



**CAMPBELL'S WETLAND (RESERVE 1002932)
LAKE WYANGAN**

DRAFT PLAN OF MANAGEMENT



Draft Plan of Management Report prepared by
Melva Robb
Consultant
Griffith City Council
GRIFFITH NSW 2680

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Photos by Melva Robb unless otherwise stated

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1.0 EXECUTIVE SUMMARY

The Campbell's Wetland Plan of Management has been prepared by Council to reflect the features of **Campbell's Wetland** (formerly referred to locally as Campbell's Swamp) Crown Reserve 1002932 (Lot 407 DP 751743) with the reserve purpose of Environmental Protection, gazetted 24 April 2000.

The Plan of Management (PoM) examines the current character, current use and future needs of the land and its relationship to the surrounding properties and communities within which it is located and establishes a clear direction for future development, planning and resource management of the land by Council. This PoM further considers future management with consideration to the Department of Environment, Climate Change and Water NSW - *NSW Wetlands Policy 2010*.

The PoM is required in accordance with Section 3.23 of the *Crown Land Management Act (CLMA) 2016* and Section 36 of the *Local Government Act (LGA) 1993*.

Campbell's Wetland is part of a collective of wetland areas within the "Lake Wyangan Basin" including Nericon Wetlands (referred to locally as Nericon Swamp) and Tharbogang Wetland (referred to locally as Tharbogang Swamp).

Despite Campbell's (together with Nericon and Tharbogang) Wetland being declared an Important Bird Area (IBA), management to date, has not been guided by a Plan of Management. Although recognised for its value as a wetland of regional, national and international significance in providing a place of refuge for migratory birds during drought years, improved management of the collective wetland areas has potential to support broader uses for eco-tourism and public recreation, and greater significance for its environmental attributes through further study, monitoring and public education.

Wetlands generally have played a significant role in Aboriginal culture, providing sources of food and shelter, for teaching and recreation, and used for ceremonies. Wetlands also hold cultural values for non-Aboriginal communities that relate to histories of recreation, conservation and pastoralism. Both cultures play an important role in future understanding and management of the collective wetlands in the Lake Wyangan Basin.

The PoM proposes to support improved adaptive management of Campbell's Wetland and its linkages to Nericon and Tharbogang Wetlands within the broader Lake Wyangan Basin, and:

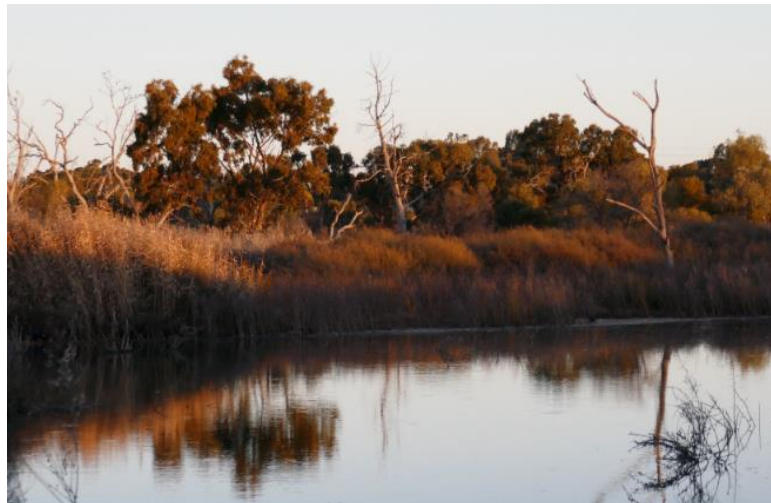
- To improve and protect biodiversity and ecological values with regard to its hydrological environment, flora and fauna habitat;
- To potentially maintain and conserve the location's biodiversity and its ecosystem function;
- To potentially provide for continued restoration and regeneration of the land;
- To provide for improved community use of and access to the land;
- To increase awareness through community education and improved eco-tourism opportunities for both Griffith City Council and the broader community; and
- To increase partnership involvement of key stakeholders.

While Campbell's Wetland has its own unique PoM, there will be generic issues affecting each of the wetlands. Current management practices differ at Campbell's Wetlands in relation to other Wetlands within the Lake Wyangan Basin due largely to its capacity to receive delivery of environmental water and also to its accessibility and proximity to Lake Wyangan.

Campbell's Wetland is categorised in this PoM, as: -

- **Natural Area - Wetland**

The categorisation of this land is consistent with the Reserves' purpose of Environmental Protection and the land continues to be used and managed for environmental protection and associated passive recreation, i.e. bird watching, study and education.



2.0 INTRODUCTION

Figure 1 – Locality diagram



Griffith City is a thriving regional capital with a vibrant lifestyle and diverse economy; embracing community, heritage, culture and the environment.

Located in the Riverina, Griffith is 584km from Sydney, 458 km from Melbourne and 358km from Canberra; and is the largest regional centre in the Western Riverina region. Griffith is located in the heart of Wiradjuri Nation – the largest nation of Aboriginal and Torres Strait Islander people in Australia.

The City of Griffith is unique in that it has no natural supply of surface water. Both town and irrigation water are supplied via the Main Canal from the Murrumbidgee River through a series of strategically designed and built channel systems. A series of drainage channels has diverted both stormwater and off-farm drainage water into small wetland areas and MI's larger strategic infrastructure, Barren Box Swamp. The vibrancy of Griffith's growth as a regional centre is a result of the development of the Murrumbidgee Irrigation system of the early 20th Century to create the Riverina's food bowl.

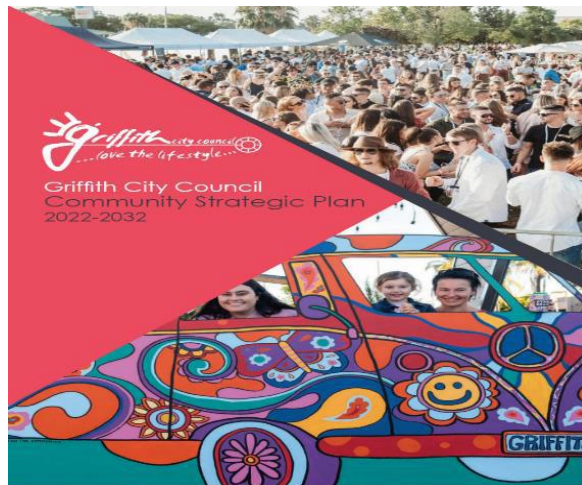
Griffith City Council is responsible for the care and control of many parcels of community land. With the introduction of the *CLMA 2016* on 1 July 2018, Council as the appointed Crown Land Manager will generally now manage Crown Reserves under the provisions of the *LGA 1993*.

2.1 Corporate Objectives

Griffith City Council has a positive future being acknowledged as a predominant major regional centre. Council's Mission Statement is –

1. To respond to the needs of the community and deliver in an economical manner those services which are the responsibility of Local Government.
2. To provide Local Government administration that is dedicated, accountable and committed to the improvement of the quality of life and the economic well-being of the citizens of the City of Griffith.

Figure 2 – Community Strategic Plan 2022-2032



The Community Strategic Plan ‘**Community Strategic Plan 2022-2032**’ endorsed 22 March 2022 identifies the community’s priorities and aspirations for the future and provides strategies for achieving these goals. The community vision for Griffith, adopted in 2017 is:

“Griffith is a thriving and innovative regional capital with a vibrant lifestyle and diverse economy. We embrace our community, heritage, culture and the environment”.

The Community Strategic Plan is made up of four themes. The objectives and strategies within the plan are:

Figure 3 – Community Strategic Plan – Objectives and Strategies

Leadership

1. An engaged and informed community

- 1.1 Provide clear, accessible, relevant information
- 1.2 Actively engage with and seek direction from our community and stakeholders

2. Work together to achieve our goals

- 2.1 Develop and maintain partnerships with community, government and non-government agencies to benefit our community
- 2.2 Maximise opportunities to secure external funding for partnerships, projects and programs
- 2.3 Mayor and Councillors represent the community, providing strong, proactive leadership

3. Plan and lead with good governance

- 3.1 Undertake Council activities within a clear framework of strategic planning, policies, procedures and service standards
- 3.2 Ensure Council's financial sustainability through effective financial management that is transparent and accountable

Love the Lifestyle

4. Griffith is a great place to live

- 4.1 Make our community safer
- 4.2 Encourage an inclusive community that celebrates social and cultural diversity
- 4.3 Provide and promote accessibility to services
- 4.4 Provide a range of cultural facilities, programs and events
- 4.5 Improve access to local health services
- 4.6 Promote reconciliation and embrace our Wiradjuri heritage and culture
- 4.7 Provide a range of sporting and recreational facilities
- 4.8 Improve the aesthetic of the City and villages, by developing quality places and improved public realm

Growing our City

5. Grow our economy

- 5.1 Be a location of choice for innovative agriculture and manufacturing
- 5.2 Be a location of choice for business investment, employment and learning

- 5.3 Promote opportunities for business to establish and grow
- 5.4 Strategic land use planning and management to encourage investment in the region
- 5.5 Support diversity in housing options
- 5.6 Promote Griffith as a desirable visitor destination
- 5.7 Support transport connectivity
- 6. Provide and manage assets and services**
- 6.1 Provide, renew and maintain a range of quality infrastructure, assets, services and facilities
- 6.2 Maintain and develop an effective transport network (airport, public roads, pathways, pedestrian access and transport corridors) for Griffith and villages
- 6.3 Mitigate the impact of natural disasters

Valuing our Environment

7. Enhance the natural and built environment

- 7.1 Encourage respectful planning, balanced growth and sustainable design
- 7.2 Deliver projects to protect and improve biodiversity, biosecurity and sustainability
- 7.3 Protect our heritage buildings and precincts
- 7.4 Improve sustainable land use

8. Use and manage our resources wisely

- 8.1 Manage Griffith's water resources responsibly
- 8.2 Reduce energy consumption and greenhouse gas emissions
- 8.3 Promote the use of alternative and renewable energy sources
- 8.4 Implement programs to improve sustainability

2.2 Land to which this plan applies

The lands to which this PoM applies is: -

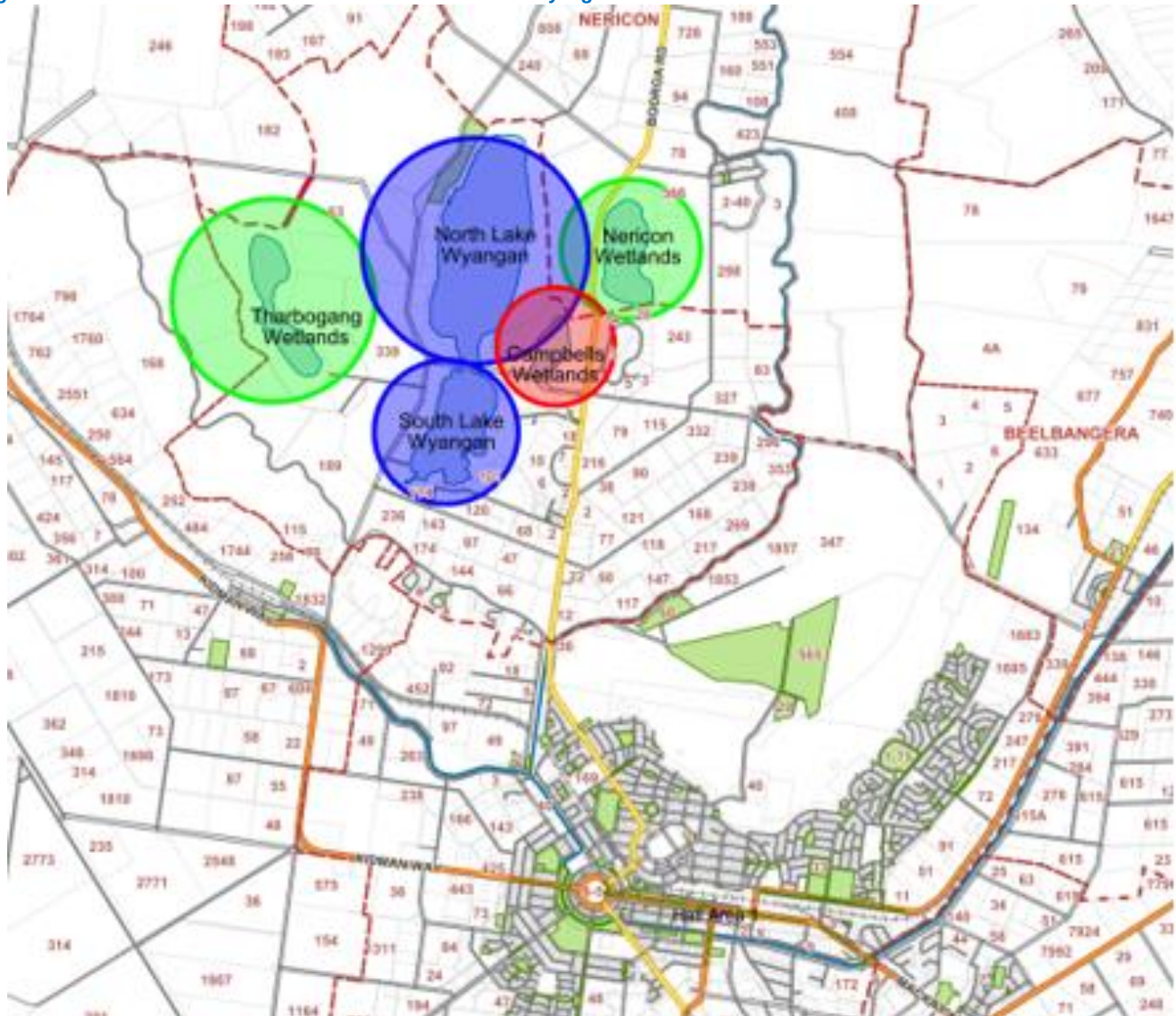
Reserve 1002932 known locally as Campbell's Swamp and referred to in this PoM as Campbell's Wetland comprising Lot 407 DP 751743, Parish of Wyangan, County of Cooper of 84.74 hectares. Campbell's Wetland is located north of the Village of Lake Wyangan and east of Lake Wyangan Recreation Reserve (approx. 8 km north of Griffith).

Figure 4 - Campbell's Wetlands lot 407 DP 751743



Campbell's Wetland (together with neighbouring Nericon and Tharbogang Wetlands, Jack Carson Reserve and North Lake Wyangan) provide an important area for biodiversity and linkages to nearby natural bushland that supports a number of waterbirds, bushland and grassland bird species as well as other reptile, mammal, amphibians and invertebrate species.

Figure 5 - Collective location of Wetlands in relation to Lake Wyangan



2.3 Owner of the land

Campbell's Wetland is owned by The State of New South Wales (as Crown land) and managed by Griffith City Council as Crown Land Manager under the CLMA 2016.

Reserve 1002932 was reserved for the purpose of 'Environmental Protection' on 20 April 2000 (Folio 3375). Griffith City Council Crown Reserves (R1002932) Trust was appointed on 20 April 2000 (Folio 3376).

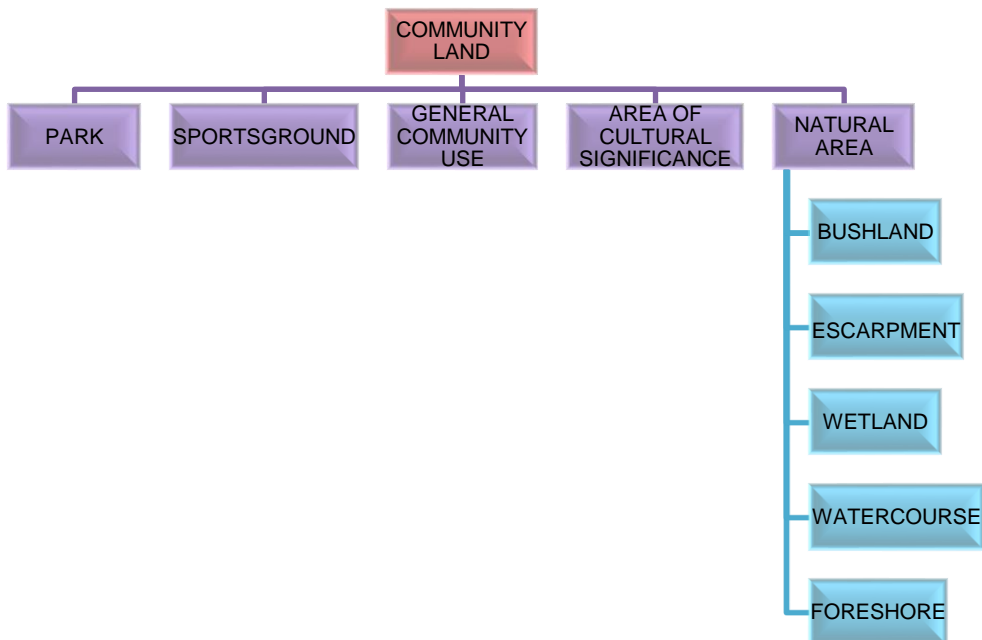
The management and use of the land are subject to the provisions contained in the CLMA 2016 and is not subject to any condition, restriction or covenant imposed by the owner.

