projects Pty Ltd Aranda ACT



ANNEXURE 1.0

***Flora & Fauna Evaluation – Hamilton Environmental
Services***



Hamilton Environmental Services
ABN: 89 108 410 911



LAKE TALBOT RESERVE FLORA AND FAUNA EVALUATION



Lake Talbot Reserve Flora and Fauna Evaluation

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Version 1, 2nd November 2012

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Cover Photo: Looking north towards the Central Block of the Reserve towards the escarpment from the levee bank near the Narrandera Common.

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1. INTRODUCTION

The Narrandera Shire Council is seeking to develop a Plan of Management for the Lake Talbot Reserve, and has engaged Booth Associates to undertake the Plan development.

In September 2012, Hamilton Environmental Services (HES) was engaged by Booth Associates to undertake a basic flora and fauna inventory of the Reserve, and further to this, identify any issues pertinent to the habitat quality and conservation aspects of the Reserve, to inform the Plan of Management development.

Dr. Steve Hamilton and Chris Neilson undertook field evaluation of the Reserve on the 17th and 18th October 2012, and this report presents the findings from these investigations.

2. BACKGROUND

2.1 Reserve location

The Lake Talbot Reserve is found on the eastern edge of the town of Narrandera, bordered approximately by Broad Street to the west and the Narrandera Common to the south (Fig. 2-1). The intersection of Broad Street and the Old Wagga Road is the north-west corner of the Reserve, and the Old Wagga Road runs bisects two of the Reserve's blocks, with the road forming the northern border of the Reserve in the north east and north west sections of the Reserve.

The Reserve is approximately 3.3 km in width (east-west) at the widest point, and approximately 1.2 km in depth (north-south) at the deepest point, and has a total area of 278.5 ha.

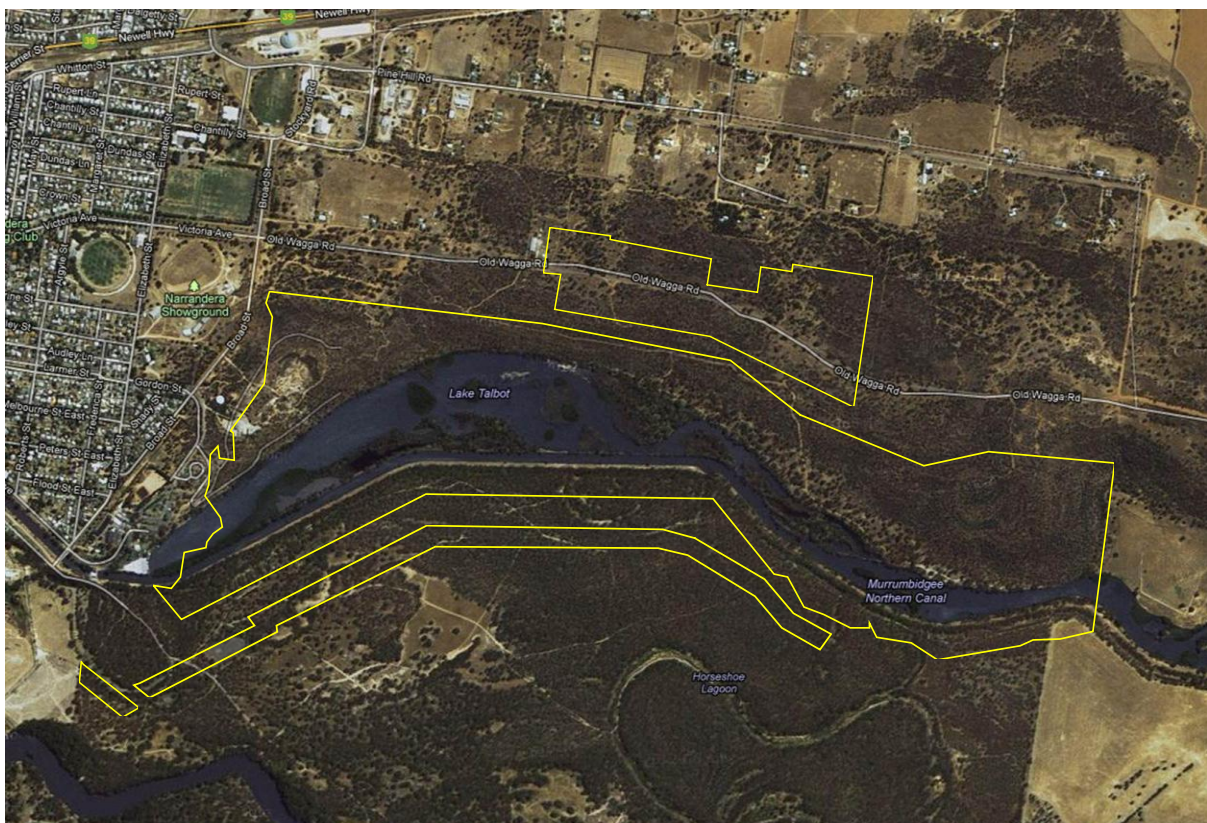


Figure 2-1 Aerial image of the Lake Talbot Reserve, outlined with solid yellow borders (Image: Google Maps).

2.2 Site characteristics and condition

The Lake Talbot Reserve comprises four contiguous blocks of land on the north side of the Murrumbidgee River, and a separate parcel south of the other blocks, Lot 7318.

The Reserve is contiguous with the Narrandera Common, to the south, and other treed native vegetation on both public and private land, to the east.

The four main blocks can be seen in Fig. 2-1.

North Block

This block is north of the Old Wagga Road, and is 43.6 ha in area. While the western, southern and northern boundaries are well defined as a result of fencing and the road, the eastern boundary does not appear to be fenced for the majority of its length, and is poorly defined.

This entire block shows clear evidence of a long-term stock grazing past, with highly compacted soils, little recent woody recruitment, and a ground layer dominated by introduced species. The Block does not retain many mature trees, with many immature and coppice growth Grey Box, Yellow Box and Dwyer's Red Gum, further evidence of stock grazing impacts.

There is little fallen timber and few standings dead trees found on this Block, presumably due to fallen timber collection.

There is considerable general rubbish, such as fencing materials etc., strewn regularly across the block, and there is a myriad of tracks throughout the block. The northern boundary of this block is adjacent to several small semi-rural lifestyle blocks, and there has been some encroachment of garden species into the block as a consequence.

Central Block

This block is south of the Old Wagga Road and is defined on its western boundary by Broad Street, and is 214.7 ha in area.

While the roadsides on the edge of the block, the turning-circle and bare areas associated with tracks in the north of the block, and the water frontage sections, do have a greater abundance of weed flora, the rest of the block, and especially on the slopes of the escarpment, has a diverse and predominantly indigenous flora of good to excellent quality. The lack of disturbance of large areas is characterised by the presence of a 'soil crust' – a surface covering of the soil and rock with non-vascular plants such as lichens, mosses and liverworts. This block does not appear to have had the impact of past stock grazing evident; however, based on the abundance of observed scats, there is a significant grazing impact from rabbits and probably feral goats, as much of the highly palatable vegetation is closely cropped. Nevertheless, there are several cohorts of recent woody recruits of Eucalypt, Wattle and White Cypress-pine (*Callitris glaucophylla*) evident.

There is considerable general rubbish, including domestic rubbish, associated with tracks and track turning circles, and there is also a myriad of tracks throughout the block, especially in the north and west of the block.

The water frontage area is a mixture of areas close to the track and well utilised, and areas where walking tracks are the only access. Generally, the areas adjacent to vehicle access are weedy, and the walking track areas retain their predominantly indigenous vegetation. The only significant stand of large old trees occurs on the floodplain area, with many mature and hollowed River Red Gums evident.

South East Block

This block is found on the southern edge of Lake Talbot, adjacent to the levee bank on the southern edge of the Lake, and contiguous with Narrandera Common to the south. This long and narrow

linear parcel is 17.0 ha in area; this block is effectively part of the Narrandera Common, is not separately fenced, and is difficult to distinguish from it.

The pathway on the top of the levee is used frequently for passive recreational activity, including the walking of domestic dogs.

Due to its linear nature, and as a consequence of the disturbance associated with the levee construction and maintenance, this block is dominated by introduced species at ground level close to the levee bank, and dominated by thick layers of leaf litter beyond the bank. There are mature River Red Gums (*Eucalyptus camaldulensis*) to be found in this narrow zone, however, there are woody weeds such as Boxthorn, European Olive and Date Palm found scattered along the levee bank, in particular.

South West Block

This small block is found on the south-western edge of Lake Talbot, adjacent to the levee bank on the southern edge of the Lake, and contiguous with Narrandera Common to the south. This short and narrow linear parcel is 1.6 ha in area; like the South East Block, this block is effectively part of the Narrandera Common, is not separately fenced, and is difficult to distinguish from it.

The pathway on the top of the levee is used frequently for passive recreational activity, including the walking of domestic dogs.

Due to its linear nature, and as a consequence of the disturbance associated with the levee construction and maintenance, this block is dominated by introduced species at ground level close to the levee bank, and dominated by thick layers of leaf litter beyond the bank. There are mature River Red Gums to be found in this narrow zone, however, there are woody weeds such as Boxthorn found scattered along the levee bank, in particular.

Lot 7318

This small block of 1.5 ha is found on the south-eastern edge of the Narrandera Common, and is contiguous with the Narrandera Common to the west, some 2 km south of the south-eastern corner of the Lake Talbot Reserve. The block is low-lying in the floodplain with some depressions, and would be flooded with above-bank events, and further to this, does retain some surface water in these depressions following these events.

The Lot is densely treed with River Red Gum, indicating regular recruitment due to the nature of flooding and surface water on the site, and the entire site is considered to be River Red Gum Forest.

2.3 Vegetation communities

Five plant communities were identified. Their distribution closely conformed to the vegetation community mapping layers provided by Booth Associates; however, boundaries were refined and informed by field evaluation across the Reserve on the 17th October 2012:

1. A Dwyer's Red Gum (*Eucalyptus dwyeri*) and White Cypress-pine (*Callitris glaucophylla*) woodland, occupying the higher, rocky outcrops and the escarpment with shallow soils (Figures 2-5 and 2-6);
2. A Grey Box (*E. microcarpa*) and White Cypress-pine woodland, found on the flatter areas at the top and bottom of the escarpment on generally deep sandy soils (Fig. 2-4);
3. A mixed woodland, comprising mostly River Red Gum (*E. camaldulensis*), and a mixture of Yellow Box (*E. melliodora*), and a mixture of Grey Box, White Cypress-pine, and/or Dwyer's Red Gum, found as an intermediate community between communities (1) and (2) (Fig. 2-8);
4. River Red Gum forest, found on the lower parts of the Reserve on the floodplain (Fig. 2.7);

5. Cumbungi (*Typha orientalis*) and Common Reed (*Phragmites australis*) macrophyte community, interspersed with aquatic herbland and open water, found on Lake Talbot.

The approximate boundaries of these vegetation communities within the Lake Talbot Reserve can be seen in Fig. 2-3.

In New South Wales, Communities 2 and 3 are considered endangered, and Community 4, due to the presence of Yellow Box, is vulnerable (Environment and Heritage 2012).



Figure 2-2 The boundaries of the Lake Talbot Reserve. The Reserve boundaries are shown with solid yellow lines.

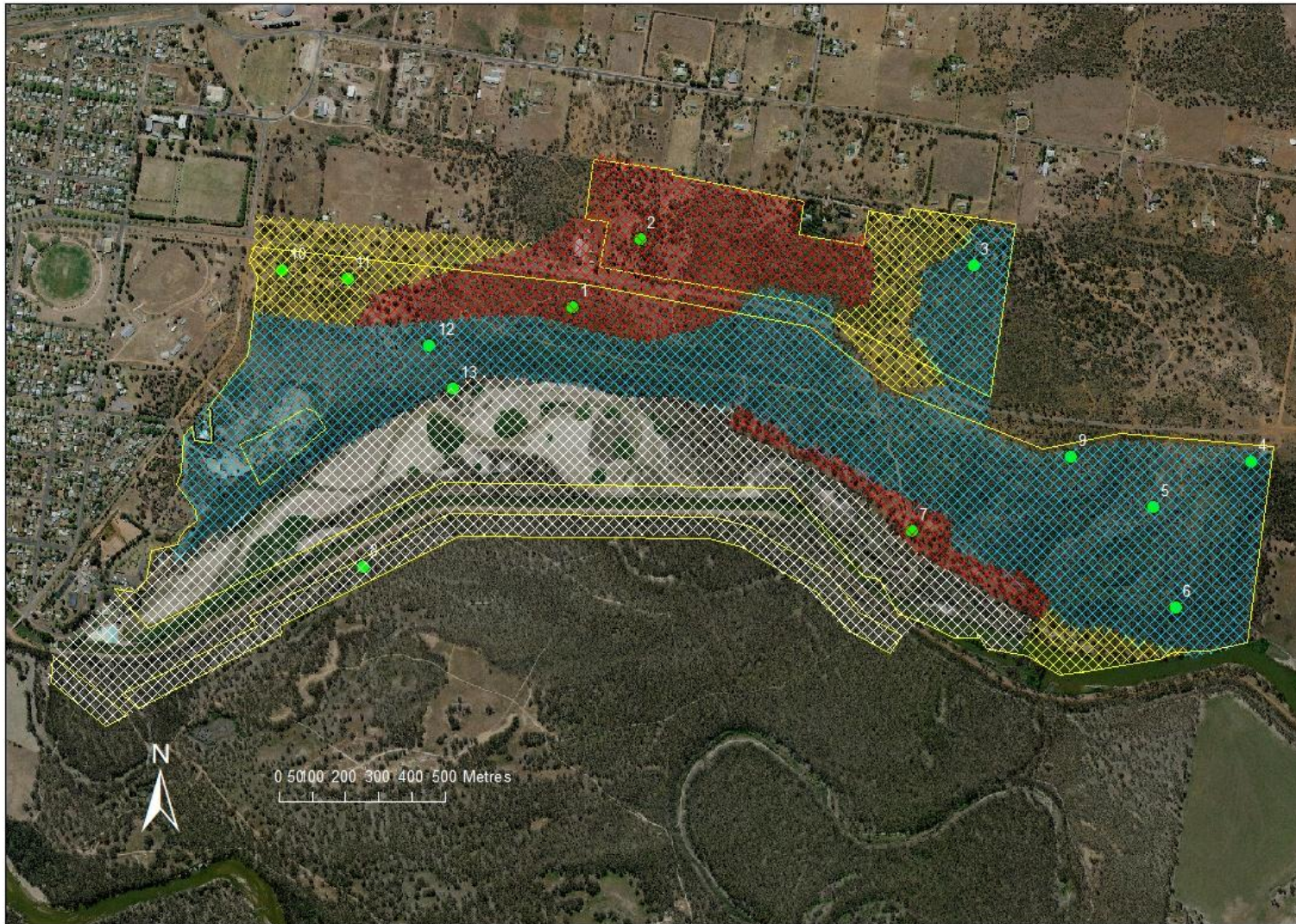


Figure 2-2 The vegetation communities of the Lake Talbot Reserve. Red shading indicates Grey Box-White Cypress-pine woodland, blue shading the Dwyer's Red Gum-White Cypress-pine woodland, yellow shading the Mixed woodland, and white shading represents the area of River Red Gum forest, open water, and the Cumbungi-Common Reed community. The Reserve boundaries are shown with solid yellow lines, and vegetation and fauna survey centroids shown with green dots; numbers represent data provided in Appendix A and B.



Figure 2-4 A typical view in the Grey Box-White Cypress-pine woodland community.



Figure 2-5 A typical view in the Dwyer's Red Gum-White Cypress-pine woodland community.



Figure 2-6 A view in the Dwyer's Red Gum-White Cypress-pine woodland community along a gully draining down the escarpment.



Figure 2-7 A view in the River Red Gum forest community on the floodplain of the Lake.



Figure 2-8 A view in the Yellow Box-Mixed Woodland community.

3. METHOD

3.1 Desktop review

The following desktop information was gathered prior to field evaluation:

- Aerial imagery of the Reserve (from Booth Associates);
- Determination of general species list within the Narrandera Local Government Area (Environment and Heritage 2012);
- Matters of National Significance reporting for the 10 km radius around the development area (Department of Sustainability, Environment, Water, Population and Communities [DSEWPC] 2012);
- Fauna and threatened species lists and information for the district were obtained from *BioNet – Website of the Atlas of NSW Wildlife* (Environment and Heritage 2012).

3.2 Vascular and non-vascular flora

The inventory of the flora of the Reserve was established by active searching (random meander technique)(Department of Environment and Conservation [DEC] 2004) across 13 selected sites representing a spread of the four terrestrial community types, and the intervening vehicle and walking tracks across the Lake Talbot Reserve, on the days of 17th and 18th October 2012 (a total of 24 hours by two personnel). At each site, between 2 and 5 ha was actively searched.

Plant presence was attributed to one of the thirteen sites (Fig. 2-3).

Vascular plants that could not be identified in the field, specimens and images were collected for identification using the *Flora of New South Wales* (Harden 1990, 1991, 1992, 1993), and PlantNet Flora On-line (Royal Botanic Gardens Sydney 2012). Non-vascular plants were identified using a combination of Filson and Rogers (1979), Catchside (1980), Eldridge and Tozer (1997), and Meagher and Fuhrer (2003).

Plant and threatened species lists and information for the district were obtained from *BioNet – Website of the Atlas of NSW Wildlife* (Environment and Heritage 2012).

3.3 Vertebrate fauna

The conditions during searching on the 17th and 18th October 2012 were mostly cloudless with no rain, with air temperatures between 8-27°C, and winds up to 40 km/h (Bureau of Meteorology 2012).

3.3.1 Taxonomy

Lists of fauna present at each of the thirteen sites indicated in Fig. 2 were compiled, with the nomenclature based variously on the compilations of Hero *et al.* (1991), Menkhorst (1995), Cogger (1996) and Simpson and Day (1998).

Fauna and threatened species lists and information for the district were obtained *BioNet – Website of the Atlas of NSW Wildlife* (Environment and Heritage 2012).

3.3.2 Mammals

Active searching for mammals (or scats, burrows, diggings and other indirect indices) was conducted was conducted across each site at the same time as active searching for vegetation (a total of 24 hours by two personnel), as well as the spotlighting search. Scats were identified according to Triggs (1996).

A nocturnal spotlight search was conducted for 1 ½ hours on the evening of 17th October 2012, between the hours of 8.30 and 10.00 pm AEDT. This search was conducted by foot by two observers, both with spotlights, across several sites throughout this time. The conditions at the time of the search was moonlit and cloudless, an air temperature of around 8-10°C, and a light wind of around 5-10 km/h (Bureau of Meteorology 2012).

Echolocation detection and trapping of microchiropteran bats was not undertaken.

3.3.3 Birds

Data on the presence of diurnal birds was collected by the gathering of visual and aural evidence of species across each site and when travelling within the Reserve at the same time as active searching for vegetation (a total of 24 hours by two personnel), as well as during the spotlighting search.

At the same time as the nocturnal spotlight search was conducted, playback of calls to elicit responses for Bush Stone-curlews (*Burhinus grallarius*), Masked Owl (*Tyto novaehollandiae*) and Barking Owl (*Ninox connivens*) were undertaken.

3.3.4 Reptiles and amphibians

Active searching of micro-habitats (logs, rocks, etc.) was conducted across the site in the course of general field work, and these micro-habitats were examined for sheltering or cryptic species (over 20 logs/rocks/surface debris rolled and evaluated)(after DEC 2004).

Frog calls were noted during the nocturnal spotlight search.

3.4 Survey limitations

The principal limitation of the assessment conducted for this reporting is that a high proportion of the plant biodiversity of such communities are likely to be annual plants, and as the landscape had started to dry at the time of this survey, a full complement of such species, especially orchids and lilies, was not observed. A survey in late Winter/early Spring is therefore likely to result in new species observations.

In regards to fauna, more survey time was required for active searching, call playback and nocturnal spotlighting (according to DEC 2004). A trapping program for small mammals (and reptiles and amphibians) should also be conducted on the Reserve, as it is likely to diverse, especially in regards to reptiles given the rocky surface in many locations. It would be expected that more time spent with these activities would reveal a far more extensive fauna inventory.

4. RESULTS AND DISCUSSION

4.1 Vegetation

The inventory of species noted across the area of evaluation, by Block, is recorded in Appendix A.

A total of 109 indigenous and 68 introduced vascular plant species were observed across the Reserve, and a further 16 indigenous non-vascular species identified (Table 4-1; Appendix A).

Threatened species searches indicated that there had been 17 threatened flora species observed within the Reserve or in 5 km radius around it (Environment and Heritage 2012), including three orchid species, Small Scurf-pea, Slender Darling Pea, Lanky Buttons and Chariot Wheels, however, no threatened flora species were observed within the Reserve (Appendix A). We strongly suspect that the orchid species would have been observed had we undertaken the assessments in late Winter/early September.

The Dwyer's Red Gum-White Cypress-pine Woodland community across the Reserve is typically characterised by stunted Dwyer's Red Gum mixed with mixed age White Cypress-pine as the tallest strata. Underneath this sparse canopy is an often dense shrub layer of Western Silver Wattle, Currawang, Gorse Bitter-pea and Deane's Wattle, with a diverse herb and forb layer found on the soil surface and in rock crevices, including Tall Raspwort, Common, Clustered and Sticky Everlasting, Bristly Wallaby-grass, Rough Spear-grass, Foxtail Spear-grass, Rock Fern and Poison Rock-fern, Climbing Saltbush, Serrated Goodenia, Scaly Buttons, Small White Sunray, Purple Burr-daisy, Corrugated Sida, Chocolate Lily, and Woolly New Holland Daisy (Appendix A). There is often significant surface rock in areas of this community, and a diverse non-vascular flora can be found on the surface of this rock or on adjacent soil crusts.

The Grey Box-White Cypress-pine is generally characterised by a canopy dominated by mixed age Grey Box individuals, intermingled with patches of White Cypress-pine, often in dense clumps of immature recruits. The overstorey composition of the Mixed woodland community depends on the location of the community across the Reserve, with River Red Gum, White Cypress-pine or Yellow Gum being the dominant in different situations, with the other species as minor components, along potentially with Grey Box, White Box, or Dwyer's Red Gum. Both of these woodland communities appeared to have a strong similarity in their typical understorey composition and abundance. In both cases, these communities will exhibit a sparse shrub layer of Deane's Wattle and Currawang underneath this tree layer, with a moderate cover of indigenous herbs and forbs, such as Bristly Wallaby-grass, Rough Spear-grass, Foxtail Spear-grass, Climbing Saltbush, Serrated Goodenia, Scaly Buttons, Small White Sunray, Purple Burr-daisy, Corrugated Sida and Woolly New Holland Daisy

(Appendix A). Significant areas of soil crusts dominated by a diverse array of non-vascular plants were observed in many less disturbed patches (Fig. 4-1).



