

QUEANBEYAN RIVER RIPARIAN CORRIDOR STRATEGY

Prepared for
Queanbeyan City Council



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Abbreviations

ABBREVIATION	DESCRIPTION
ACWA	Actions for Clean Water (a collaborative project by natural resource management organisations in the Upper Murrumbidgee River catchment)
CBD	Central business district
CL Act	<i>Crown Lands Act 1989</i>
EEC	Endangered ecological community
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwth)</i>
DPI	Department of Primary Industries
GPT	Gross pollutant trap
LEP	Local Environmental Plan
LGA	Local Government Area
LG Act	<i>Local Government Act 1993</i>
NTG	Natural temperate grassland
OEH	Office of Environment and Heritage
PACS	Platypus Awareness and Conservation Strategy
SEPP	State Environment Planning Policy
TSC Act	<i>Threatened Species Conservation Act 1995</i>
WSP	Water sharing plan

Executive Summary

A Plan of Management for the Queanbeyan River corridor was prepared by Connell Wagner in 1999 on behalf of Queanbeyan City Council. The plan made recommendations to improve the environmental quality and amenity of the river corridor. Some of the actions that have been implemented include removal of willows and aquatic weeds, revegetation and construction of recreational paths.

Council identified the need for a new plan to fulfil obligations under the NSW *Local Government Act 1993* (LG Act) and help prepare for a future with less water under predicted climate change. This plan, which includes a *Platypus Awareness and Conservation Strategy*, has been prepared by Eco Logical Australia Pty Ltd and the Australian Platypus Conservancy. Funding for the plan was provided through the Australian Government's 'Water for the Future' initiative and the 'Strengthening Basin Communities' program.

This plan provides a vision for the river corridor to be achieved by 2030, supported by actions to be implemented over the next ten years. It has been developed in close consultation with the community and government agencies. Many of the actions are consistent with those presented in the 1999 plan.

This strategy provides an integrated approach to management of the riparian corridor, covering Council-owned land, Crown land and private land. Council will be primarily responsible for implementation of the plan, and Council-owned land has been categorised in accordance with the LG Act to facilitate this process. Other landowners/managers are encouraged to apply the principles and objectives detailed in the plan to guide their own management practices along the river.

The strategy aims to improve environmental quality, amenity and recreational opportunities by reducing threats, and rehabilitating the river corridor and its tributaries. High priority actions recommended in the strategy can be summarised as follows:

- Increase riparian habitat and amenity of the river and its tributaries through pollution reduction, erosion control, stormwater treatment, rubbish removal, weed removal, regeneration and revegetation
- Improve public access along the corridor by a network of sealed paths and unsealed tracks suitable for walkers and cyclists, allowing for circuits of variable length and condition
- Strict planning and development controls to ensure future development does not adversely affect the river corridor
- Improved coordination of rehabilitation activities within the corridor by government agencies and the community (led by Council)
- Increased community education and involvement

The strategy provides a strong foundation for Council to seek grant funds and other sources of funding to provide a coordinated and prioritised approach to managing the Queanbeyan River corridor. Community involvement, collaboration with adjacent landowners/managers and cooperation with government agencies will strengthen the effectiveness of the plan.

1 Introduction

1.1 BACKGROUND

The Queanbeyan River in southern NSW originates some 70 km east—southeast of Queanbeyan. The river flows from Googong Dam near the edge of the Queanbeyan local government area, northward through the central business district and suburbs of the City of Queanbeyan. It has its confluence with the Molonglo River at Oaks Estate near the NSW-ACT border, eventually becoming the Murrumbidgee then Murray River.

The Queanbeyan River is recognised by the residents and visitors to Queanbeyan as a valuable natural asset. It is important for water supply, amenity and recreation. Sections of the river are degraded, which is typical of rivers located in urban areas. Despite this, the river corridor provides important habitat for native species such as the platypus, water rat and wombat. The health of the river also plays a vital role for communities and ecosystems further downstream.

Past activities such as rural and residential development, and construction of the weirs and Googong Dam, have caused the Queanbeyan River corridor to deteriorate. Native vegetation was cleared in many sections along the river. This was associated with erosion, sedimentation, weed infestation, loss of habitat, poor water quality and loss of amenity.

Many long term residents of the area remember the river having clear water, suitable for boating and swimming. In recent years the river corridor has been subject to a range of management measures to improve conditions. These measures were identified in plans such as the:

- *Queanbeyan River Corridor Study* (NECS 1997)
- *Queanbeyan River Corridor Plan of Management* (Connell Wagner 1999)
- *Urban Salinity Management Plan* (Murrumbidgee CMA undated)
- *Queanbeyan CBD Master Plan* (Place Design Group with Leyshon Consulting, ARUP and Elton Consulting 2009)
- *Management of Aquatic Plants on the Queanbeyan River Weir Pool* (Queanbeyan City Council 2003)
- Concept design drawings for the Queanbeyan Golf Course (dsb Landscape Architects 2004)

Key measures identified in these plans that have been implemented to varying degrees include:

- Willow removal
- Aquatic weed removal
- Construction of recreational paths along river
- Revegetation
- Installation of water quality control devices e.g. gross pollutant traps
- Erosion controls
- Installation of signage

1.2 NEED FOR A NEW PLAN

Queanbeyan City Council identified the need for a new plan to fulfil obligations under the NSW *Local Government Act 1993* and help prepare for a future with less water under predicted climate change.

This new plan provides a vision for the river corridor to be achieved by 2030, supported by actions to be implemented over the next ten years.

This strategy has been developed in accordance with the following scope:

- Undertake extensive community consultation to draw out community concerns and expectations for the Queanbeyan River over the next 20 years.
- Review existing documentation and undertake additional research required to prepare a new Queanbeyan River Riparian Corridor Strategy.
- Ensure the strategy meets legislative requirements such as Section 36 'Preparation of draft plans of management for community land', of the *Local Government Act 1993*.
- Ensure the strategy identifies actions that promote, encourage and provide for the use of the land; provide facilities on the land; and meet the current and future needs of the local community and of the wider public.
- Ensure the strategy facilitates the long term protection and enhancement of the river. It will form the basis for future Council and government agency policy for the long term management and maintenance of the river corridor.
- Ensure that objectives are in alignment with the overarching regional plans such as the *Molonglo Catchment Strategy* and the *Murrumbidgee Catchment Action Plan*.

While Council acknowledges that this plan is not able to specifically control areas of private land, private landholders are encouraged to apply the principles and objectives detailed in this plan to guide their own management practices along the river. There are many cases where it is mutually beneficial for all landholders to work together to rehabilitate the river corridor.

1.3 STUDY AREA

The section of the Queanbeyan River corridor that defines the *study area* or *riparian corridor* is within the Queanbeyan local government area (LGA) and is at least 40 m either side of the river¹. Where parcels of land extend beyond the 40 m buffer, this Plan gives consideration to the whole parcel as part of the corridor.

For management planning purposes the corridor has been divided into three units based on its characteristics (shown in **Figure 1**; refer to **Section 3** for further details). These units include:

- The upper corridor – the LGA boundary just below Googong Dam to the urban edge end of Barracks Flat Place
- The middle corridor – the urban edge end of Barracks Flat Place to the city weir
- The lower corridor – the city weir to the railway bridge (i.e. ACT/Queanbeyan LGA boundary)

Land zoning and ownership characteristics within the upper, middle and lower sections of the corridor are depicted in **Figures 2 to 4**. Land parcels which are the subject of this plan are further identified in **Appendix A**. Additional information about zoning is given in **Section 2.3**.

¹ This minimum width of the river corridor has been determined in accordance with the definition of a core riparian zone under the NSW *Water Management Act 1993*.