2.4 Categorisation of the reserve

With the introduction of the CLMA 2016, Council is to manage dedicated or reserved Crown land under their control as community land under section 3.21 of the Act.

Under section 3.23(2) of the *CLMA 2016*, Council Crown Land Managers must assign to all Crown land under their management, one or more initial categories of 'Community Land' referred to in Section 36 of the *LGA 1993*. The category is to relate most closely to the purpose(s) for which the land is dedicated or reserved.

For the purpose of section 3.23 of the *CLMA 2016*, the PoM for Campbell's Wetland is a 'first Plan'.



The *CLMA 2016* provides a new regime for the management of Crown land and Council is now responsible for compliance with Native Title legislation for the Crown land it manages. Council must obtain Native Title Manager advice as to the validity of any act or activity that it wishes to undertake on Crown Reserves (or Crown land) prior to dealing with the land, i.e., authorised through *Part 2 Division 3 of the NTA (C'th) 1993*.

Both the *Aboriginal Land Rights Act (ALR) 1983* and the *Commonwealth Native Title Act (NTA (C'th)) 1993* recognises the intent of the original reserve purpose of the land so that a complying activity can be considered lawful or validated.

On Crown land, Native Title rights and interest must be considered unless:

- Native Title has been extinguished; or
- Native Title has been surrendered; or
- Determined by a court to no longer exist.

Examples of acts which may affect Native title on Crown land reserves managed by Council include: -

- The construction of new buildings and other facilities such as toilet blocks, walking tracks, tennis courts, grandstands and barbeques,
- The construction of extensions to existing buildings,

- The construction of new roads or tracks,
- Installation of infrastructure such as powerlines, sewerage pipes, etc.,
- The issue of a lease or licence,
- The undertaking of earthworks.

Council applied for the categorisation of Campbell's Wetlands as '**Natural Area – Wetland**' which closely relates to the reserves' purpose of Environmental Protection. This category was approved by the Minister administering the *CLMA 2016* in relation to the reserve, and Council does not propose to alter the category of the Reserve by this Plan of Management.

Activities on the Council Managed Crown Reserves will need to reflect the intent of the gazetted purpose and will be assessed for compliance with relevant Local Government and Crown Lands legislation, including assessment of the activity under the *NTA 1993 (C'th)* and registered claims under the *ALRA 1983*.

Photo David Kellett, GCC (Magpie Goose on the fly)



3.0 PLANNING INSTRUMENTS, LEGISLATION and POLICIES

3.1 Local Government Act 1993 & Local Government (General) Regulations 2021

Under the *LGA 1993*, Section 36(1) Council must prepare a Plan of Management for all community land under their control. A Plan of Management may apply to one or more areas of community land.

Council must also consider the guidelines under Clause 101 of the Local Government (General) Regulations 2021 for categorisation of community land when preparing Plans of Management.

Clause 108 of the guidelines states that the land should be categorised as a wetland under Section 36(5) of the Act if the land includes marshes, mangroves, backwaters, billabongs, swamps, sedgelands, wet meadows or wet heathlands that form a waterbody that is inundated cyclically, intermittently or permanently with fresh, brackish or salt water, whether slow moving or stationary.

This Plan of Management has been prepared in accordance with the *LGA 1993* using the land categories approved by the Minister administering the *CLMA 2016* where lands are Council Managed Crown Reserves.

The minimum requirements for a Plan of Management for community land is set out in Section 36(3) of the *LGA 1993* and must identify the following:

- (a) the category of the land,
- (b) the objectives and performance targets of the plan with respect to the land,
- (c) the means by which the council proposes to achieve the plan's objectives and performance targets,
- (d) the manner in which the council proposes to assess its performance with respect to the plan's objectives and performance targets, and may require the prior approval of the council to the carrying out of any specified activity on the land.

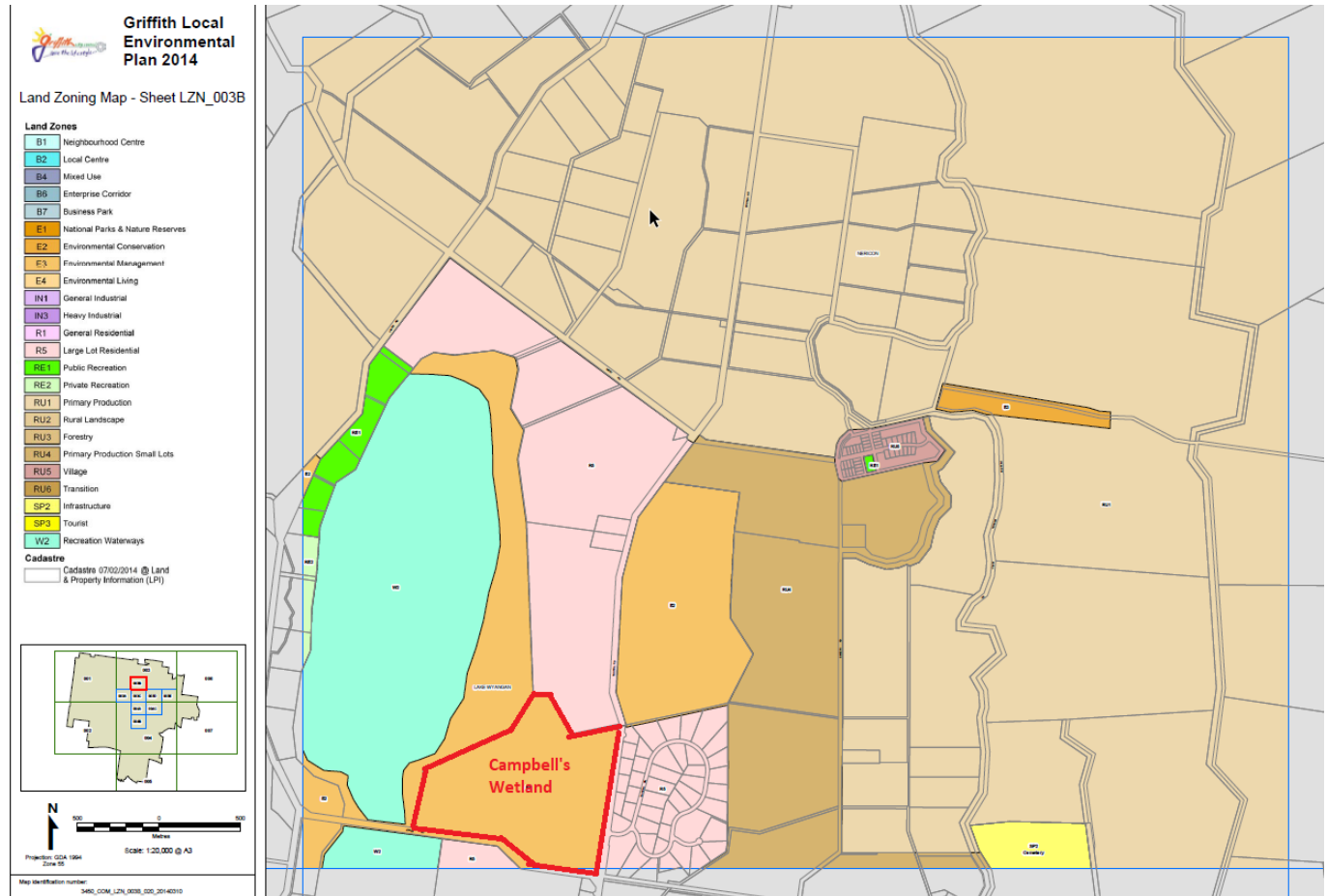
Section 36(2) specifies that a Plan of Management may apply to one or more areas of community land, except as provided by this Division.

Sections 36E – 36N of the *LGA 1993* specifies the core objectives for the management of each category of community land.

3.2 Land Zoning

The proximity of Campbell's (and Nericon) Wetland in relation to North Lake Wyangan and the Jack Carson Wildlife Reserve (known locally as South Lake Wyangan) together with the more westerly Tharbogang Wetland (situated off map in Diagram 6 below), confirm the connectedness of each waterbody, whether permanent or ephemeral, and the collective important values they contain within an area that is broadly used for 'Primary Production – RU1', 'Primary Production Small Lots – RU4' and 'Large Lot Residential – RU5'. The areas of North and South Lake Wyangan are zoned 'Recreation Waterways – W2'.

Figure 6 - Planning Zone – Campbell's Wetlands – C2 – Environmental Conservation (this map includes the location of Nericon Wetlands and Lake Wyangan easterly foreshore (also C2) and North and part South Lake Wyangan which is zoned W2 – Recreation Waterways)



Zone C2 Environmental Conservation

1 Objectives of zone

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.
- To ensure the long term viability of populations of threatened species and ecological communities by protecting and improving the condition of wildlife habitats.

2 Permitted without consent

Water reticulation systems

3 Permitted with consent

Boat launching ramps; Boat sheds; Community facilities; Eco-tourist facilities; Environmental facilities; Environmental protection works; Flood mitigation works; Information and education facilities; Jetties;

Oyster aquaculture Recreation areas; Research stations; Roads; Water recycling facilities; Water supply systems

4 Prohibited

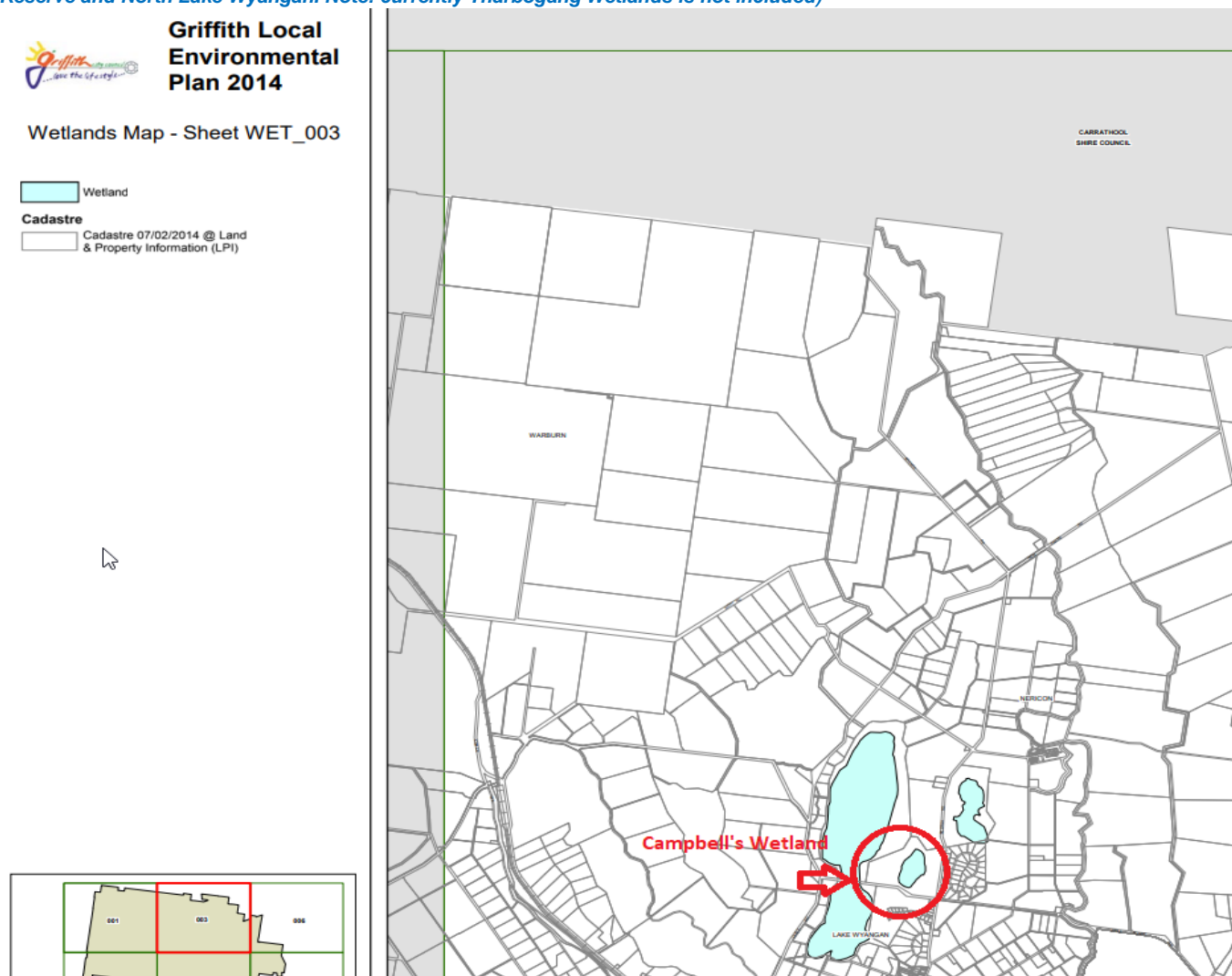
Business premises; Hotel or motel accommodation; Industries; Multi dwelling housing; Pond-based aquaculture; Recreation facilities (major); Residential flat buildings; Restricted premises; Retail premises; Seniors housing; Service stations; Tank-based aquaculture; Warehouse or distribution centres; Any other development not specified in item 2 or 3

The GLEP (2014) also provides Additional local provisions as follows: -

7.6 Wetlands

- (1) The objective of this clause is to ensure that wetlands are preserved and protected from the impacts of development.
- (2) This clause applies to land identified as “Wetlands” on the Wetlands Map.
- (3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider:
 - (a) whether or not the development is likely to have any significant adverse impact on the following:
 - (i) the condition and significance of the existing native fauna and flora on the land,
 - (ii) the provision and quality of habitats on the land for indigenous and migratory species,
 - (iii) the surface and groundwater characteristics of the land, including water quality, natural water flows and salinity; and
 - (b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.
- (4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:
 - (a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or
 - (b) if that impact cannot be reasonable avoided – the development is designed, sited and will be managed to minimize that impact, or
 - (c) if that impact cannot be minimised – the development will managed to mitigate that impact.

Figure 7 – GLEP (2014) - Wetlands Map – Sheet WET_003 (this map shows Campbell's and Nericon Wetlands, Jack Carson Wildlife Reserve and North Lake Wyangan. Note: currently Tharbogang Wetlands is not included)



3.3 State Environmental Planning Policy (Transport & Infrastructure) 2021

This Policy – *SEPP (Transport & Infrastructure) 2021* – commenced on 1 March 2021 and provides that certain types of works do not require development consent by a public authority, other agencies or authorised person.

Division 12 of the *SEPP (Transport & Infrastructure) 2021* defines parks and public reserves which this Policy covers, i.e., Crown land within the meaning of the *CLMA 2016* including a public reserve but not including a reserve that is dedicated or reserved for a public cemetery.

Section 2.73 (2) (c) of the Policy provides that in respect of land reserved within the meaning of the *CLMA 2016*, development for any purpose can be carried out without consent by or on behalf of the Secretary, a Crown land manager of the land, the Ministerial Corporation or the Minister administering the *CLMA 2016*, if the development is for the purposes of implementing a PoM adopted for the land

under the *CLMA 2016* in to such land or in accordance with the *Local Government Act 1993* in relation to Crown land managed by a Council.

Section 2.73 (3) of the Policy provides for a range of construction or maintenance works that are applicable under this Policy which may be carried out by or on behalf of a public authority in connection with a public reserve.

3.4 Council Plans, Strategies, Policies and Procedures

This PoM is to be used in conjunction with the appropriate Council plans, policies and procedures that govern the use and management of community land and any facilities located on the lands.

Additional Council policies, plans and strategies adopted after the date of this plan that have relevance to the planning, use and management of community land will apply as though they were in force at the date of adoption of the PoM, i.e. State of the Environment Report initially prepared in 2016 and to be prepared in conjunction with subsequent LGA elections.

3.5 Review of this Plan

The use and management of Campbell's Wetlands is regulated by this PoM.

Whilst the guidelines and principles outlined in the plan may be suitable at present, the Plan should be reviewed from time to time, to confirm its relevance.