Figure 4-1 A patch of soil crust, dominated by the lichen *Cladia corallaizon*.

The River Red Gum Forest community found on the floodplain is dominated exclusively by a sparse cover of mixed age River Red Gum. At ground level, this community is dominated by dense stands of graminoids, such as Pale Rush and Tall and Knob Sedge, and Warrego Summer Grass, with often dense leaf litter between tussocks. This community is directly contiguous with most Dwyer's Red Gum-White Cypress-pine woodland as soon as there is an increase in elevation above the floodplain, and there is usually a sharp ecotone in species composition evident. Nevertheless, there will often be some typical species from that drier community type found along the boundary between the two communities.

There is a significant diversity of introduced species found in all of these communities, with a typical mix of species found including *Bromus* spp., Paterson's Curse, Cat's Ear and Smooth Cat's Ear, Capeweed, *Trifolium* spp., Wild Oat, Wimmera and Perennial Ryegrass, African Boxthorn, *Medicago* spp. and Barley Grass (Appendix A).

In general, the Reserve lacks a large and abundant array of weed species requiring control; many of the pasture and opportunistic weeds found are abundant (Appendix A), and beyond the point of control. However, there are some significant invasive weeds found across the Reserve, including Tree of Heaven, Bridal Creeper (a Weed of National Significance), Blackberry, Sweet Briar, Flax-leaf Fleabane, Horehound, Paterson's Curse, Saffron, Spear, Slender and Winger Slender Thistles, African Lovegrass, African Boxthorn, Spiny Emex, Wild Sage and Twiggy Mullein (Appendix A). All of these species have the potential to become dominant across parts of the Reserve if not managed; however, most of these are found in quite low abundance. There are two exceptions to this: Paterson's Curse and African Boxthorn are widespread

Boxthorn is found across all areas in often low density; however, it could be almost eradicated by direct 'cut-and-paint' with a significant effort from a work team that systematically traversed across the Reserve area. The other woody threats, such a Blackberry, which is confined to the water's edge in the Central and Southern blocks, Cacti, European Olive, White Cedar and Slash Pine, are found

only in small numbers, and could be controlled at the same time as a Boxthorn program. In addition to these invasive species, several planted Canary Island Date Palms are found at the base of the gully on the foreshore of Lake Talbot, and one near the northern boundary of the North Block, and these should be removed.

Cleared areas in the north of the Central Block and across the North block are dominated by introduced species such as Silvery Hairgrass, Wild Oat, Capeweed, Great Brome, Paterson's Curse, Cat's Ear, Ryegrass, African Boxthorn, Wild Sage and Strawberry Clover (Appendix A). These areas should be revegetated with the canopy and major shrub species to provide competition with the abundant weed flora in these patches to reduce their abundance by shading. This shading would not eliminate the weed ground layer, but would considerably reduce the dominance of species such as Wild Oat and Paterson's Curse. In particular, while Paterson's Curse is found throughout the Reserve, it is most abundant in large patches in the cleared areas along the northern boundary of the Central block (Fig. 4-2), and in areas in the North Block. Revegetation of canopy species to eliminate these cleared patches would additionally provide an effective continuous tree canopy across the Reserve, which would aid faunal movement.

Horehound is found in the locale of Sites 2 and 3 (Fig. 2-3). There are only small patches of this weed currently, and it could be easily eradicated with an annual program over 2-3 years. In addition, Bridal Creeper is found in two localities (Sites 3 and 11; Fig. 2-3), and as a *Weed of National Significance*, should be eradicated.



Figure 4-2 A cleared patch in the Central Block dominated by Paterson's Curse.

4.2 Fauna

A total of 74 indigenous and 5 introduced fauna were observed across the Reserve during the assessment periods (Appendix B).

Across the Reserve, species were noted according to habitat and community type, level of disturbance, and proximity to Reserve 'edges'. Species generally adhered to three broad assemblages:

- species typical of paddock and disturbed bushland environments found in areas adjacent to the road and in cleared patches in the North and Central Blocks, such as the indigenous Australian

Magpie, Australian Raven, Galah, Sulphur-crested Cockatoo, Magpie-lark and Willie Wagtail, and the introduced Red Fox, Feral Goat, and European Rabbit;

- woodland species across all blocks where there was good vegetation structure, such as Brown and Buff-rumped Thornbills, Eastern Spinebill, Eastern Rosella, Grey Fantail, Grey Shrike-thrush, Laughing Kookaburra, Rufous Whistler, Silvereye, Striated Pardalote, Yellow Rosella, White-winged Chough, White-plumed Honeyeater and Short-beaked Echidna;
- water birds, such as the Australian Pelican, Australian Wood Duck, Black-faced Cormorant, Purple Swamphen and Dusky Moorhen, observed on the floodplain and near Lake Talbot in the Southern Blocks.

It is likely that further survey effort, at times more favourable for observation, such as dawn, dusk, and nocturnal surveys, would develop a significantly greater list.

Threatened species searches indicated that there have been 57 threatened fauna species observed within the Reserve or in 5 km radius around it (Environment and Heritage 2012), including the Southern Bell Frog, Sloane's Froglet, Pink-tailed Legless Lizard, Swift Parrot, Squirrel Glider, Koala, Superb Parrot, Barking Owl, Turquoise Parrot, Flame Robin, Scarlet Robin, Black-chinned Honeyeater, Speckled Warbler, Diamond Firetail, and Brown Treecreeper (eastern species).

There were 7 threatened species of fauna observed across the Reserve (Appendix B), including Sloane's Froglet, Striped Legless Lizard, Brown Treecreeper (eastern species), Flame Robin, Speckled Warbler, Swift Parrot and White-bellied Sea-eagle. The approximate locations where these observations were made can be made with reference to Appendix B and Fig. 2-3. It is also entirely possible that a significant of the other fifty five species could be observed across all zones given the vegetation connectivity to the Narrandera Common and the Murrumbidgee River corridor. However, it is more likely that threatened species would be observed in the better areas of habitat, particularly the Central Block, and the areas adjacent to Lake Talbot in regards to aquatic species.

Koalas have been noted on Lot 7318 (Environment and Heritage 2012), given that the Lot is contiguous with the Murrumbidgee River corridor and the Narrandera Common; it is also expected that other species of threatened fauna found in the Lake Talbot Reserve would equally utilise this parcel.

The observation of the Striped Legless Lizard was brief and highly opportunistic, as the individual was found when lifting a piece of corrugated iron rubbish in the North block. The fact that this species is present despite there being no effective indigenous ground layer or woody debris is indicative of the amount of surface rubbish in this block. This species needs to be assisted in its occupation of the site, with a strategy to increase the amount of woody debris on ground, a reduction in weed cover, and an increase in the indigenous ground layer. The on-going removal of grazing, the reduction of rabbit populations, the revegetation of cleared patches, and strategies to prevent the removal of timber should facilitate its survival. It would be recommended that the surface rubbish not be removed until these actions have been taken, as this material is currently providing appropriate habitat.



Figure 4-3 An Eastern Bearded Dragon in the Central Block.

The Grey Box-White Cypress-pine Woodland, Yellow Box Mixed Woodland and River Red Gum Forest communities are threatened in NSW (Environment and Heritage 2012). This effectively covers the majority of Reserve, and for the sake of uniformity, it would be prudent to treat the entire Reserve as threatened. This implies that the following defined and pertinent threatening processes should be avoided across the Reserve (from Environment and Heritage 2012):

- Alteration to the natural flow regimes of the streams and floodplains;
- Prevention of the removal of any 'bush rock';
- Prevention of the clearing of any native vegetation, and especially the loss of any hollow-bearing trees;
- Reduction of competition and grazing by Rabbits;
- Reduction of competition and habitat degradation by Feral Goats;
- Reduction of the predation by the Red Fox;
- Avoidance of a fire regime that is based on high frequency fire (i.e. fuel reduction) which will result in the disruption of life cycle processes in plants and animals;
- Prevention of the removal of dead wood and dead trees.



Figure 4-4 A view in the Mixed woodland community in the Central Block at a site some distance from a track, showing the rocky surface, significant fallen timber and standing dead trees.

Arboreal fauna are reliant on tree hollows for residence and protection. While there are scattered mature trees across the Reserve, the only significant large stands of mature and hollowed trees are the River Red Gums on the floodplain of the Central and Southern Blocks. Much of the rest of the Reserve is covered with small and immature trees. The distribution and presence of arboreal fauna will be associated with the density of hollow-bearing trees.

Additionally, many fauna, especially reptiles and ground-dwelling mammals, are reliant upon the presence of fallen timber as habitat, and their presence and distribution will be dependent upon its presence at a suitable load and diameter distribution. In general, there is very little fallen timber evident across most areas of the Reserve given the proliferation of access points, and it is only in the more remote locations of the Reserve (i.e. the areas furthest away from a track; Fig. 4-4) where there is any appreciable fallen timber on the ground.

5. RECOMMENDATIONS

- All Blocks - continued exclusion of stock grazing;
- Track rationalisation in the North and Central blocks, especially tracks to the Lake directly down the escarpment in the east of Central block. These tracks down the escarpment are badly eroding, and constitute an on-going erosion hazard, and will be almost impossible to maintain in any appropriate condition. This rationalisation should result in the reduction of vehicle access to the Lake from the Old Wagga Road to the one well defined track, with the closure of all other vehicle access points from this Block. The network of tracks at the top of the escarpment in the Central block should be reduced to one track only;
- All Blocks – Boxthorn and other woody weed eradication;
- All Blocks – annual rabbit and fox control programs;

- North and Central Blocks – removal of Date Palms (Site 13 and on the northern boundary of the North Block; Fig. 4-5);
- North Block – establishment of an eastern fence, and continued exclusion of grazing;
- North Block – clean up rubbish generally across the block only once actions have been taken to improve the habitat of the Striped Legless Lizard (see Sec. 4.2);
- North Block - clean up rubbish at the Tip site (near Site 2; Fig. 2-3 and Fig. 4-6);
- North Block – control of annual and perennial weeds around Tip site (near Site 2; Fig. 4-6), and control of garden escapes on the northern boundary;
- Central Block – removal of rubbish along tracks in the northern part of the Block in particular;
- Southern Blocks – regular programs to control woody and invasive weeds along these narrow strips. These Blocks are contiguous with the Narrandera Common, and are a point source of weed invasion into the Common;
- Revegetation of bare patches in Central and North blocks using plants in accordance with vegetation community descriptions, simultaneously with a control program for Paterson’s Curse in these areas;
- Develop strategies to improve the amount of timber on ground (and to reduce the amount of harvesting), and to prevent standing dead tree removal needs to be enacted.
- Develop strategies to reduce the incidence of the removal of rock across the Reserve. Both surface rock and dead timber provide significant faunal habitat for a variety of indigenous fauna.



Figure 4-5 **The planted Date Palm in the northern boundary area of the North Block.**



Figure 4-6 A view of the 'Tip' site in the North Block.

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**APPENDIX A FLORA INVENTORY OF THE LAKE
TALBOT RESERVE**

Vascular and non-vascular flora have been recorded for presence on the basis of designated assessment zones and specific sites (see Fig. 2-3) using a cover-abundance scale that is shown in the Table immediately below.

An asterisk denotes an introduced species.

Visual assessment of cover/abundance	
Symbol	Description
0	rare, cover < 5%
1	Uncommon, cover < 5 %
2	Very common, cover < 5 % or cover 5-25 % with any number of individuals
3	Cover 25-50 % with any number of individuals
4	Cover 50-75 % with any number of individuals
5	Cover 75-100 % with any number of individuals

Common name	Scientific name	Site 1	2 & 3	4	5	6	8	7	9	10	11	12 & 13
Vascular Plants												
Deane's Wattle	<i>Acacia deanei ssp. deanei</i>	0	0				1			2	2	1
Western Silver Wattle	<i>Acacia decora</i>			3	2	2	1		2			2
Currawang	<i>Acacia doratoxylon</i>	2		1		0	1	1	0	1	2	2
Hakea Wattle	<i>Acacia hakeoides</i>					0	0	0	0		1	
Yarran	<i>Acacia homalophylla</i>	0	1				0		0			
River Cooba	<i>Acacia stenophylla</i>						1					
Tree of Heaven	<i>Ailanthus altissima*</i>							0				0
Silvery Hairgrass	<i>Aira cupaniana*</i>		0	1	1	1	1	1		1	1	1
Buloke	<i>Allocasuarina luehmannii</i>			0								
Drooping She-oak	<i>Allocasuarina verticillata</i>							0				
Hairy Joyweed	<i>Alternanthera nana</i>											0
Box Mistletoe	<i>Amyema miquelii</i>			0	0		1	0			0	0

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Site 1	2 & 3	4	5	6	8	7	9	10	11	12 & 13
Scarlet Pimpernel	<i>Anagallis arvensis*</i>							0				1
Capeweed	<i>Arctotheca calendula*</i>	0	2							1	2	1
Brush Wiregrass	<i>Aristida behriana</i>	1	1							1	1	
No. 9 Wiregrass	<i>Aristida jerichoensis var. subspinulifera</i>									1	1	
Pale Vanilla Lily	<i>Arthropodium milleflorum</i>								0			
Bridal Creeper	<i>Asparagus asparagoides*</i>		0								0	
Creeping Saltbush	<i>Atriplex semibaccata</i>									0		
White-top	<i>Austrodanthonia caespitosa</i>	0		0			1	1				
Bristly Wallaby-grass	<i>Austrodanthonia eriantha</i>	2	0	2	2		1	1	1	1	2	2
Small-flowered Wallaby-grass	<i>Austrodanthonia setacea</i>	1		1		1		2	1		1	0
Foxtail Spear-grass	<i>Austrostipa densiflora</i>			2	2	2	0		1	0	1	1
Rough Spear-grass	<i>Austrostipa scabra ssp. scabra</i>	3	3	3	3	2	0	2	2	3	3	2
Tucker's Spear-grass	<i>Austrostipa tuckeri</i>			1	1	1		1	1	0	1	0
Wild Oat	<i>Avena fatua*</i>	2	2	2			2	1	2	2	2	2
Pacific Azolla	<i>Azolla filiculoides</i>								0			
Kurrajong	<i>Brachychiton populneus ssp. populneus</i>								0	0	1	
Prairie Grass	<i>Bromus catharticus*</i>								1			
Great Brome	<i>Bromus diandrus*</i>									1	1	2
Red Brome	<i>Bromus rubens*</i>									1		0
Leek Lily	<i>Bulbinopsis bulbosa</i>											1
Sweet Bursaria	<i>Bursaria spinosa</i>			1								0
Fringed Spider Orchid	<i>Caladenia tentaculata</i>		0						0			
White Cypress-pine	<i>Callitris glaucophylla</i>	3	3	2	3	3	1		3	3	3	3
Garland Lily	<i>Calostemma purpurea</i>											1
Purple Burr-daisy	<i>Calotis cunefolia</i>	2	2	2	1			2	2	2	2	1
Bogan Flea	<i>Calotis hispidula</i>								1			
Shepherd's Purse	<i>Capsella bursa-pastoris*</i>								1			

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Common name	Scientific name	Site 1	2 & 3	4	5	6	8	7	9	10	11	12 & 13
Slender Thistle	<i>Carduus pycnocephalus*</i>						0	0			0	1
Winged Slender Thistle	<i>Carduus tenuiflorus*</i>											0
Knob Sedge	<i>Carex inversa</i>						3					
Tall Sedge	<i>Carex appressa</i>		0				3	0				0
Saffron Thistle	<i>Carthamnus lanatus*</i>	1					0					
Punty Bush	<i>Cassia eremophila</i> var. <i>eremophila</i>	1		1	0	2						
Rock Fern	<i>Cheilanthes austrotenuifolia</i>	1	1	1	1		1				0	1
Poison Rock Fern	<i>Cheilanthes sieberi</i>	2	1	2	1	1	1				1	1
Tree Lucerne	<i>Chamaecytisus palmensis*</i>		0									
Mallee Goosefoot	<i>Chenopodium desertorum</i>	2	2				1			1	1	1
Black Crumbweed	<i>Chenopodium melanocarpum</i>	0					0					
Windmill Grass	<i>Chloris truncata</i>		1						1			
Common Everlasting	<i>Chrysocephalum apiculatum</i>											1
Clustered Everlasting	<i>Chrysocephalum semipapposum</i>											1
Spear Thistle	<i>Cirsium vulgare*</i>		0				0		2			
Camel Melon	<i>Citrullus lanatus*</i>		2									
Pink Bindweed	<i>Convolvulus erubescens</i>	1	0				0				0	
Flaxleaf Fleabane	<i>Conyza bonariensis*</i>						1			0		0
Tall Fleabane	<i>Conyza sumatrensis*</i>		0					0				
Common Cotula	<i>Cotula australis</i>		0									
Dense Stonecrop	<i>Crassula colorata</i>						0					1
Australian Stonecrop	<i>Crassula sieberiana</i>						1					
Spiny Cryptandra	<i>Cryptandra spinescens</i>			0								
Couch	<i>Cynodon dactylon</i>	0					1	0	2		1	
Leafy Flat Sedge	<i>Cyperus lucidus</i>		0				2					0
Nutgrass	<i>Cyperus rotundus*</i>		0									
Gorse Bitter-pea	<i>Daviesia ulicifolia</i>											1

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Site 1	2 & 3	4	5	6	8	7	9	10	11	12 & 13
Blue Flax-lily	<i>Dianella revoluta</i> var. <i>revoluta</i>											1
Kidney Weed	<i>Dichondra repens</i>						1					
Chocolate Lily	<i>Dichopogon strictus</i>										2	0
Umbrella Grass	<i>Digitaria divaricatissima</i>								0			
Fern-leaf Hop-bush	<i>Dodonaea boroniifolia</i>							0				
Wedge-leaf Hop-bush	<i>Dodonaea viscosa</i> ssp. <i>cuneata</i>			0			1					
Paterson's Curse	<i>Echium plantagineum</i> *	1	2				1	1	2	2	2	2
Annual Veldtgrass	<i>Ehrharta longiflora</i> *	0	0					1	2			
Climbing Saltbush	<i>Einadia nutans</i>	1	2						2	1	2	1
Crowsfoot Grass	<i>Eleusine indica</i> *		0									
Spiny Emex	<i>Emex australis</i> *	0										
Ruby Saltbush	<i>Enchylaena tomentosa</i>		0						1		0	
Curly Windmill-grass	<i>Enteropogon acicularis</i>								0			
African Lovegrass	<i>Eragrostis curvula</i> *									1	1	0
River Red Gum	<i>Eucalyptus camaldulensis</i>						3	3		3		1
Dwyer's Red Gum	<i>Eucalyptus dwyeri</i>			3	2	2			3		1	3
Yellow Box	<i>Eucalyptus melliodora</i>						1			1	1	
Grey Box	<i>Eucalyptus microcarpa</i>	3	2				2		1	1	2	
Mallee Bush-pea	<i>Eutaxia microphylla</i>											1
Climbing Fumitory	<i>Fumaria capreolata</i> *							0				
Treasure Flower	<i>Gazania rigens</i> *		1									
Variable Glycine	<i>Glycine tabacina</i>											0
A Raspwort	<i>Gonocarpus elatus</i>								0			
Tall Raspwort	<i>Gonocarpus tetragynus</i>		0	3	2	2	2	0	1			2
Serrated Goodenia	<i>Goodenia cycloptera</i>	1	0	1		0	0			2	2	1
Smooth Goodenia	<i>Goodenia glabra</i>	0	0	1		0				1	1	1
Barley Grass	<i>Hordeum leporinum</i> *		1		1					1		2

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Site 1	2 & 3	4	5	6	8	7	9	10	11	12 & 13
Stinking Pennywort	<i>Hydrocotyle laxiflora</i>								1			
Smooth Cat's Ear	<i>Hypochaeris glabra*</i>		1	1	0	0		0	1	1		1
Cat's Ear	<i>Hypochaeris radicata*</i>	1	2	2	2	1	0	1	1	2	2	1
Rock Isotome	<i>Isotoma axillaris</i>			0								0
Pale Rush	<i>Juncus pallidus</i>		0				2					0
Finger Rush	<i>Juncus subsecundus</i>		1									
Prickly Lettuce	<i>Lactuca serriola*</i>							1				
Scaly Buttons	<i>Leptorhynchus squamatus</i>	1	0				1	0	1	0	1	0
Notch-leaf Sea-lavender	<i>Limonium sinuatum*</i>		0									
Perennial Ryegrass	<i>Lolium perenne*</i>		1					1				
Wimmera Ryegrass	<i>Lolium rigidum*</i>		1				3	0	3	2		2
Wattle Mat-rush	<i>Lomandra filiformis</i>		0									
Woolly Mat-rush	<i>Lomandra leucocephala ssp. leucocephala</i>	1	1	0		0	1				1	1
African Boxthorn	<i>Lycium ferocissimum*</i>	1	2				0	0		1	2	2
False Loose-strife	<i>Lythrum hyssopifolia</i>						1					0
Small-leaf Bluebush	<i>Maireana brevifolia</i>								1			1
Black Cotton Bush	<i>Maireana decalvans</i>		1					0				
Bottle Fissure-weed	<i>Maireana excavata</i>	0	0								0	0
Small-flowered Mallow	<i>Malva parviflora*</i>							0				
Horehound	<i>Marrubium vulgare*</i>		1									
Woolly Burr Medic	<i>Medicago minima*</i>			0	1	1	1	1	1	2	0	0
Barrel Medic	<i>Medicago trunculata*</i>			1	2	0	2	1	2	1	2	1
White Cedar	<i>Melia azerdarach*</i>								0			
Smooth Minuria	<i>Minuria integerrima</i>	0						0				
Red-flowered Mallow	<i>Modiola caroliniana*</i>							1				
Thread Iris	<i>Moraea setifolia*</i>		0									
European Olive	<i>Olea europaeus*</i>							0				