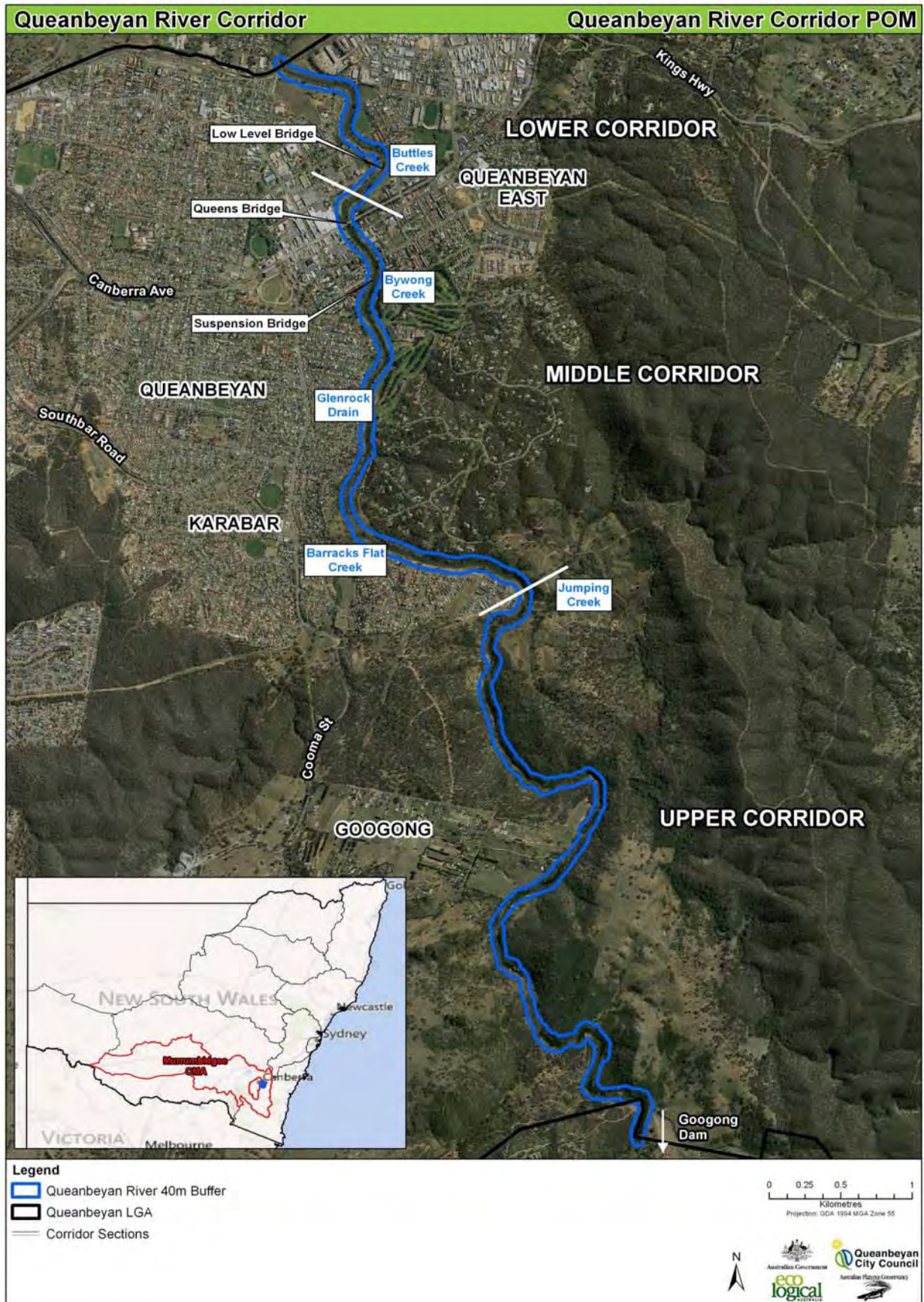


Figure 1: The study area



Figure 2: Land ownership and zoning – lower section

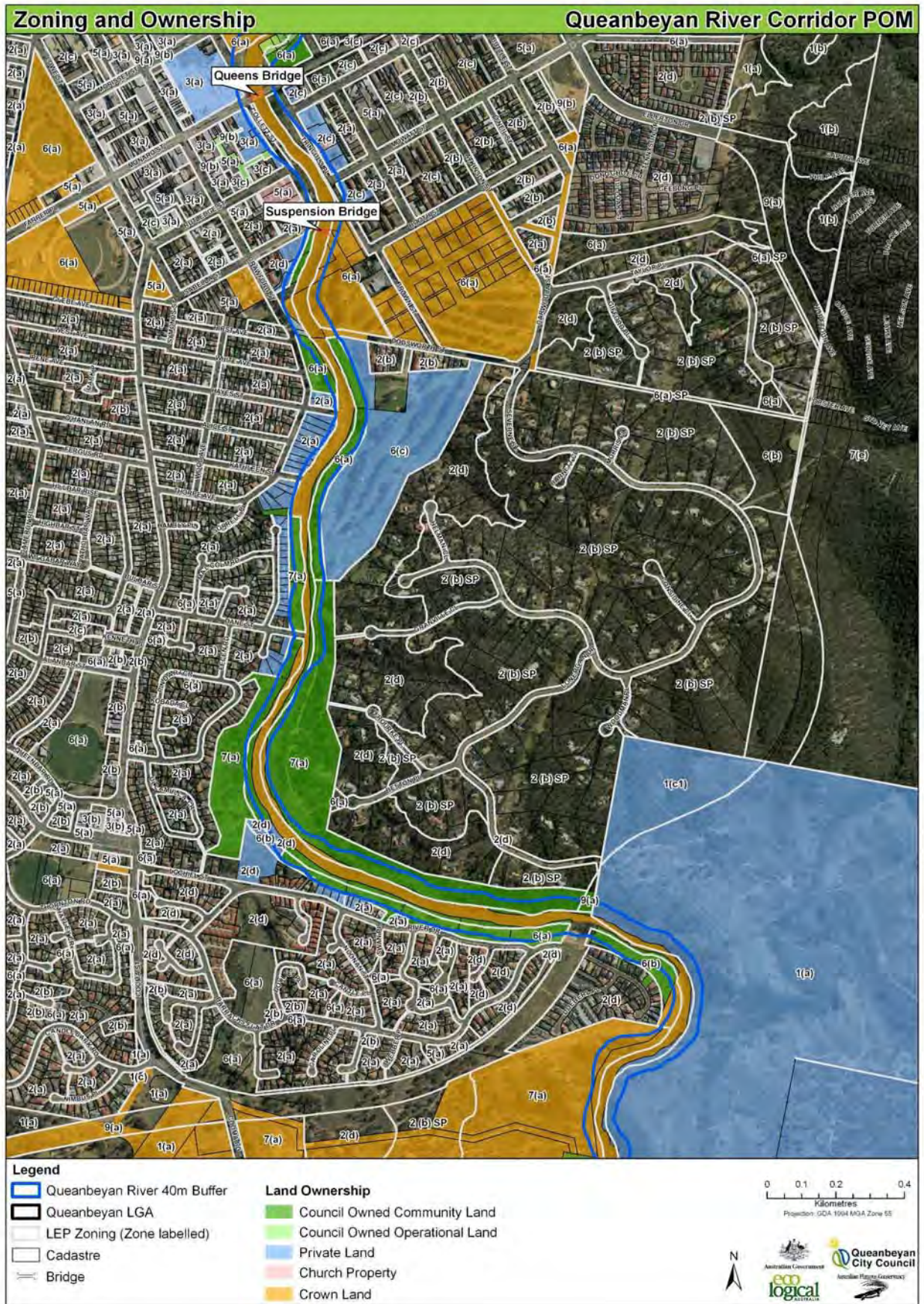


Figure 3: Land ownership and zoning – middle section

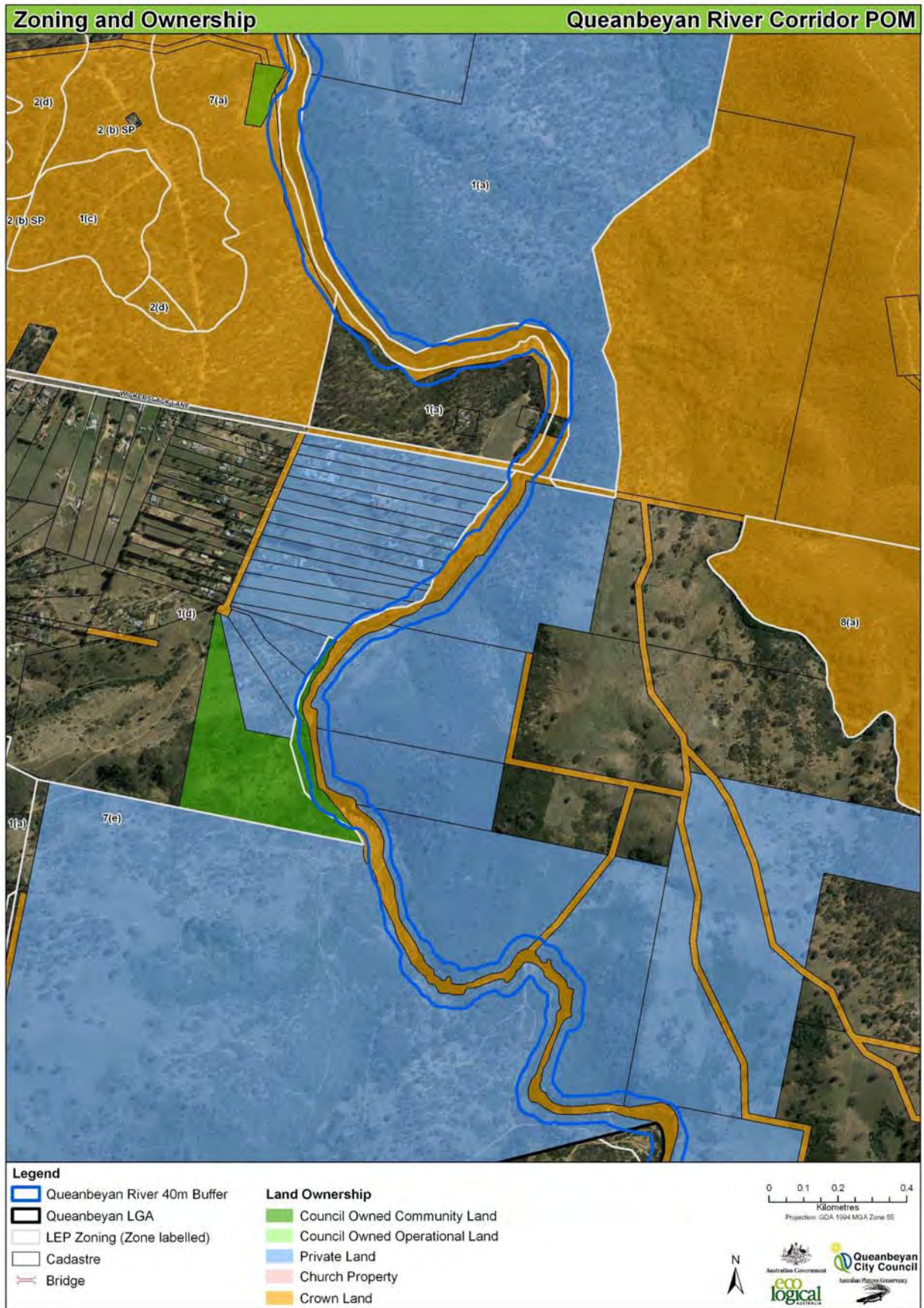


Figure 4: Land ownership and zoning – upper section

This Strategy also broadly considers impacts caused by activities beyond the immediate study area (e.g. possible future development, weed and sediment sources, and regulated flows from Googong Dam). Consideration has been given to sub-catchments associated with the Queanbeyan River including Jumping Creek, Barracks Flat Creek, Glenrock Drain, Bywong Creek and Buttles Creek (see **Figure 1**). However, these areas have not been investigated in detail.

1.4 STUDY PROCESS AND CONSULTATION

This strategy has been prepared by Eco Logical Australia Pty Ltd and the Australian Platypus Conservancy on behalf of Queanbeyan City Council. Funding for the plan was provided through the Australian Government's 'Water for the Future' initiative and the 'Strengthening Basin Communities' program. The *Platypus Awareness and Conservation Strategy* report, which is an important part of this plan, is provided in **Appendix B**.

This plan has been prepared in close consultation with Council, other agencies and the community. The study process summarised below highlights opportunities for community consultation.



Initial notification

The community was initially informed about the project via a leaflet (**Appendix C**) delivered to 500 households and other known stakeholders, a poster on display in the library and Council's office (**Appendix D**), and through a range of media:

- Media release (**Appendix E**)
- Council's City Life newsletter
- Council's regular notice in the local newspaper
- Council's website
- Social media (e.g. Twitter, Facebook)
- ACT Waterwatch's website

All forms of initial notification included an email address, direct phone line to the consultant and postal address so that people could register an interest and/or provide comments.

Initial consultation

Face-to-face consultation was conducted in early June 2011 to encourage people to provide their ideas about how to improve the river corridor.

- A display in Riverside Plaza Shopping Centre from 5 pm to 9 pm on Thursday 2 June was staffed by the consultant and Council's project manager. There was a steady stream of attendees, including people who had specifically come to look at the display and talk to the project team, and others who were shopping then took the opportunity to find out about the project and provide comments.
- Display at the library from 10 am to noon on Saturday 4 June
- Walk along the river near the CBD (met at The Q steps) from 1 pm on Saturday 4 June

- Walk near River Drive Reserve at 7 am on Sunday 5 June
- Display at Council's Enviro Expo from 10 am to 4 pm at the Queanbeyan Conference Centre. The Platypus Conservancy gave a presentation at 10.30 am
- Incidental consultation also occurred during fieldwork

Results of the initial consultation sessions are given in **Appendix F**.

Public exhibition

The draft *Queanbeyan River Corridor Plan of Management incorporating the Platypus Awareness and Conservation Strategy* was placed on public exhibition following approval by Queanbeyan City Council on 26 October 2011.

Letters were sent to 360 households and 50 stakeholders to invite them to a community meeting and notify them of the public exhibition period. Copies of the letter templates are provided in **Appendix G**. Broader notification of the exhibition period and meeting was given in the local papers (Queanbeyan Age and Chronicle) and on Council's website.

A community meeting was held on Thursday 17th November 2011 at 6 pm in the Harry Hesse Room (262 Crawford Street Queanbeyan). The meeting was attended by about twenty people. ELA and APC consultants presented the key points from the plan and, with Council officers, responded to questions and comments. Maps and action tables were on display and attendees were invited to suggest changes and make comments.

The draft plan was on exhibition for 45 days, from 28 October until 12 December 2011. The report was made available to the community via Council's website and at Council's office. Selected stakeholders were provided with a copy. Copies were also available at the community meeting.

Written submissions were invited until 12 December 2011, although a number of submissions were made later and considered in the final revisions to the plan. The main issues identified in submissions and at the meeting are listed in **Appendix G**.

2 Legislative and planning framework

2.1 COMMONWEALTH LEGISLATION

Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)

The EPBC Act provides a national scheme for environmental protection and biodiversity conservation. It incorporates referral mechanisms and environmental impact assessment processes for projects that could impact matters of national significance. Triggers for referral to the Commonwealth include endangered ecological communities (EECs), threatened species and JAMBA/CAMBA species.

There are four species that have been recorded in the riparian corridor of the Queanbeyan River that are listed under the EPBC Act:

- Murray Cod (*Maccullochella peelii peelii*) is listed as threatened
- Pink-tailed Worm Lizard (*Aprasia parapulchella*) is listed as vulnerable
- Riverine Pomaderris (*Pomaderris pallid*) is listed as vulnerable
- Thick-lipped Spider Orchid (*Caladenia tessellata*) is listed as vulnerable

Areas of Natural Temperate Grassland and Box-Gum Woodland (EECs listed under the EPBC Act) are found within the corridor.

2.2 NSW LEGISLATION

Crown Lands Act 1989

As shown in **Figures 2 to 4**, parts of the riparian corridor are Crown land. These areas include:

- Crown reserves, such as Blundell Park. The *Crown Lands Act* provides for preparing plans of management for Crown Reserves in consultation with the community
- Tenured land (i.e. land that is directly leased, licensed or allowed to be used for a range of public, private and community uses). Examples include Riverside Caravan Park and part of Queanbeyan Golf Course
- Other Crown land such as the riparian corridor between Barracks Flat Place and Wickerslack Lane
- Submerged land such as the Queanbeyan riverbed is classified as a type of Crown land

Crown lands are administered by the NSW Government in accordance with the *Crown Lands Act*. The Council has been appointed by the Minister for Lands to have care, control and management of a number of Crown reserve areas as the 'Queanbeyan City Council Crown Reserves Reserve Trust'. This Crown land area includes parts of the Queanbeyan river foreshore.