The review should take place within 5 years of adoption of this plan.

3.6 Community Consultation

Consultation with the community is an important part of the preparation of this PoM. Consultation gives Council a better understanding of the range of local issues affecting the use and enjoyment of the land to which this PoM applies and gives all sectors of the community the chance to have an input into the direction of policy development being undertaken by Council.

Initial consultation has occurred with members of the Murrumbidgee Field Naturalists (MFN), Office of Environment and Heritage (OEH), Riverina Local Lands Services (LLS) and Murrumbidgee Irrigation (MI) together with Council's Environmental Officer.

All stakeholders are given the opportunity to express their opinions and provide relevant information in relation to the planned management of the land, however as the land is Crown land, final approval for the PoM rests with the Minister administering the *Crown Land Management Act 2016* as owner of the land.

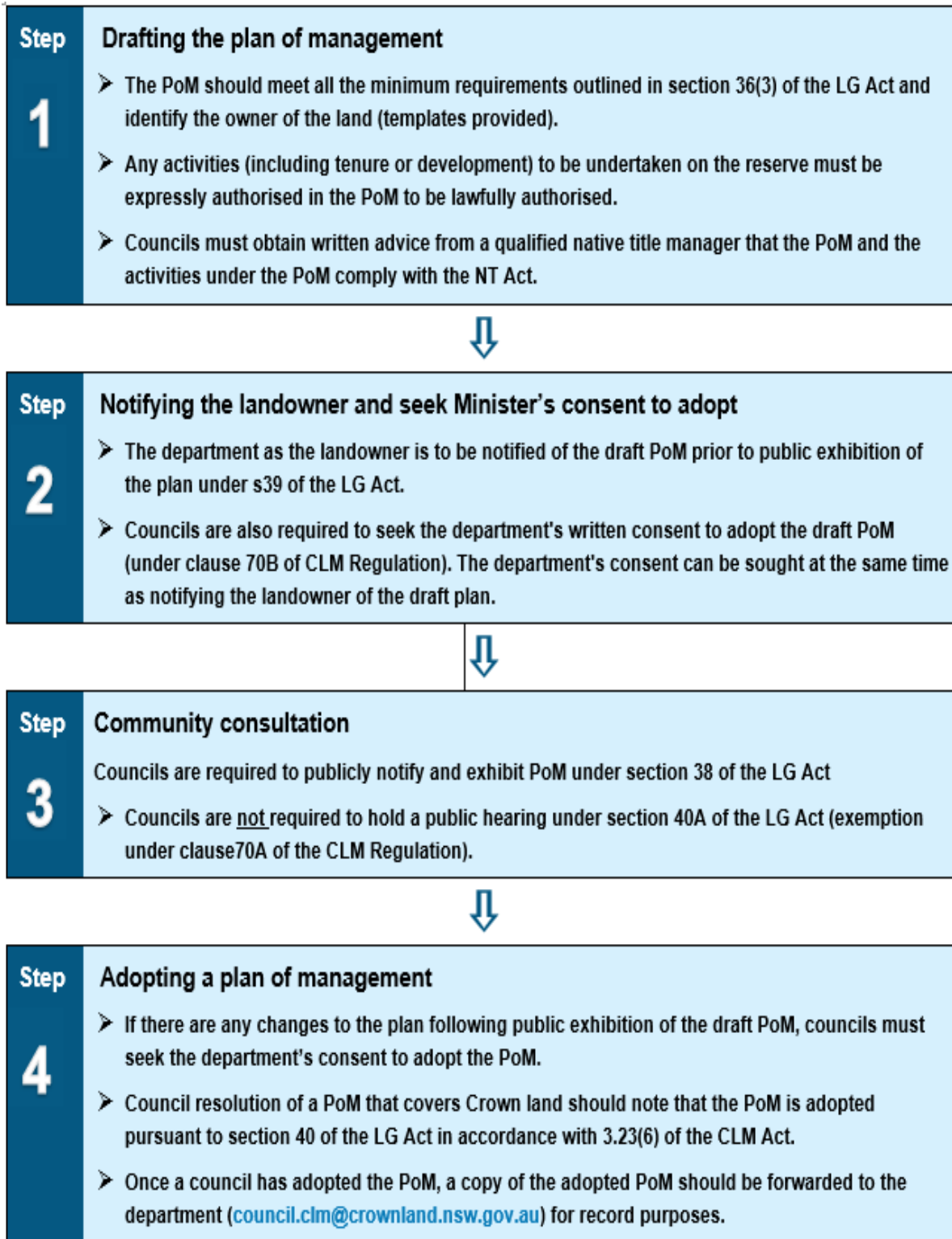
Council is required to submit the draft PoM to NSW Department of Planning & Environment, as representative of the owner of the land under section 39 of the *LGA 1993*. This process occurs prior to a public exhibition and community consultation of the Plan of Management. Refer to the "[*Flowchart for Consultation and Approval of an Initial Plan of Management*](#)" (Figure 8 below).

If after public consultation there is no change to the categorisation and no additional purpose is required to be added to the reserve, no additional ministerial consent is required. Council can then proceed to adopt the Plan of Management.

If Council proposes a change in the categorisation of the land following public consultation, the plan must be referred again to the Minister administering the *CLMA 2016* for consent to adopt the PoM.

Community consultation is also offered as a result of the development application process in line with Council's Griffith Community Participation Plan of 16 December 2019 (in response to Section 2.23 of the *Environmental Planning and Assessment Act 1979*).

Figure 8 - Flowchart for Consultation and Approval of an Initial Plan of Management



4.0 THE PHYSICAL ENVIRONMENT

Campbell's Wetland is bounded to its east by Boorga Road; to its south by Jones Road, to its north by farming land; and to its east by North Lake Wyangan. To its east and south are respective large lot residential subdivisions (Mancini Estate and Pelican Shores) however there remains a large area of undeveloped large lot residences within the Pelican Shores estate immediately to the south. *Refer to aerial imagery shown in Figure 9 below.*

Figure 9 – Aerial imagery of development within proximity to Campbell's Wetland (Lot 407 DP 751743); Nericon Wetlands shown at Lot 257 DP 751743



In MI's "Audit of Wetlands in the eastern MI (2005)", Campbell's Wetlands (together with Nericon and Tharbogang Wetlands) were regarded as "Wyangan Basin Wetlands"; a distinctive group of wetlands within the MIA due to their natural characteristics (bioregion, i.e. Cobar Peneplain, shallow soils) and proximity to urban fringe and intensive development within a small enclosed catchment (**Roberts** et al. 2005).

4.1 The Site – History including past Studies

Campbell's Wetlands similarly to Nericon Wetlands, is regarded as a shallow depression within the Lake Wyangan Basin, historically likely to have been highly ephemeral potentially supporting stands of Black Box (*Eucalyptus largiflorens*), Boree (*Acacia pendula*), Lignum (*Muehlenbeckia cunninghamii*) and Belah (*Casuarina cristata*) (CSU Report No. 140 further referred to below).

As the irrigation area evolved and farming in the vicinity of Campbell's Wetlands was more intensely cultivated, the area was used for local stormwater runoff; automatic overflow of drainage water when drainage channel (DC) Campbell's overflowed following very heavy rainfall; deliberate release of excess drainage water by Murrumbidgee Irrigation (MI) from DC Campbell's; together with irrigation runoff from farmland to the north and east of the swamp from earlier farming practices.

Although the relative importance of the various inputs to the wetland have not been quantified, run off from irrigation in summer had probably been significant. Following cessation of irrigation on lands immediately to the north of the swamp in 1999, the level of water in Campbell's has dropped considerably. (Taylor et al. 2000).

The original survey Plan (1920) of Portion 407 DP 751743 shows the swamp area to be 'timberless'; existence of a Tank on the south-western edge of the swamp; stands of Box, Pine and Yarran species south of the swamp and open pine to the east adjacent to Boorga Road. There are remnants of a former cattle yard resulting from previous years of grazing (also shown on the Portion Plan), however stables and a shed are no longer present. The Portion Plan also shows reference to the withdrawal of an area of 3,500 square metres for a road widening along the southern boundary adjoining Jones Road (Gazette 11 January 1974). Refer [Appendix 4 \(pg. 67\)](#).

Figure 10 - Remains of cattle yards (photo David Kellett, GCC)



Observations by members of the Murrumbidgee Field Naturalists (MFN) and surveys undertaken for the Royal Australasian Ornithologists Union (RAOU) (Birds Australia) Murray-Darling Basin Waterbird Survey assisted in the national and international recognition of both Campbell's (and Nericon) Wetlands as important habitat for migratory waders.

The Department of Land and Water Conservation undertook a formal Land Assessment of the Lake Wyangan area including Portion 407 (Campbell's Swamp) and Portion 257 (Nericon Swamp), Parish of

Wyangan in March / April 1996 to determine the suitable forms of land use for these parcels of land. The initial findings were published in 1997 and recommended that the areas be reserved for the “purposes of study and conservation of native flora and fauna” (Taylor et al. 2000).

Furthermore, in response to recommendations made in the Environmental Research and Information Consortium (IREC) Report on the Lake Wyangan Area (1999), Council proposed to change the status of Campbell’s (and Nericon) Swamps to 7(w), environmental protection (wetlands).

Prior to Campbell’s Wetlands’ reservation for ‘Environmental Protection’ in April 2000, the area was extensively Licenced by Department of Lands entity of the time for purposes of ‘grazing and dry cropping’. The CSU Report states that the last Licence in respect of Campbell’s Wetlands was terminated in 1997 (noted in pencil on the Portion Plan as Permissive Occupancy (PO) to LD & JM Campbell). Use at the time accorded with GLEP 1994 with the area zoned as 1(a) rural (general).

Griffith City Council Crown Reserves (R.1002932) Trust was appointed to manage the land for ‘environmental protection’ as a result of the reservation of Campbell’s Wetlands - Reserve 1002932.

Charles Sturt University (CSU - Johnstone Centre of Parks Recreation and Heritage) prepared its Report (Report No. 140) in 2000, incorporating both Campbell’s and Nericon Swamps.

In addition to water run-off, farming practices have also contributed to the composition of soils and nutrients into Campbell’s Wetlands. That is to say, along with the Leeton Cannery’s growing of highly productive tomato crops on land north of Campbell’s Wetlands utilising windblown topsoil from the former Gypsum mine (North Lake Wyangan), the farm also operated an irrigated dairy enterprise from the early 1970’s until more recent years when dairying ceased in favour of canola cropping.

The impacts of salinity are also likely to have changed both since the CSU Report and the development of the large lot residential subdivisions contained within DP 1119328 (Pelican Shores Estate south of Jones Road) and DP 285693 (Mancini Estate east of Boorga Road) which are located in close proximity to Campbell’s Wetlands, together with variations in climatic conditions. That is to say, the CSU Report was prepared during a period of extended drought that commenced in 1996. There have also been two significant 1:100-year flood events since that time being in 2012 and 2016 along with the initial drought breaking rain in 2010. The reduction of on-farm water discharge and channel escapes will also have affected the soil composition.

MI prepared reports in 2005 as essential background preparation for a program for monitoring wetland condition within the eastern MIA and surrounds linked to responsibilities of Murrumbidgee Irrigation towards wetlands as required under its water supply licence; and under its own and State Biodiversity Policy. The study area incorporated a total of 38 wetland areas (former Floodplain Channels; Depression Wetlands; the Wyangan Basin (Lake Wyangan, Nericon, Campbell’s and Tharbogang Swamps); Deflation Basins and Impounded Basins.

The subsequent Reports were: -

- *Inventory of Wetlands in the eastern MIA (May 2005)* (L Harrison and J Roberts)
- *An Audit of Wetlands in the eastern MIA (September 2005)* (J Roberts)

Although the Wyangan Basin Wetlands were treated as one type in the Report, it reflected Lake Wyangan and Nericon Swamp (each comprising 2 water regimes); and the Campbell's, Nericon and Tharbogang Wetlands collective areas comprising of 1 x Ephemeral; 2 x Seasonal; and 1 x Permanent areas with ecological values largely tied to their respective water regimes (**Roberts** et al. 2005).

The Report (at the time) provided a Condition Assessment of Campbell's Wetlands.

4.2 The Site – Recent and Current

Campbell's Wetlands has been developed with assistance of the MFN, a locally based community group whose aim is to facilitate the knowledge of natural history, and to encourage the preservation and protection of the Australian natural environment, especially that of the Murrumbidgee River Valley.

The MFN lodged **DA B473/1999** for 'On-Ground works component of the NHT funded project "Nericon & Campbell's Swamps Wetlands Conservation Plan"; the MFN having been successful in attaining a total of \$180,000 from the National Heritage Trust in 1998 for a 3-year funding program (March 1999 to September 2003).

MFN's "Nericon & Campbell's Swamps Wetlands Conservation Plan" proposed to: -

- Provide a Management Plan to guide all future activities in the Wetlands and adjacent lands.
- Register the Wetlands as both Nationally and Internationally important Wetlands in the relevant forums.
- Carry out rehabilitation and re-vegetation works to maintain and enhance current ecological diversity
- Provide protected breeding and roosting habitat for native fauna.
- Raise community awareness of the importance of Wetlands generally and of these Wetlands in particular.
- Provide educational, interpretive and monitoring structures and facilities close to a major inland center that will have a wide-reaching impact on raising community awareness of the importance, conservation, recreational and ecotourism values of wetlands.

Through MFN's Project, the members were able to: -

- Have a Survey undertaken in 1999 by local Surveyors, Polkinghorne, Budd & Longhurst (PHL)
- Engage Green Corp to install fencing.
- Arrange for combined direct seeding and seedling planting (by Green Corp and members of the MFN).
- Obtain additional funding (\$77,947) for works at Campbell's (and Nericon) Swamps.
- A further 2800 seedlings planted by Green Corp (total number 3600).
- Lodgement of Development Application(s) associated with works at Campbell's (and Nericon) Swamps, i.e. bird hide(s) and boardwalk(s) (2001).
- Installation of interpretive signage (2001).
- Campbell's (and Nericon) Swamps bird hide(s) and boardwalk(s) completed by MFN (2002).
- Additional tree planting along track to Nericon bird hide (2004).

Following completion of the Project, it was proposed that the MFN would, within its capacity as a volunteer organisation, provide minor maintenance for the structures erected at both sites; carry out regular inspections of the site and arrange working-bees to maintain the site(s) in a tidy manner (extract of undated letter from Bill Moller to Brent McAlister, Director of Environmental Services, GCC).

It was identified that Council would arrange to set up a 'Management Committee' to assume the role of ongoing management of the Lake Wyangan Wetlands (for environmental purposes). It was further proposed that the Management Committee would be responsible for the development of a Management Plan for the Wetland reserves under the Trusteeship of Council (extract of undated letter from Bill Moller following meeting of 7 August (1999) with Council representatives).

To-date, neither the *Management Committee has been created, or a Management Plan developed*. Council's Environmental Planner, has however undertaken strategic management actions in consultation with members of the MFN since Council's appointment as Trust Manager in 2000, relating to: -

- ❖ 'Boxthorn Removal Project' (\$50,837) (2006 – 2007) & (2013 - 2016)
- ❖ Direct seeding as referred to on pgs. 18-19 (2007 & 2011)
- ❖ Impacts of Pelican Shores Development on Campbell's Swamp (2009)
- ❖ Approval of environmental water delivery – Refer Table 2 pg. 35
- ❖ 'Saline Discharge Revegetation Project' – Urban Salinity Projects included Nericon Wetlands & Jack Carson Wildlife Reserve (2010)
- ❖ National Tree Corps tree-planting (2010)
- ❖ 'Biodiversity Buzz Day' (2010)
- ❖ 'Promotion, Rehabilitation & Restoration of Riverina Bird Habitats (\$1,769) (2011 / 2012)

The previously built bird hide and board walk erected by the MFN remain in-situ however the boardwalk in particular, requires repair and poses a safety risk. The signage originally installed by the MFN remains in good condition although additional interpretive and cultural signage would enhance the education and visual experience at Campbell's Wetlands.

The existence of the bird hide together with the boardwalk provides a greater opportunity for birdwatching, study and eco-tourism (than neighbouring Nericon Wetlands), despite the need for repair and upgrade. Campbell's Wetlands retains a small area of permanent water, albeit that the levels fluctuate due to reduced off-farm seasonal input, MI's channel escape and rely more on environmental water delivery. This site comprises abundant plant cover providing significant habitat.

Direct seeding previously undertaken on the north-east and north-west of the site has substantially grown to provide additional woodland biodiversity at Campbell's Wetlands and generally greater connectivity between the collective areas from Nericon Wetlands to the east through to Tharbogang Wetlands to the west.