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Site 1	2 & 3	4	5	6	8	7	9	10	11	12 & 13
Wheel Cactus	<i>Opuntia robusta*</i>		0									
Yellow Wood-sorrel	<i>Oxalis corniculata*</i>			0								0
Soursob	<i>Oxalis pes-caprae*</i>						1					
Warrego Summer-grass	<i>Paspalidium jubiflorum</i>						2					
Paspalum	<i>Paspalum dilitatum*</i>						1	1				
Water Couch	<i>Paspalum distichum</i>		1									
Kikuyu	<i>Pennisetum clandestinum*</i>							0				
Canary Island Date Palm	<i>Phoenix canariensis*</i>		0					0				1
Common Reed	<i>Phragmites australis</i>						2					0
Slash Pine	<i>Pinus ellioti*</i>							0				
Tussock Grass	<i>Poa labillardiera</i> var. <i>labillardiera</i>											0
Fine-leaf Tussock Grass	<i>Poa sieberana</i>		0				3					
Wireweed	<i>Polygonum aviculare*</i>							1				
Jersey Cudweed	<i>Pseudognaphalium luteo-album</i>		0									
Green Pusstails	<i>Ptilotus macrocephalus</i>		0									
Pusstails	<i>Ptilotus spathulatus</i>	2	2									
Small White Sunray	<i>Rhodanthe corymbiflora</i>									0	0	
Ascending Sunray	<i>Rhodanthe diffusa</i> ssp. <i>diffusa</i>	2		1	2	1			2		0	1
Onion Grass	<i>Romulea rosea*</i>								1			0
Sweet Briar	<i>Rosa rubiginosa*</i>							1				
Blackberry	<i>Rubus fruticosus</i> complex*							0				0
Swamp Dock	<i>Rumex brownii</i>		0									0
Wild Sage	<i>Salvia verbenaca*</i>							1	0	2	1	
Goathead Burr	<i>Sclerolaena bicornis</i>											
Grey Copperburr	<i>Sclerolaena diacantha</i>	0							0			
Black Roly-poly	<i>Sclerolaena muricata</i>	1	1					0	2		1	
Cotton Fireweed	<i>Senecio quadridentatus</i>				1	0				0		

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Site 1	2 & 3	4	5	6	8	7	9	10	11	12 & 13
Whorled Pigeon Grass	<i>Setaria verticillata*</i>	0	0						1			
Corrugated Sida	<i>Sida corrugata</i>	1	2	0		1	0	0		2	2	1
Ridge Sida	<i>Sida cunninghamii</i>									0	1	
London Rocket	<i>Sisymbrium irio*</i>	1						1		1	0	0
Quena	<i>Solanum esuriale</i>		0	0						0	0	0
Blackberry Nightshade	<i>Solanum nigrum*</i>							0				
Rough Sow-thistle	<i>Sonchus asper*</i>							0				
Milk Thistle	<i>Sonchus oleraceus*</i>		1				1	1				
Fairy Grass	<i>Sporobolus caroli</i>											0
Common Chickweed	<i>Stellaria media*</i>										0	1
A Starwort	<i>Stellaria papillata</i>											0
Organ Pipe Cactus	<i>Stenocereus thurberi*</i>										0	
Nodding Blue Lily	<i>Stypandra glauca</i>			2	1	2	2				1	2
Mulga Grass	<i>Thyridolepis mitchelliana</i>			1							2	2
Salsify	<i>Tragopogon porrifolius*</i>							0				
Hare's-foot Clover	<i>Trifolium arvense*</i>		0				2	2				
Yellow Sucking Clover	<i>Trifolium dubium*</i>						1	0				1
Strawberry Clover	<i>Trifolium fragiferum*</i>		1				1	2		1	1	
Clustered Clover	<i>Trifolium glomeratum*</i>							1				1
Broad-leaf Cumbungi	<i>Typha orientalis</i>					2	1					0
Twiggy Mullein	<i>Verbascum virgatum*</i>									1		
Common Vetch	<i>Vicia sativa ssp. sativa*</i>								1			
Fuzzweed	<i>Vittadinia cuneata</i>	0	1				1	1	2	1	1	1
Woolly New Holland Daisy	<i>Vittadinia gracilis</i>	0					0		0	1	2	0
Rat's Tail Fescue	<i>Vulpia myuros*</i>	0	1								0	1
Tufted Bluebell	<i>Wahlenbergia communis</i>	1	0	1	0	0			0	0	1	
River Bluebell	<i>Wahlenbergia fluminalis</i>						0					0

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Site 1	2 & 3	4	5	6	8	7	9	10	11	12 & 13	
Annual Bluebell	<i>Wahlenbergia gracilentia</i>	2	0	2	2		0	1			1		
Golden Everlasting	<i>Xerochrysum bracteatum</i>				1								
Sticky Everlasting	<i>Xerochrysum viscosum</i>	2	1	3	2	2	2	1			2	2	
Non-vascular plants													
Lichens	<i>Aspicilia calcarea</i> ¹												
	<i>Buellia subcoronata</i> ²												
	<i>Cladia corallaizon</i> ²												
	<i>Hypogymnia subphysoides</i> ²												
	<i>Lecidea terrena</i> ¹												
	<i>Lepraria membranaceae</i> ³												
	<i>Neofuscelia pulla</i> ¹												
	<i>Telschites siberianus</i> ⁴												
	<i>Toninia sedifolia</i> ¹												
	<i>Xanthoparmelia caperata</i> ³												
	<i>Xanthoparmelia tasmanica</i> ³												
<i>Xanthoria ectanea</i> ⁴													
Liverwort	<i>Riccia limbata</i> ²												
Mosses	<i>Bryum pachytheca</i> ²												
	<i>Tortula pagorum</i> ²												
	<i>Tortula papillosa</i> ⁴												

1. Found on rock surfaces
2. Found on the soil surface
3. Found on both rock surfaces and as an epiphyte on White Cypress-pine
4. Found as an epiphyte on White Cypress-pine

APPENDIX B OBSERVED OR INFERRED FAUNA AT THE LAKE TALBOT RESERVE

Lake Talbot Reserve Flora and Fauna Evaluation

Fauna have been recorded for presence on the basis of designated assessment zones and specific sites (see Fig. 2-3). Identification method has been noted for each species observation within each zone: A = audible call; V = visual; N = distinctive nest or scratching; S = scat

An asterisk denotes an introduced species.

Common name	Scientific name	Conservation Status ¹	1	2	3	4	5	6	Spotlight ²	7	8	9	10	11	12&13
Amphibians															
Barking Marsh Frog	<i>Limnodynastes fletcheri</i>								A						
Eastern Common Froglet	<i>Crinia signiferi</i>								A		A				A
Peron's Tree Frog	<i>Litoria peroni</i>								A						
Pobblebonk	<i>Limnodynastes dumerili</i>								A						
Sloane's Froglet	<i>Crinia sloanei</i>	V							A						
Reptiles															
Bearded Dragon	<i>Pogona barbata</i>														V
Eastern Brown Snake	<i>Pseudonaja textilis</i>						V								
Garden Skink	<i>Lampropholis guichenoti</i>						V	V							
Lace Monitor	<i>Varanus varius</i>		N												
Striped Legless Lizard	<i>Delma impar</i>	V		V											
Birds															
Australian Magpie	<i>Gymnorhina tibicen</i>			V,A			V,A			V,A	V,A		V,A		
Australian Pelican	<i>Pelecanus conspicillatus</i>												V		V
Australian Raven	<i>Corvus coronoides</i>													V,A	
Australian Ringneck	<i>Barnardius zonarius</i>											V,A	V,A		
Australian Wood Duck	<i>Chenonetta jubata</i>												V,A		
Black Falcon	<i>Falco subniger</i>												V		
Black-faced Cormorant	<i>Phalacrocorax fuscescens</i>												V		
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>												V,A		
Blue Bonnet	<i>Northiella haematogaster</i>							V,A							
Brown Thornbill	<i>Acanthiza pusilla</i>											V,A			V,A

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Conservation Status ¹	1	2	3	4	5	6	Spotlight ²	7	8	9	10	11	12&13
Brown Treecreeper	<i>Climacteris picumnus victoriae</i>	V			V,A										
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>												V,A		
Chestnut-rumped Heathwren	<i>Hylacola pyropygia</i>													V,A	
Common Blackbird	<i>Turdus merula*</i>			A											
Common Bronzewing	<i>Phaps chalcoptera</i>							V							
Crested Pigeon	<i>Ocyphaps lophotes</i>				V										
Double-barred Finch	<i>Taeniopygia bichenovii</i>										V,A				
Dusky Moorhen	<i>Gallinula tenebrosa</i>										A				V,A
Eastern Rosella	<i>Platycercus eximius</i>										V,A		V,A		
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>														V
Eastern Yellow Robin	<i>Eopsaltria australis</i>										V,A				
Eurasian Coot	<i>Fulica atra</i>														
Flame Robin	<i>Petroica phoenicea</i>	V													V
Galah	<i>Eolophus roseicapillus</i>										V,A		V,A		
Grey Fantail	<i>Rhipidura fuliginosa</i>				V,A			V,A							V,A
Grey Shrike-thrush	<i>Colluricincla harmonica</i>			V,A						V,A	V,A		V,A	V,A	
Jacky Winter	<i>Microeca fascinans</i>										V,A				
Laughing Kookaburra	<i>Dacelo novaeguineae</i>						V				V,A		V,A		
Little Corella	<i>Cacatua sanguinea</i>			V,A											
Magpie-lark	<i>Grallina cyanoleuca</i>						V,A						V,A		
Nankeen Night Heron	<i>Nycticorax caledonicus</i>								A						
Noisy Friarbird	<i>Philemon corniculatus</i>												V,A		
Pacific Black Duck	<i>Anas superciliosa</i>				V,A										
Pied Butcherbird	<i>Cracticus nigrogularis</i>														V,A
Pied Cormorant	<i>Phalacrocorax varius</i>											V,A			

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Conservation Status ¹	1	2	3	4	5	6	Spotlight ²	7	8	9	10	11	12&13
Purple Swamphen	<i>Porphyrio porphyrio</i>														V,A
Red-browed Finch	<i>Neochmia temporalis</i>		V,A												
Red-rumped Parrot	<i>Psephotus haematonotus</i>			V,A											
Restless Flycatcher	<i>Myiagra inquieta</i>							V,A							
Rufous Songlark	<i>Megalurus mathewsi</i>		V,A												
Rufous Whistler	<i>Pachycephala rufiventris</i>												V,A		V,A
Sacred Ibis	<i>Threskiornis spinicollis</i>		V								V				V
Shining Bronze Cuckoo	<i>Chrysococcyx lucidus</i>														A
Silvereye	<i>Zosterops lateralis</i>												V,A		
Speckled Warbler	<i>Chthonicola sagittata</i>	V									V,A				A
Southern Boobook	<i>Ninox novaeseelandiae</i>								A						
Striated Pardalote	<i>Pardalotus striatus</i>													V,A	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>		V,A	V,A							V,A				
Swift Parrot	<i>Lathamus discolor</i>	e,E									V				
Tawny Frogmouth	<i>Podargus strigoides</i>								V						
Yellow Rosella	<i>Platyercus elegans</i>										V,A		V,A		V,A
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>										V,A				
Wedge-tailed Eagle	<i>Aquila audax</i>		V												
Weebil	<i>Smicrornis brevirostris</i>										V,A				
Welcome Swallow	<i>Hirundo neoxena</i>										V		V		
Western Gerygone	<i>Gerygone fusca</i>			V,A											
White Winged Chough	<i>Corcorax melanorhamphos</i>		V,A	V,A							V,A		V,A		V,A
White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>	EPBC						V							
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>												V		
Willie Wagtail	<i>Rhipidura leucophrys</i>						V,A								V,A

Mammals

Lake Talbot Reserve Flora and Fauna Evaluation

Common name	Scientific name	Conservation Status ¹	1	2	3	4	5	6	Spotlight ²	7	8	9	10	11	12&13
Black-tailed Wallaby	<i>Wallabia bicolor</i>							V	V						
Brown Hare	<i>Lepus europaeus*</i>														
Common Brushtail Possum	<i>Trichosorus vulpecula</i>								V						
Eastern Grey Kangaroo	<i>Macropus giganteus</i>		V,S			S		V,S			S			S	
European Rabbit	<i>Oryctolagus cuniculus*</i>					S								S	
Feral Goat	<i>Capra hircus*</i>													S	
Red Fox	<i>Vulpes vulpes*</i>				S									S	S
Short-beaked Echidna	<i>Tachyglossus aculeatus</i>							N						N	
Sugar Glider	<i>Petaurus breviceps</i>								V						

1. from BioNet - Atlas of NSW Wildlife website (Environment and Heritage 2012): v = vulnerable in NSW; e = endangered in NSW; V = vulnerable across Australia; EPBC = a Marine and Migratory species under the *Environmental and Biodiversity Conservation (EPBC) Act*;
2. Spotlighting was conducted across multiple sites, notably Sites 2, 4 and 7 (Fig. 2-3).

ANNEXURE 2.0

***AIHMS Database Search with attached GIS Map depicting
Location of Registered Sites***



AHIMS Web Services (AWS)

Your Ref Number : 78748

Extensive search - Site list report

Client Service ID :81403

Note: This Excel report shows the sites found in AHIMS on the 10/10/2012. If this date is not the same as the original date of the Search Results letter obtained during the Basic Search, then the search results might be different. The PDF version of this report will always coincide with the Basic Search Results letter.

SiteID	SiteName	Contact	Date	Zone	Easting	Northing	Context	SiteStatus	SiteFeatures	SiteTypes	Permits	Reports	Recorders
49-6-0031	Duck Berd Billabong		AGD	55	464500	6150000	Open	Valid	Conflict : -	Massacre			Ms.Adrienne Howe-
49-6-0028	Massacre Island Massacre		AGD	55	465650	6148300	Open	Valid	Conflict : -	Massacre			Ms.Adrienne Howe-
49-6-0030	Poisoned Waterholes Creek Massacre		AGD	55	456000	6153800	Open	Valid	Conflict : -	Massacre			Ms.Adrienne Howe-
49-6-0001	Narrandera;		AGD	55	459653	6154706	Open	Valid	Modified Tree	Scarred			ASRSYS
49-6-0002	Open;Weir Park;		AGD	55	455700	6158216	Open	Valid	Earth Mound :-	Mound			D Ingram,R Williams
49-6-0003	Gillenbah Stock Reserve;Cuddel;		AGD	55	451950	6152150	Open	Valid	Artefact : -,	Open			D Ingram,R Williams
49-6-0004	Bundidgerry Creek 3;Bundidgerry;		AGD	55	462530	6154020	Open	Valid	Artefact : -	Open			RK Barz
49-6-0006	Lake Coolah;		AGD	55	464700	6161900	Open	Valid	Artefact : -	Open		722	Bonhomme Craib &
49-6-0026	Poisoned Water Hole Creek;		AGD	55	455900	6153540	Open	Valid	Modified Tree	Scarred			Steven Meredith
49-2-0024	Weirs Reserve Tree 1;T.S.R. Crown		AGD	55	455280	6157740	Open	Valid	Modified Tree	Scarred			Steven Meredith
49-6-0034	SHT-1		AGD	55	465000	6152955	Open	Valid	Modified Tree			99034	Navin Officer Heritage
49-6-0035	SHT-2		AGD	55	465716	6152920	Open	Valid	Modified Tree			99034	Navin Officer Heritage
49-6-0036	Restriction applied. Please contact						Open	Valid					Narrandera Shire Council

Report generated by AHIMS Web Service on 10/10/2012 for Bill Booth for the following area at Lat, Long From : 146.44276, -34.82973 - Lat, Long To : -34.67836, 146.69548 with a Buffer of 50 meters. Additional Info : In preparation of Plans of Management for Crown Land Reserves on behalf of Narrandera Shire Council. Number of Aboriginal sites and Aboriginal objects found is 13

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NARRANDERA SHIRE COUNCIL ABORIGINAL HERITAGE ITEMS

Note: Booth Associates and its employees do not guarantee that this publication is without flaw of any kind or is wholly appropriate for your particular purposes, and therefore disclaims all liability for relying on any information in this publication.
Date: 8/02/2013
Project: Narrandera Shire Council
Created By: GIS Mapping Unit



ANNEXURE 3.0

Black Mountain Projects Cultural Heritage Report

Black Mountain Projects Heritage-Architecture-Archaeology

Black Mountain Projects Pty Ltd
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12 November 2012
Frank Dyrssen
Director of Technical Services
Narrandera Shire Council, 6959 5510
frank.dyrssen@narrandera.nsw.gov.au

Dear Mr Dyrssen

**RE: DUE DILIGENCE HERITAGE ASSESSMENT
PROPOSED DRAINAGE CHANNEL, LAKE TALBOT CROWN RESERVE,
NARRANDERA, NSW**

This report has been prepared by Black Mountain Projects Pty Ltd by Dr Peter Kabaila, principal archaeologist and Kyle Moffitt Associate Archaeologist, at your request. It is in relation to the proposed construction of a drainage channel (incorporating a settlement pond) into Lake Talbot. Narrandera Shire wishes to re-engineer some storm water drainage in Narrandera. To do so requires some significant earthworks through native trees. This archaeological report was triggered by field observation of council staff and consultant planners who inspected the site and saw scarred trees. Planners then advised Council to obtain an archaeological report for the development area (**Figure 1**).

This archaeological report presents the results of a Preliminary Due Diligence Aboriginal Heritage Assessment to meet the requirements of due diligence as per the OEH 2010 *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*, including a determination of whether further archaeological investigation may be required in relation to the current proposal. An archaeological check for European heritage was also undertaken.

The development area is bushland about 600m long x 150m wide, in a strip through Crown land. The purpose of the development is to reduce flooding in Narrandera CBD by constructing an open drainage channel and settling stormwater into a pond before draining into Lake Talbot. The pond is proposed to be located over an existing depression in the development area.

The drainage channel is likely to be only 60m wide. But the development area width of 150m was nominated to provide a generous buffer zone for any disturbance around the drain. There was also the possibility of shifting the route of the channel within the nominated development area, if there was a need to do so.

The current Preliminary Due Diligence Aboriginal Heritage Assessment has examined the potential impact to Aboriginal heritage of the development. No archaeological sites and no areas of archaeological potential were identified within the development area.

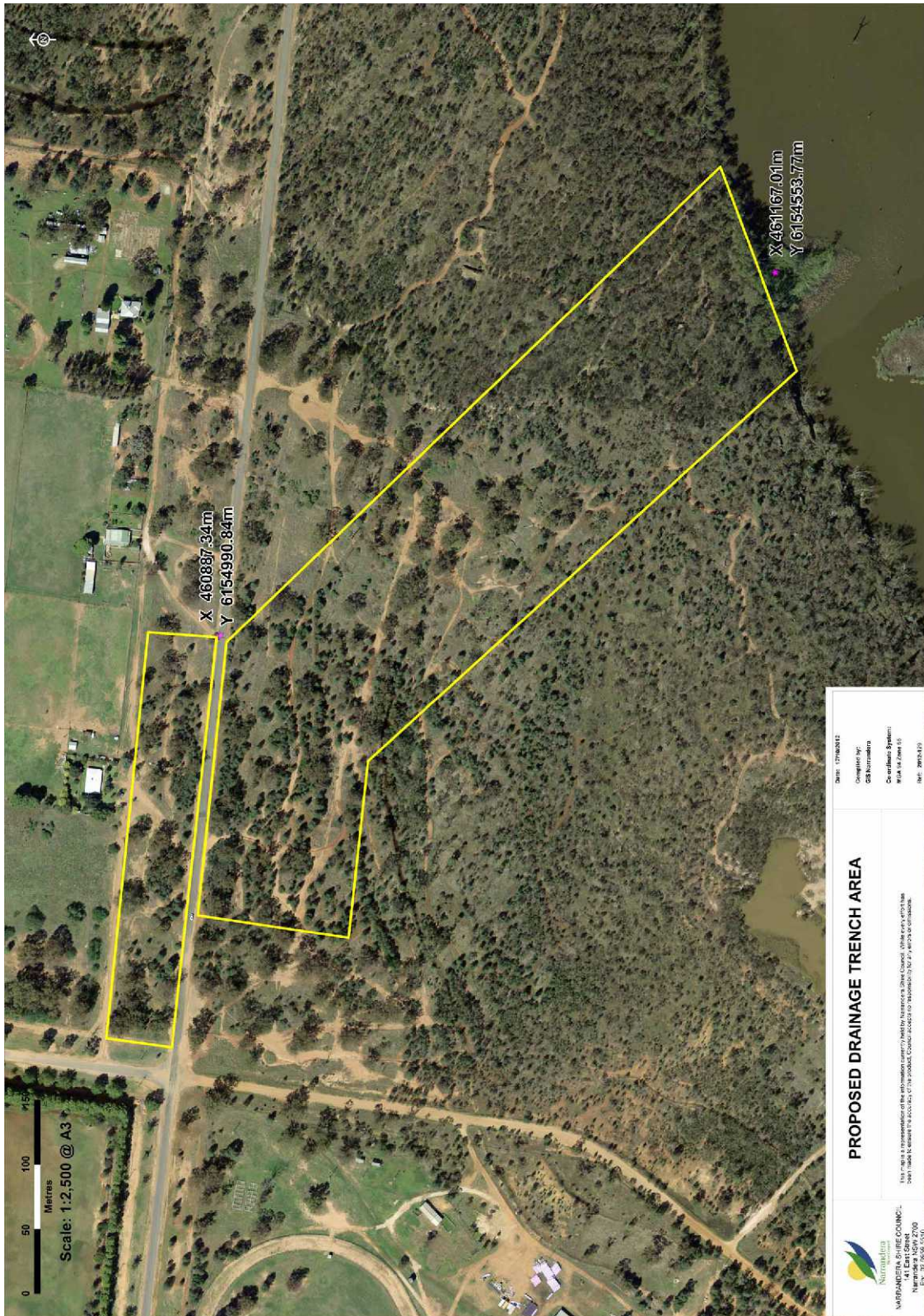


Figure 1. Development area (outlined in yellow).

Aboriginal Community Consultation

Consultation with the Aboriginal community is not a formal requirement of the Due Diligence Code. In the present case, the investigation has followed the spirit of the Code consultation guideline by involving a local Aboriginal Interested Party. The scale of the area to be investigated was far too small to have called for advertising in the public media for Interested Parties (as followed by the developers of the big scale projects).

Four Narrandera local Aboriginal community members (Dexter Briggs, Yvonne Ingram and her cousins Joy and Colleen Ingram) were contacted by telephone. One of these, Yvonne Ingram, agreed to voluntarily join the inspection, also assisting in the fieldwork.

Yvonne Ingram was invited to assist as an Aboriginal consultant with the heritage assessment. Yvonne is a prominent member of a large local Aboriginal family network in Narrandera, is a member of at least three local Aboriginal organisations and was selected for her extensive experience.

Yvonne completed the NSW Forestry Aboriginal Assessments course in Dubbo. Her family have trained themselves in stone artefact recognition, using their family's artefact collection. Yvonne is currently Aboriginal Health Projects Officer for the Close the Gap program run by Murrumbidgee Medicare Local Ltd. She also serves on three local Aboriginal organisations and committees: Sandhills Foundation Board; Aboriginal Healthy Communities Committee; Aboriginal Advisory Committee to Narrandera Shire Council.



Left to right: Yvonne Ingram, Peter Kabaila, Colleen Ingram, Joy Ingram.

For the purposes of the current Preliminary Due Diligence Aboriginal Heritage assessment, further Aboriginal community consultation was not undertaken.