Crown lands may be subject to claim by the Aboriginal community. If the claim is successful, the land title becomes freehold rather than Crown. There are instances where this has previously occurred in the Queanbeyan River corridor. There are some Crown lands within the corridor that are currently subject to Aboriginal land claim.

Aboriginal Land Rights Act 1983

The purpose of this Act are to provide land rights for Aboriginal persons, represent Aboriginal Land Councils in New South Wales who have a vested interest in land. It also helps to provide for the acquisition of land and the management of land and other assets and investments, the allocation of funds to provide for the provision of community benefit schemes by or on behalf of those Councils.

Through the *NSW Aboriginal Land Rights Act 1983*, vacant Crown land not required for an essential purpose or for residential land, is returned to Aboriginal people.

Aboriginal land rights aim to redress past injustices when Aboriginal people were dispossessed of their land by colonisation. This dispossession led to many social, economic and physical problems for Aboriginal people.

Crown Lands investigates and assesses Aboriginal land Claims across the State. There are currently several parcels of land along the Queanbeyan River corridor subject to land claim.

Native Title Act 1994

The objectives of this Act are to validate any past acts, and intermediate period acts, invalidated because of the existence of native title and to confirm certain rights and to ensure that New South Wales law is consistent with standards set by the Commonwealth Native Title Act for future dealings affecting native title.

Native Title is the name Australian law gives to the traditional ownership of land and water that have always belonged to Aboriginal people according to their traditions, laws and customs. These rights are different to and separate from the statutory right of Aboriginal Land Councils to make claims for land under the *NSW Aboriginal Land Rights Act 1983*. Native title is the legal recognition of Indigenous Australians rights and interests in land and waters according to their own traditional laws and customs. Unlike land rights, native title is not a grant or a right that is created by governments.

Local Government Act 1993

Council owned land must be classified as either community land or operational land under the *Local Government Act 1993* (LG Act). Community and operational lands in the river corridor are identified in **Figures 2 to 4**.

Operational land has no special management restrictions other than those that may apply to any piece of land such as zoning. Operational land does not require a plan of management.

Parcels of land that are designated as Council-owned community land must be managed in accordance with a Plan of Management prepared under the LG Act.

Conditions that apply to community land are:

- It cannot be sold
- It can only be leased, licensed or have any other estate granted over the land under specific conditions
- It must be categorised according to the following:
 - Park
 - Sportsground
 - General community use
 - Area of cultural significance
 - Natural area (bushland, wetland, watercourse, foreshore or escarpment)

- A plan of management must be prepared or applied in consultation with the community. The plan should identify:
 - The category of land
 - The objectives and performance targets for the land
 - The means by which the Council proposes to achieve the plan's objectives and performance targets (i.e. the actions)
 - The manner in which the Council proposes to assess its performance with respect to the plan's objectives and performance targets

The way community land is to be used and managed is strictly governed by an adopted plan of management. Council can amend plans of management at any time by adopting a new plan. However, any significant amendment is regarded as another plan of management. The amended plan must be put on public exhibition with opportunities for submissions prior to adoption.

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) forms the basis of town planning in New South Wales. The EP&A Act provides the legislative power for the preparation of State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs.) This includes the *Queanbeyan Local Environmental Plan 1998* (LEP 1998) – see **Section 2.3**.

SEPP 44 - Koala habitat protection

Koalas have been sighted within the outskirts of Queanbeyan city near the riparian zone (ELA 2008). SEPP 44 aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline. However, Queanbeyan LGA is not listed in Schedule 1 of the SEPP, so this policy does not apply.

Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* requires that Councils consider the impact on threatened species in fulfilling their statutory responsibilities under the EP&A Act. It also provides for the preparation of Species Recovery Plans that may bind Council to certain actions or activities on Council owned land.

There are two flora species, six fauna species and three endangered ecological communities listed under the TSC Act that have been recorded within the riparian corridor, with a further seven species of fauna that have not been recorded but are likely to forage within the corridor because of the availability of suitable habitat. Threatened species and ecological communities occurring and likely to occur within the Queanbeyan River riparian corridor are listed in **Section 3.5**.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) is the principal legislation governing the protection and management of Aboriginal heritage in NSW. An Aboriginal object is considered to be known if:

- It is registered on the AHIMS database
- It is known to the Aboriginal community
- It is located during an investigation of the area conducted for a development application

An AHIMS search was conducted on 8 August 2011 (GDA zone 55; Eastings 702751-705353; Northings 6079089 – 6086881; buffer 0 m). The search found 85 Aboriginal sites have been recorded

in or near the above location. These results partly reflect survey effort and there are likely to be other sites found in areas that have not yet been surveyed.

The Act makes it an offence to damage, deface, destroy, disturb or collect any Aboriginal object or evidence without the approval of the Office of Environment and Heritage (OEH). Recent amendments to the Aboriginal heritage provisions of the Act differentiate between type and severity of these 'harm' offences and provide a number of defences to prosecution. The most serious offence, and carrying the higher penalties, is the offence of knowingly harming or desecrating an Aboriginal object.

The Act provides a 'due diligence' defence for unintentional harm to Aboriginal objects where an activity is undertaken in compliance with an adopted (OEH endorsed) industry code of practice, in compliance with an Aboriginal Heritage Impact Permit, or after following the process set out in the OEH code of practice for due diligence. There is no requirement to follow the due diligence process for certain activities defined as low impact – such as specified land management, maintenance, surveying or environmental rehabilitation works.

In a local government context, these low impact activities (as defined in the accompanying Regulation) include maintenance of existing roads or fire trails or tracks, maintenance of existing utilities, and environmental rehabilitation works (such as temporary silt fencing, tree planting, bush regeneration and weed removal). Certain activities are also exempt from the Aboriginal heritage offences, while other actions are described as 'trivial or negligible' events and no longer considered as 'harm'.

Noxious Weeds Act 1993

The *Noxious Weeds Act* identifies noxious weeds, control measures, public and private responsibilities, and provides a framework for the management of noxious weeds across NSW. Various noxious weeds have been recorded within the study area (**Appendix H** lists all noxious weeds within the LGA). In recent years, Council has implemented a willow removal program across the Queanbeyan River corridor. Other recent efforts to control noxious weeds include Landcare activities (e.g. at Buttles Creek and White Rocks).

Fisheries Management Act 1994

The *Fisheries Management Act 1994* is administered by the Department of Primary Industries (DPI) and applies to aquatic habitat and ecology, including all freshwater vertebrate and invertebrate taxa and their associated habitat. The Act has provisions to declare and list threatened species of fish, endangered populations and ecological communities, and key threatening processes. Refer to **Section 3.5** for further information.

Infrastructure State Environmental Planning Policies (SEPP) 2007

The Infrastructure SEPP includes generic provisions to allow for development to be exempt or require a Part V Assessment. There are 23 classes of infrastructure development where a development application is not required and only a Part V Assessment has to be undertaken. Some of the relevant classes of infrastructure development that may be carried out by or on behalf of Council on a public reserve are:

- Information facilities such as information boards
- Lighting
- Landscaping
- Amenity facilities
- Environmental management works (e.g. bush regeneration)

Heritage Act 1977

The *Heritage Act* sets out responsibilities for assessing and managing non-Aboriginal heritage. It aims to encourage appreciation and conservation of the State's heritage. Heritage values in the corridor are discussed in **Section 3.3**.

Native Vegetation Act 2003

The *Native Vegetation Act* (NV Act) aims to protect the health of land, rivers and wildlife by preventing broadscale clearing of native vegetation. In the Queanbeyan LGA, the NV Act is administered by the Murrumbidgee Catchment Management Authority.

Rural Fires Act 1997

The NSW Rural Fire Service has developed several policy documents and guidelines relating to fire management, including the *Bush Fire Environmental Assessment Code* (RFS 2003) and *Planning for Bushfire Protection* (RFS and Planning NSW 2001). The former identifies threatened species, threatened populations and endangered ecological communities to be considered when undertaking hazard reduction burns, and specifies conditions relating to the use of fire and mechanical forms of hazard reduction for each species, population or community. The planning document outlines planning matters to be taken into account for developments in bushfire prone areas.

Bushfire management issues in the Queanbeyan corridor are discussed in **Section 3.6**.

Water Management Act 1993

The *Water Management Act 2000* aims for sustainable and integrated management of the State's water for the benefit of both present and future generations. The Act recognises the need to allocate and provide water for the environmental health of our rivers and groundwater systems, while also providing licence holders with more secure access to water and greater opportunities to trade water in particular through the separation of water licences from land. Issues relevant to water management within the Queanbeyan corridor are discussed in **Section 3.4**.

2.3 LOCAL PLANS AND POLICIES**Local Environmental Plan**

Local Environmental Plans (LEPs) outline the land use zones within the LGA, the types of development permitted within each zone and special provisions that relate to heritage, flooding, noise, bushfire, scenic protection, contamination, pollution, main roads etc. As depicted in **Figures 2 to 4**, the corridor is affected by a variety of land use zones under the *Queanbeyan LEP 1998* and *Yarrowlumla LEP 2002*. These are tabulated below.

The table below also indicates the equivalent zone that would be applied under the NSW Standard Instrument. Queanbeyan Council has drafted a comprehensive LEP in line with the Standard Instrument. The comprehensive LEP is currently being reviewed by the Planning Minister and will be publicly exhibited prior to finalisation.

Table 1: Land use zones applicable to the river corridor

CODE*	LEP LAND USE ZONES	STANDARD INSTRUMENT ZONE**
1(a)	Rural A	RU1 – Primary Production RU2 – Rural Landscape
1(d)	Rural Residential	R5 – Large Lot Residential
2(a)	Residential A	R2 – Low Density Residential
2(b)	Residential B	R3 – Medium Density Residential
2(c)	Residential C	R4 – High Density Residential
2(d)	Residential D	R1 – General Residential
3(a)	General Business	B2 – Local Centre B3 - Commercial Core
3(c)	Business Park	B7 - Business Park
5(a)	Special Uses 'A'	SP1 - Special Activities SP2 - Infrastructure
6(a)	Recreation	RE1 – Public Recreation
6(c)	Open Space 'C' – Private Recreation	RE2 – Private Recreation
7(a)	Environmental Protection A	E2 – Environmental Conservation E3 – Environmental Management
7(e)	Environmental Protection	E2 – Environmental Conservation E3 – Environmental Management
9(a)	Road A	

*Refer to **Figures 2 to 4**

**Equivalent zones

Council is currently reviewing applications to rezone areas at Googong and Jumping Creek from rural to residential. If approved, these would result in significant areas of urban development in the mid to upper catchment. Infrastructure that would be needed to support these developments includes a sewage treatment plant and stormwater treatment systems.

Council's policies and plans

Council's policies that are relevant to management of the river corridor are listed below.

- *Noxious weeds policy* (2010) aims to effectively manage the control of noxious weeds
- *Stormwater disposal – rural residential land policy* (2009) aims to establish standards for stormwater disposal on rural residential land and limit uncontrolled stormwater overland flow on these lands
- *Water restriction policy* (2009) aims to meet Council's obligations under the contract for potable water supply from ACTEW in relation to water restrictions. Under this policy, when Council is advised by ACTEW that the available stored water in the water supply system, or the available capacity of supply from that system, is insufficient to allow the unrestricted consumption of water for purposes other than domestic purposes, Council will restrict:
 - The purpose of which the water can be used, or
 - The times when the water can be used, or
 - The methods by which the water can be used, or
 - The quantities of the water that can be used

- *Street verge / nature strip policy* (draft 2011) aims to:
 - To reduce silt build up in Council's stormwater network
 - Improve pedestrian safety through verge treatments
 - Reduce silt load into the environment
 - Set out the guidelines in relation to the development
 - Maintenance of verges on Council owned road reserves

Council's (2010) *Natural Areas Plan of Management* categorises three types of Natural Areas within community land in the LGA:

- Urban Bush Reserves (Bushland)
- Escarpment
- Queanbeyan River Corridor (Watercourse)

The last of these is relevant to this strategy. QCC (2010) states:

The Queanbeyan River is a water course constituting a significant natural feature and recreation base within the City of Queanbeyan. It provides the community with a range of aquatic based recreational opportunities, and has significance in terms of wildlife habitat. The river corridor presents the community with an unequalled opportunity to combine urban amenity, active and passive recreation with a naturally occurring aquatic wildlife corridor.