Council's *State of the Environment Report (2016)* identifies strategies including to: -

- 'Improve sustainable land use' by measures including the protection of landscapes that are environmentally sensitive; determining the extent of soil salinity and reduce impact where possible; and enhance compliance with applicable environmental codes and standards.

- 'Plan effectively and consider health issues within planning and sustainable development frameworks' by measures including to encourage nature-based recreation at levels that are compatible with existing conservation values.
- 'Improve biodiversity by preserving and protecting existing biodiversity' by measures including developing and implementing a Biodiversity Strategy and Offset Strategy to identify appropriate land for revegetation and protection; development of a 'Sustainable Living Guide' to inform the community on biodiversity related issues; and compile detailed management plans for all parks and reserves.
- 'To ensure and maintain the conservation of the natural environment' by measures including developing a 'Noxious Weeds' Guide for the Griffith LGA; avoid development in areas of environmental significance; improving education and promotional resources to assist in the conservation and promotion of biodiversity; and continuing noxious weeds management.
- 'To preserve our built and natural heritage for future generations' by measures including increasing awareness of local indigenous heritage.

Figure 11 – Project and Interpretive signage



4.3 Topography, Hydrology and Drainage

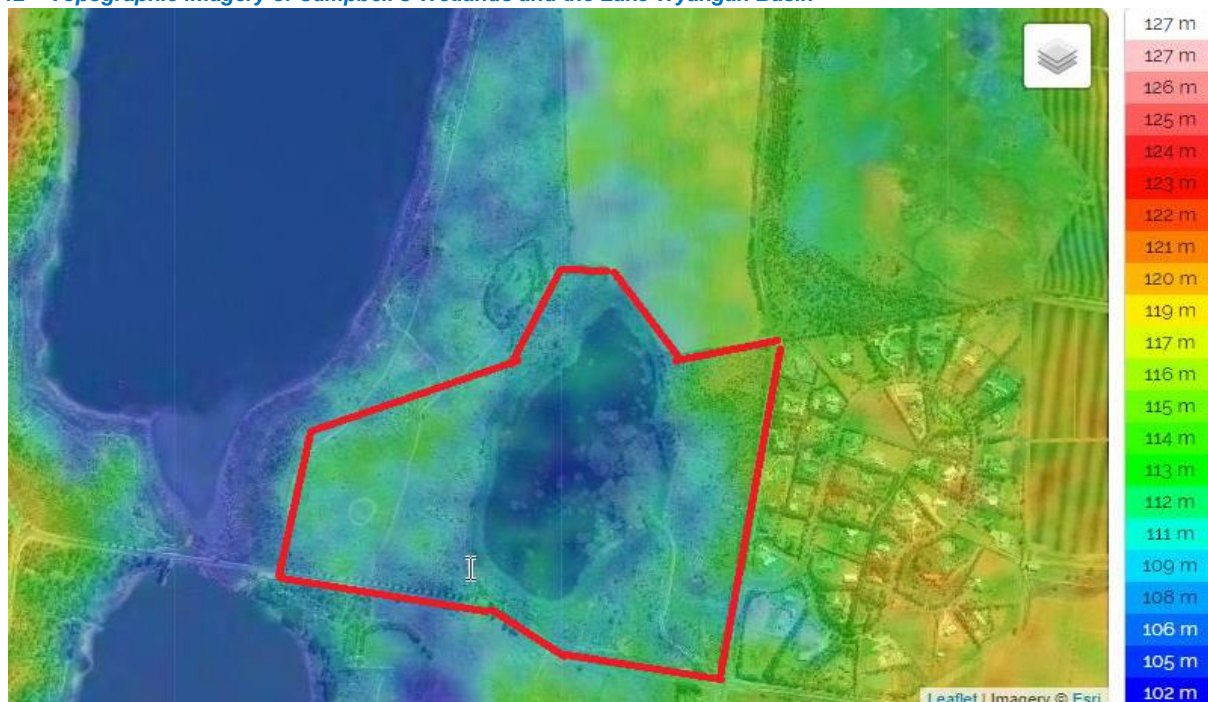
The area of Campbell's Wetlands is a very shallow depression of medium size (27.3 hectares within the overall area of 84.74 ha) with a variation of height above sea level between 104m and 116m as per the below map.

The Wetland's sources of water include rainfall; local stormwater runoff during heavy rainfall; automatic overflow of drainage water when DC Campbell's overflows following very heavy rainfall; deliberate release of excess drainage water by MI from DC Campbell's following extreme rainfall events or prolonged heavy rainfall; and irrigation runoff from farmland to the north and east of the swamp (Taylor et al. 2000). The area experienced two 1:100-year flood events in 2012 and 2016, the former as a result of prolonged rainfall.

Previous water escape from irrigation supply delivery is likely to have decreased in recent years due to MI's improved technology and delivery systems together with improvements in on-farm water management and farming practices.

Water management will be mentioned further within this PoM.

Figure 12 – Topographic imagery of Campbell's Wetlands and the Lake Wyangan Basin



4.4 Soils and Geology

The sediments of the Riverina plain are relatively young compared to those of the Lake Wyangan basin, with the surface aged in the tens of thousands of years, whereas the landscape of the Lake Wyangan basin is aged in the hundreds of thousands of years. The material in the Macpherson Range is from the Cocopara Group formed in the late Devonian (400 million years old), and comprises sandstones, siltstones, pebbly conglomerate and quartzite sandstones (ERIC 1999). Much of the surface material within the depressions in the basin consists of weathered products derived from these sedimentary rocks (Taylor et al. 2000). The processes of erosion and eluviation of these materials have produced a range of soils and recent geological formations such as lunettes, gypsum deposits and heavy clay soils (ERIC 1999).

Occurrences of summer rainfall events of high intensity and magnitude have caused significant erosion and hence deposition of finer soils into the swamps. Recent deposition material is more finely textured, but is still closely associated with the Cocopara Group (ERIC 1999). The pH of Campbell's (and Nericon) Wetland soils is lower than that of the surrounding landscape. Refer Table 1 below (Extract from CSU Report 140).

Table 1 – Soil properties of Campbell's Swamp (data from ERIC 1999)

Property	Soil Horizons			
	A1	A2	B1	B2
Profile thickness	10	20	10	40+
pH	6.8	7.1	6.8	6.9
Oxidation/reduction – Potential (pe)	160	150	175	200
Specific conductivity	20	30	290	2200
Texture	Clay loam	Clay loam	Light clay	Medium clay
Overall class	Loam			

Light soils in the Lake Wyangan catchment are prone to percolation and leaching.

The soils around Campbell's Wetlands have also been influenced by the history of gypsum mining (used in the manufacture of gyprock wall board) which was mined between 1934 to the end of 1959, producing 92,838 tonnes. Some of the soils that were scraped off to extract the gypsum were deposited to the west of Campbell's Wetlands resulting in the raised area between it and North Lake Wyangan (**Taylor et al. 2000**).

No recent soil studies have been undertaken since the CSU Report and MI Audits respectively.

4.5 Biodiversity

Under the *LGA 1993*, Council has obligations for conservation issues as determined by the *Biodiversity Conservation Act 2016*, and the *Fisheries Management Act 1994*.

Griffith City Council's Planning Certificate under Section 10.7(2) and 10.7(5) *Environmental Planning and Assessment Act 1979* dated 20 October 2020 indicates the following: -

- The subject site has been mapped in Griffith Local Environmental Plan for its terrestrial biodiversity and may include remnant vegetation.
- The site is not subject to any conservation area.
- The site is not land biodiversity certified land within the meaning of Part 7AA of the *Threatened Species Conservation Act 1995*.
- The land is not subject to any bio-banking agreement under Part 5 of the *Biodiversity Conservation Act 2016*.
- The land is not subject to any set aside areas under Section 60ZC of the *Local Lands Services act 2013*.
- Griffith City Council's Tree Preservation Order applies, i.e. a person must not ringbark, cut down, top, lop, remove, injure or wilfully destroy any tree or other vegetation without the authority conferred by development consent or a permit granted by Council.

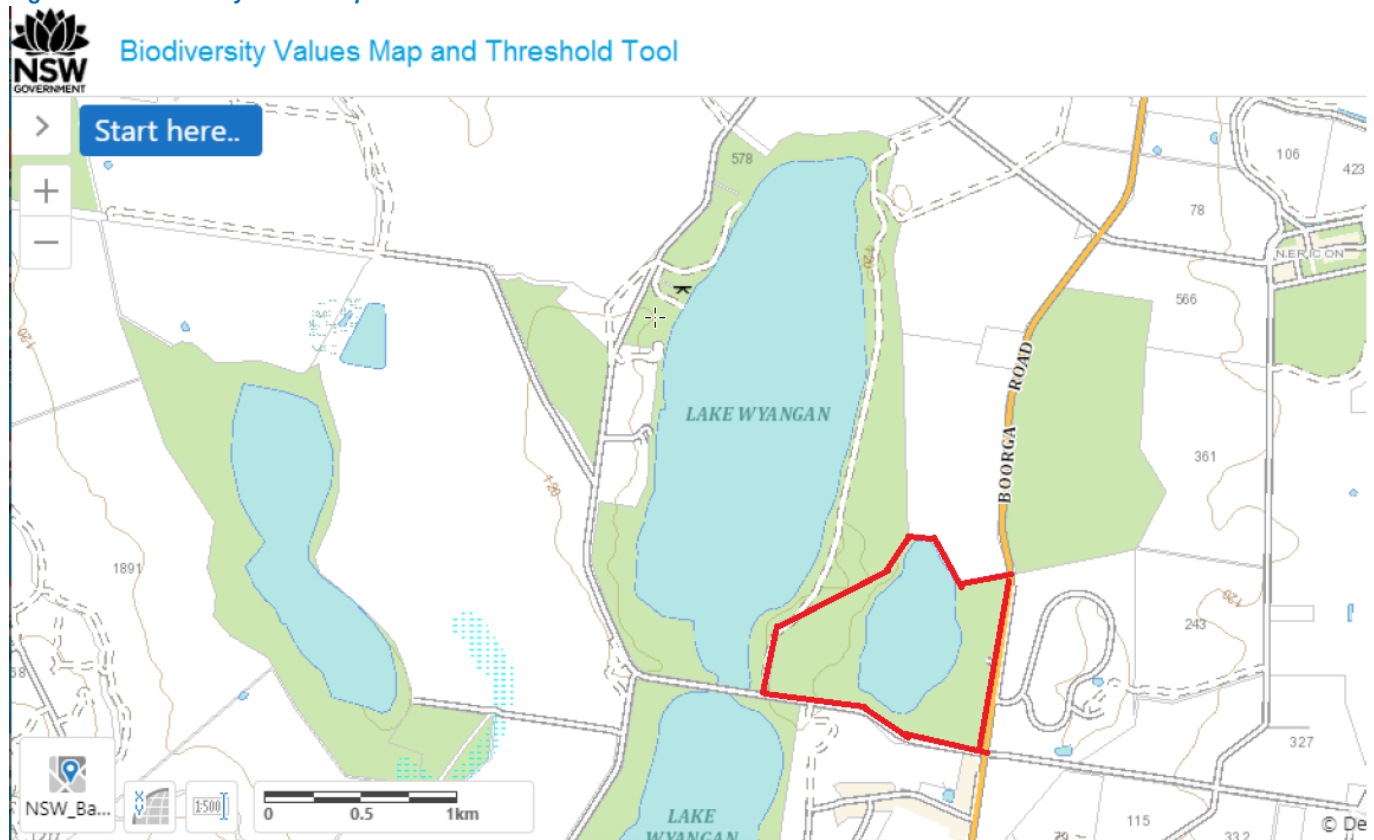
Council considers the land to be below the Flood Planning Level (FPL) and therefore subject to flood related development controls. Restrictions on development apply to this land.

*Note: **Flood planning level** means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metres freeboard.*

The NSW Government Biodiversity Values Map and Threshold Tool indicates that there is no land of biodiversity within Lot 407 DP 751743 as per Figure 13 below.

Any future work will be subject to detailed assessment in accordance with the legislation prior to the removal of any native vegetation.

Figure 13 - Biodiversity Values Map and Threshold Tool – Lot 407 DP 751743



4.6 Riparian Land and Watercourses

There are no named rivers or creeks in the vicinity of Campbell's Wetlands. Griffith LEP however identifies both North and South Lake Wyangan as Riparian Lands and Watercourses in Map – Sheet RLW_003 below.

A waterbody as defined in the Griffith LEP 2014 states –

Waterbody (artificial) or artificial waterbody means an artificial body of water, including any constructed waterway, canal, inlet, bay, channel, dam, pond, lake or artificial wetland, but does not include a dry detention basin or other stormwater management construction that is only intended to hold water intermittently.

Figure 14 – Griffith LEP Riparian Lands and Watercourses Map – Sheet RLW_003



5.0 THE SOCIAL ENVIRONMENT

5.1 Aboriginal Significance

A search of the Office of Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) dated 24 August 2020 indicates that.

- There are ten (10) Aboriginal sites recorded in or near Lot 407 DP 751743 (200 metres buffer); and
- No Aboriginal places have been declared in or near Lot 407 DP 751743 (200 metres buffer).

A subsequent AHIMS search undertaken on 20 October 2020 with a 50-meter buffer, indicated three (3) Aboriginal sites recorded in or near Lot 407 DP 751743.

Council will undertake due diligence in accordance with the *NSW National Parks and Wildlife Act 1974 (NPW Act)* and the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

Council may consider that the Griffith Local Aboriginal Land Council (Griffith LALC) undertake a site assessment of any area where proposed works are to be undertaken, i.e. upgrade or new boardwalk installation; installation of new viewing platform etc.

It may be necessary to apply for an Aboriginal Heritage Impact Permit (AHIP) prior to undertaking any development at the site should further investigation indicate that proposed works are likely to impact on any of the recorded sites.

5.2 Heritage Significance

The relevant 10.7 Certificate indicates that no environmental items and controls exist at this site.

6.0 KEY ISSUES

Although identified previously, to-date, no formal management guidelines (Plan and / or Committee) have been in place.

Key issues affecting Campbell's (and Nericon) Wetlands include: -

- ❖ future management;
- ❖ protecting, restoring and improving the condition of wildlife habitats of the wetlands to ensure long-term biodiversity of the environment (either individually or collectively);
- ❖ ensuring adequate receipt of environmental water (when available);
- ❖ the prevention of development that could potentially destroy, damage or otherwise adversely affect the values of the wetlands (individually and collectively); and
- ❖ improving opportunities for education, study and eco-tourism to promote the site's special features within the broader Lake Wyangan Basin.

The growth of Griffith and its surrounding area has been key to its success as an agricultural food bowl, however it has also caused significant pressure on the local environment.

Since settlement in the early 1900's, over 94% of the land has been cleared with the remaining 6% of native vegetation existing in pockets. Significantly, Nericon and neighbouring Wetlands (and other pockets of native vegetation) have been under threat of grazing, weed invasion and isolation. Conversely, it is also probable that farm-water run-off and channel escape water has also assisted the development of biodiversity of the wetlands following the initial post settlement land-clearing.

Council's *State of the Environment Report (2012 / 2016)* indicates that there are 802 species of flora currently recorded within the Griffith LGA on the NSW Wildlife Atlas database. Of these, 22 endangered plants listed under the *NSW Threatened Species Conservation Act 1995 (TSC Act)* (now the *Biodiversity Conservation (BC) Act 2016*) are known or predicted to occur within the Griffith LGA.

To date, 271 birds, 28 mammals, 20 bats, 41 reptiles and 9 amphibians are currently recorded within the Griffith LGA on the NSW Wildlife Atlas database. Of those recorded, 15 species are classified as endangered and 50 are classified as vulnerable under the *TSC Act 1995 (now the BC Act 2016)*. Sixteen fauna species are listed as endangered under the *Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*; and sixteen migratory water bird species are protected under international treaties with China, Japan and the Republic of Korea. Seven endangered ecological communities also listed under the *TSC Act 1995 (now the BC Act 2016)* are also known to occur in the Griffith LGA.

Bird Surveys undertaken at Campbell's since 1996 indicate a total number of 77 species, the Magpie Goose, Freckled Duck and Blue-billed Duck being Vulnerable species (*NSW BC Act 2016*). Furthermore, 3 of the sighted species are also listed under the Japan-Australia Migratory Bird Agreement (JAMBA); China-Australia Migratory Bird Agreement (CAMBA) or Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) - [See Appendix 2 \(pg. 62-64\)](#).