Contextual information

The development area is situated between Narrandera town and Lake Talbot, an artificial lake formed by widening an irrigation canal off the Murrumbidgee River. Lake Talbot came into existence 1925 when the broken bank of an irrigation canal flooded adjoining

land. The lake, named after a prominent local politician, was progressively formalised into a recreational lake. It included a public swimming pool.

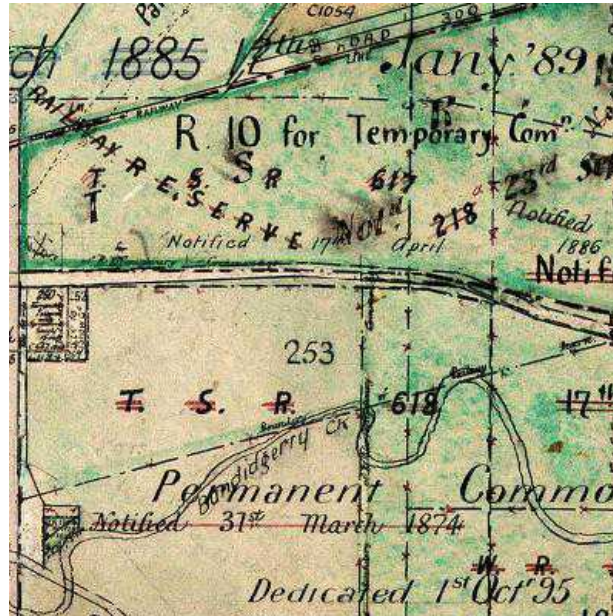


Lake Talbot Swimming Pool (Narrandera Argus)

The development area is on gently sloping sandy ground. It appears to have been partially cleared, possibly around the 1920s to 1940s. There are now vehicle and dirt bike tracks, as well as previously dug drainage ditches (about 2m wide x 1m deep), 21 large grey box trees and regrowth of native pines and native grass. There are some exotic weeds at the lower end of the development area, on the shore of Lake Talbot.

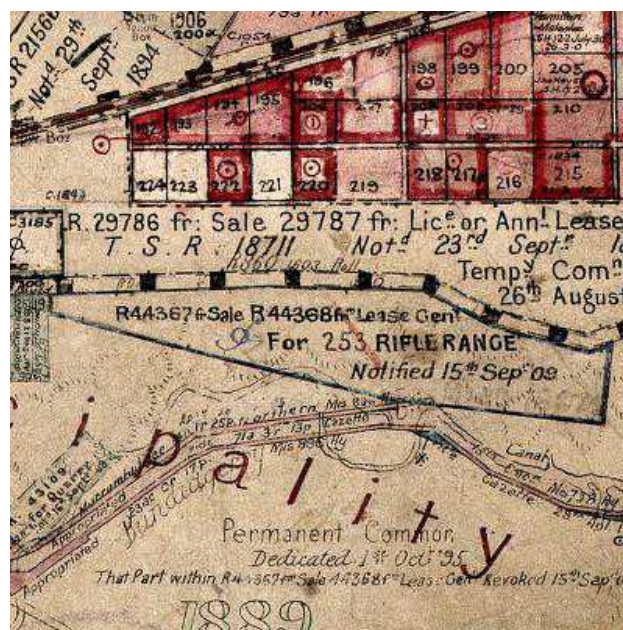
The development area contains land previously used for livestock grazing, hunting, itinerant camping, and shooting. Squatters took up cattle runs along the entire northern frontage of the river between 1829 and 1833. During the 1830s and 1840s sheep were introduced to the runs. Clashes between pastoralists and local Aboriginal people resulted in the Wiradjuri War in 1841. The war and later slaughter of indigenous men and women at nearby Massacre Island probably drove most Aboriginal people away from the area in the early 1840s.

Grazing and land clearing continued in the development area for approximately fifty years after first European settlement, until Travelling Stock Reserve 618 was notified on 31 Mar 1874 (shown below on an 1888 Parish Map of Narrandera). The area north of the main canal (including TSR 618) was surveyed and proclaimed a Permanent Common on 1 Oct 1895. It was used as a town common for local landholders to depasture their stock. It was also used for firewood collection by townspeople. The clearing of old trees and removal of dead wood resulted in koalas becoming extinct from the development area by the early 20th Century.



Excerpt from 1888 Parish Map of Narrandera showing Travelling Stock Reserve 618 Bundidgerry Creek, and the Permanent Common

A portion of the development area was also used as a rifle range by the Narrandera Rifle Club (formed on 8 Mar 1893). The range is shown below on an 1898 Parish Map of Narrandera.



Excerpt from 1898 Parish Map of Narrandera showing the Rifle Range

The Rifle Range was used as training ground by soldiers of "G" Company, 1st Infantry Regiment AIF based at Wagga Wagga. Many soldiers who trained here were part of the initial invasion force that landed at Gallipoli on 25 Apr 1915. Bert Smythe wrote the following account of his training at the Narrandera Rifle Range to his mother at Jerilderie. The letter is dated 21 Jul 1914, Narrandera:

“On Saturday Morning I spent the morning reading, and in the afternoon on the invitation of one of the Post office chaps went out to the Rifle Range, and had a shoot. I did not come up top through bad luck. At 500 yards, it was 10 shots, no sighters. a chap before me had got 48 out of 50, and I had the bad luck to get a mag first shot, and as a mag is only 3, I had dropped my 2 points in the first shot, however I started getting Bulleye after bullseye, until the last shot, when I wanted another bull to tie him. My shots had been a little bit on the high side right through getting the bull in the top, so it served me right for not altering, on my last shot I hung on a little bit too long and got shaky, with the result that it was a bit up in the bull when she jumped. I thought that with any luck it would be one of the best, but it was a Mag. So I only got 46. At 600 yards I was the last down, and it was dark, could not see the target plain, and I only got 30 out of 35. However I was not the worst by any means.”

Smythe was one of the first to land at Gallipoli and was later killed in action at Bullecourt.



Herbert Andrew “Bert” Smythe

The development area is located on the fringe of Narrandera’s town limits and close to the Showground. It is likely that itinerant travellers and locals used the area for informal camping. The Narrandera Shire Council Plan of Management for the Flora and Fauna Reserve (2010) contains the story of a taxi driver, who in the 1950s was asked to deliver a man to his home - a hollowed out tree situated in the Reserve just south of the development area.

The development area was also used by the Hinchley family and other locals in the 1930s and 1940s for trapping water rats. The National Museum of Australia’s collection includes a 1940s era pelt-skin cape made from the skins of fifty water rats collected from Bundidgerry Creek (running along on the south side of the development area). It was made for Elsie Eileen Hinchley of Narrandera. The rats were trapped by the Hinchley family using jam tins baited with fish oil and sardines. During the war, the Hinchleys supplied the Wagga Wagga tannery of William Adolf Schultz, who in turn, supplied American soldiers based at Kapooka with native fur garments (no doubt used to impress

local girls who would otherwise have spent their ration allocation to purchase such a cape).

The legal hunting of native animals in the development area ended in 1948 with the Fauna Protection Act and it is likely that hunting as an economic activity finished around then.



Left to right: the Hinchley Cape at the National Museum of Australia; Mary Hutchins (seated left) is wearing the cape in the 1950s

The development area has been used since for a variety of recreational activities including camping and offroad vehicles. Several well used, irregular vehicle tracks cross the development area and have exposed the underlying soil.

The Inland Riverine Forest ecosystem that formerly represented the development area is now degraded and has been impacted by more than a century of intensive grazing pressure, land clearing, fencing and recreational use. There are no heritage listed historical sites in the development area. The native fauna has been impacted by hunting, trapping and shooting associated with the rifle range. The land use activities have also impacted on native trees, resulting in very few trees old enough to have been standing prior to European settlement.

Background research

For the current preliminary assessment, the Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System Aboriginal Sites Register (the AHIMS Register) and catalogue of Archaeological Reports were consulted. A search of the AHIMS Register of a 1km x 1km area centred on the development area revealed no previously recorded Aboriginal sites. (**Appendix 1**). The AHIMS Register therefore contains no records for gazetted Aboriginal Places within or in the vicinity of immediately adjacent to the study area.

Expected site types in the Narrandera local area include artefact (stone flake) scatters, ground ovens (hearths), scarred trees, burials, axe-grinding grooves. Scarred trees can be located in any landscape context but are more common in woodland environments and show scarring relating to the extraction of bark or wood used in the manufacture of coolamons, containers, shelter, shields and canoes. Open camp sites are expected to be

located on elevated dry ground near watercourses in the vicinity of food resources. Large and complex stone scatters are thought to demonstrate repeated or intensive use of an area. Other sites may contain low density stone artefact scatters. Isolated artefacts are thought to result from tool loss or abandonment.

In summary, evidence of past Aboriginal use which might have survived in the development area is likely to consist of evidence of occupation (stone artefacts) or bark extraction (scarred trees, should trees of sufficient age be present within the development area).

Site Visits

An archaeological inspection of the development area for Aboriginal cultural heritage was undertaken in fine weather on Wednesday 24th October 2012 by archaeologist Peter Kabaila, Narrandera Aboriginal community member Yvonne Ingram and Narrandera Shire Council staff members Ian Draper, Senior Engineer and Fred Hammer, Assets Manager.



Left to right: Fred Hammer, Yvonne Ingram and Ian Draper.

After researching European history of the development area, a European heritage inspection of the development area was undertaken in fine weather on Sunday 11th November 2012 by archaeologist Peter Kabaila and archaeologist Kyle Moffitt. No significant European heritage archaeological sites were found.

Development Area description

The development area is typical Narrandera sand hill ground. This is red sand with very little surface stone material, except some sedimentary gravel exposed on weathered ridgelines. Native grasses cover most of the area, but this is crisscrossed with a network of drainage trenches, vehicle and dirt bike tracks that provide good samples of full visibility of the ground surface. **(Figure 3)**



Figure 3. Typical surface exposure in the development area.

A search of these ground exposures revealed almost no naturally occurring stone material on the surface. No stone artefacts were found.

The only area seen to contain naturally occurring stone was at the upper end of the development area near the road. At least some of this sedimentary gravel stone had washed out of some dumped gravel. No stone artefacts were found. (**Figure 4**)



Figure 4. Natural stone outcropping near a ridgeline.

Most of the tree vegetation of the development area appears to have been previously cleared. It is scattered with regrowth of small native pine trees. As the native pine vegetation is of a young age, the presence of scarred trees would be unlikely. There are also isolated grey box trees.

A search for scarred trees revealed that scars (naturally formed or otherwise) were not present on the native pine trees, but only on the large grey box trees

For the purposes of this study, every grey box tree over 1m girth was considered “old growth”, capable of containing Aboriginal scars, and was therefore numbered, mapped, and recorded if any scar was present.

The development area was found to contain four trees with scars. These scars were identified to be naturally occurring. Refer to the attached record of fieldwork (**Appendix 2**). It is not surprising that four tree scars randomly sampled in bushland were found to be natural in origin. DECC’s scarred tree manual (2005) notes that most tree scars are either natural or recently made by incidental impact.

Conclusions

The site visit yielded no evidence of past Aboriginal use within the development area. It is possible that some Aboriginal scarred trees or stone artefact scatters may be present beyond the boundaries of the development area but these would not be affected by the proposal.

In conclusion, the development area has been found to contain no historical heritage sites, no evidence of past Aboriginal use and little likelihood for surviving deposits of Aboriginal stone artefacts. With the exception of the recommended actions below, no further *archaeological* investigations are considered warranted within the development area in relation to the current proposal.

Recommendations

The following recommendations are based upon:

- Legal requirements and automatic statutory protection provided to items of Aboriginal heritage under the terms of the National Parks and Wildlife Act 1974 (as amended), where it is an offence to knowingly or unknowingly harm an Aboriginal object.
- Results of the current study which are documented in this report.

It is recommended that:

- There are no further archaeological investigations or actions required in relation to the proposed development.
- If any Aboriginal objects (such as stone artefacts or skeletal remains) are uncovered in the course of construction then all work at that site to stop immediately and staff from OEH and Local Aboriginal Land Council to be notified. Please also call my mobile, at any time, on 0403727805, so I could provide advice on immediate measures to protect relics.
- One copy of this report would be forwarded to: The Manager, Aboriginal Heritage Information Management System, NSW Office of Environment and Heritage, PO Box 1967, Hurstville NSW 2770

If you require any further information, please do not hesitate to contact me.

Regards



Dr Peter Kabaila
Principal Archaeologist
Black Mountain Projects Pty Ltd

Kyle Moffitt
Associate Archaeologist

Appendix 1 AHIMS search

Appendix 2

Scarred tree search

Kyle Moffitt
9 Lyne St
Tumbarumba New South Wales 2653
Attention: Kyle Moffitt
Email: tumbahill@hotmail.com

Date: 06 November 2012

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 55, Eastings : 460887 - 460888, Northings : 6154990 - 6154991 with a Buffer of 1000 meters. conducted by Kyle Moffitt on 06 November 2012

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

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

If your search shows Aboriginal sites or places what should you do?


- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette](http://www.nsw.gov.au/gazette) (<http://www.nsw.gov.au/gazette>) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request


Important information about your AHIMS search



- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

FIELD RECORD OF SCARRED TREE SEARCH

All trees in the development area over 1m girth at 1.5m height were examined for scarring and noted as follows:

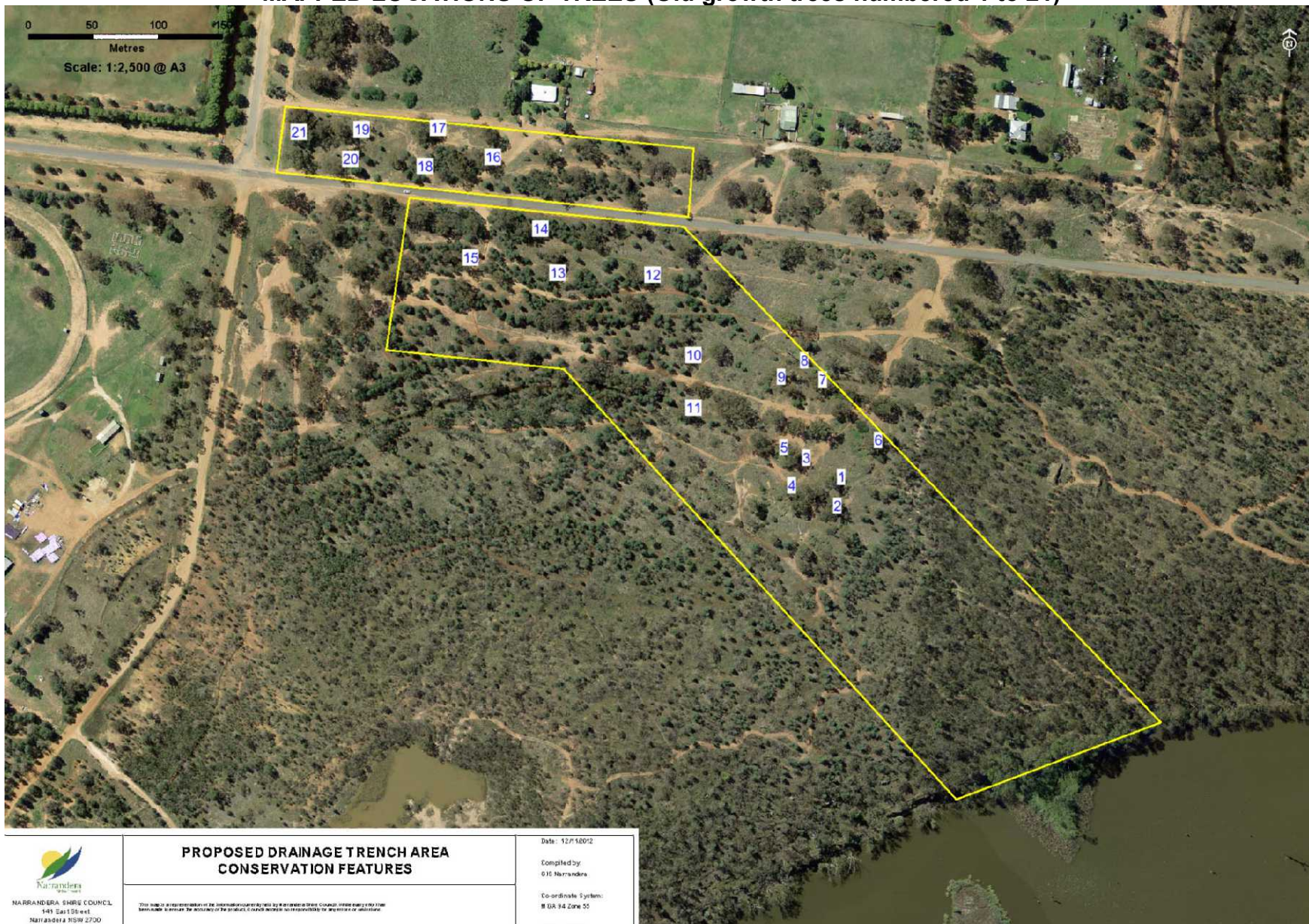
No.	Tree species, girth @1.5m	Scar dimensions: length x width x depth x height above ground	Scar orientation	Interpretation Categorised according to the <i>Aboriginal Scarred Trees in NSW Field Manual</i> by A. Long (2005), DEC	Image
1	Grey box. 3200mm girth.	1200mm long x 200mm wide x 75mm deep x 600mm above ground	NE	<p>Compound Scar -Category 1: Trauma Damage Category 3: Faunal Damage</p> <p>This scar is irregular in shape. The dry face contains bore holes from insects. A bushfire later left marks on the dry face and accelerated growth callus.</p>	

2	Grey box. 3400mm girth	900mm long x 400mm wide x 75mm deep x 400mm above ground	NE	<p>Compound Scar -Category 2: Storm and Fire Damage Category 5: Ring Barking and Other Deliberate Damage</p> <p>Natural scar produced by a lightning strike and resulting fire. The lower part of the scar contains scarfs produced by a steel axe, possibly to mark a boundary or survey. Common in the local area.</p>	
3	No scar (Grey box)				
4	No scar (Grey box)				
5	No scar (Grey box)				
6	No scar (Grey box)				
7	No scar (Grey box)				

8	Grey box. 2700mm girth	3300mm long x 400mm wide x nil deep x nil above ground	SE	<p>Category 2: Storm and Fire Damage</p> <p>This scar is produced by lightning and fire. There is a superficial resemblance to a canoe scar but the tree is far from the river (370m) and the scar goes to ground level.</p>	
9	No scar (Grey box)				
10	Grey box. 3500mm girth	1900mm long x 600mm wide x 100mm deep x 750mm above ground	NE	<p>Category 2: Storm and Fire Damage</p> <p>This scar is produced by lightning and fire. The scar has a pronounced occlusion. The scar is interpreted to be natural due to its irregular shape and extension to ground level.</p>	
11	No scar (Grey box)				
12	No scar (Grey box)				

13	No scar (Grey box)				
14	No scar (Grey box)				
15	No scar (Grey box)				
16	No scar (Grey box)				
17	No scar (Grey box)				
18	No scar (Grey box)				
19	No scar (Grey box)				
20	No scar (Grey box)				
21	No scar (Grey box)				

MAPPED LOCATIONS OF TREES (Old growth trees numbered 1 to 21)



ANNEXURE 4.0

Issues Paper

NARRANDERA SHIRE COUNCIL

Lake Talbot and Environs and Crown Land Reserves

Plans of Management Issues Paper



Agribusiness and
Environmental Solutions

www.boothassociates.com.au

NARRANDERA SHIRE COUNCIL

LAKE TALBOT AND ENVIRONS AND CROWN LAND RESERVES

PLANS OF MANAGEMENT ISSUES PAPER

Submitted to:

Narrandera Shire Council
141 East Street
NARRANDERA NSW 2700

Attention: Mr Frank Dyrssen

Ph: 0269 59 5510
Fx: 026959 1884
Em: Frank.Dyrssen@Narrandera.nsw.gov.au

Submitted by:

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2 November 2012

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ANNEXURES

- Annexure 1: Diagram of Lots around Lake Talbot**
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1.0 EXECUTIVE SUMMARY

This Issues Paper outlines key issues for some 30 separate Crown Land sites within the Narrandera Shire, including bushland areas, sportsgrounds, waste disposal areas, cemeteries, passive recreation areas and major recreation precincts.

Many of the Crown Reserves are operating effectively and generally in line with community standards, however there is a general community desire to see upgraded amenities and change rooms in the sportsground sites.

Other sites have the need for more regular maintenance.

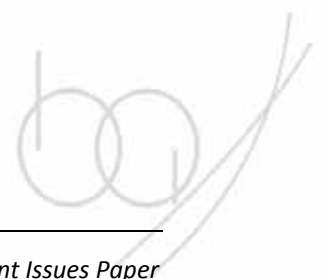
The two sites which have attracted the most significant comment and attention are the Lake Talbot and environs area, and the Brewery Flat area in Narrandera.

Lake Talbot and environs

The Lake Talbot and environs is reserved for public recreation, and is a significant boating, swimming, fishing, recreational, tourist and aesthetic asset for the Narrandera and district community. The Lake Talbot bushland reserve area has significant flora and fauna, Aboriginal cultural heritage and aesthetic values, which can be enhanced and promoted.

The key issues for the Lake Talbot and environs are:

- Preservation of the natural attributes of the Reserve;
- Sensitive development of mountain bike tracks and walking trails in the Reserve, and banning of motorised vehicles;
- Development of the Rocky Water Holes area as a canoe launching area, with amenities;
- Control of Cumbungi in the ski areas and an increase in water flow to benefit water quality, water oxygenation and fish health; and
- Provision of amenities and infrastructure such as shelters, BBQs and recreation sites within the Reserve and the ski ramp parking area.



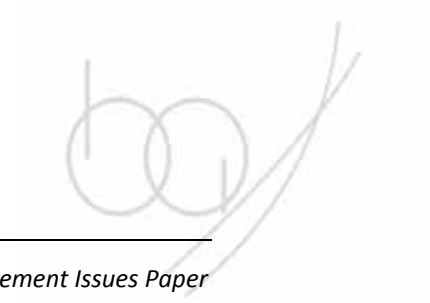


Brewery Flat area

Brewery Flat is concurrently reserved for public recreation, and Camping/Travelling Stock Reserve. The land is an attractive stopover for visitors to Narrandera and travellers, with proximity to the Murrumbidgee River, the historic Brewery ruin and plenty of shade trees.

The key issue for Brewery Flat is the use of the land for free overnight stays by caravan and RV owners. This casual use is perceived to be at the expense of the two caravan parks in Narrandera, and has attracted strong criticism over the past few months.

The above are key issues for the Plan of Management process to consider.