Relevant objectives and performance targets identified in the QCC (2010) plan are incorporated in **Section 4** of this Riparian Corridor Strategy.

2.4 OTHER PLANS AND POLICIES

Water sharing plans

Water sharing plans (WSP) made under the WM Act establish rules for sharing water between the environmental needs of the river or aquifer and water users, and also between different types of water use such as town supply, rural domestic supply, stock watering, industry and irrigation. The draft Murrumbidgee WSP (which covers the Queanbeyan River) is currently before the Minister (pers. comm. Danielle Dougherty, NSW Office of Water 27/7/11). Its objectives include protection of the health of rivers and groundwater while also providing water users with perpetual access licences, equitable conditions, and increased opportunities to trade water through separation of land and water. Due to the formation of this plan, water sharing issues are not addressed in the Queanbeyan River Riparian Corridor Strategy.

State Weirs Policy 1997 NSW Fisheries

Since the late 1990s NSW Fisheries (now NSW DPI) has been encouraging weir removal as a management tool to address river degradation through the *State Weirs Policy*. There are 350 weirs in the Murrumbidgee CMA region, including a number of weirs on the Queanbeyan River. In accordance with the *State Weirs Policy*, all weirs on the Queanbeyan River should be assessed for their potential impact on aquatic habitat. Any recommendations for modification (such as the instalment of fishways) will need to be consistent with Water Sharing Plans for the region.

In 2006, the Murrumbidgee CMA investigated thirty weirs in the Murrumbidgee catchment and selected seven State Water owned weirs for detailed review. The report recommended construction of fishways at those seven weirs. Additional detailed investigation is needed regarding the other weirs in the region.



Photo: Two weirs near the Queanbeyan CBD

ACWA Program in Upper Murrumbidgee

The Action for Clean Water (ACWA) program was established in response to increased turbidity within the Upper Murrumbidgee River as well as the poor ecosystem health noted in the *2008 Murray Darling Basin Sustainable Rivers Audit*. It aims to enhance surface water quality and reduce turbidity in the Upper Murrumbidgee River catchment in NSW and the ACT.

The program encourages a collaboration of federal, state and local government agencies, research scientists and other stakeholders within the catchment. Queanbeyan City Council is represented on the ACWA Advisory Group. The program may be expanded to include the Queanbeyan River catchment.

The first plan is scheduled to be completed by mid 2012. It will prioritise regions for scientifically based best management practices including actions such as revegetation, bank stabilisation, in stream structural works, fencing and landholder education.

3 History and features of the corridor

3.1 CLIMATE

Queanbeyan (35.36 °S, 149.23 °E) has an elevation of 580 m. Temperatures range from an average maximum monthly temperature of 29°C in summer to average minimum monthly temperatures of –2°C in winter. Rainfall averages are higher in summer than in winter, with an average annual rainfall of around 600 mm.

The following climate changes are predicted for Queanbeyan (Sutton et al 2008):

- Increase in temperature; more hot days and warm nights
- Reduction in annual rainfall and increased likelihood of drought
- Increased intensity of daily rainfall events, more intense storm events
- Increased likelihood (frequency and intensity) of bushfire
- Fewer frost days

Consequences of predicted climate change on water availability and biodiversity are outlined below. Potential adaptation and mitigation measures relevant to the Queanbeyan River are discussed in **Section 4**.

3.2 GEOLOGY AND SOILS

Elevation in the catchment ranges from 550 m to 1,000 m above sea level. Most of the terrain near the river is hilly to undulating (NECS 1997). The Queanbeyan River has formed a minor gorge, with erosion of limestone deposits creating escarpments such as those seen at White Rocks.

The Queanbeyan region is dominated primarily by folded and faulted Ordovician metasediments and Silurian age volcanic sediments (NECS 1997). Soils are generally shallow, stony and relatively infertile, with deeper, more fertile soils occurring on flats and valley bottoms (ACT Environment Commissioner 2006). Limestone deposits are located in the region with several seams along the eastern bank of the Queanbeyan River. Alluvium is confined to riverbeds and adjacent terraces with minor amounts of alluvial gold previously found (NECS 1997).

The Molonglo Catchment Group has prepared a series of maps for the *Molonglo Catchment Strategy 2004-2024*² that indicate, on a catchment-scale, the study area experiences:

- Minor gully erosion (<1.5. m deep) in the undeveloped areas of the upper catchment
- High soil erosion hazard for non-concentrated flows in developed areas
- Low soil erosion hazard for non-concentrated flows in undeveloped areas

Although unmapped by the Molonglo Catchment Group, tributaries and sections of the main channel in the mid and lower catchment also experience gully erosion.

² http://www.molonglocatchment.com.au/catchment_planning.htm



Photo: Minor soil erosion on slope between the river and southern end of Collett Street



Photo: Previously rehabilitated tributary near the Suspension Bridge requiring follow-up erosion and weed control

3.3 HERITAGE

3.3.1 Indigenous history

Evidence of Aboriginal occupation in the region has been dated to approximately 20,000 years ago. Rivers and floodplains in the area would have provided sources of food in the form of fish, shellfish, water fowl and edible roots, as well as grazing animals such as emus, kangaroo and wallaby.

Boot & Kushie (1996) concluded that the region around Jumping Creek and the Queanbeyan River was likely to be frequently inhabited by indigenous people. Evidence for this is supported by more than twenty sites recorded in the Jumping Creek area containing quartz artefacts and blades.

Further evidence of indigenous use of the land was found in an archaeological survey of the Gale precinct (Hogg 1991), which identified nine sites including a scarred tree and campsites. The location of sites and artefacts was mainly restricted to ridgelines and spurs that were probably used as access routes to creek corridors.

In a report on the rezoning of the Gale precinct, Birtles (1995) stated that the Queanbeyan River valley has spiritual value for the Aboriginal people, with the river being part of the Dreaming Track, linking the coast to inland Australia. The report also identified White Rocks as a sacred ground.

There is a need for a comprehensive study to identify Aboriginal sites and places of significance in the Queanbeyan River corridor. The study should incorporate consultation with the local Aboriginal community and refer to research conducted by students at the Australian National University. This information could be used to identify areas that need protection or areas that may be suitable for improving the wider communities' appreciation of indigenous history and values.

3.3.2 Early settlement

Graziers began to settle the region in the 1820s. The town of Queanbeyan was gazetted in 1838 and proclaimed a municipality in 1885. The name of the town is believed to be derived from the Aboriginal word for 'clear water' and was adapted by the first squatter, Timothy Beard, who named his property 'Quinbeane'.

Large swathes of native vegetation along the river near the township were cleared during early settlement, as shown in the photos below. Such clearing would probably have resulted in significant sedimentation of the river and loss or degradation of habitat.



Photos: View of township (from area near existing golf club) c.1905 (left); First bridge c.1870 (right)

The river was an important resource during early settlement. Activities that directly relied on the river included water supply for general use and for a brewery, flour mills, market gardens, and an open cut gold mine that drew water from the river (NECS 1997). Swimming and fishing were popular recreational pastimes.

River crossings were a key issue in the growth of the town. Pedestrian access across the river was first established at the current site of the suspension bridge in the form of stepping stones, and further upstream from Dodsworth Street to Hirst Avenue. The main bridge underwent four major constructions and relocations between 1848 and 1975 (NECS 1997).

Over the years, much of the early infrastructure has been lost due to floods, fire and deterioration. However, the Queanbeyan community and Council actively conserve and promote the remaining heritage. As indicated in **Table 2**, bridges are the most significant listed heritage features preserved in the riparian corridor. Other items of heritage value in the corridor include lime kilns at White Rocks, mining sites, buildings and cemeteries (Armes 1997).

Table 2: Significant listed heritage items

ITEM	VALUE	LISTING BY
Suspension Bridge over Queanbeyan River at Isabella St	Suspension bridge across the river was originally constructed of timber and cable in 1901 to replace a series of stepping stones across the Queanbeyan River. The original bridge washed away in the floods of 1925 and was replaced in 1938	Australian Heritage database under the Register of the National Estate (http://www.environment.gov.au/cgi-bin/ahdb/search.pl). (Note that the RNE was closed in 2007 and is no longer a statutory list but is maintained as a publicly available archive)
Queanbeyan railway bridges over the Queanbeyan and Burbong Rivers; part of the Goulburn-Bombala Railway	The railway was built in 1887, associated with the Cooma Railway. It is significant due to the truss formation (DSEWPC 2011, Heritage NSW 2011)	NSW Heritage Act by the Heritage Council (www.heritage.nsw.gov.au)

3.4 WATER MANAGEMENT

The Queanbeyan River is 120 km long and the section that passes through the Queanbeyan LGA (and is the subject of this plan) is 12 km long. **Figure 5** shows features relating to water management including weirs, the extent of the one in 100 year flood event, main stormwater inflows and water quality monitoring locations.

3.4.1 Weirs and dams

The Queanbeyan weir (near Queen Elizabeth Park) was constructed in 1901-2 to provide a pool for the town's water supply, and was raised an extra one metre to the height of 4 m in 1952. A second weir was subsequently built some 100 m downstream.

Googong Dam is located about 5 km upstream of the town of Queanbeyan and was built in 1977. It has a capacity of 124,500 ML. It is owned by the Commonwealth Government and operated under lease by ACTEW, the ACT's electricity, water and gas utility provider. Management is in accordance with the Commonwealth *Canberra Water Supply (Googong Dam) Act 1974*.

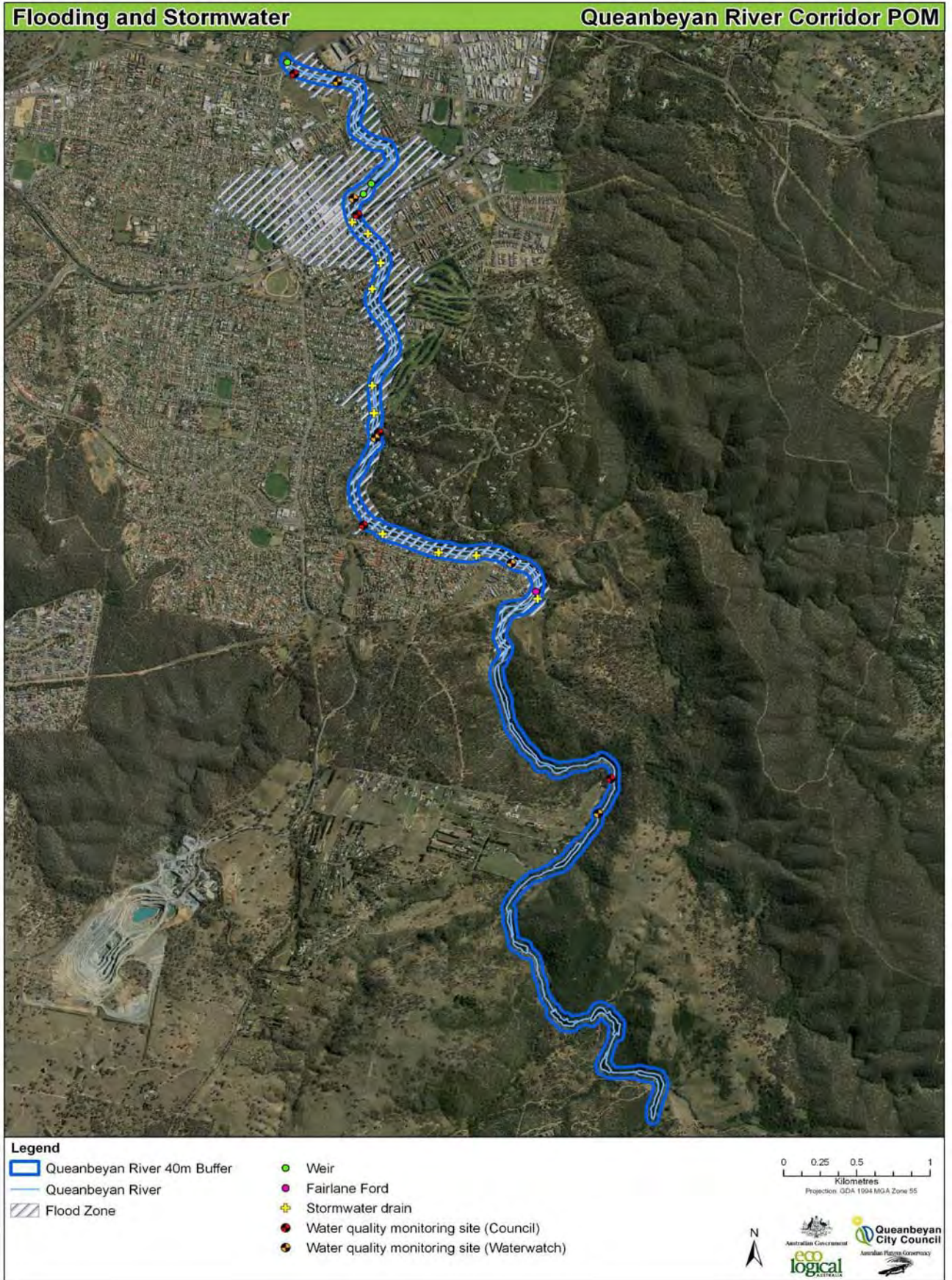


Figure 5: Flooding and stormwater

Weirs and dams regulate the flow for water supply, and affect water quality, flood regimes and aquatic habitat. For example, NECS (1997) reported that between 1977 and 1997 Googong Dam reduced base flow in the river at the Wickerslack Lane gauging station from 1 m³/s to around 0.1 m³/s. Weirs and dams along the Queanbeyan River have assisted colonisation and growth of willows and aquatic weeds, and have prevented or limited movement of fish, platypus, macroinvertebrates and other aquatic organisms.