The CSU Report noted that there had not been any formal quantitative plant studies undertaken at Campbell's Wetlands (or Nericon) and that there were no historical records of vegetation. Plant communities were subsequently assessed as part of the CSU Report in November 1999 using two transect lines across the swamp, from east to west and from north to south. Distinctive plant communities or associations were identified and fifteen randomly placed .5m x .5m quadrants were

taken in each community. A percentage of plant species within each quadrant was then estimated visually with a number of communities noted and identified.

It is noted however, that Eric Whiting, member of the MFN noted plant species sighted at Campbell's Wetlands in 1996 (prior to the CSU Report). It is unknown as to why the CSU Report did not refer to Mr. Whiting's earlier findings. The CSU study noted 18 families (*Asteraceae*, *Boraginaceae*, *Brassicaceae*, *Caryophyllaceae*, *Chenopodiaceae*, *Cyperaceae*, *Fabaceae*, *Gramineae*, *Lythraceae*, *Marsileaceae*, *Mimosaceae*, *Myrtaceae*, *Poaceae*, *Polygonaceae*, *Ranunculaceae*, *Scrophulariaceae*, *Solanaceae* and *Typhaceae*) of flora with a total of 42 species. It is noted from the Report that a number of species were one-off siting's.

In addition to Eric Whiting's study of 1991, a subsequent study was undertaken in 2010. Mr Whiting's collective studies noted a total of 23 families (*Araceae*, *Asteraceae*, *Boraginaceae*, *Brassicaceae*, *Caesalpiniaceae*, *Chenopodiaceae*, *Convolvulaceae*, *Crassulaceae*, *Euphorbiaceae*, *Fabaceae*, *Geraniaceae*, *Gramineae*, *Juncaceae*, *Lamiaceae*, *Lythraceae*, *Malvaceae*, *Mimosaceae*, *Myrtaceae*, *Poaceae*, *Polygonaceae*, *Ranunculaceae*, *Sapindaceae*, *Scrophulariaceae*, *Solanaceae* and *Typhaceae*) of flora with a total of 64 species.

A full list of plant species sited incorporating all studies is shown in [Appendix 3](#) (pg. 65-66).

No further formal plant studies have been undertaken since that time. Further studies of vegetation and water requirements will assist to better manage the site to meet wetland bird habitats and support the species previously sighted specifically at Campbell's Wetland and more broadly across the Lake Wyangan Basin. The re-vegetated areas of woodland also support overall biodiversity of fauna at Campbell's.

Key threatening processes are the things that could threaten the survival or evolutionary development of species, populations, or ecological communities. They are listed in the *Biodiversity Conservation Act 2016* and include pest animals, weeds, diseases and habitat loss / change. With a total of 33 Key threatening processes identified within the Griffith LGA (Council's *State of the Environment Report (2016)*), those most threatening to the local Wetlands are: -

- Invasion of Environmental Weeds
- Predation by European Red Fox (*Vulpes Vulpes*) and Feral Cat (*Felis catus*)
- Anthropogenic Climate Change
- Removal of dead wood and dead trees
- Loss of hollow-bearing trees

During early agricultural years, the Wetlands' sources of water included rainfall, local stormwater run-off during heavy rainfall; automatic overflow of drainage water following overflow of DC Campbell's resulting from heavy rainfall; deliberate release of excess drainage water by MI from DC Campbell's following extreme rainfall events and irrigation run-off from farmland to the north and east of the Wetlands.

This source of water supply over more recent decades has been greatly reduced due to improved technology in water delivery mechanisms and monitoring by MI of its unpaid water losses; together with on-farm management practices and a requirement of farmers to retain drainage water on-farm due to chemical pollution. The extremely severe weather patterns and high rainfall events of 2012 and 2016 are exceptions.

In more recent years the Office of Environment and Heritage (OEH) has made allocations of environmental water (e-water) available to both Campbell's (and Nericon) Wetlands. The Murrumbidgee Environmental Water Advisory Group (EWAG) that includes two representatives of the MFN, determines

e-water allocations across the collective of Murrumbidgee Wetlands. GCC should also be represented on this Committee given its management of Campbell's Wetlands individually (and the collective of Wetlands).

Accordingly, a more permanent wet area has been preferred at Campbell's Wetland to support Australasian Bittern habitat particularly with reduced rice production in the Murrumbidgee Irrigation Area (MIA), neighbouring Coleambally Irrigation Area (CIA) and Berriquin Irrigation Districts. The '*Bitterns in Rice Project*' developed by Matt Herring, Ecologist in association with the Rice Growers' Association of Australia have noted the significance of permanent water and suitable habitat for Australasian Bittern breeding.

The maintaining of a permanent wet area at Campbell's Wetlands (together with Fivebough Wetlands, Leeton) provides a valuable refuge for Bittern prior to rice planting (between October to November) and post rice harvest (between late March to May) (**Personal Comment** Max O'Sullivan, MFN 6 January 2021).

Improvements to water delivery and associated infrastructure together with improved monitoring may further improve water delivery and thereby improve the Wetlands biodiversity overall, particularly for threatened and endangered species.

Figure 15 – Water delivery point to Campbell's Wetlands adjacent to Jones Road – environmental flow December 2020 adjacent to Jones Road - (Photo: David Kellett, GCC)



Notes from MFN meetings indicated that there was an environmental water delivery in 2005 / 2006 indicating a delivery of **235ML for Campbell's** (and 230ML for Nericon), however as supply delivery to Nericon was difficult, all water was delivered to Campbell's.

Information from Murrumbidgee Irrigation's Annual Compliance Reports provides the following information in relation to the delivery of e-water in more recent years, however comments noted by the MFN suggest that more water was redirected to Campbell's from Nericon Wetlands due to issues with previous delivery.

E-water delivery has not been further confirmed by OEHL at the time of preparing this Draft PoM.

Table 2 – Environmental Water delivery (Recent MI Annual Compliance Reports data)

Murrumbidgee Irrigation Environmental Protection Licence (EPL) 4651				
Reporting Year	E-water - Nericon	E-water – Campbell's	Date	Total E-water delivered in MIA
2015 / 2016	138ML 102ML	206ML	November 2015 December 2015	1857ML
2016 / 2017	126ML 108ML	292ML 77ML	April 2017 May 2017	986ML
2017 / 2018	-	-	-	600ML
2018 / 2019	-	263ML 136ML	October 2018 November 2018	2996ML

Council approved the most recent delivery of **200ML in December 2020** at a rate of 10-15ML / day. Cultural water delivery is also available through LLS, which can be a further alternative for receipt of water for Campbell's (and Nericon) Wetlands subject to suitable infrastructure as in the case for e-water delivery.

It has been recognised that climatic variations are occurring with human-induced build-up of greenhouse gases in the atmosphere known as 'enhanced' greenhouse or anthropogenic climate change. This is expected to change many of the basic weather patterns that make up our climate including wind and rainfall patterns; and the incidence and intensity of storms.

In NSW, the average temperatures have been steadily rising since the 1960s. The decade from 2008 to 2017 was the hottest on record. Accordingly, climate change will increasingly affect the environment and society across the State.

Figure 16a – Climatic modelling Murray – Murrumbidgee Change in days over 35° 2020-2039

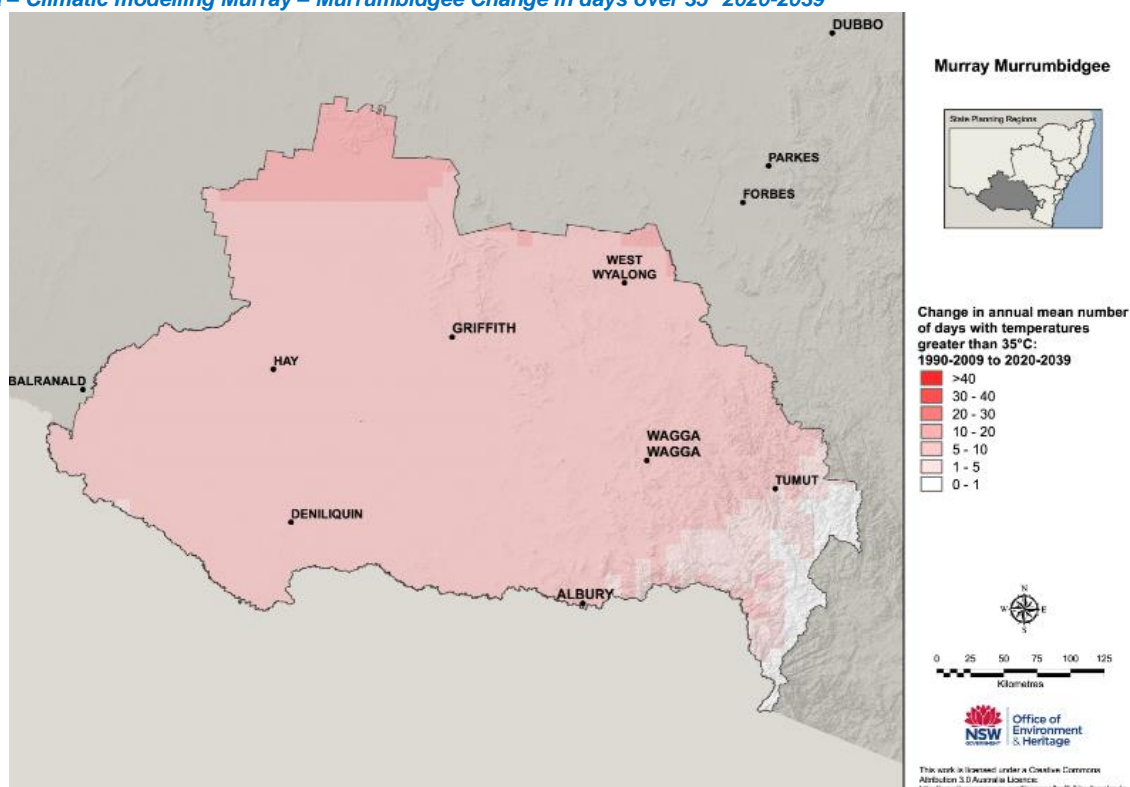
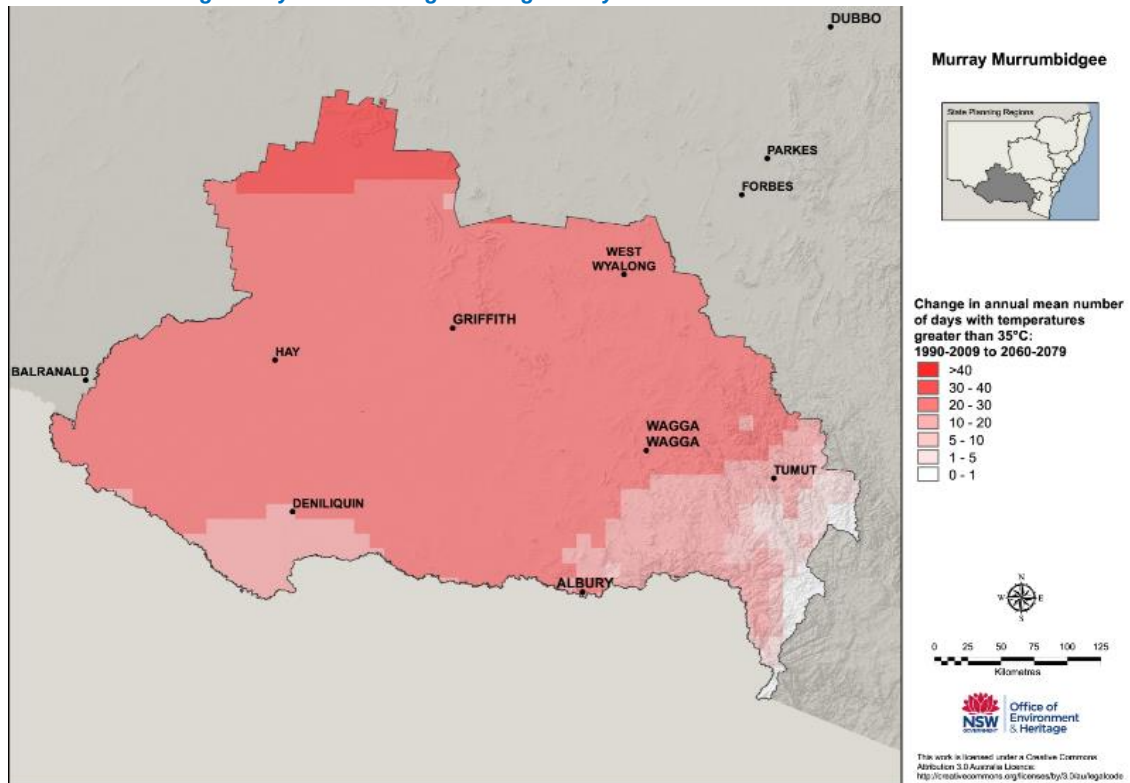


Figure 16b – Climatic modelling Murray – Murrumbidgee Change in days over 35° 2060-2079



Understanding the potential for impact of climatic variations on our environment, particularly wetland areas and building resilience to these changes will assist in protecting their biodiversity and preventing further fragmentation of habitat.

Additional threats from nearby large-lot residential subdivisions also have potential to impact on the site particularly in regards to indiscriminate and illegal dumping of rubbish; predation by cats; and leakages from effluent disposal units.

Environmental and other weeds also compete with native vegetation causing imbalances to biodiversity. While significant infestation of African Boxthorn (*Lycium ferocissimum*) has been removed from Campbell's Wetlands, this species still exists in isolated stands at both Campbell's (and Nericon) Wetlands with a couple of individual plants growing adjacent to the boardwalk.

Figure 17 – Campbell's Wetland



7.0 DEVELOPMENT AND USE

7.1 Current Use of Land and Structures at date of Adoption of Plan of Management

Campbell's Wetlands continues to be used for environmental protection. Passive recreational activities should be carefully related to the existing purpose of 'environmental protection' so as not to negatively impact on the valuable biodiversity footprint that currently exists at Campbell's Wetlands.

There is a gravel car park entry off Boorga Road however signage is difficult to see when travelling north along Boorga Road with no prior warning for entry to Campbell's Wetlands.

Griffith City Council has constructed a concrete footpath / cycle track from Griffith to Lake Wyangan and with renewed development of North Lake Wyangan for wider recreational use (and improved water quality), there is potential to link a walking track / cycle track with Campbell's Wetlands to facilitate enhanced understanding, education and appreciation of the wetland area through increased visitation.

From the main entrance off Boorga Road, there is a vehicular track leading from the car park entry which contains both a pedestrian gate and a locked vehicle gate that deters unauthorised entry. The existing boardwalk provides direct entry to a single corrugated iron bird hide. The boardwalk to date, having been installed by members of the MFN, has largely been repaired and maintained by the MFN. However, the boardwalk is now requiring critical repair and Council was successful in a DPE – Crown Lands 'Crown Reserve Improvement Fund' (CRIF) grant application to replace the existing boardwalk.

Structural integrity of the bird hide also requires Council to take an active role in maintenance; with an internal information board identifying various bird species, being damaged through random acts of vandalism. Viewing from the hide is almost non-existent due to the growth of Common Reed (*Phragmites australis*). (Refer to photos on pg. 39).

With more frequent visitation and promotion by Council, there is potential to develop a walking track, viewing mounds for additional bird watching, and installation of further interpretive and cultural signage to provide information and education on both the biodiversity of the site and the significance of wetland areas to the local indigenous community. There is also opportunity for an additional bird hide.

Guidance through a Plan of Management and a specific Management (or Advisory) Committee in respect of Campbell's, Nericon and Tharbogang Wetlands collectively, will provide more appropriately for improved management outcomes and support Council in decision making. Through this process of collaboration, there is potential for more opportunities to seek funding from a range of sources, particularly given the sensitivity and previous sighting of threatened species at the site.

Figure 18 – Lack of management indicators – photos of boardwalk and hide with vandalism and restricted view; and regeneration of African Boxthorn



7.2 Strategic Objectives

The aim of this Plan of Management is to guide Council in future development of the land in accordance with the legislative requirements of both the *LGA 1993* and the *CLMA 2016* as applicable to the respective management types.

This Plan of Management will assist Council to: -

- Identify and assess the reserves' current uses, condition and potential future uses.
- Potentially form a Management or Advisory Committee to oversee future long-term management.
- Provide guidelines for the effective and ongoing management and budget forecasting for Campbell's Wetlands, individually (and Nericon and Tharbogang Wetlands collectively).
- Provide facilities that support use of the wetlands for ecological, scientific and cultural studies and aesthetic values supporting birdwatching and walking (as considered appropriate)
- Manage the lands for environmental protection, management and restoration of the wetlands; and protection and improving the condition of wildlife habitats of the wetlands.
- Provide for public safety with the framework for on-going maintenance and improvements to the facility at an appropriate standard.
- Collate all information in a single document.