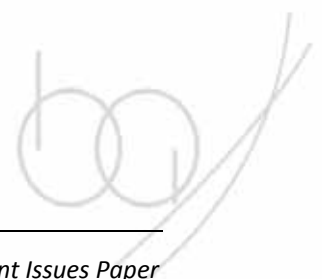
2.0 INTRODUCTION

Booth Associates were appointed by the Narrandera Shire Council in August 2012 to prepare new and revised plans of management for Crown lands where the Council is trustee or proposed to be trustee. These lands comprise some 30 individual sites, ranging in size from 0.25ha to over 250ha, with a variety of land uses and building improvements.

The land uses vary from well used sportsgrounds to passive bushland, with varying levels of community use and ongoing maintenance requirements.

Some of the more well-known sites include:

- The Lake Talbot Nature and Public Recreation Reserve on the north side of the Main Canal;
- The Brewery Flat Camping and Travelling Stock and Public Recreation Reserve in Narrandera;
- The Grong Grong Rodeo/Sportsground;
- The Grong Grong and Barellan Cemeteries;
- The Rescue Squad Headquarters building in Narrandera; and
- The Watermain Street reserve in Narrandera.





3.0 PLAN OF MANAGEMENT PROCESS

The Crown Land Plans of Management are prepared under the Crown Lands Act 1989, with specific guidance provided under Chapter 5 of the *Reserves Trust Handbook – Plans of Management*.

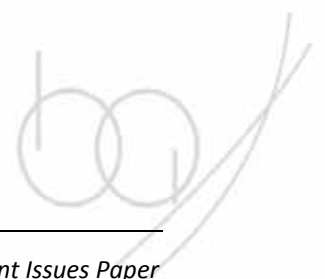
Chapter 5.1 of the Handbook describes a Plan of Management (PoM) as follows:

“A plan of management is the document which defines the value, use, management practices and intent for the broad public purpose for which the land has been reserved or dedicated. The plan of management should be consistent with the public purpose for the reserve and the principles of Crown land management, as well as guidelines, policies, and legal requirements which may apply to the reserve such as the provisions of environmental planning instruments (EPIs) and development control plans (DCPs) made under the provisions of the Environmental Planning and Assessment Act 1979.”

This Issues Paper was developed to inform on the development of the PoMs, based on consultation with a variety of community groups and stakeholders who have interests in the various sites.

The Issues Paper will be presented to the Plan of Management Steering Committee. Booth Associates intend to prepare a separate PoM for the Lake Talbot area, and one other integrated PoM which groups like Reserves together, for example, sportsgrounds, bushland area, play grounds, cemeteries and tip sites.

For simplicity this Issues Paper will discuss sites according to their town based location in either Barellan, Grong Grong or Narrandera.



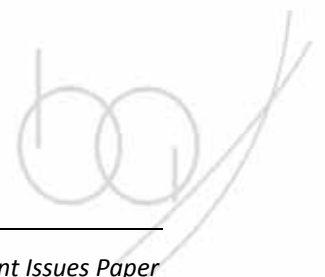


4.0 CONSULTATION

The community and stakeholder consultation for this project was carried out by Associate Consultant Anthony Newland, who is familiar to the Council through his ongoing work on the Narrandera LEP.

The consultation consisted of the following:

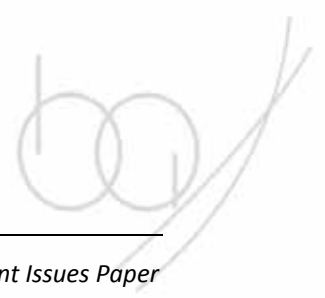
- Inception meeting with Council Managers and staff, in Narrandera on 4 September, 2012, including representatives on the Noxious Weeds Committee, Parks and Recreation, Tourism and Technical Services;
- Meeting with the Lake Talbot Environs Committee, in Narrandera on 19 September, 2012;
- Meeting with the Grong Grong Progress Association/Hall Committee, in Grong Grong on 9 October, 2012. This meeting included representatives from the Progress Association, Rodeo Committee and the Grong Grong Anglers Club;
- Meeting with the Barellan Progress Association/Hall Committee, in Barellan on 10 October, 2012;
- Meeting day in Narrandera on 17 October, 2012. Discussions were held with Bill Moller of the Murrumbidgee Field Naturalists, Barry Bolwell of the Lake Talbot Caravan Park and Ken Jones of the Narrandera Caravan Park, Matthew McLellan of the Narrandera Cricket Club, Bob Manning, Mark Wilkie representing the Narrandera Rotary Club, Peter Beal of the Wetlands Committee and Lake Talbot and Environs Committee;
- Telephone discussion with Wal Lingen of the Rescue Squad;
- Telephone discussion and meeting with John Hornbuckle of the Narrandera Forests Nursery;
- Email discussion with Simon Lee of the Narrandera Swimming Club;
- Meeting with Phil Carmichael of the Lake Talbot Tournament Water Ski Club, in Wagga on 24 October, 2012;
- Telephone discussion with Lee Reavley, Secretary of the Narrandera Lizards Junior Rugby League Football Club (and involved in Little Athletics locally);
- Attempts were also made to contact the Regional Manager of Holcim with invitation to the Narrandera consultation day and follow up phone calls;
- Letters sent to Murrumbidgee Irrigation on 10 September, 2012 and Crown Lands Division on 11 September, 2012;
- Telephone discussion with Luke Pearce of NSW Fisheries on 29 October, 2012;





- Telephone discussion with Noel Heath, Operations Manager with Murrumbidgee Irrigation on 29 October, 2012; and
- Telephone discussion with Bruce Harrison, Operations Officer with Murrumbidgee Irrigation on 30 October, 2012.

Written submissions were provided to Booth Associates by the Murrumbidgee Field Naturalists, the Lake Talbot and Environs Committee and Peter Beal.





5.0 BARELLAN SITES

5.1 Barellan sportsground

For the purposes of this project, this site is known as Site No. 1.

The Sportsground comprises Lot 14, DP 1149099, is 4.9ha in area and is located in Mulga Street. The Sportsground has a recently erected building comprising kiosk, store, disabled WC and callers' box.

The key issues for the Sportsground are:

- The need for a new integrated change room and toilet building to replace the current change room in the northern part of the ground;
- Better directional signage to the ground; and
- The potential to provide an RV and caravan stop in the north or north east corner of the ground, for the benefit of the town.

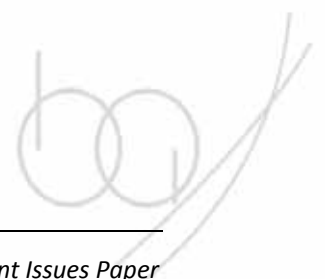
5.2 Children's playground at Barellan Hall

For the purposes of this project, this site is known as Site No. 2.

The playground is on Lot 16, Section 3, DP 758052. It is part of the Barellan Community Hall site, which is 2,023m² in area.

The key issues for the playground are:

- The playground is in very poor condition and is probably not OHS compliant, representing a risk to users of the facility. Action to rectify this should be taken at the earliest possible opportunity. It has a low height fence to the street; and
- A unisex toilet is needed, with possible use in conjunction with the disabled toilet in the Hall. This may require securing part of the Hall to permit separate toilet use.





5.3 Barellan Cemetery

For the purposes of this project, this site is known as Site No. 3.

The cemetery is located on Lot 7001, DP 94878. The key issues for the cemetery are:

- A question over the exact map location of the cemetery – is the block to the south of the cemetery part of the Reserve or privately owned? and
- The Cemetery needs new gates and front entrance, better directional signage, and a monthly tidy up by the Council.

5.4 Night soil depot and rubbish depot

For the purposes of this project, this site is known as Site No. 4.

The Barellan Tip is on the Barellan Tip Road west of town and north of the rail line, and comprises Lots 18 and 104, DP 751672.

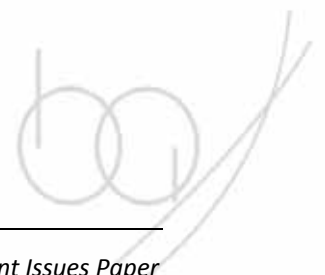
The key issues for the Tip site are:

- Tidy up the old rubbish area, as it is unsightly; and
- Cut back the woody regrowth within the Tip – a request from Les Irvine, Captain of the Barellan Rural Fire Service.

5.5 Bushland sites around Barellan

There are a number of Crown Land bush areas around Barellan, comprising:

- Land north of the golf course, comprising Lot 7011, DP 94947, total of 38ha (Site No. 5 on the council mapping Brief);
- Land along Manning Road and Barellan Merribee Road and between Barellan Road and the Barellan Cemetery Road and comprises Lot 7003 DP 94875, Lot 7001 and Lot 7002 DP94944, Lot 7004 DP94945, Lot 7005 DP 94946, Lot 48 DP751672, Lot 7003 DP1152481, Lot 701 DP94874 (Site No. 6 on the Council mapping Brief). Some of this land along the Barellan Merribee Road is leased for grazing; and
- Land on Sandy Creek Road, west of the Graincorp site, comprising Lot 7013, DP 94873 is 11.2ha. Part of this site is leased to Graincorp (Site No. 7 on the Council mapping Brief).





There are no key issues for these sites. The bush reserve status quo should remain.

5.6 Vacant land off Hughenden Road

For the purposes of this project, this site is known as Site No. 8.

This land comprises Lot 73, DP 751740 and is listed under the Barellan Hall Trust. The land is on the Barellan Merribee Road about 8km west of the town. The land was apparently the site of a primary school building (now removed). The aerial photograph of the site indicates the remains of a sports oval and the remains of a tennis court.

There are no key issues for the site. Its preferred use is for a grazing lease.

5.7 Yvonne Goolagong Park locality

For the purposes of this project, this site is known as Site No. 9.

There was some confusion at the Barellan consultation about the location of Lots 7008 and 7009, DP 94877. It was assumed that the land was Yvonne Goolagong Park, and responses were given relevant to that park, for example new toilets, sealing between the kerb and gutter and carriageway, removing peppercorn trees progressively with under planting, external lighting needed to the toilet area, better garbage and recycling facilities.

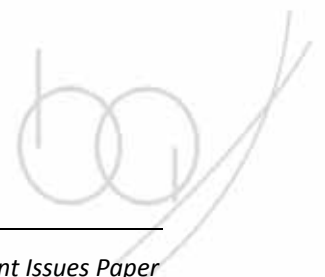
However a more detailed search of the allotments indicates that they are two long narrow lots between the current park and the railway land and silos. Yvonne Goolagong Park and the CWA building are within the road reserve of the Burley Griffin Way (Lot 2 DP47221 and Lot 109 DP 726536 respectively), under the control of the Council and RMS.

5.8 Public Carpark, Yapunyah Street

For the purposes of this project, this site is known as Site No. 10.

The car park comprises Lot 17, Section 3, DP 758052 and is reserved for community purposes. The car park is used as a weekly drop off point for young students, as it has a rear lane access which avoids main road use. The car park is handy for elderly residents.

The key issue for the car park is to retain and maintain it for ongoing use and to maintain and upgrade the existing garden.



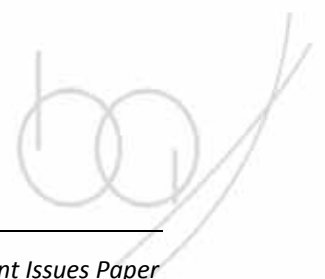


5.9 Kamarah Sportsground (Kamarah)

For the purposes of this project, this site is known as Site No. 14.

Kamarah is a separate locality to Barellan, however at the Barellan consultation a resident of the locality noted that the key issue for the Sportsground is to provide power to the canteen, and drop toilets (vs the current pan toilets). The ground needs basic maintenance. At present the local cricketers maintain the ground.

The site has an Aboriginal Land Claim pending which was lodged in May 2006. Further advice is required from the Department of lands as to whether the Claim has an impact on the preparation of the PoM.





6.0 GRONG GRONG SITES

6.1 Grong Grong River Road (Green Valley Reserve)

For the purposes of this project, this site is known as Site No. 11.

The Green Valley Reserve is 14.56ha in area and is located fronting the Murrumbidgee River at the southern end of the Grong Grong River Road. The Reserve comprises Lot 7003, DP 1024690.

The Reserve, for Public Recreation, has in previous times had facilities such as a table and benches, however these have been vandalised/burnt.

The key issues for the Reserve are:

- Provision of vandal proof table/benches and shelter and a BBQ grill;
- The access road should be graded and the use of the access through private land discouraged;
- The Reserve has the potential for greater use;
- A swimming beach is available; and
- If more people use the Reserve, there may be a greater risk related to persons jumping/diving off the high bank. This should be considered by the Council.

6.2 Grong Grong sports ground/rodeo ground

For the purposes of this project, this site is known as Site No. 12.

The Grong Grong Sportsground, also known as the Rodeo Ground, comprises Lot 1, Section 27, DP 758477 and Lots 1 – 10, Section 28, DP 758477 and Lot 7003, DP 1025178.

The key issues with the Sportsground site are:

- The Sportsground needs a new toilet block of a size suitable for rodeo and other events. This facility requires a new septic system to suit the predicted event loading. An integrated facility, with a shower area and canteen (facing the arena) should be provided, to give best value for money;
- A question has arisen as to whether caravans and RV's are able to stop overnight at the Sportsground. The land is reserved for Public Recreation, which like Brewery Flat does not necessarily entitle persons to stop overnight. An alternative stopover point and location of a RV sewer dump site is within the park near the General Store. It has been suggested that the Council has a lease from the ARTC over this area. This will be checked with the Council; and



- The Council wishes to have the Narrandera and District Gymkhana Club Inc. take over the trust to manage the Sportsground via a community trust. The Council does not wish to grant additional temporary licenses for the land, and is uncertain if they will grant another temporary license in 2014.

6.3 Grong Grong Cemetery

For the purposes of this project, this site is known as Site No. 13.

The Cemetery is located on Lachlan Street in an undeveloped part of the Village (east) and comprises Lot 7300, DP 1136149.

The cemetery is in active use and the key issues are:

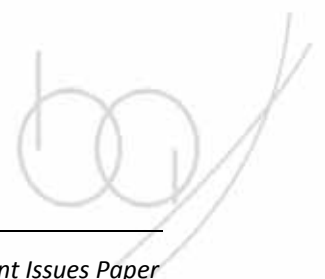
- The need for better directional signage; and
- Better maintenance (slashing, mowing and snipping). It has been noted by residents that maintenance is typically carried out as a series of separate activities over different days, and that there may be efficiency (time, labour and travel) gains if all maintenance was carried out on the one day, in conjunction with other sites in the Village such as the garden outside the General Store and the Village entrance feature.

6.4 Grong Grong Tip

For the purposes of this report, this site is known as Site No. 29.

The former tip has an area of 3ha and consists of Lot 230, DP 750821 and Lot 242, DP 750821. The tip was used by the Grong Grong community but has since been closed.

The key issues for the tip are to retain groundcover and to ensure that there is no emission of waste or affected groundwater to the environment.



7.0 Lake Talbot and Environs

Given the size and significance of Lake Talbot and environs a specific PoM for this area will be prepared. The Crown Land incorporating Lake Talbot and environs underwent a title conversion in late 2010, resulting in a series of allotments under DP 1159952. These lots are shown on the DP diagram attached as Annexure 1.

The lots include:

- **Lot 7311** – incorporating the western part of the escarpment and bush area, part bordered by Broad Street, including Rotary Lookout, the Holcim site and part of the Lake;
- **Lot 7310** – the north part of the escarpment, including part of the Lake. The lot is bounded to the north by Old Wagga Road;
- **Lots 7312 and 7313** – the eastern part of the Lake and bush area. Lot 7313 is bounded to the north by Old Wagga Road;
- **Lot 7316** – A long narrow strip of land running along the south border of the Main Canal, up to the start of Lot 7313 opposite. This lot is effectively part of the Narrandera Reserve;
- **Lot 317 in DP 41709** – a bushland lot located immediately north of the Old Wagga Road;
- **Lot 117, DP 751719** – former quarry lot forming part of the overall reserve, surrounded by Lot 7311; and
- **Lot 7318** – a small lot located on the south east corner of the Reserve which is effectively part of the separate Narrandera Nature Reserve.

The Lake Talbot area is one of the key recreational assets for the town and the district. The PoM covers many different aspects of the Lake Talbot area, the key issues for which are provided in separate headings below.

7.1 Flora and fauna

Booth Associates arranged for a flora and fauna survey to be carried out by Hamilton Environmental Services. The preliminary results of the survey indicate that the bushland reserve areas contain a number of different vegetation communities, including:

- A Dwyer's Redgum and White Cypress community (occupying the higher, rocky outcrops and the escarpment with shallow soils);
- A Grey Box and White Cypress-pine woodland, found on the flatter areas at the top and bottom of the escarpment and deep sandy soils;



- A mixed woodland, comprising Yellow Box, and a mixture of Grey Box, White Cypress-pine, River Red Gum and/or Dwyer's Red Gum, found as an intermediate community adjacent to the above woodlands;
- River Red Gum forest, found on the lower parts of the site on the floodplain, and
- Cumbungi and Common Reed macrophyte community, interspersed with aquatic herbland and open water, found on Lake Talbot.

In NSW the grey box and mixed woodland communities are endangered. The River Red Gum forest is vulnerable.

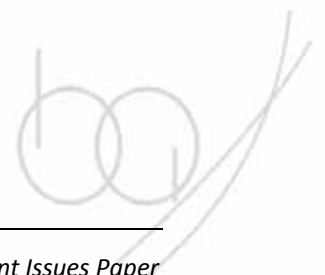
Field surveys revealed seven threatened fauna species within the Reserve area, but no threatened flora species. Notwithstanding this threatened species searches indicated a large number of threatened species within the Reserve or within 5km of the Reserve.

Hamilton Environmental Services summarise their review by noting the following:

"The Grey Box-White Cypress-pine Woodland, Yellow Box Mixed Woodland and River Red Gum Forest communities are threatened in NSW (Environment and Heritage 2012). This effectively covers the majority of Reserve, and for the sake of uniformity, it would be prudent to treat the entire Reserve as threatened. This implies that the following defined and pertinent threatening processes should be avoided across the Reserve (after Environment and Heritage 2012):

- *Alteration to the natural flow regimes of the streams and floodplains;*
- *Prevention of the removal of any 'bushrock';*
- *Prevention of the clearing of any native vegetation, and especially the loss of any hollow-bearing trees;*
- *Reduction of competition and grazing by Rabbits;*
- *Reduction of competition and habitat degradation by Feral Goats;*
- *Reduction of the predation by the Red Fox;*
- *Avoidance of a fire regime that is based on high frequency fire (ie fuel reduction) which will result in the disruption of life cycle processes in plants and animals;*
- *Prevention of the removal of dead wood and dead trees."*

Hamilton Environmental Services also noted the presence of rubbish dumping and weed escape throughout the Reserve, but particularly within the lot north of Old Wagga Road, and the elevated cleared areas south of Old Wagga Road.





It is apparent that the bushland areas flora and fauna attributes, which can be enhanced, require protection. These findings are backed by the information provided by the Murrumbidgee Field Naturalists, who have observed threatened species in the Reserve over a longer period, and who have also proposed a weeding program for various parts of the Reserve. The Field Naturalists have provided a written response which is attached to this Issues Paper as Annexure 2.

7.2 Aboriginal cultural heritage

Whilst a specific study of Aboriginal heritage is not included in the preparation of the PoM, a separate review has been carried out in order to inform a potential drainage channel project within the reserve (see below).

The review has found that there are areas of Aboriginal cultural significance within the nominal drainage channel, including scarred trees. It is likely that there are a number of areas of Aboriginal significance throughout the whole reserve area, which will require investigation prior to recreation or other works being carried out.

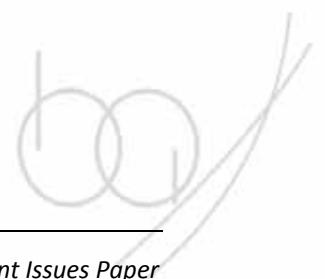
7.3 Potential drainage channel through Reserve

The Council is presently investigating the location and feasibility of a drainage channel through the northern part of the Reserve (Lot 7310) running adjacent to Old Wagga Road into an existing intermittent creek and into Lake Talbot (across the middle of Lot 7311).

The drainage channel would divert stormwater from the large catchment (Red Hill, Pine Gully Road area) which presently floods the central business area during larger storm events.

The depth of the channel required to achieve gravity fall of stormwater, would necessitate a large swathe through part of the reserve, and would have significant implications for flora and fauna, Aboriginal heritage, quarrying of rock, sediment and erosion control in the channel, creek and Lake and similar environmental matters.

The draft PoM should acknowledge the potential for the drainage channel, subject to a suitable environmental solution, however the final decision on the channel is likely to be beyond the timeframe of the preparation of the PoM.





7.4 Access trails and bicycle and motorised vehicle access

A common theme amongst contributors during consultation was that of walking tracks requiring upgrade, particularly in the steeper areas leading down the escarpment to the Lake edge, within Lot 7311. Some of these walking tracks were constructed by the Department of Lands in the 1970s.

A Council/community working party has been working on a Master Plan for walking and cycling tracks.

There was widespread comment and agreement that motorcycles and other motorised vehicles should be banned from the Reserve, due to the significant damage/cutting of paths, loss of vegetation and subsequent erosion.

There was good support for a series of upgraded and carefully located mountain bike trails to be constructed, to enhance the existing network and provide potential for district and regional events to be held in Narrandera. Mountain bike events are viewed as having very good potential for expansion and marketing. Mountain bike trails should be distinguished from walking tracks.

There was strong support among contributors for the promotion of the nature walk aspects of the Reserve and common, particularly when the new bridge is erected across the Bundidgerry Creek “broken bridge” section.

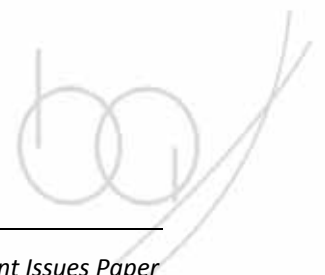
7.5 Lake “Weed” Infestation

Lake users, including the swimming club, ski club and environs committee, noted the expanding presence of Cumbungi. There is a large and expanding area of Cumbungi in the north east portion of the Lake adjoining the easternmost island. The species in the Lake is native, however in many areas Cumbungi is considered to be a weedy native and invasive species. Whilst it does have some benefits such as habitat and capturing sediment, it can also congest waterways, change water flow and out-compete other native plants, according to a *Greening Australia* Fact Sheet (http://www.greeningaustralia.org.au/uploads/Our%20Services%20%20Toolkit%20pdfs/YAFI_No2_Cumbungi.pdf).

The swimming club and ski club wish to see the Cumbungi heavily controlled and monitored and see a possible solution in providing better water flow through the upper reaches of the Lake to stem Cumbungi growth (see section below). The ski club slalom course would benefit from a cutback of the Cumbungi.