The introduction of 'environmental flows' from Googong Dam in the 1990s aimed to simulate moderate flow regimes which would facilitate natural processes within the river and maintain healthy ecosystems. The ACT 2006 guidelines for environmental flows improved on previous policy by recognising that flow conditions should not be constant, providing a variety of minimum flow regimes for various ecological conditions. The *Draft Environmental Flow Guidelines* (ACT Government 2011) are a revision of the 2006 Environmental Flow Guidelines, updated using scientific knowledge gained during the past five years. They set out the environmental flow requirements needed to maintain aquatic ecosystems (refer to **Section 4.2.2** for further details).

The two main weirs in Queanbeyan were examined in a catchment wide weir review by NSW DPI in 2002. It was recommended that a fishway be considered for Queanbeyan weir (furthest upstream – owned by State Water). It was also recommended that investigations be made into the feasibility of modifying the sewer/weir 50 m downstream to allow fish passage. However, the upstream weir should not be removed because of the positive affect pooled water has on the amenity of Queanbeyan as well as the river's ecology (e.g. habitat for platypus and water rats). Recent advice from DPI Fisheries recommends investment in fish restocking rather than removal of the weir and/or construction of a fishway.

3.4.2 Water licences

There are 24 surface water licences within the Queanbeyan River catchment downstream of Googong Dam, including eleven located in the Queanbeyan River corridor. There are over seventy groundwater bore licences in the catchment, with the majority being for basic rights purposes (i.e. stock and domestic use). Both current and future water licence entitlements will be assessed under the Water Sharing Plan for the Queanbeyan River (draft plan currently being considered by the Minister).

3.4.3 Stormwater and sewer

Stormwater infrastructure associated with urban development includes drains and gross pollutant traps (GPTs). Sewerage infrastructure along the corridor includes reticulated systems in the town (linked to the treatment plant) and on-site disposal (e.g. septic) in the semi rural areas. Stormwater and untreated sewage contribute to pollution of the river and tributaries (e.g. nutrients, hydrocarbon and faecal organisms). Water quality is also affected by inputs from properties directly adjoining the river (e.g. fertiliser).

There are a number of GPTs along the river (e.g. end of Rutledge Street, off Collett Street, upstream of the Queens Bridge). These traps are designed to prevent solid waste from entering the waterways. The GPTs are currently cleaned on a six month cycle, around December and June each year. To be more effective, it would be preferable if the GPTs are emptied immediately after significant rainfall events, rather than leaving them for extended periods of time.

3.4.4 Flooding and drought

The river is affected by cycles of floods and droughts. As outlined in **Section 3.1**, droughts and extreme weather events are expected to be more frequent in future. Bates et al (2003) predicted that annual runoff in the Queanbeyan catchment may decrease in response to climate change by up to 20% by 2030 and up to 50% by 2070, comprising:

- changes in summer/autumn runoff of +5 to -20% and +10 to -50% by 2030 and 2070 respectively, relative to 1990
- changes in winter/spring runoff by -5 to -20% and -10 to -50% by 2030 and 2070 respectively, relative to 1990

As a consequence, water users within the catchment may face long-term reduction in allocations and higher prices for water. Ecosystems and amenity would also be affected.

During the most recent drought, Council observed households replacing natural grassed areas with paths and pavers. This has the following consequences:

- A slower rate of groundwater recharge, as a result of impervious surfaces
- The likelihood of local flooding, as a result of the stormwater system being unable to handle the runoff in a timely fashion
- Increased demand for Council resources to clear drains (Sutton et al 2008)

On the other hand, to address risks associated with flooding, Council is preparing a flood management plan in accordance with the NSW Government's Flood Prone Land Policy, as detailed in the *Floodplain Development Manual* (NSW Govt 2005), and the requirements of current legislation governing the management of vegetation and floodplains.

Heavy rainfall in December 2010 resulted in river levels reaching 8.4 m, the largest flood event since 1976. Parts of the river burst its banks, with waters dividing the CBD (see photo below taken by the SES on 9th December 2010). This event was significant in moving sediment, pollutants and debris. Some long-time residents of the area have commented that since the 2010 flood, and with the willow removal works, the channel more closely resembles the river prior to construction of Googong Dam.



Photo: Flooding across Morisset Street bridge in December 2010 (Source: SES)

3.4.5 Water quality

Council monitors water quality at seven sites (identified in **Figure 5**) each month for a variety of parameters (temperature, conductivity, pH, dissolved oxygen, nutrients and microbiological indicators of pollution). Results of the monitoring program are reported annually in Council's *State of the Environment Report* (SOE), with results being compared against ANZECC guidelines. Council has been monitoring the river since 2000.

Under the Waterwatch program, the Molonglo catchment group uses Council's database and results of volunteer sampling to provide reports on the catchment's health. Watchwatch monitoring sites within the study area are shown on **Figure 5**. Watchwatch has also been monitoring the river every year since 2000.

According to Council's 2007 SOE report and the *Molonglo Catchment Health Indicator Program Report* (Skinner 2010), water quality in the river is generally rated as good, although the nutrient concentrations have increased since 2000. Excessive nutrients within waterways can lead to algal blooms and facilitate growth of aquatic weeds. The monitoring results also indicate several instances where faecal coliform (*E.coli* and *Enterococci*) counts are extremely high which would pose issues for human health.

Macroinvertebrate populations within the upper stretches of the river are healthy with high diversity and abundance. Communities exhibited impairment further downstream, and are severely to extremely impaired at the junction with the Molonglo River (Waterwatch 2009).

3.5 ECOLOGY

The study area represents a significant ecological corridor that facilitates wildlife movement. It supports a variety of habitats for native flora and fauna species, including the Platypus (*Ornithorhynchus anatinus*) and a number of threatened species and endangered ecological communities. However, the ecological value of the corridor has been degraded by pollution, construction of weirs and dams, vegetation clearance, weed invasion, pest fauna species and inappropriate fire regimes.

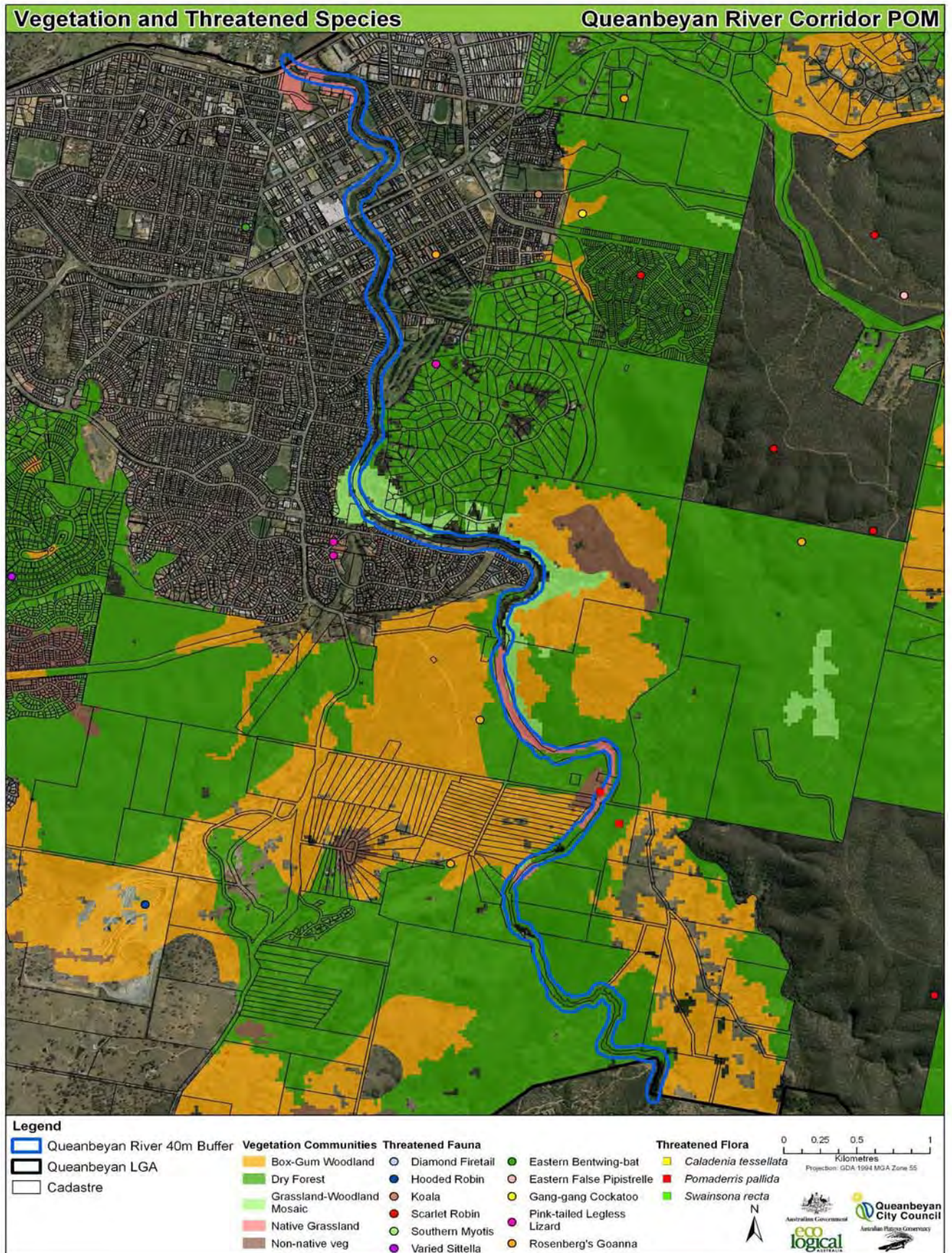
The *Native Fish Strategy for the Murray-Darling Basin 2003-2013* estimated that fish populations in the Basin are only 10% of what they were prior to European settlement. Fish populations have declined because of river regulation, in-stream habitat loss, cold water pollution, alien species, barriers to fish passage, disease and riparian clearing. These issues need to be addressed if rivers such as the Queanbeyan are to support a large and diverse population of aquatic species.

The following information about the ecological characteristics of the river corridor and surrounds has primarily been taken from BES (2008) and Rowell & Crawford (1997).

3.5.1 Vegetation communities

Prior to European settlement, vegetation in the study area would have probably comprised riparian vegetation consistent with remnants now found in the upper catchment. Much of the mid- to lower part of the corridor has been cleared of native vegetation to allow rural and urban development.

The distribution and types of vegetation communities within and surrounding riparian corridor are indicated in **Figure 6**. BES (2008) identified four communities within the corridor (Native Grassland, Box-Gum Woodland, Grassland-Woodland Mosaic and Dry Forests), which are discussed below. The integrity of the vegetation communities ranges from poor (highly modified) to pristine (unmodified with structural and functional integrity intact).