7.3 Permitted and future use

The gazetted purpose of Campbell's Wetlands is 'Environmental Protection' and the assigned category is **Natural Area – Wetland** which aligns with the reserve's past and current use and values identified in this Plan.

It is considered important for a Management or Advisory Committee to be created for over-sight of Campbell's (Nericon and Tharbogang) Wetlands in the first instance. A priority for management can then be set in place. While future use is unlikely to change, the wetland is likely to require further development to support greater accessibility and use for passive recreational purposes based on its linkage and proximity to North Lake Wyangan, i.e.

- Potential hydrology study of the wetlands to allow for improvements to infrastructure to facilitate efficiencies in water delivery (in-house engineers or MI could support out-sourced study if required);
- Current flora and fauna studies;
- Detailed cultural assessment particularly where any prospective improvements (bird hide / viewing mounds / walking tracks / board walks) are proposed;
- Improvements to / or additional walking tracks and boardwalks to enhance visitation, study and improve accessibility;
- Replacement of existing damaged signage and installation of additional interpretive signage (flora, fauna, cultural features);
- Potential replacement of existing bird hide and installation of additional new hide or viewing mounds to enhance visitation and study;
- Improvements to entry and car-park area (to provide safer entry and exits onto Boorga Road and on-going monitoring for unauthorised activities, i.e. illegal rubbish dumping and unauthorised access by motor-bikes);
- Additional re-vegetation programs (Greening Australia, National Tree Day and School Tree-planting days etc.);
- Installation of Track Counters.

Possible development may not occur during the term of this PoM other than to upgrade existing infrastructure that poses a safety risk to both Council and the various Wetlands' users (subject to planning and budgeting).

Future development of the land will be consistent with the reserve purpose, available funding and budget allocations, and relevant legislation, i.e. *LGA 1993*, *CLMA 2016*, *NTA 1993 (C'th)* and the *ALRA 1983*.

7.4 Leases, Licences and other Estates

For this section, please see the Explanation of Terms set out below.

Section 3.22 of the *CLMA 2016* authorised Councils to now manage dedicated or reserved Crown land as public land under the *LGA 1993*.

The *LGA 1993* provides that tenures (leases, licences, or any other estates) or easements may be granted over all or part of community land. It is highly unlikely that Leases will be issued in respect of Campbell's Wetlands however there may be opportunity for the issue of short-term licences for crash-grazing and one-off events, i.e. Tree Planting Days, World Wetlands Day excursions etc. (as considered appropriate).

Should Council enter into short-term grazing licences, prospective licencees must ensure that grazing practices are undertaken in accordance with the Reserve's purpose of 'Environmental Protection' and utilise sustainable grazing practices to ensure that over-stocking does not occur; weeds species are not introduced to the site; nor is there a negative footprint impacting on the environment, i.e. management practices could include temporary fencing and the requirement to provide alternate water sources for stock. Strategic and timely grazing will provide for reduced weed growth prior to the setting of seed with long-term benefits in reducing the prevailing seed bank.

Leases, licences and other estates formalise the use and occupation of community land and can generally only be permitted if consistent with the purpose for which the reserve was dedicated or reserved, or on a short-term basis as prescribed in the Local Government (General) Regulation 2021.

Tenures may be held by:

- Community organisations and sporting clubs, or
- By private / commercial organisations or
- Individuals providing facilities and / or services for public use.

The maximum period for leases and licences on community land allowable under the *LGA 1993* is 30 years (with the consent of the Minister for a period over 21 years) for purposes consistent with the categorisation and core objectives of the particular area of community land.

Community land may only be leased or licenced for periods of more than 5 years if public notice is given according to the requirements of Sections 47 and 47A of the *LGA 1993*.

Leases

A lease will generally be required where exclusive use or control of all or part of community land is desirable for effective management. A lease may also be required when the scale of investment in facilities, necessity for security measures, or where the relationship between a holder and facilities on community land justifies such security of tenure.

Leases issued by Council will require:

- That subleases or any other supplementary tenures can only be issued by the Holders with the approval of Council, and consistent with Section 47C of the *LGA*.
- Maintenance of the facility will be the responsibility of the Lessees.

Explanation of Terms

Tenure – A lease, licence or other estate issued by Council in accordance with Section 46 of the Local Government Act 1993 or Sections 2.19 – secondary interests & 2.20 short term licences, of the Crown Land Management Act 2016.

Holder - The company, organisation, individual or group of individuals who have been issued with a Tenure.

Licences

Licences allow multiple and non-exclusive use of an area. A licence may be required where intermittent or short-term use or control of all or part of the community land is proposed. A number of licences for different holders can apply to the same area at the same time, provided there is no conflict of interest.

Purposes for which Tenures may be issued

In accordance with Section 46A of the *LGA*, a PoM for community land is to specify and authorise any purpose for which a lease, licence or other estate may be granted over community land during the life of the Plan of Management. The issue of any licence granted by Council over Reserve 1002932 must also have consideration to Section 47B of the *LGA* 1993 in respect of 'Natural Areas'.

This PoM authorises a Tenure to be issued:

- For any permissible use as detailed.
- For purposes consistent with the Reserve's:
 - Categorisation (see Section 2.4), and
 - Zoning (see Section 3.2), and
 - Reserve purpose of Environmental Protection as required under the *CLMA*.

Temporary licences may be granted for up to one year where they are consistent with purposes for which a short-term licence can be issued under the provision of the *Local Government Act 1993*.

Licences and other estates formalise the use and occupation of community land and can generally only be permitted if consistent with the purpose for which the reserve was dedicated or reserved, or on a short-term basis as prescribed in the *Local Government (General) Regulation 2021*.

A tenure on Crown land may impact native title rights and interests. Any use agreement issued on Crown land must be issued in accordance with the future act provisions of the *Native Title Act 1993* and in accordance with Part 8 of the *Crown Land Management Act 2016* unless native title is extinguished. For Crown land which is not excluded land this will require written advice from one of Council's native title managers that it complies with any applicable provisions of the native title legislation.

The adoption of this PoM and associated works meet the definition of a 'future act' under Section 233 of the *Native Title Act 1993*.

Reserve 1002932 (Campbell's Wetlands) notified after 23 December 1996, therefore the provisions of Section 24JA of the *Native title Act 1993* do not apply. Reserve 1002932 was gazetted 24 April 2000.

Section 24LA (Low impact future acts) of the *Native Title Act 1993* could be considered for works not of a permanent nature. That is, excavation and land clearing would only be permitted where reasonably necessary for the protection of public health or public safety, tree lopping and clearing of noxious or introduced animal or plant species, or environmental assessment or protection activities.

The replacement of the existing boardwalk would be considered under Section 24KA - Facilities for services to the public - subsection (2) (b). That is, replacement of a boardwalk (similar to a jetty or wharf)

is to be undertaken of an existing structure footprint due to its continuing deterioration and risk to public safety.

Where Council is considering undertaking major works, Council may need to enter into either an Indigenous Land Use Agreement (ILUA) or apply for Section 24FA Protection.

Future acts proposed for Reserve 1002932 will require native title manager assessment at the time, to validate all works under the Native Title Act 1993 and undertake any procedural requirements as a consequence of those works.

There is currently no tenures over Reserve 1002932.

Direction of Funds

Income produced from the Reserve, i.e. as per the approved Tenure, will be distributed to manage other community land in a fashion determined by Council.

7.5 Native Title Assessment

Further to [Section 2.4 – Categorisation of the Reserve](#) and reference to Native Title Assessment, Council is required under the provisions of the *CLMA 2016*, to undertake steps to identify whether activities proposed on Crown land will affect Native Title. Council must further consider what provisions of the *NTA 1993 (C'th)* will validate the activity; and what procedures should be taken in relation to a particular activity prior to its commencement.

The activity must be authorised through *Part 2 Division 3 of the NTA 1993 (C'th)*.

Examples of acts which may affect native title on Crown land or Crown reserves managed by Council include:

- The construction of new building and other facilities such as toilet blocks, walking tracks, tennis courts, grandstands and barbeques
- The construction of new roads and tracks
- Installation of infrastructure such as power lines, sewerage pipes, etc.
- The issue of a lease or licence
- The undertaking of major earthworks

Accordingly, Council must obtain written advice from its Native Title Manager in relation to certain activities and acts carried out on Crown land where the land is not excluded land, in accordance with native title legislation and applicable to works and activities to be undertaken at Campbell's Wetlands.

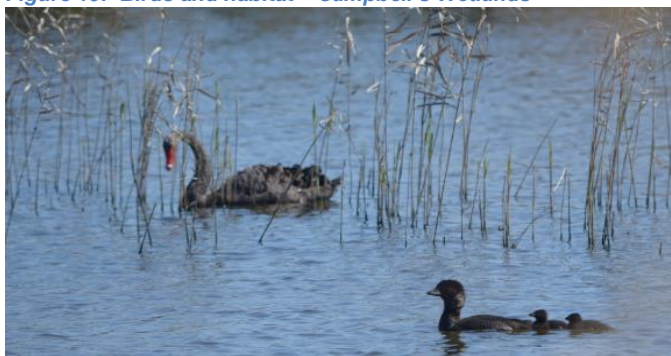
7.6 Easements

Council reserves the right to grant easements as required for utilities and access, bearing in mind the impact of such easements on the site.

The granting of easements over Crown land will be subject to the provisions of the *NTA 1993 (C'th)* and Division 8.3 of the *CLMA 2016*.

A copy of Certificate of Title Identifier 407/751743 confirms that no Easement has been registered impacting on the land within the Reserve area.

Figure 19: Birds and habitat – Campbell's Wetlands



8.0 MANAGEMENT FRAMEWORK FOR NATURAL AREAS CATEGORISED AS WETLANDS

8.1 Biodiversity Conservation

Biodiversity conservation provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places including species and ecosystem diversity that supports both aesthetic values and ecological balances.

While not recognised under the Ramsar convention as wetlands of international significance, Campbell's (and Nericon) have been recognised as Important Bird Areas (IBA's) and support the mosaic of wetlands of inland NSW, particularly within the broader Riverina Region and locally within the MIA, as being sites offering refuge during drought years for migratory and other bird species as initially identified by the MFN and the CSU Report.

Historical land-use and more recent changes to water management practices by landholders and MI thereby reducing water inflow to Campbell's Wetlands may have altered the biodiversity of the Wetland to some degree. However on-going monitoring of the site by the MFN would suggest that fauna has not been drastically impacted, supported by the on-going delivery of environmental water to the site as suggested and agreed to by Council, the MFN and OEH.

The Commonwealth Department of Agriculture, Water and Environment has identified Australia's Strategy for Nature including the following goals: -

1. Connect all Australians with Nature
2. Care for nature in all its diversity
3. Share and build knowledge

Council through its *State of the Environment Report (2012 / 2016)* has initially identified strategies to enhance biodiversity of land within its area of management. This PoM further supports endeavours for Council to manage Campbell's (together with Nericon and Tharbogang Wetlands) individually (and collectively) to -

- ❖ to connect the local community and visitors with nature (#see Note below);
- ❖ care for the natural environment within the wetlands in all its diversity and variance;
- ❖ to share and build knowledge (both within Council as Crown Land Manager and more broadly to share and build knowledge through stakeholder engagement and partnerships;
- ❖ provide potential eco-tourism opportunities of the broader Lake Wyangan Basin.

Note: Tharbogang Wetland is not readily accessible to members of the public however remains valuable in terms of connectivity and biodiversity within the Lake Wyangan Basin.

8.2 Wetland Management

Management of the land must take into consideration the reserve's purpose and the purpose for which the land is classified and categorised.

In broad terms, Council will need to determine the priority of development (if any), it proposes to undertake and the linkages to be made within the area to negate any further loss of ecological communities.

There are several factors of consideration for future Management of Campbell's (together with Nericon and Tharbogang) Wetlands which ideally would be managed collectively for optimum outcome within the broader Lake Wyangan Basin. Management of these Wetlands will differ to Lake Wyangan (North Lake

Wyangan and Jack Carson Wildlife Reserve) which are zoned as a Recreational Waterway and have more site-specific management issues.

With support of Council, a Management or Advisory Committee comprising of key stakeholder agencies and community groups could discuss and plan management outcomes and seek funding opportunities. Committee members may also be better placed to undertake specific monitoring to support Council's achievement of objectives.

The formation of a Management or Advisory Committee will better assist Council to: -

1. Manage a suitable water regime to maintain and improve the ecological resilience of the wetlands. Strategic environmental water delivery could enhance current biodiversity and support connectivity between neighbouring wetlands both within the Lake Wyangan Basin and more broadly across the region including the Ramsar listed sites of Fivebough & Tuckerbil Wetlands (Leeton); Narrandera Wetlands; Marrambidya Wetlands (Wagga Wagga); Doodle Swamp Nature Reserve (Henty); and the Wonga Wetlands (Splitters Creek). Improvements to existing water delivery infrastructure may be a consideration for future management (subject to funding and planning).
2. Implement land management practices to improve the wetlands' habitats, ecosystem services and cultural values. Management of weeds and pests and continued maintenance of existing vegetated areas and development of further vegetated buffer zones may improve the various habitats within the area for both wetland and bushland species of flora and fauna. Recent inspections have identified isolated pockets of emerging African Boxthorn (that had been extensively removed from the site); together with evidence of fox scats and feathers indicating recent predation activity with potential impacts to various breeding species. Feral cat predation is also a likely impact due to the proximity of large-lot residential lands.
3. Recognise the importance of wetlands for its cultural values in particular, their importance of Country for Aboriginal people. Wetlands have been an important part of Aboriginal culture and heritage as a source of food, water and natural resources, and for cultural ceremonies. The cultural values of wetlands also extend to non-Aboriginal communities through their historical use for recreation including fishing, hunting and camping and conservation of habitats. Education of these values has potential to share and build knowledge and allow for a broader range of community members to care for and appreciate nature and the biodiversity of the wetlands.
4. Rehabilitate degraded areas of the wetlands and their habitats (collectively) as far as is practicable. Rehabilitation will be guided by Council's overall planning and funding capacity however community engagement may facilitate greater outcomes.
5. Consider potential impacts of climate change in planning management and conservation outcomes. That is to say, improved water allocation delivery infrastructure could improve the capacity of the wetlands to better receive environmental water as available and at critical times to best support required vegetation for key species. The reduction of non-hydrological pressures, i.e. weed invasion and sedimentation; and increasing the protected area network and linking corridors to allow for migration of organisms.
6. Consider potential improvements to other infrastructure (i.e. boardwalks and walking tracks) to improve accessibility that will allow improved opportunities to undertake studies of flora and fauna

species and provide better availability of data to support management outcomes. Potential improvements may also include technology to assist in water quality monitoring.

7. Engage in research and studies into the wetlands to better support water and land use planning and management supported through regular monitoring and reporting of wetland extent and condition. It is acknowledged that further research and studies may be a longer-term outcome for management of the wetlands (individually and collectively) as there has been a number of change factors since the earlier observations by the MFN and the undertaking of Reports by both CSU (2000) and MI (2005). Engagement of local MFN and other community interested parties will be key to assist in future management. As Campbell's Wetlands currently provides easier access, there is also potential for local schools to undertake curriculum-based education and studies. University studies could also be targeted for research outcomes and provide current baseline data.