On the other hand, NSW Fisheries has been consulted and has advised that the Cumbungi and reed area is a protected habitat for fish and important for sediment control, and that natural growth of the Cumbungi should not be stopped due to these benefits.

Each year NSW Fisheries releases around 5,000 Murray Cod and 5,000 Golden Perch fingerlings into the Lake.





7.6 Lake Water Quality and Flow

It is fair to say that during the course of discussions with various stakeholders there has been some confusion as to the management of the Lake, and who is responsible for operating the existing regulators and when.

A number of stakeholders expressed concern at water flow levels through the Lake. This includes a submission from Ken Murphy attached as Annexure 3. The concern was that regulators were placed at the head and foot of the Lake a number of years ago, and the regulators were restricting flow to the detriment of water quality and fish health.

According to NSW Fisheries an increased water flow rate through the Lake would have benefits for water exchange, dissolved oxygen, nutrient loading and fish health.

The swimming club believes that increased flow will benefit water quality, and notes that in recent times water quality has deteriorated, to the point where swim events are now jeopardised.

The Lake Talbot and environs Committee has strong views about water flow being improved within the Lake, by modification of the regulators.

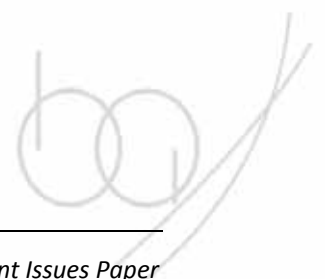
The Committee's preference is that the regulators to the Lake be modified, as the second option of emptying the Lake and dredging silt is impractical and extremely expensive on a value for money basis.

Booth Associates have investigated this matter and liaised with Murrumbidgee Irrigation understand the issues.

The Lake has a board drop style regulator at the eastern (upstream) end which receives water from the Main Canal. At the western end (Pool end) there is a wind up partition regulator. The regulators were installed at the Council's request two to three years ago, to avoid the Lake level dropping during winter. Prior to this the Lake would drain in winter when the Canal was drawn down due to low demand and/or maintenance.

Noel Heath, Operations Manager with Murrumbidgee Irrigation was contacted to discuss operational issues associated with the Main Canal and the Lake. Noel noted as that there is an agreed protocol between MI and the Council to regulate the height of the Lake. The existing control structures are to remain open unless Canal maintenance or customer drawdown causes the Canal level to drop, whereupon the controllers can be closed to preserve Lake level. The protocol includes measures to contact NSW Fisheries in certain circumstances.

The Lake Talbot water control protocol is attached as Annexure 4, and clearly sets out the obligations of each party.





It has been suggested that closing the regulators over the winter period may allow more sediment to drop out into the Lake, particularly around the Cumbungi, allowing more Cumbungi growth and lowering the Lake water depth further. It has been suggested that allowing the Lake to drain every season may assist in limiting growth of the Cumbungi. Booth Associates offer no qualified opinion in this regard, but note that this is something the Council could consider.

It may be that even with the control structures fully open, that the Lake stakeholders want the structures to be modified to allow more flow through the Lake. The upstream regulator was apparently made wide enough to pass a small boat through, and is the same width as the original break in the Canal wall which enabled the Lake to fill initially.

It seems that it is within the Council's ambit to approach MI to further derestrict the control structures; however this should be evaluated with respect to the prime usage intention of the Lake.

7.7 Improving the Lake to retain and enhance recreation events

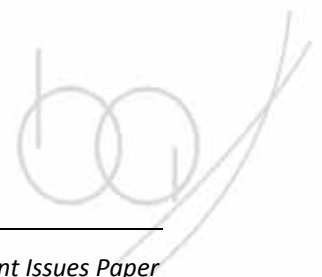
The ski club has noted that since the willows have been removed from the Main Canal wall an unintended consequence is reflected back waves from the wall into the ski lane, particularly during tournaments. The best way to fix this is to erect a 1:10 barrier along around 250m of the Canal wall to dissipate the wave action and limit ski wave "echoes".

The ski club and environs committee have noted that power and water, along with a toilet and BBQ/shelter facility should be provided to the boat ramp area, also noting the current construction of an expanded parking area.

The ski club also note that an area of sediment build-up around the present ski jump practice area could be removed to make this area safer. This could be achieved if the Lake was at a lower level. Local skiing facilities would also benefit from a floating ski dock large enough for two boats, located at the island next to the practice ski jump area.

7.8 Rocky Waterholes area and former sport and recreation reserve

Feedback from stakeholders indicates that the entrance road should be engineered for greater stability and less maintenance, the four wheel drive use of the area needs to be banned and monitored, a canoe launching area constructed and a toilet, BBQ and shelter constructed. The environs committee noted that the Rocky Waterholes area was a significant local feature and could be better utilised and improved for non-motorised boating and mountain bike activities. Rocky Waterholes is near to the Broken Bridge area where the new panel bridge will be erected. It has been suggested that a new toilet facility could be erected near the Broken Bridge, however a single facility at the Rocky Waterholes may suffice.





7.9 Access to Snake Island

The environs committee has noted that Snake Island has good future potential as a picnic area, if access can be provided, perhaps by boardwalk, from the boat ramp side of the Lake.

Currently Snake Island is very difficult to maintain, as it is difficult to access via larger machinery. The Island has blackberry bushes and long grass. Goats have been placed on the Island in an attempt to control growth. This is not the preferred approach of some environmental groups, but represents a practical approach to the issue.

7.10 Lake Talbot risk management

The ski club has a recently prepared a risk management plan for use of the lake, which takes note of areas with water hazards such as stumps and water vegetation.

The Council has a series of requirements for the use and management of the Lake in order to meet the requirements of their insurers. These requirements should not be compromised in proposing works or activities within the revised plan of management for the Lake and environs.

It is noted that there are existing fire trails within the reserve area which should not be modified without consultation and the consent of the NSW Rural Fire Service.

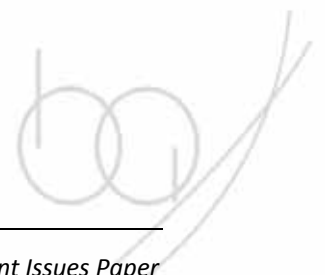
7.11 Aboriginal Land Claims

Lot 317 north of Old Wagga Road has an Aboriginal Land Claim pending which was lodged in August 2009, and Lot 117 (former quarry site) has an Aboriginal Land Claim pending which was lodged in November 2004. Further advice is required from the Department of lands as to whether the Claims will have an impact on the preparation of the PoM.

7.12 Regional level recreational asset development

The escarpment area of the Reserve has excellent potential to be developed as a significant tourist and sporting attraction. The escarpment has beautiful views, mountain bike event potential and natural habitat. Lake Talbot and environs can be developed as a sporting and leisure hub which could be a stopover point for travellers.

The escarpment would benefit from a Master Plan showing location of facilities and amenities. The PoM will include a Master Plan drawing, which will be given to stakeholders for feedback.





7.13 Relevant sites near to Lake Talbot

7.13.1 Forest Nursery

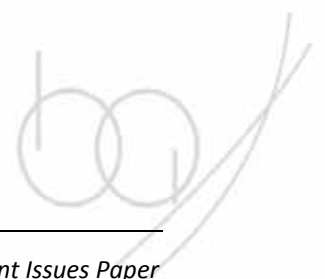
The Forest Nursery is located adjoining the Lake Talbot pool entrance with a long frontage to Broad Street. The property is located over a number of titles, the chief of which is Lot 42, DP 751719.

The Nursery is Crown Land and has been continuously used since the late 1940s. Recently the State Government has attempted to lease the facility via Tender, with little success. State Forest Nurseries at Inverell and Forbes have closed. The future of the Narrandera facility is not certain, however the Council should keep a watching brief as there may be potential to use the Nursery site as part of a wider recreation precinct around Lake Talbot.

7.13.2 Holcim Batching Plant

The Holcim facility is located over 1.5ha and is located on Crown land reserved for Public Recreation between the water reservoir and the Caravan Park on Broad Street. The facility has been there for a considerable time, and there is a partially rehabilitated quarry directly to the north.

The facility is a legacy of previous development and the quarry and is located in a strategically poor position with respect to the surrounding Public Recreation Reserve and its current and future recreation potential. The facility occupies a prime position overlooking Lake Talbot and it would be advantageous for it to move to an industrial estate. The Council may be able to facilitate this action, as an industrial landowner, through use of various incentives, for the greater public good of the Lake Talbot precinct.





8.0 NARRANDERA SITES

8.1 Rescue Squad site

For the purposes of this project, this site is known as Site No. 15.

The Rescue Squad property is known as Lot 1, DP 1018844 and Lot 4, DP 624855. Lot 1 contains the Headquarters building on the corner of Irrigation Way and Sugden Street, but Lot 4 appears unrelated to the main property, being a very small triangular site on a separate corner of Twynam Street and Irrigation Way. The approximate site area of Lot 1 is 4,047m².

The Rescue Squad representative noted that the Council has not contributed to any of the current facilities on site, however the original building is in need of a replacement roof, including a higher pitch and trusses (due to rain infiltration) and the removal of the split level between the kitchen/toilet area and the remainder of the floor area. There is also a drainage problem on site caused by a neighbouring property.

The site has an Aboriginal Land Claim pending which was lodged in May 2006. Further advice is required from the Department of lands as to whether the Claim has an impact on the preparation of the PoM.

8.2 Shady Street Park

For the purposes of this project, this site is known as Site No. 16.

The Shady Street Park is located at 17 Shady Street, Narrandera and occupies an area of 1,169m², slightly larger than one house block and generally triangular in shape. The title is Lot 33, DP 252051.

The park has play facilities for children, in good condition, and is apparently popular with children and parents.

The park did not elicit any particular comments during consultation. A more detailed examination of the park will be undertaken for the preparation of the plan of management.

8.3 Watermain Street Reserves

For the purposes of this project, this site is known as Site No. 17.

Watermain Street has three reserves grouped together in area covering around 6.5ha. The double water tank on the eastern end of the street is reserved for water (Lot 7014, DP 1024984), and the old brick base water tower at the western end is also Reserved for Water (Lot 7015, DP 1024981).

The brick base tower is a heritage item under the Narrandera LEP.



The remainder of the land is reserved for Public Recreation (Lot 7011, DP 1024985) and has an area of 5.96ha. The key issues for the Public Recreation Reserve are as follows:

- The Reserve has a heritage item brick based water tank at the western end;
- The Reserve has magnificent views across the township;
- The Reserve needs to be better maintained and is sometimes a fire and snake hazard.
- The Reserve, at the eastern end, is used by residents as a cut –through route to cross the rail line to the business area (illegally). A footbridge is required to cross the rail line;
- The Reserve has no recreation facilities, but is one of the largest open space areas in the town;
- There is ample potential to develop the reserve for recreation purposes;
- The area surrounding the reserve has some public housing and is perceived to be less safe than other parts of the town; and
- One of sites has an Aboriginal Land Claim pending which was lodged in May 2009. Further advice is required from the Department of lands as to whether the Claim has an impact on the preparation of the PoM.

8.4 Brewery Flat

For the purposes of this project, this site is known as Site No. 18.

The area known as Brewery Flat has concurrent reservations for Public Recreation (Reserve No. 57075) and Camping and Travelling Stock (Reserve No. 64706), has an area of 7.108ha and several titles, being Lots 83, 122 – 124 and 127, DP 751719, Lot 7003, DP 1070114 and Lot 7047, DP 1124066.

The Brewery Flat area is contentious as the area is used for overnight stays by caravan and RV visitors, at the expense of the two caravan parks in Narrandera, and Gillenbah. The issue has attracted significant attention over the past few months.

The Department of Primary Industries (Lands) have provided the following advice in relation to the reservations. Note this advice by letter dated October 17, 2012 was in relation to whether the Council could grant a license for grazing over the land, but the principles for other uses would be similar:

- “• *There is an Aboriginal Land Claim over the subject land which remains an impediment and is under investigation.*
- *Whilst one reserve is not necessarily considered dominant, the purpose of ‘Public Recreation’ is more commonly used.*
- *Reserve 64706 camping purposes would originally been associated with the travelling of stock.*





- *The consent to use land reserved for travelling stock should be obtained from the Livestock Health Pest Authority. An impediment to travelling stock should not be imposed by any license for the land.*
- *A license to use the land should not impede or prevent the land being used for Public Recreation or Camping and Travelling Stock.”*

A full copy of the response from the Department is included as Annexure 5. It seems evident that use of the land should not impede its primary purposes of Public Recreation and Travelling Stock, and the Camping activity is related to the former Travelling Stock Reserve.

The Department also noted in the letter that:

“The Reserve Purpose of ‘Public Recreation’ incorporates a myriad of activities and although it is not necessarily Council’s intention that caravans and/or mobile homes “camp” for the night, the purpose of public recreation may include (but not be restricted to) picnics, social sporting events (as evidenced by the sporting pitch), jogging, dog-walking, koala spotting, stop-over ie journey break and use of toilet facilities, bike riding etc.”

The Brewery Flat Reserve is a pleasant area with attractive surrounds, close to the river. It is a good area for informal recreation and for visitor stop overs. It can be accessed by walking tracks from the town area.

It seems that it is within the Council’s ability to require that persons do not stay overnight (this is not legal advice) subject to consideration of other matters such as Narrandera’s status as an “RV friendly town”. It is understood that caravans and RVs also stop over at the Narrandera Showgrounds.

Booth Associates note that the caravan and RV sector is a growth sector and it would be reasonable to provide attractive daytime journey stop points, such as Brewery Flat, but to direct overnight stayers to the two caravan parks in town. If the caravan parks experience undue loss of income from ‘free campers’ their viability could be threatened and significant assets lost to the town.

The site has an Aboriginal Land Claim pending which was lodged in June 2009. Further advice is required from the Department of lands as to whether the Claim has an impact on the preparation of the PoM.

8.5 Former cemetery in Forest Nursery site

For the purposes of this project, this site is known as Site No. 19.

Within the grounds of the NSW Forests Nursery on Broad Street is a cemetery, on Lot 46, DP 751719. The cemetery is located near to the entrance to the Lake Talbot pool. The land is reserved for the Preservation of Graves. There are around eight headstones and many unmarked graves in the site, and potentially outside the bounds of the actual lot, which is the approximate size of two house lots.



Key issues with the cemetery site are (note that this information was derived from a long term employee of the Nursery):

- The cemetery is effectively maintained by Forests NSW, although it is the Council's responsibility;
- Existing headstones need regular maintaining;
- The grounds need mowing and snipping;
- The full extent of the burial area should be established through records or other means; and
- A pedestrian entrance could be provided from the eastern side (pool side).

8.6 Former Narrandera Sanitary Depots

For the purposes of this project, this site is known as Site No. 20.

Lots 166 and 268, DP 751719 are each 2ha in area and are separate reserves for former Sanitary Depots (where night soil pans were typically transported, emptied and sometimes discarded).

The lands are located in north Narrandera adjacent to Adams Street. The present land use is grazing. Due to the previous land use, the sites are considered to be potentially contaminated land. Prior to land use which may involve residential occupation, the land should be tested for contaminants and remediated as necessary.

8.7 Former Narrandera rubbish depot

For the purposes of this project, this site is known as Site No. 21.

The Narrandera rubbish depot is located on Red Hill Road and occupies an area of around 7.4ha. The property description is Lot 311, DP 751719. Key issues for the rubbish depot include maintenance of groundcover and containment of waste in existing cells. Specific plan of management requirements for the rubbish depot will be discussed with the Council's Director of Technical Services.

8.8 Henry Mathieson Oval

For the purposes of this project, this site is known as Site No. 22.

Henry Mathieson Oval is reserved for Public Recreation and the title description is Lot 269, DP 751719. The Oval is a key facility for the Council, as it takes pressure off the main sportsground.

The Oval has a canteen and toilets, change rooms and good lighting, and is fully irrigated. The facilities, whilst reasonable, are considered by user groups to be inferior to the main sportsground.



The Oval is oriented to junior sport, including cricket, AFL and Little Athletics. The Oval has the only quality set of cricket nets in Narrandera. These nets, with three full length pitches were recently installed, at a cost of around \$40,000. Council funds were not expended in this upgrade.

“C” grade cricketers (14 to 17 year olds) use the Oval for Saturday morning games. Junior cricket representative games are also played at the Oval.

The Oval is used for junior AFL games, and is also used for junior Rugby League training.

Little Athletics use the Oval regularly for their activities. Henry Mathieson Oval is a key part of the Narrandera sports network.

Booth Associates understand that when the lights were installed the capacity of the oval was limited to one effective sports oval; however this does not seem to be an issue. The installation of the lights means that the oval is offset to centre and the existing synthetic cricket pitch needs to move to the east to a more central position. A new pitch, requiring a new concrete base and synthetic turf, could cost as little as \$5,000 with assistance from the Council and volunteers. A new relocated pitch would allow B grade cricketers to use the Oval, on Saturday afternoons.

Whilst the current facilities are reasonable, the main needs for the Oval are:

- Replace the existing small toilet block in the north west corner with a new facility next to the change room, perhaps an integrated toilet/change room facility;
- Mounded/terrace seating around parts of the Oval with shade tree planting;
- Shade tree planting around the north and east areas; and
- A new long jump pit. If a new long jump is provided, (low cost), Little Athletics carnivals and school carnivals from the District can be held at the Oval, with good benefits to the Town;
- There has also been a request from a Councillor to consider establishing Junior Rugby League fields. The size and orientation of the fields would be considered in conjunction with the cricket pitch relocation described above.

8.9 Japonica Place Park

For the purposes of this project, this site is known as Site No. 23.

The Japonica Place park is located at the northern cul-de-sac end of Japonica Place, which runs north off Watermain Road. The park did not elicit any particular comments during consultation. A more detailed examination of the park will be undertaken for the preparation of the plan of management.

The site has an Aboriginal Land Claim pending which was lodged in July 2009. Further advice is required from the Department of lands as to whether the Claim has an impact on the preparation of the PoM.



8.10 Narrandera Cemetery

For the purposes of this project, this site is known as Site No. 24.

The current Narrandera monumental and lawn cemetery is located off Douglas Street in west Narrandera and is situated over a number of titles. The approximate land area is 9ha.

The operation, use or maintenance of the cemetery did not elicit any particular comments during consultation. However it is suspected that the typical key issue for the cemetery is to provide adequate maintenance of the driveway, pathways lawn areas and headstone surrounds. The town cemetery is a respectful area where residents wish to see a good standard of care.

8.11 Wreck of PS Wagga Wagga viewing area

For the purposes of this project, this site is known as Site No. 25.

The viewing platform to the wreck of the PS Wagga Wagga is Reserve No. 88222, and is located on Lots 301 and 302, DP 751719, Lot 7001, 1115835 and Lot 345, DP 1016914.

The wreck is visible during low river levels.

Feedback from the consultation sessions indicates the following issues for the Reserve:

- Access to the viewing area is not ideal. The access tracks are not well defined and there are random vehicle paths leading to the site;
- The viewing site should be connected/linked with the walking/cycling track around the town and signposted and promoted accordingly;
- There is a need to control bank erosion at the site; and
- The site has an Aboriginal Land Claim pending which was lodged in October 2009. Further advice is required from the Department of lands as to whether the Claim has an impact on the preparation of the PoM.

8.12 Victoria Square

For the purposes of this project, this site is known as Site No. 26.

Victoria Square is opposite the Council Chambers on Victoria Avenue and is the War Memorial site. The title is Lot 80, DP 1140946, with an area of 2,023m².

No particular issues were raised during consultation; however the key issue for the site is maintenance, particularly consistent grass cover, as the site is highly visible and well used by pedestrians and visitors.

The garden within the grounds is regularly maintained by one or two more elderly volunteers.

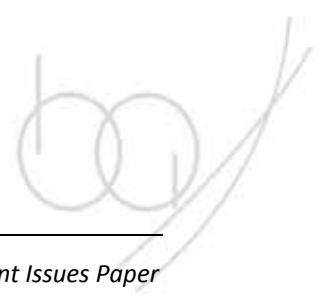


8.13 Teloca House

For the purposes of this project, this site is known as Site No. 30.

The lot is known as Lot 1, DP 722018 and consists of a small rectangle of land at the southern edge of the Teloca House site. Teloca House is a low to medium care aged care facility which is owned by the Council.

There are no key issues for the Teloca House lot, aside from recognising that the lot forms part of a vital community facility and its tenure should not be changed so as to affect the operational future of the facility.