Native Grassland

Native Grassland occurs sporadically along the entire stretch of the Queanbeyan River corridor. There are patches of the community located around Queanbeyan city, a 2 km stretch along the middle section and a very small patch in the upper reaches of the river. This vegetation type is generally subject to poor soil drainage and cold air drainage, and may be fringed by woodland in some areas. This community comprises the Natural Temperate Grasslands of the Southern Tablelands of NSW and ACT (NTG) – an endangered ecological community (EEC) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Grassland – Woodland Mosaic

The Grassland-Woodland Mosaic community within the riparian corridor is located in the middle and upper sections of the river, fringing the Native Grassland community. Parts of the community comprise the NTG and Box-Gum Woodland EECs. The Grassland – Woodland Mosaic typically comprises a mosaic of Native Grasslands and cold climate woodland communities that can include Snow Gum (*Eucalyptus pauciflora*), Manna Gum (*E. viminalis*), Apple Box (*E. bridgesiana*), Candlebark (*E. rubida*) and also areas of Yellow Box (*E. melliodora*) and Blakely's Red Gum (*E. blakelyi*) (Box-Gum) woodlands.

Box-Gum Woodland

Box – Gum Woodland is characterised by grassy woodlands with a tree cover of between 10 and 30 % and dominated by tree species including White Box (*E. albens*), Yellow Box (*E. melliodora*) and Blakely's Red Gum (*E. blakelyi*) (Fallding 2002). This community occurs on the deeper soils of the foot-slopes and mid-slopes, and occasionally on upper-slopes in the Queanbeyan LGA. Within the river corridor the community exists primarily within the middle sections of the river. Parts of the community comprise the Box-Gum Woodland ECC listed on both the NSW *Threatened Species Conservation Act 1995* (TSC Act) and EPBC Act.

Dry Forest

Dry Forest dominates the upper section of the riparian corridor, but also exists along the middle section of the corridor. This community typically comprises forests and woodlands dominated by one or more of the following eucalypt species; Red Stringybark (*E. macrorhyncha*), Red Box (*E. polyanthemos*), Scribbly Gum (*E. rossii*), Brittle Gum (*E. mannifera*), Broad-leafed Peppermint (*E. dives*), Bundy (*E. sgoniocalyx*) and Mealy Bundy (*E. nortonii*). The understorey is often sparse and dominated by tussock grasses such as Red-anthered Wallaby Grass (*Jaoycea pallida*). Dry Forests typically occur on shallower soils and steeper slopes than those that support grassy woodlands. This community includes those parts of the Box-Gum Woodland community where Yellow Box (*E. melliodora*) is not dominant or co-dominant.

Endangered Ecological Communities

In summary, three EECs are known to occur within the Queanbeyan River corridor:

- Natural Temperate Grasslands of the Southern Tablelands of NSW and ACT (EPBC Act) (Natural Grassland)
- White Box, Yellow Box, Blakely's Red Gum Woodland (TSC Act) (Box-Gum Woodland)
- White Box, Yellow Box, Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands (EPBC Act) (Box-Gum Woodland)

The Box-Gum Woodland EEC is covered by listings at both state and federal level, which each have slightly different definitions of the community. For the purposes of this report the Box-Gum Woodland EEC has been defined using the NSW definition and includes recent changes proposed by the OEH for identification of the community.

3.5.2 Iconic fauna

As part of this strategy, the Australian Platypus Conservancy has prepared the *Platypus Awareness and Conservation Strategy (Appendix B)*. The strategy focuses on iconic fauna species inhabiting the Queanbeyan River corridor – the Platypus (*Ornithorhynchus anatinus*) and Australian Water Rat (*Hydromys chrysogaster*). The Platypus is an important biological component of permanent freshwater ecosystems in south-eastern Australia and is a popular conservation icon.

3.5.3 Threatened species

Threatened species recorded in the study area are indicated in **Figure 6** (locations shown on the map are approximate only, as determined by the accuracy of field and mapping techniques). Several areas along the riparian corridor have high conservation value because they support a wide array of species. Threatened flora and fauna species that have been recorded in the corridor or have suitable habitat in the corridor are listed below. Their preferred habitat types are described in **Appendix H**.

Table 3: Threatened species recorded in the study area

SCIENTIFIC NAME	COMMON NAME	STATUS	
		EPBC Act (C'weath legislation)	TSC Act (NSW legislation)
<i>Aprasia parapulchella</i>	Pink-tailed Worm Lizard	✓	✓
<i>Caladenia tessellata</i>	Thick-lipped Spider Orchid	✓	✓
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo		✓
<i>Phascolarctos cinereus</i>	Koala		✓
<i>Pomaderris pallid</i>	Riverine Pomaderris	✓	✓
<i>Pyrrholaemus sagittatus</i>	Speckled Warbler		✓
<i>Maccullochella peelii peelii</i>	Murray Cod	✓	
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing Bat		✓
<i>Varanus rosenbergi</i>	Rosenbergs Monitor		✓

Threatened species that have been identified in the broader region (by the NSW Wildlife Atlas and EPBC Act Protected Matters databases) and have suitable habitat within the riparian corridor include:

- Australian Painted Snipe (*Rostratula australis*)
- Barking Owl (*Ninox connivens*)
- Diamond Firetail (*Stagonopleura guttata*)
- Hooded Robin (*Melanodryas cucullata*)
- Masked Owl (*Tyto novaehollandiae*)
- Powerful Owl (*Ninox strenua*)
- Superb Parrot (*Polytelis swainsonii*)

3.5.4 Key threatening processes

Key threatening processes listed under the TSC Act, the EPBC Act and FM Act that may affect species found within the corridor include:

- The removal of large woody debris, dead wood and dead trees from rivers and streams
- Clearance or degradation of native riparian vegetation along water courses
- Loss of hollow-bearing trees
- Installation and operation of in-stream structures and other mechanisms that alter natural flow regimes of rivers and streams
- Bushrock removal
- Ecological consequences of high frequency fires
- Invasion, establishment and spread of Lantana (*Lantana camara L. sens.*)
- Competition and grazing by the feral European rabbit
- Predation by the European Red Fox
- Predation by feral cats
- Invasion and establishment of exotic vines and scramblers
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants

Additional threats to individual species or communities are as follows³:

- Continuous heavy grazing and trampling of remnants by grazing stock, impacting both vegetative communities and fauna
- Application of intense defoliation regimes, in particular, too frequent burning or slashing
- Physical compaction of the soil, by people, stock and vehicles
- Chemical changes to the soil by the application of fertilisers and lime, or from run-on of nutrients from adjacent sites
- Altered soil moisture conditions, including modified drainage
- Salinity and the associated remediation for salinity (i.e. exclusion of stock and tree planting)
- Harvesting of firewood (either living or standing dead, including material on the ground)
- Collection of on-ground woody debris in the guise of a 'clean-up'
- Habitat degradation through slashing for hazard reduction, ploughing and rock removal
- Modification of habitat through tree-planting in native grasslands
- Moving vehicles pose threats to native fauna
- Non-application of biomass control measures in some highly productive sites, which leads to over-shading by dominant grasses (particularly Kangaroo Grass), shading out of associated forbs, and ultimate loss of vigour of the dominants, which in turn can result in mobilisation of nutrients locked up in the dominant grass sward, which leads to weed invasion

Noxious and environmental weeds present a serious threat to the ecology, productivity and amenity of the corridor. Noxious weeds that are listed under the *Noxious Weeds Act* for the LGA are in **Appendix I**.

³ Threatened species profiles for species, populations and communities listed under the TSC Act (<http://www.threatenedspecies.environment.nsw.gov.au/tsprofile>)

Climate change also presents a threat to ecosystems in the corridor. Decreases in runoff due to climate change may have a negative impact on aquatic biodiversity and riparian/wetland ecosystems. Plants and animals may become 'stranded' in isolated remnants of vegetation as climate zones change, due to a lack of suitable habitat for migration. More frequent droughts and fires are likely to increase stress on plants and animals. (CSIRO 2006)

3.5.5 Recovery planning

Information relevant to recovery of species and ecological communities in the corridor is available from the following sources, and these have been considered when developing actions for this Riparian Corridor Strategy (**Section 4**):

- Threatened species profiles for species, populations and communities listed under the TSC Act (<http://www.threatenedspecies.environment.nsw.gov.au/tsprofile>)
- DECC 2007. *NSW Threatened Species Priority Action Statement (PAS)*
- Threatened species profiles for species, populations and communities listed under the EPBC Act (<http://www.environment.gov.au/epbc/protect/species-communities.html>)
- Key threatening processes for species, populations and ecological communities listed under the TSC Act (http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/home_threats.aspx)
- Key threatening processes for EPBC Act listed species, populations and communities (<http://www.environment.gov.au/cgi-bin/sprat/public/publicgetkeythreats.pl>)
- National Murray Cod Recovery Team 2010. *National Recovery Plan for the Murray Cod *Maccullochella peelii peelii**. Department of Sustainability and Environment, Melbourne.
- MDBA 2004. *Native Fish Strategy for the Murray-Darling Basin 2003-2013*. MDBC, Canberra.
- It is noted that in late 2011, 150 Chinese elm trees (*Ulmus parvifolia* - an introduced deciduous species) were planted along the river corridor at Trincolo Place. This action is inconsistent with ecological recovery objectives, plans and policies. Many of these trees will need to be relocated outside the riparian buffer zone. Significant works planned to occur within 40 m of the river bank must be coordinated in consultation with Council's Environmental Advisory and Sustainability Committee.

3.5.6 Recent recovery effort

Activities performed in recent years to help rehabilitate the ecological value of the corridor include revegetation and weed control, aquatic plant control and restocking with native fish.

Revegetation and weed control

Willows have been established within the Queanbeyan River landscape for over 100 years, dominating the riparian corridor since the establishment of Googong Dam in 1977 (Lang 2000). They are deemed an environmental weed due to their ability to spread and quickly dominate the riparian zone, posing threats to native vegetation, water quality, sedimentation and bank erosion. The detrimental impacts of willows and need for their removal was acknowledged as a priority action in the 1999 *Queanbeyan River Corridor Plan of Management*, with subsequent reports recommending a 'top down' approach of willow removals (Lang 2000).

In 2008, the Queanbeyan River Traditional Owners Restoration Project was established to make further environmental improvements following willow removal efforts. The project focused on restoration of the Queanbeyan riparian corridor from Barracks Flat Creek to the low level bridge through removal of willows, other weeds and revegetation with locally propagated native species (refer to list in **Appendix J**). The program saw a partnership between the Murrumbidgee CMA and the QCC, and was also supported by local Aboriginal groups, TAFE NSW, and the NSW and Federal Governments.

By 2011, the majority of willows have been removed from the river's edge, with monitoring and maintenance of vegetation within the riparian zone now becoming a priority to ensure the spread of other noxious and environmental weeds does not occur.

Aquatic plant removal

Aquatic plants play an important role in the ecosystem of the river environment. They provide habitat for a variety of vertebrate and invertebrate species, increase biodiversity, decrease bank erosion and act as natural filters for fine sediment and nutrients. In response to the 1997 River Corridor Study, QCC developed a management plan for aquatic plants on the Queanbeyan River Weir Pool. This strategy deals with the removal of aquatic plants for public safety, aesthetic and water flow issues. The management plan's objectives are to selectively cull aquatic plants and limit the growth in various areas in accordance with the 1997 River Corridor Study and the Native Fish Stocking Program.



Aquatic plant removal



Revegetation and path construction

Native fish populations

Council conducted fish surveys in 1998, 2001, 2004 and 2011 using funds provided by ACT Wildlife and Research. Species that have been released into the river since 2000 by the Department of Primary Industries and/or Council under a restocking program for the Murray-Darling system include:

- Macquarie Perch (*Macquaria australasica*)
- Golden Perch (*Macquaria ambigua*)
- Silver Perch (*Bidyanus bidyanus*)
- Murray Cod (*Maccullochella peelii peelii*)

Council held a 'catch a carp competition' in 2001 to help reduce numbers of this pest species. There were 400 entrants to the competition and 75 fish weighed in.