Table 3 – Management Issues and Guidelines

Management Oversight	Management or Advisory Committee formed and comprising Council staff (as appropriate) together with key stakeholders (including representatives of OEH, MI, MFN, Griffith Local Aboriginal Land Council (GLALC) or interested community member(s)) to assist in future planning i.e. water delivery, monitoring, maintenance. This Committee would only be providing advice to Council who would ultimately give its approval for various works (re-vegetation, signage, installation of water delivery infrastructure etc..
Car Park (and Entry)	May require maintenance in accordance with approvals, manuals or schedules as required; and improved entry and associated signage, i.e. Campbell's Wetlands 200m (with arrow symbol) as this section of Boorga Road is close to the 100km/hr zone.
Watering	Environmental water delivery (liaison with MFN, OEH and MI for timing and liaison with MI for advice as to potential upgrade / costing of infrastructure to facilitate improved delivery). Potential for external funding opportunity.
Vandalism	Vandalism will be addressed at the time of occurrence and may include issues such as unauthorised vehicle access; the riding of horses; illegal dumping of rubbish; or other damage resultant from unauthorised activities referred to in Vandalism, Graffiti and Rubbish Dumping – Reward – <i>GC-CP-314</i> ; Litter Reduction and Clean up Campaigns (Public Policy) – <i>EH-CP-204</i> ; and Prohibited Activities on Council Active & Passive Recreation Areas – <i>PG-CP-310</i> .
Feral Animals	Monitoring and appropriate pest control measures should be undertaken so as not to impact on native fauna (i.e. domesticated and feral cats; and foxes) or impact on native flora (rabbits) (as per Protection of the Environment Operations Act 1997 and the National Parks and Wildlife Act, 1974 and GCC – Keeping of Animals (Public Policy) <i>CO-CP-703</i>
Trees	Trees should not be removed and tree-planting to be undertaken in accordance with GCC Tree Preservation Order – <i>PG-CP-401</i> (Local Policy) in relation to the provision of environmental corridors for native fauna and flora

Fire	Fire management practices to be implemented in accordance with <i>the Rural Fires Act 1997</i> . Hazard reduction works may also include the use of low intensity cultural burns where considered appropriate.
Weeds	Weed management practices will be undertaken in accordance with guidelines to ensure protection of the wetland area from environmental weeds / weeds of National significance (as per GCC Biosecurity – Weeds and Legislation and <i>PG-CP-401</i>)

8.3 Community Access and Education

Community access is integral to education and gaining both appreciation and an understanding of the value of wetlands to the broader community.

Wetlands vary widely due to the local and regional differences in topography, hydrology, vegetation and other factors including human involvement. A wetland need only be wet for long enough for its plants and animals to be adapted to, or event dependent on the wet conditions for at least part of their life cycle.

The historical context of Campbell's Wetlands is valuable in educating locals and the wider community to the importance of biodiversity and connectivity to habitat within the localised Lake Wyangan Basin and the wider Riverina network of wetlands especially for migratory bird species during periods of drought.

The community's primary access point is available to Campbell's Wetland directly off Boorga Road, albeit that signage is not obviously visible. Improved signage would assist increased visitation of the site.

Figure 20 – Existing entry Signage (parallel to Boorga Road)



While there are various tracks around the Wetland, there is currently only a single bird hide accessed via a wooden boardwalk.

Secondary in-formal access points are currently available off Jones Road with these points potentially leading to unauthorised riding of motor-bikes between Campbell's Wetland and North Lake Wyangan. While secondary access points have merit for the purpose of bird-watching and site monitoring, fencing to restrict vehicular access and create small localised parking areas with directional signage would be beneficial.

Figure 21 – Aerial imagery showing boardwalk and bird hide (entry through carpark off Boorga Road)



Figure 22 – Access points and water delivery to Campbell's Wetlands (other internal tracks as seen)



The MFN through its previous funding has provided on-site interpretive signage that could be further increased providing its visitors with greater information and knowledge of species, both flora and fauna, prevalent at the site. Maintenance of the existing boardwalk and improvements to walking tracks also have potential to encourage further exploration and study of the site. Signage currently doesn't indicate direction or distance to any point(s) of interest and this would both enhance safety and visitation at the Wetlands.

Opportunities for education can be enhanced by brochures available to visitors; acknowledging World Wetlands Day, or undertaking tree-planting programs with school students and / or the wider community to encourage ownership in the value of the site and its offerings.

8.4 Plan Implementation

The following action plan sets out the requirements under Section 36(3) of the LGA 1993 with respect to:

- The objectives and performance targets of the plan
- The proposed means in which to achieve the objectives and performance targets
- The proposed manner in which the objectives and performance targets are assessed for performance.

Responsibility: Griffith City Council (GCC)

Table 4 - Objectives and Performance Targets of this Plan of Management (PoM)

Performance Target	Actions	Priority	Performance Indicator
LEGISLATIVE			
To ensure that relevant legislation is complied with in relation to preparation of the PoM.	1. The Plan is prepared in accordance with Native Title Manager advice, the LGA 1993, the CLMA 2016 and NTA 1993 (C'th)	High	<ul style="list-style-type: none"> • The Plan is reviewed by Council's Native Title Manager and approved by Department of Industry – Crown Lands. • Council exhibits and adopts the PoM subject to community comments being addressed. (Where significant changes to the PoM are required, the PoM will be re-referred to the Department).
MANAGEMENT			
To provide over-arching management of wetland areas	2. Form a Management or Advisory Committee with key stakeholders to support Council's management for Environmental Protection	High	<ul style="list-style-type: none"> • Management or Advisory Committee is formed and the Committee forms a strategy for management in alignment with the adopted PoM • Management or Advisory Committee meets regularly (i.e. quarterly) and reports to Council • Funding opportunities sourced (internal or external)
To assess the current infrastructure, assets, and condition where applicable	3. Audit of existing infrastructure and assets 4. Ensure appropriate tenure arrangement (where applicable)	On-going	<ul style="list-style-type: none"> • Assets (current and future) are managed in accordance with prescribed Council standards, relevant State Wetland

			<p>Policies and community expectations</p> <ul style="list-style-type: none"> • Consultation with relevant Agencies and key stakeholders in regards to receipt of environmental water • Reporting as appropriate to relevant Agencies in regards to Wetlands outcomes (as appropriate) • Review of tenure conditions (where appropriate)
To address illegal activities	5. Program regular inspections (i.e. monthly)	On-going	<ul style="list-style-type: none"> • Regular inspection and prompt removal of rubbish • Repair signs and address other acts of vandalism (as appropriate) • Reduced illegal dumping of rubbish and vandalism with installation of Report Illegal Dumping (RID) signage • Installation of signage regarding unauthorised access and riding of motor-bikes prohibited • Consider installation of surveillance cameras • Feedback from community is positive and negative feedback acted upon as necessary
INFRASTRUCTURE			
To upgrade & install any new infrastructure aligned with Environmental Protection	6. Ensure on-going inspection and assessment of infrastructure 7. Plan and renewal of infrastructure in accordance with Environmental Protection outcomes, Asset Management guidelines and budgetary constraints	On-going	<ul style="list-style-type: none"> • Management or Advisory Committee to discuss potential of water delivery improvements with relevant Agency experts • Future works are carried as approved by Council and in accordance with the PoM; budget availability; and required development processes (as applicable)
To manage the areas to provide clearly defined access	8. Audit of existing boardwalk and walking tracks 9. Plan and renewal of boardwalk and walking tracks and install	On-going	<ul style="list-style-type: none"> • Boardwalk is upgraded in accordance with safety requirements

	directional signage to improve available access		<ul style="list-style-type: none"> Walking tracks are defined and identified with directional signage for clarity of users Feedback from community is positive and negative feedback acted upon as necessary
ENVIRONMENT			
To provide quality passive recreational facilities	10.Maintain the area for site-specific passive recreational use (i.e. renew bird hide)	On-going	<ul style="list-style-type: none"> Relevant infrastructure is upgraded as necessary and well maintained Community feedback is positive and negative feedback acted upon as necessary
To monitor and assess environmental biodiversity outcomes	11.Develop appropriate monitoring requirements	On-going	<ul style="list-style-type: none"> Engage with relevant key stakeholders to undertake up-to-date audit of flora and fauna Plan and appropriately budget for relevant studies to support environmental outcomes in accordance with Council and State Environmental Policies (as relative to Wetland management) Report key findings as appropriate to relevant agencies
To manage environmental and user safety	12.On-going inspection and assessment of infrastructure in accordance with Council and Government OHS legislation 13.Consider the safety of the community in the maintenance of the passive recreational areas 14.Carefully consider use of chemicals and pest control measures within the respective remnant vegetation and wetland areas 15. Maintain fire management controls	On-going	<ul style="list-style-type: none"> Audit process for safety reporting working well Staff are appropriately trained in safe handling and use of appropriate chemicals for the land External contractors (if used) for pest animal control measures hold relevant up-to-date certification No unauthorised use of facilities Reduction of fire risks to property (Wetlands, Lake and neighbouring lands) Feedback from the community is positive and negative feedback is acted upon where necessary

USE OF THE RESERVES			
Signs	16. Review signs and follow guidelines provided by Statewide Mutual Signs as Remote Supervision	On-going	<ul style="list-style-type: none"> Continually monitor all signs are legible and current and renew as required Install improved roadside signage Update existing interpretive signage and install new directional signage along boardwalk and walking track(s) Install new cultural signage Feedback from the community is positive and negative feedback is acted upon where necessary
Access	17. Vegetation is cleared from walking tracks and obscured signage	On-going	<ul style="list-style-type: none"> On-going inspection to ensure appropriate access by users of the Reserve Feedback from the community is positive and negative feedback is acted upon where necessary
Parking	18. Provide adequate parking and ensure amenability for users	On-going	<ul style="list-style-type: none"> Grade or in-fill holes within parking area Promptly remove dumped rubbish from parking area Potential installation of solar lighting Community feedback is positive and negative feedback acted upon as necessary

8.5 Communication in the Management of the Reserves

Communication between Council and members of the proposed Management (or Advisory) Committee and Tenure Holders is important to the success of this Plan. Council will establish and maintain clear lines of communication.

Other community communications may be appropriate in terms of education and improved brochures available through Council's Tourist Information Centre.

8.5.1 Information and Monitoring

Monitoring and collection of information relating to the Campbell's Wetlands Plan of Management are important tools to enable good management outcomes.

Current records are held individually by a variety of parties, i.e. the MFN, OEH and MI. Better collation of information and data by Council would be of benefit to long-term management of the Wetlands to enhance future management and source funding opportunities where applicable.

Monitoring of associated tenure agreements by Council (where applicable), will also be undertaken to ensure users and user groups comply with tenure conditions.

Surveys of visitation and / or satisfaction with the facilities may be undertaken to facilitate improved management and use of the land. Longer-term, the installation of a 'track counter' might be valuable information for potential tourism promotion and preparation of brochures to further support broader community information and education.

Figure 23 - Max O'Sullivan undertaking the quarterly Bird Survey January 2021 – photo David Kellett, GCC



8.5.2 Infrastructure

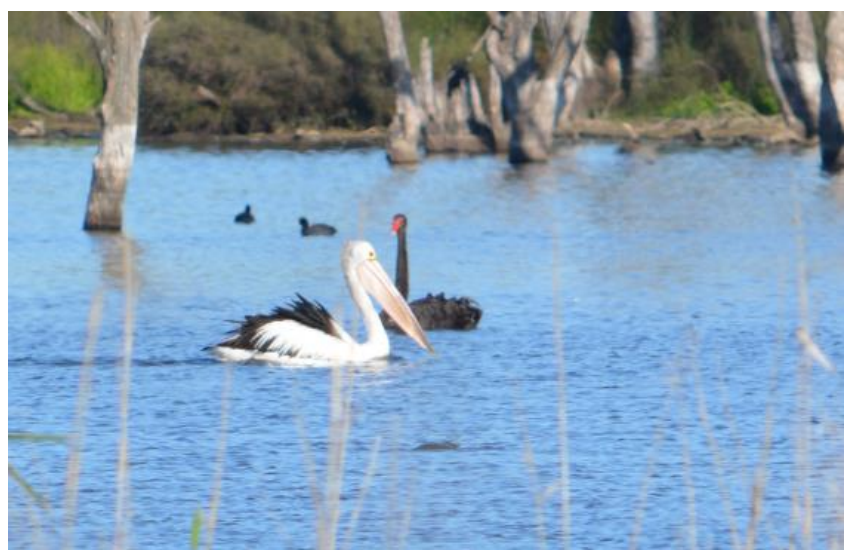
Any infrastructure to further service the purpose of the land may be constructed provided that, a Native Title Assessment has been carried out by Council's Native Title Manager; the land is not subject to a Claim under the *ALRA 1983*; and the provisions of the *LGA 1993* and the *CLMA 2016* have been complied with.

Subsequent development activities shall be undertaken in a way that minimises the area, degree and duration of disturbance; and the area is to be restored to the greatest extent practicable to ensure management is undertaken in accordance with the Reserve purpose of 'Environmental Protection'

8.5.3 Public Liability

Council will continue to maintain public liability insurance in respect of Campbell's Wetlands.

Figure 24: Campbell's Wetland various bird species







9.0 REFERENCES

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(The) Butterfly fauna of the Griffith district, a fragmented semi-arid landscape in inland southern NSW (MF Braby & TD Edwards)

https://www.researchgate.net/publication/283471075_The_butterfly_fauna_of_the_Griffith_district_a_fragmented_semi-arid_landscape_in_inland_southern_New_South_Wales

Commonwealth Native Title Act 1993

<https://www.legislation.gov.au/Details/C2017C00178>

Crown Land Management Act 2016

http://www.austlii.edu.au/au/legis/nsw/num_act/clma2016n58226.pdf

<https://www.industry.nsw.gov.au/lands/what-we-do/legislation-policies>

Commonwealth Department of Agriculture, Water and the Environment

<https://www.environment.gov.au/biodiversity/conservation>

DPI website

https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0007/164374/irrigation-profile-murrumbidgee.pdf

Environment website

<https://www.environment.nsw.gov.au/bioregions/Riverina-Landform.htm>

NSW Wetlands Policy (2010) - <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Water/Wetlands/nsw-wetlands-policy-100039.pdf>

<http://www.environment.gov.au/cgi-bin/sprat/public/publicshowmigratory.pl>

Griffith City Council Website – Publications and Policies

- *Griffith Community Participation Plan*

file:///C:/Users/Melva/Downloads/GRIFFITH_COMMUNITY_PARTICIPATION_PLAN_ENDORSED_17_DECEMBER_2019.pdf

Griffith Community Strategic Plan

<https://www.griffith.nsw.gov.au/integrated-planning-reporting-framework>

- Council Policies

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- *Griffith Local Environmental Plan 2014 (GLEP 2014)*

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- *State of the Environment Report 2012/16*

https://issuu.com/griffithcitycouncil/docs/2016_state_of_the_environment_report

- *Local Government Act 1993*

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- *Local Government Regulations*

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- Matt Herring, Murray Wildlife

<http://www.murraywildlife.com.au/matthew-herring/>

- Murrumbidgee Field Naturalists

<https://mfng.org.au/>

- Murrumbidgee Irrigation

<https://www.mirrigration.com.au/water/annual-compliance-report>

- NSW Land Registry Services

<https://www.nswlrs.com.au/Historical-Records-Online#Historical%20Maps>

- Plants of Western New South Wales (Cunningham, Mulham, Milthorpe, Leigh)

- Other Sources

CSU Report No. 140 (2000) – Nericon and Campbell's Swamps (*Taylor, Croft and O'Connell*)

MI 'Inventory of Wetlands in the eastern MIA' (2005) – (*Harrison and Roberts*)

MI 'An Audit of Wetlands in the eastern MIA' (2005) – (*Roberts*)

- Trove

<https://trove.nla.gov.au/gazette>

10 APPENDICES

- 1) Core Objectives for Categories of Community Land – Wetland
- 2) Bird Survey Report – Campbell's Wetlands
- 3) Plant Species List – Campbell's Wetlands
- 4) Portion Plan – Lot 407 DP 751743, Parish of Wyangan

APPENDIX 1

CORE OBJECTIVES FOR MANAGEMENT OF COMMUNITY LAND CATEGORISED AS WETLAND (*Local Government Act 1993*)

36K Core objectives for management of community land categorised as a wetland

The core objectives for management of community land categorised as a wetland are –

- (a) To protect the biodiversity and ecological values of wetlands, with particular reference to their hydrological environment (including water quality and water flow), and to the flora, fauna and habitat values of the wetlands, and
- (b) To restore and regenerate degraded wetlands, and
- (c) To facilitate community education in relation to wetlands, and the community use of wetlands, without compromising the ecological values of wetlands.