Annexure 1

Diagram of Lots around Lake Talbot

DP 1159952

Registered : 03-12-2010

Title System : CROWN LAND

Purpose : CROWN LAND CONVERSION
L5547-24

Reference Map: NARRANDERA SH 7

Last Plan: 1209-1804, 6989-1804, 142-3110,
3397-3060

DP751719_UP120213_ CA156824
PLAN OF CROWN LAND BEING
RESERVE

Lengths are in metres. Reduction Ratio - NTS

Sheet 1 of 2 sheets

LGA: NARRANDERA

LOCALITY: NARRANDERA

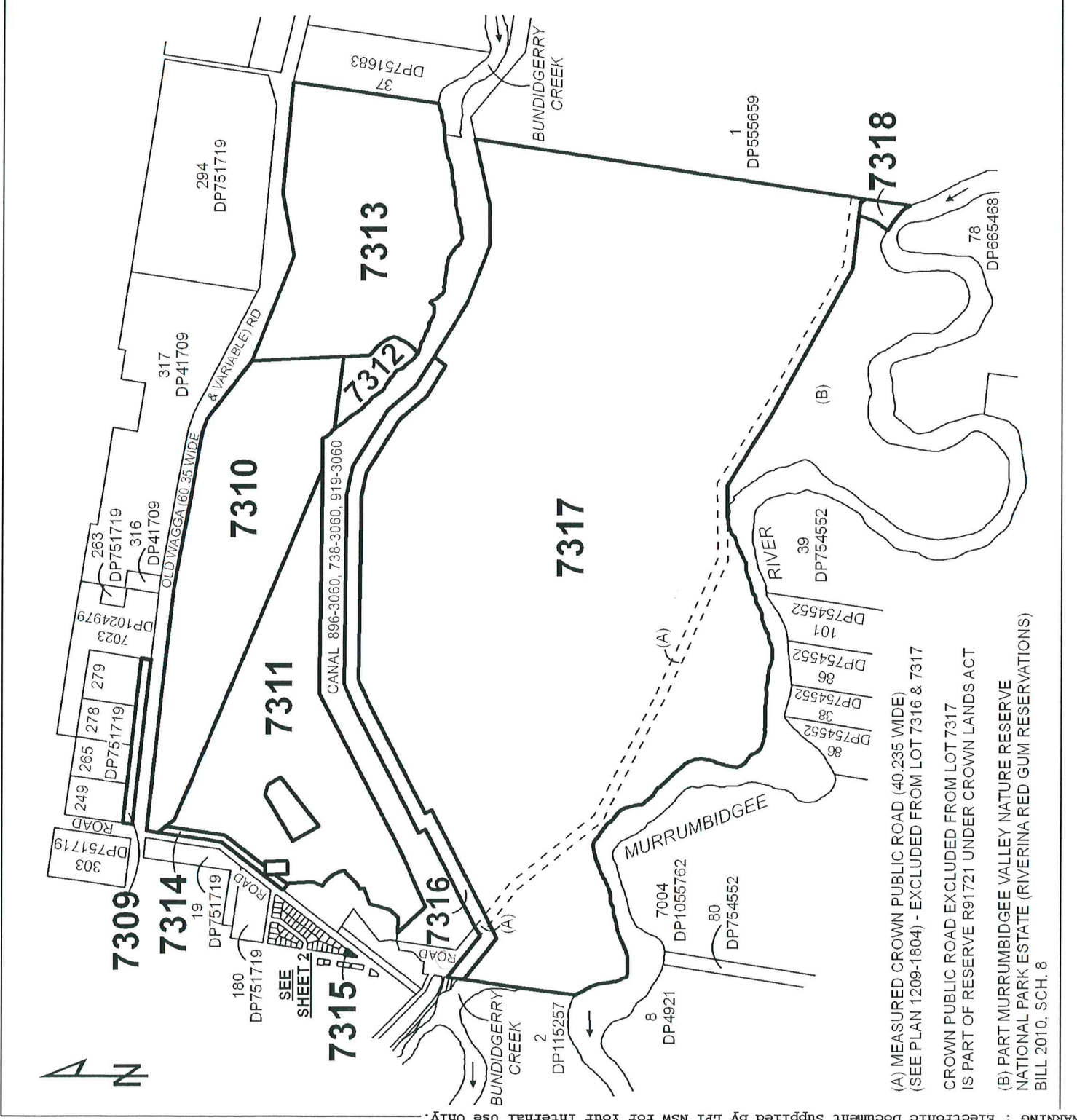
PARISH: NARRANDERA

COUNTY: COOPER

THIS PLAN WAS PREPARED SOLELY TO
IDENTIFY THE LAND ABOVE AND THE
BOUNDARIES HAVE NOT BEEN
INVESTIGATED BY THE REGISTRAR GENERAL

THIS PLAN IS NOT A CURRENT PLAN IN TERMS OF
S.7A CONVEYANCING ACT 1919

Drawn By: SV
Signed Off: RW
Office: Head Office, Crown Lands Division, Newcastle



- (A) MEASURED CROWN PUBLIC ROAD (40.235 WIDE)
(SEE PLAN 1209-1804) - EXCLUDED FROM LOT 7316 & 7317
CROWN PUBLIC ROAD EXCLUDED FROM LOT 7317
IS PART OF RESERVE R91721 UNDER CROWN LANDS ACT
- (B) PART MURRUMBIDGEE VALLEY NATURE RESERVE
NATIONAL PARK ESTATE (RIVERINA RED GUM RESERVATIONS)
BILL 2010, SCH. 8

Annexure 2

Letter from Field Naturalists

Murrumbidgee Field Naturalists(MFN) Comment on Crown Reserves Plan of Management 2012– Narrandera Shire

Thank you for the opportunity to make comment re. the management of Crown Reserves in the Narrandera Shire prior to the establishment of a Plan of Management of said reserves.

The MFN are primarily concerned with the management of the Reserves numbered 1-5 on the map provided being – Lake Talbot Reserve 0 - Lot 7312, 7311, 7310 DP1159952, Old Wagga Road Reserve No. 159002 - Lot 317 DP41709 and Reserves 751719 and 89805 – Lots 7318, 7316 & 7313 DP1159952.

These reserves have significant natural values, are largely intact native vegetation, include rare and threatened native plants and provide critical habitat for rare and threatened native fauna. They are also Native Flora & Fauna Reserves.

It is recommended that these areas continue to be utilised for public recreation but that management of these areas need to be consistent with maintaining their natural values and exclude activities that detract from these natural values and their preservation as Native Flora & Fauna Reserves.

Lake Talbot Reserve Reserve 0 - Lot 7312 DP1159952

Take into account significant native vegetation at Rotary Lookout and beyond. This includes *Diuris sp*, *Pterostylis sp*, *Eutaxia sp*, *Lomandra sp*, *Stypanandra sp*.

Take into account that walking tracks are to be renovated and re-aligned as the existing track has been badly eroded. Make provision for erosion on walking tracks.

Walking tracks are important here as they are close to the Lake Talbot Caravan Park and the visitation associated with it. Take into account when re-planting areas near the lookout that locally native species of local provenance be used as preferred species.

Undertake a weeding program to eradicate feral plants like African Boxthorn, Wild Olive, Date Palm,

Take into account that Significant Native vegetation is also found on the north side of Reserve 1. which include threatened species as listed below and other woodland species of plants which form a ground layer of forbs, herbs and grasses, a shrub layer of Acacia and Hopbush species and a tree layer of *Eucalyptus dwyerii*, *Euc.microcarpa*.

When undertaking any walking track work, or erosion control, threatened plants species present needs to be taken into account. These include *Diuris tricolor*, *Caladenia rileyii*.

Any management actions need to take into account threatened species of fauna that may be present including Brown Treecreeper, Grey-crowned Babbler, Superb Parrot, potential for Barking Owl, Diamond Finch, Square-tailed Kite and Little Eagle.

Take into account that the area on the north western corner is used for under-aged and un-licenced motor bike riding with erosion resulting from these actions.

Take into account that 4 wheel drive training is undertaken in No 1, No 2 and No 5 areas with the result of ground disturbance and erosion. This is not an activity that is consistent with the maintenance of Flora and Fauna reserves, particularly those adjacent to important watercourses.

ID 2 Old Rifle Range Reserve 0. Lot 7310 DP1159952

Significant native vegetation exists on this site with the known threatened species *Diuris tricolor* and *Caladenia rileyii*

Management needs to take into account the presence of the Threatened Flora and Fauna species. Brown Treecreeper, Grey crowned Babbler, Superb Parrot, potential for Barking Owl, Diamond Finch, Varied Sitella, Speckled Warbler, Square-tailed Kite, Little Eagle, plants: *Diuris tricolor*, *Caladenia rileyii*.

Management needs to take into account the use of the north-eastern corner opposite showgrounds for un-licensed motor bike riding with associated erosion problems and safety issues.

ID 3 Old Wagga Road - No. 159002 - Lot 317 DP41709

Management as above

ID 4 Narrandera reserve 751719 Channel bank - Reserves 751719 – Lots 7318, 7316 DP1159952.

Take into account its use as a bushwalking and bike riding site linked to the Narrandera Flora and Fauna reserve and soon to be linked to reserve 5 by a walking bridge over the channel.

Take into account pre-white settlement River Red Gums *Eucalyptus camaldulensis* and their environmental values as nesting hollows and refuge for Ring-Tailed Possums, Brush-tailed Possums, Squirrel Gliders, Barking Owls, Superb Parrots, Eastern Rosellas and Yellow Rosellas as well as several other more common species.

Take into account its use as a levee bank in times of very high river.

ID 5 Reserve 89805 – Lots 7313 DP1159952.

Take into account Significant native vegetation including *Caladenia rileyii* and other *Caladenia* species, *Diuris tricolor*, *Diuris goonooensis* and other *Diuris* species and *Pterostylis rufus* spp.

Take into account that this is a common dumping ground for garden refuse with the potential for environmental weeds. Take into account and lessen the effects of dumping of household and building refuse with potential for toxic materials to be dumped by the use of additional signage.

Note these areas (as are the other areas listed here) are Fauna & Flora Reserves and as such ensure that no hard-hoofed animals, including goats, sheep, horses or cattle be released either by lease or on agistment or for management of vegetation into these areas. The goats that have been released on Snake Island need to be removed so they do not escape to sensitive areas. Horses that are often agisted on Narrandera Flora and Fauna Reserve must not be allowed to return for agistment. Biological soil crusts of algae, lichens and mosses play a very important role in soil dynamics. Soil crusts contribute to soil stability as well as nitrogen and carbon fixation and soil fertility. Where crusts are damaged, for example by hard-hoofed animals or vehicle movements, they are exposed to sheet erosion and can rapidly break down. Crusts can tolerate some damage but recovery is very slow once they have been severely damaged.

Take into account that adjacent wetlands to No 5 are an important native fish breeding and nursery area as well as an aquatic environment suitable for other aquatic fauna.

Take into account that there is a significant Ibis breeding colony in the wetlands adjacent to reserve No 5. This is also an important refuge for other water birds like Spoonbill, ducks and cormorant sp and a breeding area for Peregrine Falcon.

Golden Whistler, Brown Treecreeper, Superb Parrot, Crested Shrike Tit, Red-browed and Double-barred finches and many other woodland birds have been sighted here.

Should you require further information please contact me.

Nella Smith nella.smith0@gmail.com

President - Murrumbidgee Field Naturalists

Date 15th October 2012

Annexure 3

Letter from Ken Murphy

Items for consideration –Plan of Management Lake Talbot and Environs and Crown reserve

Just some thoughts to add to comments already received for the meeting held with consultants this week as I could not attend.

1. The Lake

(a) Water Quality/Flow

One of the key attractions of the Shire (and the Region) is Lake Talbot. A major issue has been willow infestation which was the subject of a \$500,000 grant for their removal. One of the associated issues now that willows have been removed is water Quality.

There is only one inlet and one outlet between the Main Canal and Lake. Since the Lake has had the main canal embankment restored on the northern side and free flow restricted to these inlets/outlets the quality of the Lake water has declined. The solution is for the installation of additional inlets (Culvert Structure) to improve water flow. A design needs to be done by way of a hydrological study so that if future infrastructure grants become available this project can be submitted.

(b) Depth of Lake/Silt Issue

The lake has over many years accumulated silt, largely due to willow infestation and as a result the depth is less than a metre in some sections particularly in the area between the pool and the large island. The shallow depth combined with restricted flow has led to significant problems from aquatic weed.

Along term solution is to dredge silt from the lake. It has been suggested that this project would be worth pursuing as an army exercise.

The value as a water storage has had some preliminary considerations but the cost in relation to storage capacity is marginal when last examined by Murrumbidgee Irrigation .

2. Infrastructure

From a tourism and community aspect there is a need for the management Plan to recognise the provision and location of amenities such as ;

* Toilets , shower and catering facility. These items were discussed and documented as part of a recent grant application under the Better Boating program. The management plan should take into account this documentation

*Extension of power and water to the Boat Ramp and Amenity site also needs to be taken into account in the management plan.

*Reconstructed Car Park –work is scheduled to commence on this shortly.

3. Walking /Cycling Tracks

The network of walking tracks were constructed by the Department of Lands in the early 1970's and sections have fallen into disrepair. The signage has suffered a similar fate. A council sub committee including Alastair Hayward has been developing a blue print for reconstruction of walking / cycle tracks and redesign of signage .

4. Relevance of Current Project to Reconstruct a Bridge between Lake and River Reserve

A proposal is currently well advanced to erect an old Army Panel Bridge across the Main canal which will link up the walking tracks of Lake Talbot environs with the Flora and Fauna reserve walking tracks adjoining that section of the Murrumbidgee River . This project would complete a longstanding "Murrumbidgee" loop walking track.

5. Potential to develop access from Northern side of Lake to Northern side of Main Canal

During discussions and inspections of the Lake Environs Committee it has been suggested that access from the Boat ramp side of the lake to the northern bank of the main canal could be part of a plan to access the area known as "Snake Island" which has great potential as a picnic /recreation area.

6. Former Sport & Recreation Reserve

This reserve adjoins Lake Talbot reserve and has developed over many years for fishing, canoeing and short term camping. The current facilities are primitive .

In discussions it has been proposed that an enviro style Toilet amenity be listed for future works as well as reconstruction of an earthen boat ramp.

Ken Murphy

6/9/2012

Annexure 4

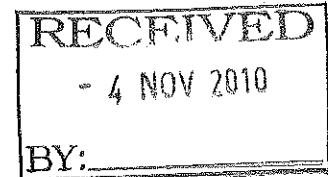
Lake Talbot Control Structure Protocol

Our ref: MH/ap: 50/15/35-02



26 October 2010

Mr Geoff Beard
Murrumbidgee Irrigation
PO Box 519
LEETON NSW 2705



Dear Geoff

RE: Protocol for Operation of Control Structures in Lake Talbot

Please find enclosed a prepared Protocol for Operation of Control Structure at Lake Talbot which has been duly signed and sealed by the Narrandera Shire Council. The Protocol for Operation of Control Structure will need to be executed by Murrumbidgee Irrigation and returned to Council at your earliest convenience.

Council will return to you a copy of the signed Protocol for Operation of Control Structures in Lake Talbot for your records.

If you have any questions please contact Council's Technical Services Department on 02 6959 5560, fax 02 6959 1884 or email council@narrandera.nsw.gov.au.

Yours faithfully



Martin Hiscox
Acting Director Technical Services

Protocol for Operation of Control Devices Lake Talbot Narrandera

Background to Representations and objectives of control structures between Main canal and Lake Talbot.

The management of willow infestation in Lake Talbot and other management issues have been a long standing issue for Council and the community utilising the lake and environs.

This culminated in a public meeting in late 2004. A Major outcome of that meeting was the establishment of a community based committee to support Council in its objective of addressing the deterioration of the lake particularly in regard to willow infestation and siltation.

Council in conjunction with the community committee concluded that the only realistic means to achieve its objectives for management for Lake Talbot was the installation of control structures between the main canal and Lake Talbot. The objectives for rehabilitation of Lake Talbot and the environs are summarised below;

- The removal of willow infestation in Lake Talbot as a means to address water quality and to allow re-establishment of native vegetation.
- To develop a plan for stabilisation of the lake foreshores as a means to reduce erosion and associated sediment being deposited in the lake.
- To encourage the restocking of fish in the lake. The provision of control structures will enable the level of the lake to be maintained, particularly in the off irrigation season when low flows in the canal result in the lake being emptied. The objective to provide for restocking of fish in the lake would involve the development of a concept plan with fisheries and other relevant agencies to provide for construction of deep channels or pools within the lake to ensure the survival of introduced fish in circumstances where the lake level is significantly reduced for maintenance works or inability of Murrumbidgee Irrigation to maintain sufficient water levels in the main canal to maintain normal lake levels.
- Pursue opportunities for funding to undertake de-silting of the Lake bed in consultation with all relevant government agencies.
- Improvement of access to the lake and environs.

These objectives were developed over a series of meetings involving representation at various times from Murrumbidgee Irrigation Pty Ltd, Department of Natural Resources, Department of Primary Industries – Fisheries and Department of Lands and Community Committee representatives.

Protocol for Operation of Control Devices Lake Talbot Narrandera

To date the objectives for installation of Control structure and willow removal are progressing. The next stage in the achievement of objectives is the development of a management plan to provide for fish refuge access within a suitable area of the lake to enable fish stocks to survive periods where temporary measures involve lowering or draining of the lake. To achieve this objective Council proposes to seek environmental funding in partnership with DPI – Fisheries once a concept plan has been finalised.

A longer term objective to ensure future environmental viability of the lake is to seek funding for de-silting works.

Murrumbidgee Irrigation have provided a preliminary estimate of cost for the exercise in the vicinity of \$3.5 million dollars. This would be an ambitious project and would involve major consultation with DPI – Fisheries and other relevant government agencies.

In order to progress initiatives associated with the above objectives Council and Murrumbidgee Irrigation have prepared the following protocols outlining the traditional operating procedures associated with provision of water in the lake and amendments to those practices in the form of protocols for operation of the two control structures.

Traditional Operating Protocols.

The level of Lake Talbot is directly related and influenced by the operation of Murrumbidgee Irrigations Main Canal and particularly the operating level of the Narrandera Regulator - 2.95m

As the Canal is filled and emptied so is the Lake, therefore completely depended on the supply requirements of the M.I.A.

In normal years of Irrigation supply, the Narrandera Regulator and hence lake, would commence to supply irrigation water from the level of 2.95m. The Irrigation Season generally commences at the beginning of August.

Narrandera Regulator is maintained at this height within a tolerance of +/- 100mm except in times of resource shortage.

Resource shortage can occur as a result of operational mismatch (orders exceed forecast), orders exceed resource availability (valley demand exceeds system capacity-peak) operational/maintenance problems.

These events are relatively few however when they have occurred it has been necessary to mine the storage volumes within Lake Talbot and Bundidgerry to meet customer requirements. M.I. notify NSC with as much notice as possible of these events.

Protocol for Operation of Control Devices Lake Talbot Narrandera

At times when special events are being conducted at the Lake, Narrandera Shire, M.I. and DWE (River Operations) have cooperated to limit the effects imposed by such operational needs.

At seasons end, the level in the Lake is dependent on maintenance and ongoing operational needs. If maintenance is required, the Lake may be emptied at the close of the season and remain so until the commencement of the next season. The duration may last up to 8 weeks and the draw down or emptying may take place over 24 hours. Alternatively, if maintenance is not required, the Lake may be retained full and drawn down over the winter period to provide winter water to select commodity groups (Dry or frosty winters). The cycle of fill and empty may continue depending on water availability, weather and demand until the commencement of the new season.

Proposed Amendments Operating Protocols.

With the introduction of control structures in the; 1) *Designed unregulated void between Main Canal Bank and Lake Talbot near the swimming pool* and 2) *Erosion created breach 2 Km upstream on Narrandera Regulator* at the request of Narrandera Shire Council, the following modifications to operating protocols are agreed.

During the normal irrigation season, both upstream and downstream gates will remain completely open.

In principle, operation and control of the Narrandera Regulator will remain unchanged except;

Narrandera Shire will have the ability to retain water levels in the lake when canal levels are significantly reduced for seasonal and operational requirements.

Where Narrandera Shire Council request a Lake flushing event, Murrumbidgee Irrigation will coordinate such event over the minimal amount of days to effect sufficient exchange of existing and fresh water in the Lake as requested by the Council. It is noted that an estimated 1000 ML exists within the Lake Talbot Storage separate from the Main Canal. NSC will express the desired ratio of change in ML. It is understood that M.I. may not be able to facilitate such a request in times of peak irrigation demand as operational integrity will be jeopardised.

M.I. will effect the flushing event by lowering the operating height of the Main Canal and thus drawing down the Lake Storage, followed by immediately refilling to desired operating height and maintaining measurement integrity. It is expected that the exchange can be conducted at a daily rate of 150ML whilst maintaining a 50mm head difference. This results in a 4 day exercise to exchange approximately one third of the lakes storage volume. 2 days to lower and 2 days to fill. Narrandera Shire will have the opportunity to close the control structures to retain the lake level in cases where low flows occur in the main

Protocol for Operation of Control Devices Lake Talbot Narrandera

canal associated with operational requirements. In years where NSC wish to undertake maintenance activities within the Lake Environment, and the Main Canal can be lowered to effectively drain the Lake, NSC may request that the Lake be isolated from the Main Canal to extend maintenance access periods. NSC will be responsible for closing both upstream and downstream gates. At the completion of the maintenance works, NSC must notify M.I. and request the Lake to be refilled. This may involve the need to order additional resource and therefore such a request should be made seven days in advance of the required start. NSC will be responsible for the operation of the gates to refill the Lake under instruction from M.I. (Instructions will include gate openings and flow rates).

Application of Amended Operating Protocols to Address Interest of NSW Department of Primary Industries – Fisheries.

In recognition of the objective to encourage the restocking of fish in the Lake, the Council and Murrumbidgee Irrigation Pty Ltd clarify the following in the interest of NSW Department of Primary Industries – Fisheries within the Amended Operating Protocols for the two central structures at Lake Talbot:

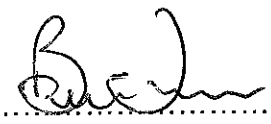
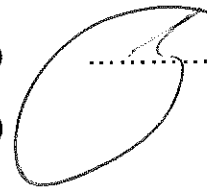
1. Regulators are to be operated with the purpose of retaining sufficient water in the lake at all times to maintain fish populations, except where the lake needs to be completely drained to undertake maintenance, habitat restoration or enhancement or control of alien fish or plant species..
2. Regulators are not to be operated in such a manner that results in the lake being completely drained without prior notification of NSW Department of Primary Industries.
3. Murrumbidgee Irrigation are to notify Narrandera Shire Council if flows in the main canal are to be reduced such that water will be drained from the lake. Under such a circumstance, the regulators are to be closed to retain minimum water in the lake.
4. Both regulators can be left open whenever there are high flows in the main canal.

**Protocol for Operation of Control Devices
Lake Talbot Narrandera**

SIGNED SEAL AND DELIVERED)

by Chief Executive Officer, Mr Brett Tucker)
of Murrumbidgee Irrigation)

in the presence of: Geoff Beard)


.....

.....

The Common Seal of **NARRANDERA**)

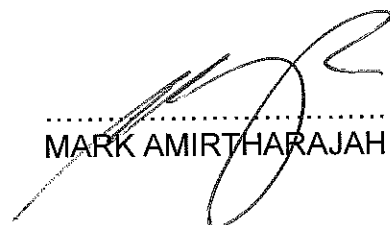
SHIRE COUNCIL was hereunto affixed)

In the presence of:)

Mayor:


.....
GRAHAM EIPPER

General Manager:


.....
MARK AMIRTHARAJAH

Annexure 5

**Letter from DPI Catchment and Lands dated
17 October, 2012**



Mr Craig Taylor
Administration Manager
Narrandera Shire Council
141 East Street
NARRANDERA NSW 2700

Your Ref: MPH/cjt/CR12-85 &
60/10/7-48

Date: 17 October 2012
Our Reference: 12/00231

Dear Craig,

Re: Brewery Flat – Reserves 57075 and 64706 – Enquiry to Council for the issue of a Licence to occupy for grazing purposes

I refer to your email of 16 March 2012 in relation to a proposed grazing licence in respect of the subject Reserves as previously requested by Mr Bolwell.

The Department supports Council's decision in relation to its management of the 'Brewery Flat' site following my initial correspondence to Mr Bolwell without the benefit of Council's comments prior.

I wish to advise / confirm the following information in answer to your email: -

- I. Reserve 57075 for Public Recreation notified 16 May 1924 and Reserve 64706 for Camping and Travelling Stock Reserve notified 10 August 1934 are concurrent reserves in respect of Lots 83, 122-124, 127 DP 751719, Lot 7003 DP 1070114, Lot 7047 DP 1124066, Parish of Narrandera, County of Cooper of a total area of 7.108ha. Refer to that part of CRV diagram outlined by 'purple colour'.

Please note that Lot 127 DP 751719 is in isolation to the predominant 'Brewery Flat' location, that is to say, it fronts Narrandera Street and is bounded to its south by Council's freehold Land Lot 1 DP 558067.