The total number of fish recorded in 2011 was less than previous surveys (

Table 4) due to the reduced number of sampling techniques used, Oaks Estate not being sampled and the likelihood of fish migrating downstream during the December 2010 flood. Golden Perch was the only native angling species captured in 2011. An opportunity exists to augment the native fish population by continuing to stock the Queanbeyan weir pool with Golden Perch and Murray Cod while there are adequate flows in the Queanbeyan River below Googong Dam and numbers of Redfin are relatively low.

Table 4: Results of fish monitoring 2004-2011

YEAR (SHOTS)	GOLDEN PERCH	REDFIN	CARP	TOTAL
2004 (20)	1	23	3	27
2005 (10)	-	1	6	7
2006 (24)	-	31	18	49
2007 (10)	-	10	1	11
2011 (24)	4	7	6	17

Source: Queanbeyan City Council (N. Abbott pers. com.)

3.6 BUSHFIRES

Inappropriate fire regimes are considered a threat (DEC 2004; Environment ACT 2005) to the endangered ecological communities in the study area, i.e. White Box Yellow Box Blakely's Red Gum Woodland and Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT.

Bushfire can also have substantial impacts on aquatic ecology and river health, particularly if heavy rainfall occurs after significant fires. The impacts of flooding after bushfire include general reduction of water quality such as addition of nutrients to the waterway, sedimentation, increased turbidity and reduction of dissolved oxygen within the water column. Such impacts pose a serious threat to fish and aquatic invertebrates within the river and can cause algal blooms.

The impact of potentially toxic effects from bushfires is poorly understood in Australian aquatic ecosystems (EPA 2004). Substantial bushfires in the upper catchment of the Queanbeyan River are also likely to impact the hydrology of the river. Until natural vegetation re-establishes, the soil's capacity to hold water is quickly exceeded in heavy rainfalls resulting in increased flow and sedimentation of the river.

The intensity and frequency of bushfires are expected to increase with predicted climate change.

3.7 RECREATION AND ACCESS

The Queanbeyan River corridor provides significant recreational opportunities within the region, as tabulated below and shown in **Figure 7**. Community feedback received during preparation of this strategy indicated a high degree of support for actions to improve recreational amenity, particularly walking/cycling loop tracks of varying lengths, while maintaining and improving environmental conditions. Comments in the following table provide a background to existing conditions and the issues highlighted during consultation.

Table 5: Recreation and access

TYPE	LOCATION & COMMENT
Swimming	Swimming occurs in the river but is not encouraged because of public safety risks
Canoeing/kayaking	Boating activities are more popular since the willows have been removed and the 2010 flood occurred. There are opportunities to involve canoeists/kayakers in on-river rehabilitation activities
Fishing	Fishing is a popular activity along the river, particularly since the willows have been removed. Need education and signage regarding fish species and sizes, habitat protection and improvement, and risks (e.g. entanglement of native species such as platypus)
Sealed path / cycleway & unsealed tracks	<p>Concrete paths have been constructed along parts of the river's edge near the town centre. Unsealed tracks are available on the southern bank of River Reserve further upstream to the edge of the urban area</p> <p>There was strong community interest in the issue of public access along the river corridor, particularly between Glebe Park and Dane St</p>
Playgrounds & BBQ/formal picnic	<p>Barrack Flat Park - on tributary to river, has BBQ, toilets, picnic tables and bike track</p> <p>Blundell Park – playground</p> <p>Doeberl Reserve - natural area</p> <p>Glebe Park – fenced playground, toilets, BBQ, seating, bitumen basketball court, outdoor classroom</p> <p>Marj Christian Riverside Park – fenced playground, shelter, picnic tables, wood fireplaces, recent plantings with exotic tree species</p> <p>Queanbeyan River Recreation Reserve – playground</p> <p>Queen Elizabeth Park – fenced playground, BBQ, picnic tables, seating</p> <p>River Reserve - natural area with unsealed track</p>
Seats	<p>Council has installed seats along the corridor to provide places for rest and views over the river; additional seating is needed</p> <p>There is a small outdoor classroom of seats in a bushland setting at the northern end of Glebe Park</p>
Mown open space	Extensive areas of the riparian corridor are mown by Council; some of these areas do not appear to be utilised for recreation and may be suitable for revegetation to improve habitat and amenity, and reduce ongoing mowing costs
Sports fields	Riverside Sportsground

TYPE	LOCATION & COMMENT
	Blundell Park
Golf course	Queanbeyan Golf Course is situated adjacent the river. Unrestricted public access is available along the river's edge, although there is a safety issue associated with golfing activities. Maintenance of the golf course involves mowing and fertilising the greens, and this may have a detrimental effect on the river
Bridges/river crossings	<p>Queens Bridge – located on Monaro St is an elevated traffic bridge</p> <p>Suspension bridge – located at intersection of Isabella and Collett Streets is a pedestrian only bridge (see photo below)</p> <p>Low level bridge – located at Morisset / Atkinson St</p>
Riverside cafe	The Riverside cafe is being constructed in Ray Morton Park, opposite Queen Elizabeth Park.
Relationship to CBD	The CBD Master Plan (Place et al 2009) states that the Queanbeyan River and associated parklands represent a highly valuable asset within the town centre. However, the lack of integration of these within the city fabric weakens the overall amenity. Development has occurred along the river frontage (Collett Street) without taking full advantage of this aspect. Visual and physical connections to the CBD are poor with significant grade separation between Collett Street and the open space hindering pedestrian access. Queen Elizabeth Park provides a valuable respite for users and could be enhanced to create a more meaningful relationship with the CBD.



Photo: Suspension bridge

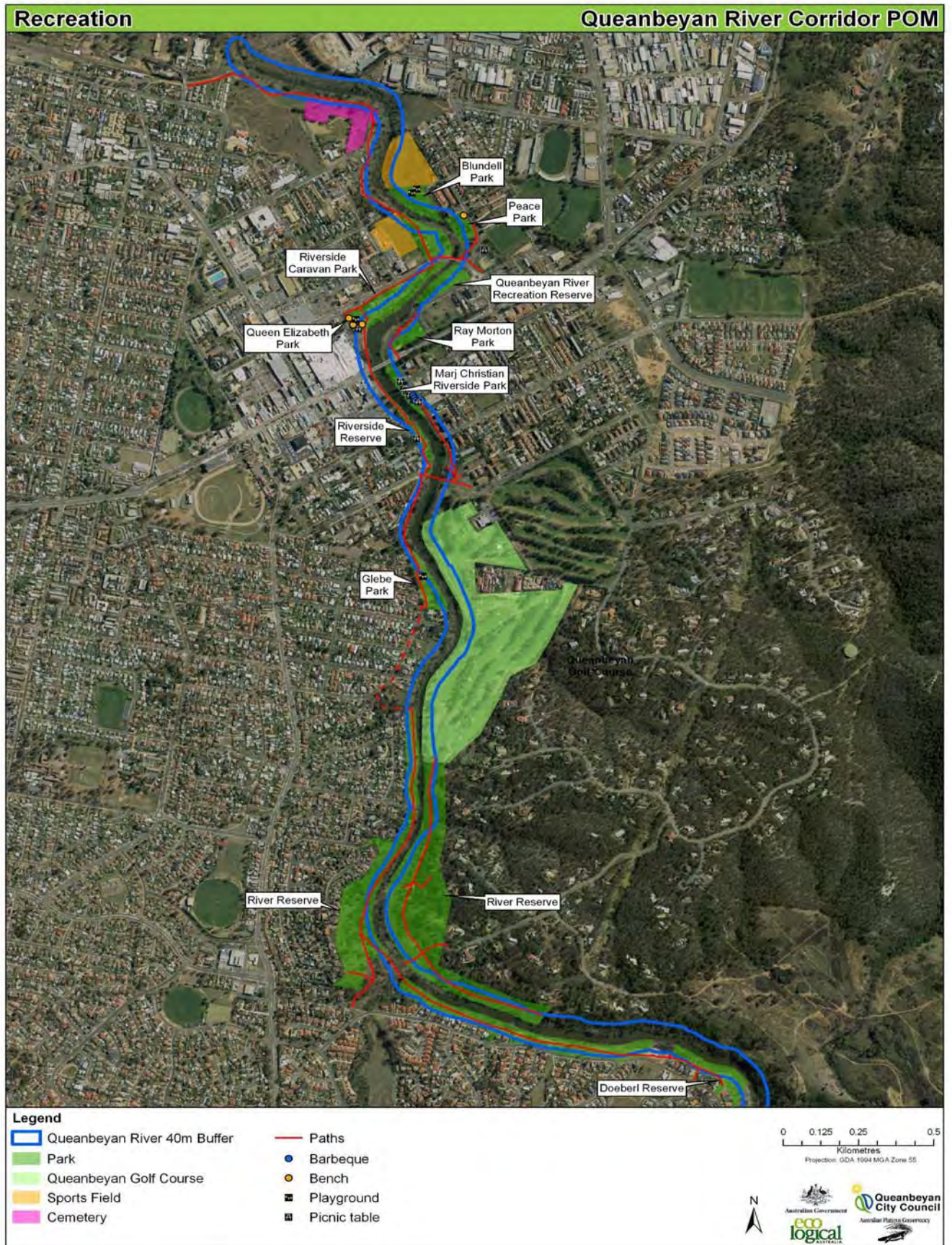


Figure 7: Recreation facilities

3.8 CARAVAN PARK

The Queanbeyan Riverside Tourist Park (the caravan park) was established by the Council on Crown land adjacent to the Queanbeyan River in the 1960s. The caravan park was operated by the Council for many years and in 1999 it leased the operation to Marellen Pastoral Company Pty Ltd for a twenty year period. At that time the on-site cabins and maintenance equipment were sold to the lessee, but the Council retains the ownership of the caravan park infrastructure, including the amenities building, sheds, park furniture, roads and site infrastructure.

The lessee has a legal and legitimate right to operate the park until the expiration of the lease on 28 February 2019. It is the role of the Trust Manager (the Council) to determine any request for a lease extension and the NSW Department of Primary Industries (Crown Land Division) will be guided by that position.

3.8.1 Current status and management

Facilities

The caravan park was established in the 1960s, and its infrastructure requires upgrading. Examples are:

- The size of the caravan park is 1.17 ha, which only just exceeds the 1 ha minimum requirement
- The forecourt area is approximately 7 m too short
- Road widths for two-way traffic are required to be 6 m; within the caravan park the general road width is only 5 m
- Access to sewerage is not provided for all sites
- Some sites do not have direct access to power; it has been observed that power has been provided to some sites by using extension leads across internal roads
- The proximity of some dwelling sites to park amenities exceeds the maximum distance allowable of 100 m

For licensing purposes, limitations and non complying features can be covered by an exemption that permits acceptance where facilities were in place prior to the commencement of the new requirements.

Pollution

The location of the caravan park immediately adjacent to the Queanbeyan River is a concern in respect of pollution. It has been observed that when caravans have been located on sites within the park that do not have access to sewerage facilities, sullage lines have been laid to the rear of the van with potential to flow into the river.

There are two major trunk sewer lines that service the southern part of the city that traverse the leased area to connect the sewer pumping station at the corner of Morisset and Carinya Streets. A recent sewer block in one of the lines caused a minor sewage spill and required extensive works to clear the blockage. A relief line was constructed between two access holes located in the caravan park to overcome the blockage. These works caused inconvenience to caravan park users, conflict with park management and required compensation to be paid to the caravan park because a number of sites could not be used whilst the work was undertaken.

The age and number of sewer and sullage lines within the park, as well as restricted access due to park facilities, increases the risk of river pollution if blockages or breakages occur.

There is uncertainty regarding responsibility for clean-up and management of the Queanbeyan River foreshore adjacent to the caravan park. This lack of clarity is detrimental to the amenity of the river environs.

Flooding

The caravan park site is within the floodplain of the river and is subject to flooding. The most recent event was in December 2010. The flood was assessed as a one in twenty year flood event and the caravan park flood emergency plan had to be enacted. The plan required caravans and on-site cabins to be relocated to the Queanbeyan Showground. However, the on-site vans could only be moved to an adjacent Council car park. This area would also have been inundated if the flood event was of greater intensity.