Appendix 2

BIRD SURVEY REPORT

	A	B	C	D	E	F	G	H
1	BIRD SURVEY - CAMPBELL'S WETLANDS (list taken from initial Report - CSU Report No. 140 (2000) - No numbers given)							
2	Observers: Max O'Sullivan (MO) & Neil Palfaman (MFN); Carmen Amos (CA) and Erin Lenon (EL) (OEH)							
3								
4		SPECIES NAME	SCIENTIFIC NAME	THREATENED SPECIES STATUS	CA & EL March 2016	MO 09/07/2020 NUMBER	MO 10/09/2020	MO 09/01/2021
5	1	Magpie Goose	<i>Anseranum semipalmata</i>	V			10	16
6	2	Plumed Whistling Duck	<i>Dendrocygna eytoni</i>					
7	3	Blue-billed Duck	<i>Oxyura australis</i>	V	√		3	4
8	4	Musk Duck	<i>Biziura lobata</i>			6	2	1
9	5	Freckled Duck	<i>Stictonetta naevosa</i>	V	√	2		2
10	6	Black Swan	<i>Cygnus atratus</i>			16	22	6
11	7	Australian Shelduck	<i>Tadorna tadornoides</i>					
12	8	Australian Wood Duck	<i>Chenonetta jubata</i>					
13	9	Pacific Black Duck	<i>Anas superciliosa</i>		√	33	23	18
14	10	Australasian Shoveler	<i>Anas rhynchotis</i>		√	54	2	
15	11	Grey Teal	<i>Anas gracilis</i>		√	99	52	30
16	12	Chestnut Teal	<i>Anas castanea</i>			28	14	15
17	13	Pink-eared Duck	<i>Malacorhynchus membranaceus</i>		√			16
18	14	Hardhead	<i>Aythya australis</i>			64	16	14
19	15	Australasian Grebe	<i>Tachybaptus novaehollandiae</i>		√	4	1	
20	16	Hoary-headed Grebe	<i>Poliocephalus poliocephalus</i>		√	8		1
21	17	Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>			10	10	
22	18	Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>				7	6
23	19	Great Cormorant	<i>Phalacrocorax carbo</i>		√	8	1	
24	20	Pied Cormorant						
25	21	Australian Pelican	<i>Pelecanus conspicillatus</i>			9	33	14
26	22	White-faced Heron	<i>Egretta novaehollandiae</i>		√		2	
27	23	Little Egret	<i>Egretta garzetta</i>					
28	24	Great Egret	<i>Ardea alba</i>				1	4
29	25	Intermediate Egret	<i>Ardea intermedia</i>			1	9	13
30	26	Glossy Ibis	<i>Plegadis falcinellus</i>		√		6	
31	27	Australian White Ibis	<i>Threskiornis molucca</i>			30	12	6
32	28	Straw-necked Ibis	<i>Threskiornis spinicollis</i>		√	2	25	18
33	29	Royal Spoonbill	<i>Platalea regia</i>			3	5	4
34	30	Yellow-billed Spoonbill	<i>Platalea flavipes</i>				1	1
35	31	Whistling Kite	<i>Haliastur sphenurus</i>			4		1
36	32	Swamp Harrier	<i>Circus approximans</i>		√	2	3	3
37	33	Peregrine Falcon	<i>Falco peregrinus</i>		√			
38	34	Ballion's Crake	<i>Porzana pusilla</i>					
39	35	Australian Spotted Crake	<i>Porzana fluminea</i>			1	1	

37	33	Peregrine Falcon	<i>Falco peregrinus</i>	√			
38	34	Ballion's Crake	<i>Porzana pusilla</i>				
39	35	Australian Spotted Crake	<i>Porzana fluminea</i>		1	1	
40	36	Spotless Crake	<i>Porzana tabuensis</i>			1	
41	37	Purple Swamphen	<i>Porphyrio porphyrio</i>	√	17	16	3
42	38	Dusky Moorhen	<i>Gallinula tenebrosa</i>		2	2	
43	39	Black-tailed Native-hen	<i>Gallinula ventralis</i>				
44	40	Eurasian Coot	<i>Fulica atra</i>	√	128	54	19
45	41	Marsh Sandpiper	<i>Tringa stagnatilis</i>				
46	42	Common Greenshank	<i>Tringa nebularia</i>				
47	43	Sharp-tailed Sandpiper	<i>Calidris acuminata</i>				
48	44	Black-winged Stilt	<i>Himantopus himantopus</i>			17	
49	45	Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>				
50	46	Red-capped Plover	<i>Charadrius ruficapillus</i>				
51	47	Black-fronted Dotterel	<i>Elseya melanops</i>				
52	48	Red-kneed Dotterel	<i>Erythronyx cinctus</i>				
53	49	Masked Lapwing	<i>Vanellus miles</i>				
54	50	Silver Gull	<i>Larus novaehollandiae</i>				
55	51	Whiskered Tern	<i>Chlidonias hybridus</i>				
56	52	Clamorous Reed-Warbler	<i>Acrocephalus stentoreus</i>				
57	53	Little Grassbird	<i>Megalurus gramineus</i>		4	2	
58							2
59	Additional species sited in March 2016 Bird Survey by Carmon Amos and Erin Lenon						
60		Plumed Whistling Duck		√			
61		Black Swan		√			
62							
63	Additional species sited in 09/07/2020 Bird Count by Max O'Sullivan @ Campbell's Swamp						
64							
65		Brown Goshawk	<i>Accipiter fasciatus</i>		1		
66		Red-rumped Parrot	<i>Psephotus haematonotus</i>		16	22	15
67		Tree Martin	<i>Petrochelidon nigricans</i>		8	18	2
68		Australia Reed-Warbler	<i>Acrocephalus australis</i>		8	14	4
69		Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>		2		
70		White-plumed Honeyeater	<i>Lichenostomus ornatus</i>		1		
71		Magpie-Lark	<i>Grallina cyanoleuca</i>		1	5	1
72		Australasian Darter	<i>Anhinga novaehollandiae</i>		1	2	2
73		Australian Hobby	<i>Falco longipennis</i>		1		1
74		Galah	<i>Eolophus roseicapillus</i>		2		
75		Bluebonnet	<i>Northiella haematogaster</i>		2		
76		Grey Fantail	<i>Rhipidura albiscapa</i>		1		
77		Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>		1	1	3
78		Brown Honeyeater	<i>Lichmera indistincta</i>		1		

76	Grey Fantail	<i>Rhipidura albiscapa</i>			1		
77	Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>			1	1	3
78	Brown Honeyeater	<i>Lichmera indistincta</i>			1		
79	Australian Raven	<i>Corvus coronoides</i>			4	4	3
80	Nankeen Kestrel	<i>Falco cenchroides</i>			2		
81	Black Kite	<i>Milvus migrans</i>			2		
82	Australian Ringneck	<i>Barnardius zonarius</i>			1		
83	Welcome Swallow	<i>Hirundo neoxena</i>			6	10	8
84	Willie Wagtail	<i>Rhipidura leucophrys</i>			3		1
85	Purple-backed Wren (Variegated)	<i>Malurus lamberti</i>			2	2	1
86	Singing Honeyeater	<i>Lichenostomus virescens</i>			1		1
87	Common Starling	<i>Sturnus vulgaris</i>		50+		22	6
88	Rock Dove (Feral Pigeon)	<i>Columba livia</i> Intro.			18	38	40
89	Little Raven	<i>Corvus mellori</i>				6	
90	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>				1	
91	White-breasted Woodswallow	<i>Artamus leucorhynchus</i>				4	4
92	Australasian Bittern	<i>Botaurus poiciloptilus</i>				2	
93	Cockatiel	<i>Nymphicus hollandicus</i>				7	
94	Rufous Songlark	<i>Megalurus mathewsi</i>				1	
95	Crested Pigeon	<i>Ocyphaps lophotes</i>				2	
96	Great Crested Grebe	<i>Podiceps cristatus</i>					1
97	White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>					1
98							

Appendix 3

1	PLANTS SPECIES LIST - CAMPBELL'S WETLANDS						
2	Noted by Eric Whiting (EW - 14/04/1996), MFN; CSU Report (Taylor, Croft & O'Connel (btw 11-16/11/1999); (EW - 05/09/2010)						
3	FAMILY	SCIENTIFICA NAME	COMMON NAME	DATE	Introduced Species	DATE	DATE
4	Araceae	<i>Lemna disperma</i>	Common Duckweed				5/09/2010
5	Asteraceae	<i>Arctotheca calendula</i>	Capeweed				5/09/2010
6		<i>Aster subulatus</i>	Wild Aster	14/04/1996	#	11-16/11/1999	
7		<i>Carthamus lanatus</i>	Saffron Thistle	14/04/1996	#		
8		<i>Cirsium vulgare</i>	Spear Thistle	14/04/1996			
9		<i>Cotula coronopifolia</i>	Waterbuttons		#	11-16/11/1999	
10		<i>Dittrichia graveolens</i>	Stinkwort	14/04/1996			
11		<i>Hypochaeris radicata</i>	Dandelion / Flatweed		#	11-16/11/1999	5/09/2010
12		<i>Lactuca saligna</i>	Wild Lettuce		#	11-16/11/1999	
13		<i>Lactuca serriola</i>	Prickly Lettuce	14/04/1996	#	11-16/11/1999	5/09/2010
14		<i>Leontodon taraxacoides</i>	Hairy Hawkbit	14/04/1996	#		
15		<i>Sonchus oleraceus</i>	Common Sowthistle		#	11-16/11/1999	5/09/2010
16		<i>Vittadinia cuneata</i>	Fuzzweed	14/04/1996			5/09/2010
17		<i>Vittadinia gracilis</i>	Fuzzweed	14/04/1996			5/09/2010
18		<i>Xanthium spinosum</i>	Bathurst Burr	14/04/1996	#		5/09/2010
19	Boraginaceae	<i>Echium plantagineum</i>	Paterson's Curse	14/04/1996	#	11-16/11/1999	5/09/2010
20		<i>Heliotropium curassivicum</i>	Smooth Heliotrope	14/04/1996			
21		<i>Heliotropium europaeum</i>	Common Heliotrope	14/04/1996	#		
22	Brassicaceae	<i>Lepidium hyssopifolium</i>	Peppercress	14/04/1996		11-16/11/1999	5/09/2010
23		<i>Sisymbrium irio</i>	London Rocket				5/09/2010
24	Caesalpiniaceae	<i>Senna artemisioides zygophylla</i>	Punty	14/04/1996			
25	Caryophyllaceae	<i>Spergularia rubra</i>	Sandspurrey		#	11-16/11/1999	
26	Chenopodiaceae	<i>Atriplex semibaccata</i>	Creeping Saltbush	14/04/1996			
27		<i>Atriplex spinibractea</i>	Spiny-fruit Saltbush				5/09/2010
28		<i>Atriplex suberecta</i>	Lagoon Saltbush	14/04/1996			
29		<i>Chenopodium</i> spp.	Nettle-leaf Goosefoot		#	11-16/11/1999	
30		<i>Maireana decalvans</i>	Black Cottonbush	14/04/1996			
31		<i>Maireana humillima</i>		14/04/1996			
32		<i>Maireana microphylla</i>	Eastern Cottonbush				5/09/2010
33		<i>Rhagodia spinescens</i>	Spiny Saltbush				
34		<i>Salsola kali</i>	Buckbush	14/04/1996			5/09/2010
35		<i>Sclerolaena diacantha</i>	Grey Copper Burr	14/04/1996			
36		<i>Sclerolaena muricata</i>	Black Roly-poly				5/09/2010
37		<i>Suaeda australis</i>	Seablite			11-16/11/1999	
38	Convolvulaceae	<i>Convolvulus erubescens</i>	Australian Bindweed	14/04/1996			
39	Crassulaceae	<i>Crassula sieberana</i>	Australian Stonecrop				5/09/2010

40	Cyperaceae	<i>Bolboschoenus caldwellii</i>				11-16/11/1999	
41		<i>Cyperus eragrostis</i>	Umbrella Sedge		#	11-16/11/1999	
42	Euphorbiaceae	<i>Chamaesyce drummondii</i>	Caustic Weed	14/04/1996			
43	Fabaceae	<i>Medicago</i> spp.				11-16/11/1999	
44		<i>Medicago polymorpha</i>	Burr Medic				5/09/2010
45		<i>Medicago sativa</i>	Lucerne		#	11-16/11/1999	
46		<i>Mellilotus indica</i>	Hexham Scent		#	11-16/11/1999	
47		<i>Trifolium</i>	Clover		#	11-16/11/1999	
48	Geraniaceae	<i>Erodium crinitum</i>	Blue Crowfoot				5/09/2010
49	Gramineae	<i>Phragmites australis</i>	Common Reed			11-16/11/1999	5/09/2010
50	Juncaceae	<i>Juncus usitatus</i>	Common Rush	14/04/1996			
51	Lamiaceae	<i>Marrubium vulgare</i>	Horehound		#		5/09/2010
52	Lythraceae	<i>Lythrum hyssopifolia</i>	Loosestrife	14/04/1996		11-16/11/1999	
53	Malvaceae	<i>Malva parviflora</i>	Small-flowered Mallow	14/04/1996			5/09/2010
54		<i>Sida corrugata</i>	Corrugated Sida	14/04/1996	#		
55		<i>Sida cunninghamii</i>	Ridge Sida	14/04/1996			
56	Marsileaceae	<i>Marsilea drummondii</i>	Common Nardoo			11-16/11/1999	
57	Mimosaceae	<i>Acacia brachybotrya</i>	Grey Wattle				5/09/2010
58		<i>Acacia deanii paucijuga</i>	Dean's Wattle				5/09/2010
59		<i>Acacia oswaldii</i> F. Muell	Umbrella Wattle			11-16/11/1999	
60		<i>Acacia oswaldii</i>	Miljee	14/04/1996			5/09/2010
61		<i>Acacia pendula</i>	Weeping Myall	14/04/1996			
62	Myrtaceae	<i>Eucalyptus largiflorens</i>	Black Box	14/04/1996		11-16/11/1999	
63		<i>Eucalyptus populnea</i>	Bimble Box	14/04/1996		11-16/11/1999	5/09/2010
64	Poaceae	<i>Agrostis avenacea</i>	Blown Grass			11-16/11/1999	
65		<i>Avena fatua</i>	Wild Oats		#	11-16/11/1999	
66		<i>Aristida behriana</i>	Brush Wiregrass	14/04/1996			
67		<i>Bromus Hordaceus</i> L.	Soft Brome		#	11-16/11/1999	
68		<i>Bromus sterilis</i>	Sterile Brome				5/09/2010
69		<i>Bromus unioloides</i> Kunth	Prairie Grass		#	11-16/11/1999	
70		<i>Chloris truncata</i>	Windmill Grass	14/04/1996			
71		<i>Cynodon dactylon</i>	Couch Grass	14/04/1996		11-16/11/1999	
72		<i>Enteropogon acicularis</i>	Curly Windmill Grass				5/09/2010
73		<i>Eragrostis ciliensis</i>	Stink Grass	14/04/1996	#		
74		<i>Eriochloa pseudo-acrotricha</i>	Early Spring Grass	14/04/1996			
75		<i>Hordeum leporinum</i>	Common Barley Grass				5/09/2010
76		<i>Hordeum marinum</i>	Sea Barley Grass	14/04/1996	#	11-16/11/1999	
77		<i>Lolium</i> spp.	Rye Grass		#	11-16/11/1999	
78		<i>Microlaena stipoides</i>	Meadow Rice-Grass				5/09/2010
79		<i>Phalaris paradoxa</i>	Paradox Grass			11-16/11/1999	
80		<i>Polypogon monspeliensis</i>	Annual Beardgrass		#	11-16/11/1999	
81		<i>Stipa</i> spp.	Speargrass			11-16/11/1999	
79		<i>Phalaris paradoxa</i>	Paradox Grass			11-16/11/1999	
80		<i>Polypogon monspeliensis</i>	Annual Beardgrass		#	11-16/11/1999	
81		<i>Stipa</i> spp.	Speargrass			11-16/11/1999	
82	Polygonaceae	<i>Muehlenbeckia florulenta</i>	Tangled Lignum	14/04/1996			5/09/2010
83		<i>Muehlenbeckia horrida</i> H.	Lignum			11-16/11/1999	
84		<i>Polygonum arenastrum</i>	Wireweed	14/04/1996	#		
85		<i>Polygonum decipiens</i> R.	Slender Knotweed			11-16/11/1999	
86		<i>Rumex crispus</i> L.	Curl'd Dock		#	11-16/11/1999	
87	Ranunculaceae	<i>Ranunculus sceleratus</i> L.	Celery Buttercup		#	11-16/11/1999	
88	Sapindaceae	<i>Dodonea viscosa angustissima</i>	Narrow-leaf Hopbush	14/04/1996			
89	Scrophulariaceae	<i>Veronica anagallis - acquatica</i>	Blue Water Speedwell		#	11-16/11/1999	
90	Solanaceae	<i>Lycium ferocissimum</i>	African Boxthorn	14/04/1996	#	11-16/11/1999	5/09/2010
91		<i>Solanum esuriale</i>	Quena	14/04/1996			
92	Typhaceae	<i>Typha</i> spp.	Cumbungi			11-16/11/1999	
93		<i>Typha domingensis</i>	Cumbungi	14/04/1996			
94		<i>Typha orientalis</i>	Cumbungi				5/09/2010