While one reserve is not necessarily considered dominant, the purpose of 'Public Recreation' is more commonly used.

Aboriginal Land Claim (ALC) 18010 remains a current impediment to the land and is pending investigation.

- II. Council does have a capacity to issue a licence for 'Grazing' to the effect of providing for weed maintenance and bushfire hazard reduction as it relates to use for Public Recreation. However Council may have undertaken sufficient management of the site to not require the issue of Licence for such a purpose.

- III. Your comments in relation to Lot 7003 DP 1070114 are noted in relation to the Reserve of Travelling Stock.

Although the Livestock Health Pest Authority (LHPA) is not the appointed land manager, its consent to any use of Crown land reserved for 'Travelling Stock' should be obtained in the first instance.

I have obtained information from the local LHPA Office that would indicate that the Reserve is not used for the "camping" of stock, but rather as a thoroughfare for stock travelling from south to north Narrandera, via Old Brewery Road, Oakbank Street, across the Main Canal into Lake Drive and north along Broad Street.

The impediment to travelling stock should not be imposed by any likely Licence for 'grazing'.

- IV. Reserve 64706 'camping' purpose would have originally been associated with the travelling of stock.

The Reserve Purpose of 'Public Recreation' incorporates a myriad of activities and although it is not necessarily Council's intention that caravans and / or mobile homes "camp" for the night, the purpose of public recreation may include (but not be restricted to) picnics, social sporting events (as evidenced by the sporting pitch), jogging, dog-walking, koala spotting, stop-over i.e. journey break and use of toilet facilities, bicycle riding etc.

Signage could be installed in relation to Council's prohibited use for short-term stays.

- V. If Council were to reconsider its option to offer Mr Bolwell a Licence for Grazing purposes, the following information is supplied for your consideration: -
- a. The issue of any Licence for Grazing should not impede or prevent the public's access and use of the Reserve for either Public Recreation or Camping and Travelling Stock.
 - b. The ecology and biodiversity of the site particularly in relation to its location to the Murrumbidgee River is to be considered. If the site has not had any stock grazing on the land for some time, any future grazing will have negative impacts on the existing growth of native vegetation.
 - c. Mr Bolwell (or any other prospective Licencee) must ensure that stock are contained within the location of the Licenced area (please refer to suggestion(s) below). Costs of fencing will be at the Licencee's expense and no compensation will be entered into.
 - d. The Licencee will also be subjected to payment of Council rates.
 - e. Grazing would be restricted from spring to early summer to allow for native vegetation to regenerate and seed. (Referred to in Special Conditions attached).
 - f. Stock numbers would be restricted to ensure that grass cover height is <5cm and / or the average ground surface area is >25% bare. (Referred to in Special Conditions attached). A Stock and Station Agent may be able to provide specific stocking numbers appropriate for this area, however numbers would be considered as minimal.

- g. The Licencee is not to introduce hand feeding and would need to ensure that stock water is available. No access to the creek will be permitted for the purpose of watering stock. (Referred to in Special Conditions attached).
- h. Attached for information is a list of "Special Conditions" imposed by this Office for "Grazing" licences in respect of Crown land to ensure management for 'Environmental Protection and Sustainable Grazing'.

If Council were to re-consider its initial position on the granting of a Licence to Mr Bolwell, the following are suggested: -

1. A Licence be issued over that part of Lot 7003 DP 1070114 north of the unnamed Creek as shown in the Aerial Imagery below.
 - This would potentially allow Mr Bolwell use of part of the land for a grazing licence without impacting too heavily on the Reserve particularly its use for recreational purposes, and where Council's infrastructure is located.
 - Mr Bolwell would be required to adequately fence off the area proposed to be held under Licence and adhere to the Special Conditions as suggested below.
2. Alternatively, a Licence be issued over Lot 7308 DP 1160259 (east of Oakbank Street, northern section) in respect of part Reserve 751719 notified for 'Future Public Requirements' on 29 June 2007.
 - There is no current Aboriginal Land Claim in respect of this parcel of land.
 - It is noted that this is densely vegetated and therefore may not be considered as a suitable site for a grazing licence.

Please note that even with a reduced period of time per year within which to graze stock, the statutory minimum rent (currently \$431) + CPI + GST is to be applied.

As Trust Manager, it will be Council's responsibility to ensure adherence to all imposed Licence Conditions.

Should you require any additional information in this matter, please do not hesitate to contact me on phone 6960-3601.

Yours sincerely,

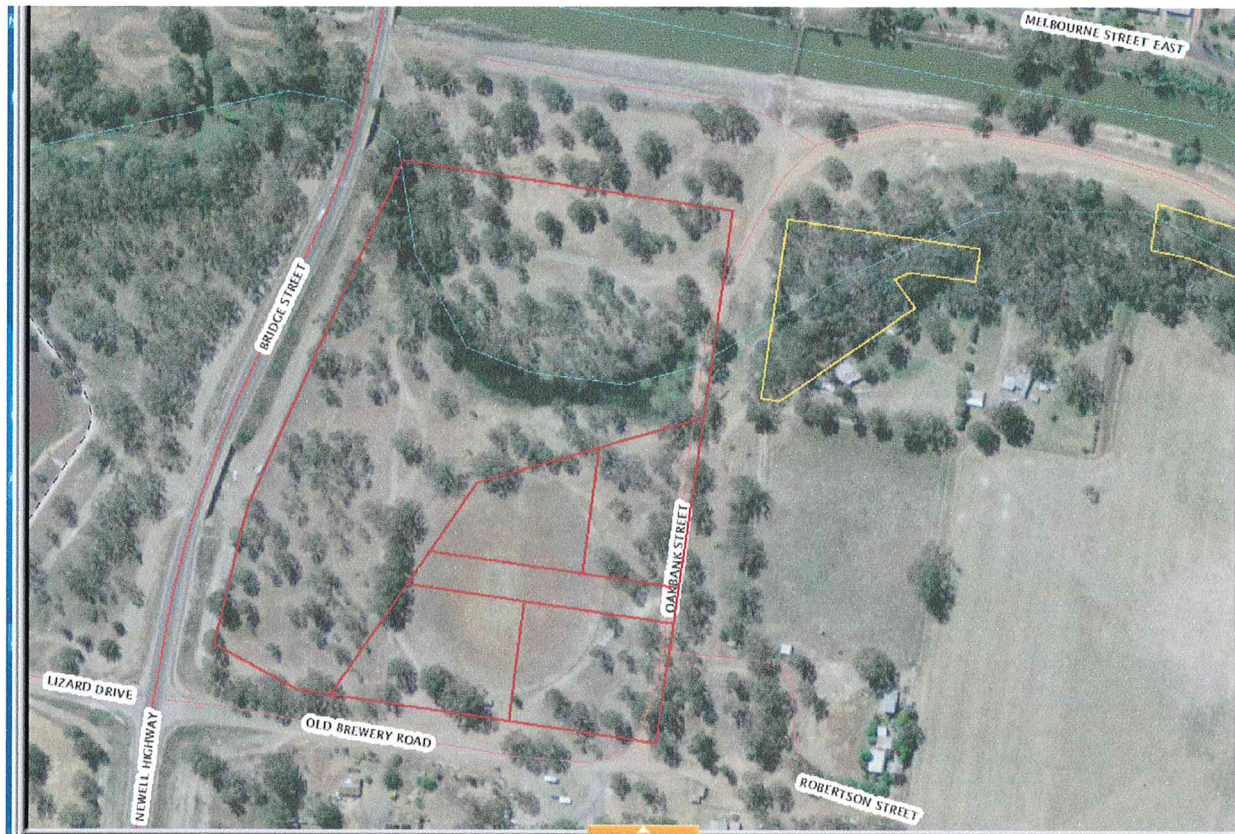


Melva Robb
Group Leader, Natural Resources & Property Services
Lands
NSW Department of Primary Industries – Catchment & Lands
GRIFFITH OFFICE

Enc.

P.O. Box 1030
GRIFFITH NSW 2680
Tel: 02 6960-3601
Fax: 02 6962-5670
Email: melva.robbs@lpma.nsw.gov.au
www.lpma.nsw.gov.au

Photo Imagery



P.O. Box 1030
GRIFFITH NSW 2680
Tel: 02 6960-3601
Fax: 02 6962-5670
Email: melva.robb@lpma.nsw.gov.au
www.lpma.nsw.gov.au

SCHEDULE 2

57. List of Special Conditions for Environmental Protection and Sustainable Grazing

- Native vegetation must not be cleared
- Objects and sites that have significance to Aboriginal cultural heritage must not be disturbed, damaged or removed. If a site is identified LPMA must be notified.
- Stocking rates must be managed to ensure groundcover vegetation is maintained at greater than 70% foliage cover.
- Grazing exclusion period: Grazing is prohibited between September (early spring) to December (early summer) to allow native plant flowering and seed production.
- Grazing exclusion: Exclude stock and cease grazing at any time when the average grass cover height is <5cm (based on actively growing leaf height only, not flower/inflorescence) and/or the average ground surface area is >25% bare.
- No additional feed to be brought on the licence area. This is to limit the contamination and spread of weeds.
- Standing or fallen dead timber must not be burnt, cleared or removed. Timber is required and used as native animal habitat.
- Earthworks, including the operation of borrow pits, quarries and the dumping of fill, area prohibited.
- The removal of soil or inorganic material such as bush rock is prohibited.
- The shooting, trapping, baiting or otherwise harming of native fauna is prohibited.
- Environmental weeds will be contained and their extent reduced.
- Non-native and environmental weeds may be controlled by hand methods or selective herbicides that will not damage, kill or destroy native vegetation.
- All noxious weeds must be removed.
- The burning/slashing of native vegetation may only be carried out for the purpose of Bushfire Hazard reduction and only with an appropriate environmental approval in accordance with the Rural Fires Act 1997, the local bushfire management plan and the bushfire environmental assessment code. The licensee requires consent from the LPMA Bushfire Officer in the first instance.
- Stock must be excluded from entering designated waterways at all times. To enhance water quality and protect riparian areas.
- Water troughs must be installed at least 50 metres from a watercourse.
- No removal or cutting of vegetation for fodder
- No pasture improvements to be undertaken with annual and/or perennial introduced species. No application of inorganic fertilisers
- Due to the variability of weather events and seasonal conditions (eg. drought, storm damage, bushfire etc) irregular conditions may be experienced that affect the impact grazing has on the Crown land. this will require extensive periods of the year to exclude grazing. This condition will need to be co-ordinated with the grazing exclusion conditions for management and monitoring by the licensee.
- On inspection the Crown land may be assessed as stressed or over exploited and the removal of stock will be required. The licence holder agrees to remove stock or reduce stocking rate within the notified time frame on written advice from the LPMA.

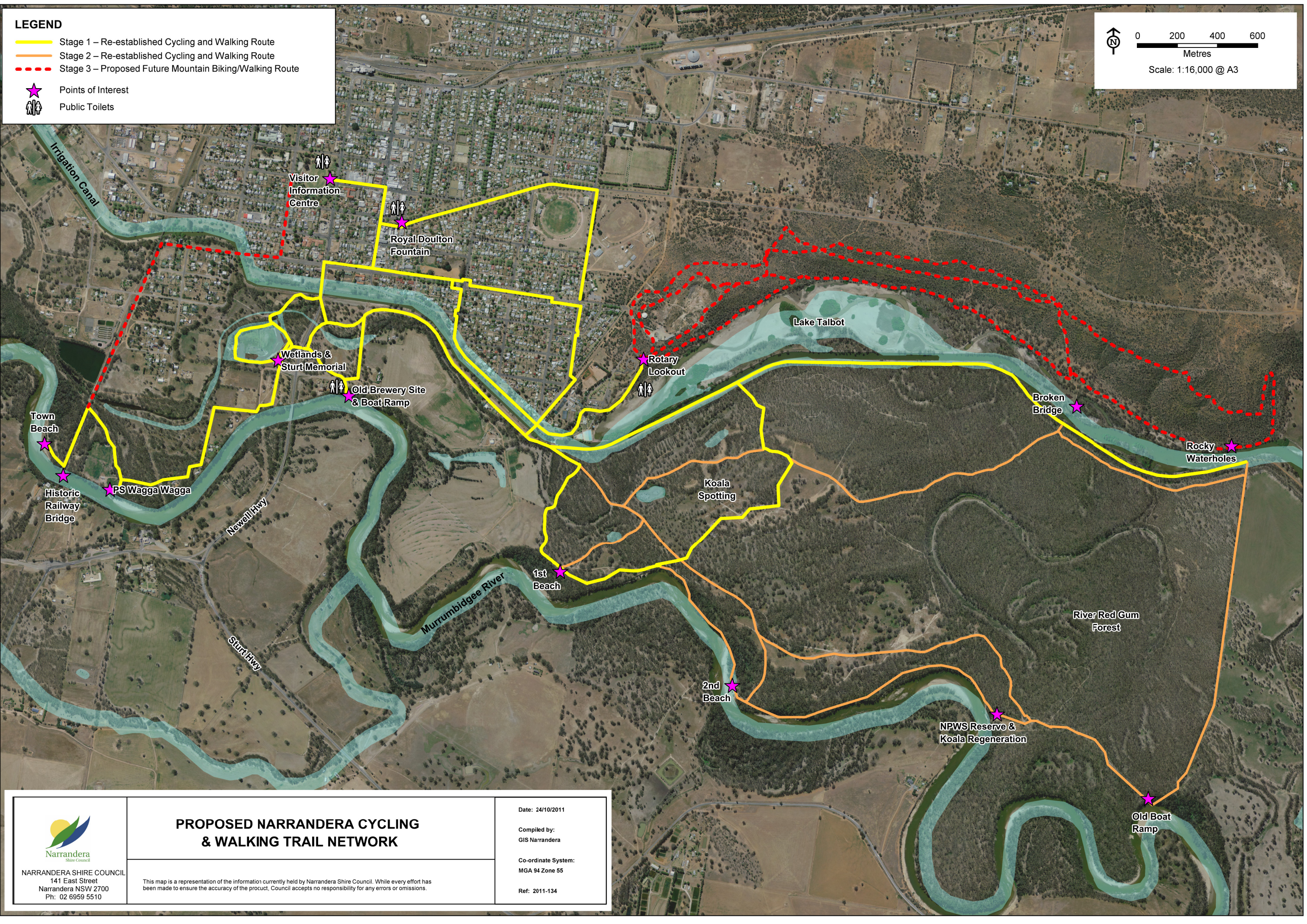
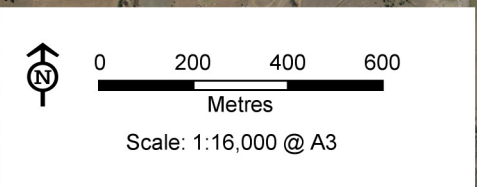
***** End of Schedule 2 *****

ANNEXURE 5.0

Cycling and Walking Trail Network Map

LEGEND

- Stage 1 – Re-established Cycling and Walking Route
- Stage 2 – Re-established Cycling and Walking Route
- - - Stage 3 – Proposed Future Mountain Biking/Walking Route
- ★ Points of Interest
- Public Toilets




NARRANDERA SHIRE COUNCIL
 141 East Street
 Narrandera NSW 2700
 Ph: 02 6959 5510

PROPOSED NARRANDERA CYCLING & WALKING TRAIL NETWORK

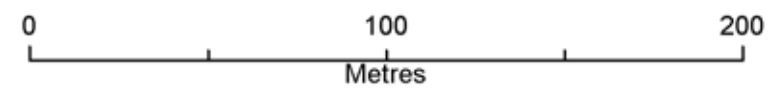
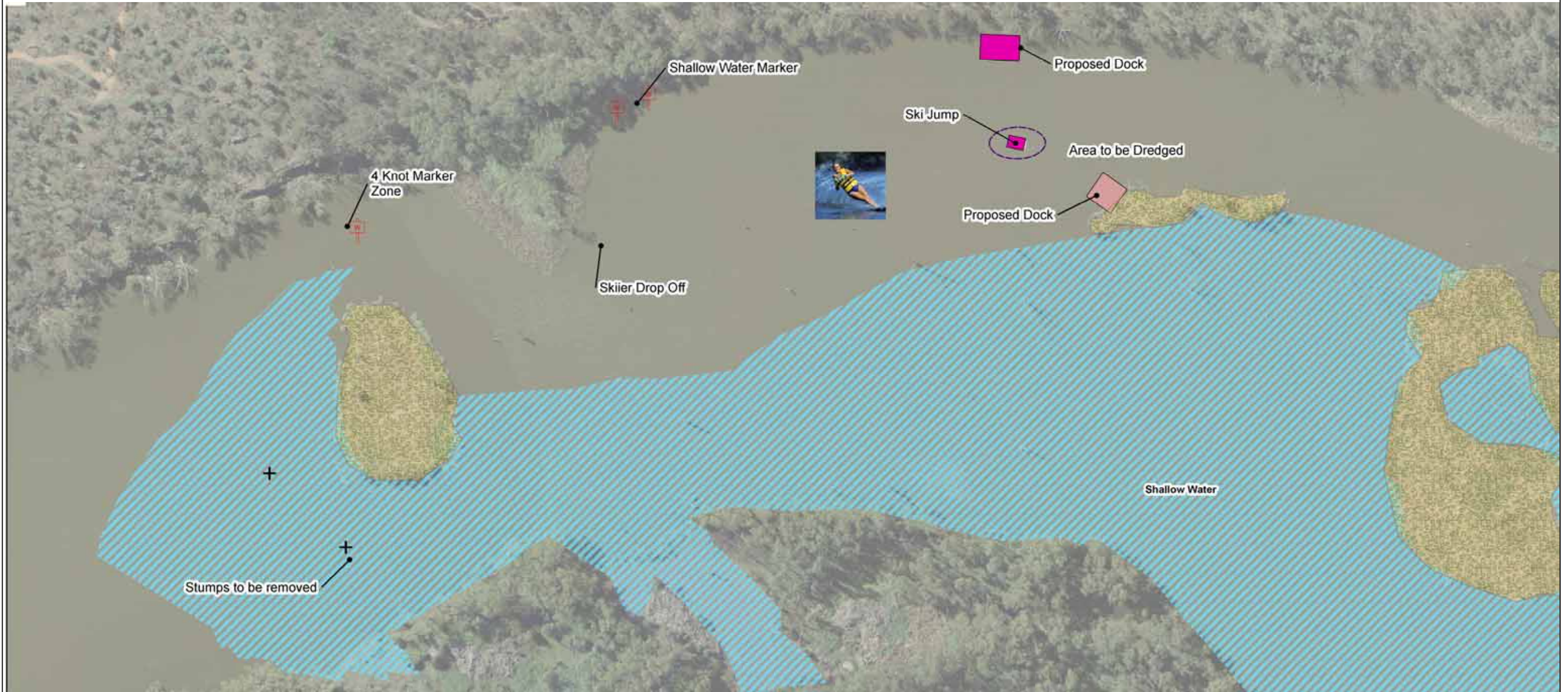
This map is a representation of the information currently held by Narrandera Shire Council. While every effort has been made to ensure the accuracy of the product, Council accepts no responsibility for any errors or omissions.

Date: 24/10/2011
 Compiled by:
 GIS Narrandera
 Co-ordinate System:
 MGA 94 Zone 55
 Ref: 2011-134

ANNEXURE 6.0

Lake Talbot Water Ski Concept Plan

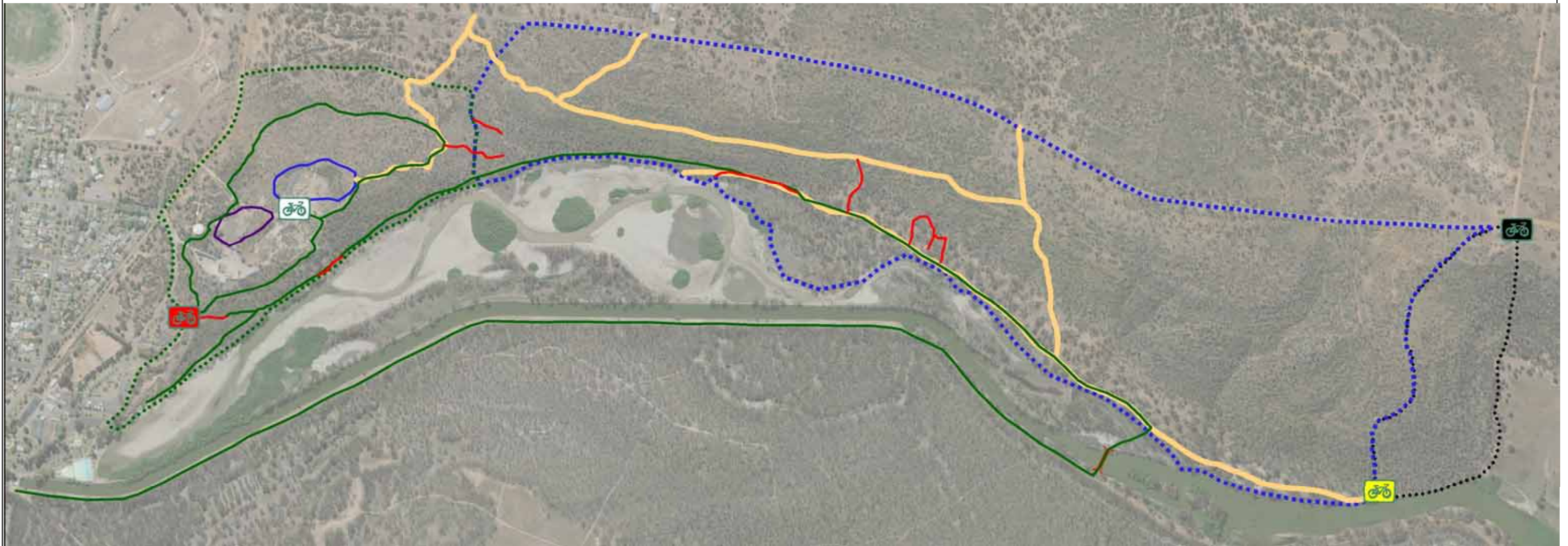
LAKE TALBOT—DRAFT TOURNAMENT WATER SKI CLUB TRAINING AREA
















ANNEXURE 7.0

Lake Talbot Mountain Bike Park Concept Plan

LAKE TALBOT—DRAFT MOUNTAIN BIKE PARK



-  Rocky Water Hole Bridge
-  Trailhead
-  Future Trailhead
-  Downhill Start
-  Downhill Finish
-  Degraded Trails need repairs or closing
-  Possible Beginner Trails
-  Fire Trails
-  Free Ride Track
-  Old Quarry Skills Area
-  Beginner Level Area
-  Intermediate Level Area
-  Advanced Level Area (Downhill)