Public access

The existing location of the caravan park impedes the contiguous public use of land along the northern side of the river as the leased area is for the exclusive use of the lessee (and caravan park visitors). Accordingly, any plans to expand the parkland area, or develop community amenities and walking tracks along the river would be precluded.

The Council has endeavoured to increase the community focus on the Queanbeyan River and its foreshore, and in its CBD Master Plan there is recognition of the need to strengthen this focus. The development of walking trails on both sides of the river, and projects such as the Riverside café and the sensory gardens (to be built in 2012/13) will enhance the attraction of the foreshore for local residents and visitors to the area. Accordingly, there is a need for additional parks in the area.

3.8.2 Lessee's strategy

It is known that the lessee is keen to extend the existing lease and has offered to 'make a significant investment to upgrade the caravan park facilities in line with the CBD Master Plan in return for a new 25 year lease' (letter to Council from the Marellen Pastoral Company on 23/11/2010). The 'New Lease Strategy' for the caravan park by the Marellen Pastoral Company states that the three main strengths of the park are that it:

- Provides lower cost accommodation for the budget conscious
- Allows pets
- Is located next to the CBD and major facilities

The 'New Lease Strategy' (which has not been endorsed by Council) proposes the following investment to cater for projected growth in occupancy:

- Relocate road at south end to improve access
- More concrete slabs for vans
- Replace worn or broken concrete paths etc
- Construct six new cabins and one disabled cabin (suitable ramp, toilet etc)
- Refurbish amenities block
- Build camp kitchen and improve BBQ facilities
- Prepare landscaping masterplan
- Develop lower riverside amenity for visitors
- Replace grass areas with artificial turf
- Review all space to maximise density to site

However, the lessee will not invest in the site unless the lease period is extended.

3.8.3 Future use of the site

The Trust Manager (Council) needs to consider opportunities and threats to the river corridor as well as broader socio-economic factors when deciding the future use of the caravan park site. In summary, while it is recognised that the caravan park provides a significant economic benefit to Queanbeyan by attracting visitors to the area, and plans by the lessee to upgrade facilities could partly address issues associated with aging and non-compliant infrastructure and facilities, the riverside location is not preferred because of problems associated with pollution, flooding, public access and amenity. Council should consider a strategy to allow the current lease expire and not be renewed. The site should be converted into public parkland consistent with the vision and objectives of the CBD Master Plan and those outlined in **Section 4** of this strategy.

There may be opportunities to relocate / establish a caravan park at a more suitable location in Queanbeyan.

3.9 FUTURE DEVELOPMENT

The current population of Queanbeyan exceeds 40,000 and it is estimated that this will increase to approximately 70,000 by 2036 as a result of new developments at Googong and in the Jerrabomberra Valley. Future growth and change in the urban fabric of Queanbeyan comprises three main trends (Sutton et al 2008):

- New suburban estates on the town perimeter
- Rural residential developments on the peri-urban fringe
- Densification and infill

Some considerations associated with these land use changes include:

- Loss of vegetation and fauna habitat
- Greater water demand
- Modified stormwater conditions e.g. more impervious surfaces creating greater peak discharges
- Increased discharges of treated wastewater (sewage)
- Need for additional facilities and services (e.g. for recreation)

3.10 COMMUNITY ENGAGEMENT

The community is involved in monitoring and management of the river corridor through the following programs and activities.

Table 6: Community participation and education

TYPE	DESCRIPTION
Platypus monitoring	The Australian Platypus Conservancy (APC) coordinates community involvement in monitoring platypus and water rats with a project called <i>Platypus Count</i> . Data is used by the APC to determine population trends. New volunteers can register an interest through Waterwatch*
Waterwatch	Formed in 2003, the Molonglo Catchment section of the Upper Murrumbidgee Waterwatch group regularly monitors the water quality of the Molonglo catchment. The group produces six-monthly reports detailing the health of the Queanbeyan River utilising water and biomonitoring techniques. New volunteers can become involved in this project by contacting Waterwatch*

TYPE	DESCRIPTION
Frogwatch	Frogwatch is a community based group conducting research and surveys on frog activities. The Ginninderra catchment group conducts annual surveys of frogs within the Queanbeyan River corridor. Frogwatch works closely with members of Waterwatch groups in the area and can be contacted through Waterwatch*
Landcare	The Queanbeyan Landcare Inc group conducts Landcare activities in the Queanbeyan River corridor. The Landcare group has been partners in the willow removal project on the river and meets every month.
Education	Environmental education programs and promotions run by Council includes signage in parks and along walking tracks, and sustainable living activities (energy and water efficiency, waste minimisation etc)

*waterwatch@molonglocatchment.com.au

3.11 SUMMARY OF MANAGEMENT ISSUES AND OPPORTUNITIES

The main issues that require management within the corridor are as follows:

- Weeds including willows and aquatic plants
- Pollution sources (point source and diffuse) including rubbish dumping
- Impacts associated with adjacent land uses
- Provision and quality of public access
- Threats to water quality and hydrological regimes
- Recovery of threatened species and endangered ecological communities
- Protection of biodiversity
- Community involvement
- Climate change



Photo: Queanbeyan Regatta

4 Strategic framework

4.1 VISION

The vision for the river corridor was developed in conjunction with the community for the 1999 Plan of Management. It continues to be relevant and supported, and is:

To protect and enhance the Queanbeyan River Corridor as the focus of the City's natural and cultural environment, providing a diverse range of recreational opportunities whilst maintaining, improving and protecting the social, cultural, natural, visual and heritage landscape, for both the local and wider community.

4.2 OBJECTIVES

4.2.1 Land management objectives

Objectives for management of land within the corridor have been developed to reflect land tenure (see **Figures 2-4**) and statutory requirements. There are three broad sets of objectives for the corridor which are discussed below:

- Objectives for Council-owned community land
- Objectives for Crown reserves
- Objectives for all other land within the corridor

Council-owned community land within the corridor has been categorised in accordance with the requirements of the *Local Government Act*. Parcels of land within each category, and relevant objectives are given in **Table 7**.

Table 7: Categories and objectives for community land under the LG Act

CATEGORIES	MANAGEMENT OBJECTIVES	AFFECTED LAND*
Sportsground	<p>To encourage, promote and facilitate recreational pursuits in the community involving organised and informal sporting activities and games</p> <p>To ensure that such activities are managed having regard to any adverse impact on nearby residences</p>	Lot 2 DP 835901 (Riverside Sportsground)
Park	<p>To encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities</p> <p>To provide for passive recreational activities or pastimes and for the casual playing of games</p> <p>To improve the land in such a way as to promote and facilitate its use to achieve the other core objectives for its management</p>	<p>Lot 3 DP 1021603 and Lot 6 Section 6 DP 978284 (park next to Ford St)</p> <p>Lot 48 DP 14068 (Glebe Park)</p>

Community use	<p>To promote, encourage and provide for the use of the land, and to provide facilities on the land, to meet the current and future needs of the local community and of the wider public:</p> <p>in relation to public recreation and the physical, cultural, social and intellectual welfare or development of individual members of the public</p> <p>in relation to purposes for which a lease, licence or other estate may be granted in respect of the land (other than the provision of public utilities and works associated with or ancillary to public utilities)</p>	Lot 6 DP 1099164 and Lot 2 DP 749033 (new café)
Natural area	<p>To conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area</p> <p>To maintain the land, or that feature or habitat, in its natural state and setting</p> <p>To provide for the restoration and regeneration of the land</p> <p>To provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion</p> <p>To assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in a recovery plan or threat abatement plan prepared under the <i>Threatened Species Conservation Act 1995</i> or the <i>Fisheries Management Act 1994</i></p>	<p>Lots 3 and 4 DP 792307 (upstream of Isabella St)</p> <p>Lot 17 DP 223652 and Lot 20 DP 538743 (edge of Queanbeyan Golf Course)</p> <p>Lot 2 DP 710056 (part drainage line that connects river corridor to Thorpe Ave near Sorrell Pl)</p> <p>Lots 58 and 59 DP 221948 (downstream of Dane St, parallel to Woodger Pde)</p> <p>Lot 112 DP705742 (River Reserve – north-east side of river)</p> <p>Lot 24 DP 239425, Lot 2 DP 552380, Lot 20 DP 837155, Lot 105 DP 707719, Lot 243 DP 803621, Lot 20 DP 818066, Lot 51 DP 835313 (River Reserve between Dane St and River Drive)</p>
Natural area - watercourse	<p>To manage watercourses so as to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and water flows</p> <p>To manage watercourses so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability</p> <p>To restore degraded watercourses</p> <p>To promote community education, and community access to and use of the watercourse, without compromising the other core objectives of the category</p>	<p>Lot 39 DP 1007139 (Doeberl Reserve)</p> <p>Lot 86 DP 45240, Lots 38 and 43 DP 226218 (upstream of Barracks Flat)</p>

*Figures 2-4 show community lands

Section 11 of the *Crown Lands Act* outlines the management principles for Crown reserves such as Blundell Park:

- That environmental protection principles be observed in relation to the management and administration of Crown land
- That the natural resources of Crown land (including water, soil, flora, fauna and scenic quality) be conserved wherever possible
- That public use and enjoyment of appropriate Crown land be encouraged
- That, where appropriate, multiple use of Crown land be encouraged
- That, where appropriate, Crown land should be used and managed in such a way that both the land and its resources are sustained in perpetuity
- That Crown land be occupied, used, sold, leased, licensed or otherwise dealt with in the best interests of the State consistent with the above principles

The *Crown Lands Act* enables Crown reserves to be managed as if it were Council land in accordance with the *Local Government Act*. In Queanbeyan, Crown reserves are managed by Council.

For other areas within the corridor (i.e. private land, operational land and other Crown land which is under Council management), broad objectives for the corridor are taken from the 1999 Plan of Management as follows:

Table 8: Objectives for private land, operational land and non-reserve Crown land

VALUE	OBJECTIVE
Water quality	Improve water quality emanating from development and human activities to ensure compliance with guidelines for the protection of aquatic ecosystems and recreational waters, and achieve Sustainable environmental flows to maintain and improve the ecology and health of the river
Natural environment	Maintain, protect and enhance the natural environmental values of the Queanbeyan River and improve the value and integrity of bushland and riparian zones
Scenic quality	Preserve the views and scenic quality of the Queanbeyan River Corridor through preservation and conservation of bushland and other natural features as well as minimising the effects of urban development
Social and cultural	Maintain and enhance existing recreation areas to provide opportunities and facilities for local residents and visitors, to experience its values whilst minimising impacts on the environment
Heritage	Protect, maintain and enhance significant heritage features of the Queanbeyan River corridor including the natural bushland and individual heritage items and places
Recreation	To provide a quality recreation experience for residents and visitors to the Queanbeyan River area whilst protecting the environment
Education	Increase awareness of the ecological, recreation and heritage value of the Queanbeyan River
Resource management	To improve the effectiveness of management of the Queanbeyan River

4.2.2 Aquatic objectives

The ACT Government's *Draft 2011 Environmental Flow Guidelines* sets objectives for aquatic health and flows in the Queanbeyan River below Googong Dam. The subject area is classified as a 'water supply catchment ecosystem' and has the following objectives:

- To maintain healthy aquatic ecosystems in terms of biota⁴
- To prevent degradation of riverine habitat through sediment deposition⁵
- Maintain an average base flow of 10 ML/day or natural inflow, whichever is the lesser volume
- Maintain a riffle flow of 100 ML/day for one day every two months (no riffle maintenance flows are required during Stage 1 or 2 drought restrictions)
- Groundwater abstraction limited to 10% of the long term recharge
- No limits on drawdown levels for water supply impoundments

4.3 PRIORITIES

This strategy has a ten-year time frame. Priority for each action is rated as follows:

- High priority – to commence within two years
- Medium priority – to commence within three to six years
- Low priority – to commence within seven to ten years
- Ongoing

In **Section 4.4**, highest priority has been allocated to actions in accordance with the following principles:

- Reduce pollutant inputs to the river
- Reduce risk to public safety
- Protect and enhance biodiversity
- Maintain and improve recreational opportunities consistent with environmental improvements
- Involve the community

4.4 ACTIONS, COSTS AND PERFORMANCE MEASURES

Actions recommended in this section are consistent with the vision and objectives for the corridor. The actions have been developed in close consultation with the community, agencies and Council. Actions from recent studies (e.g. the CBD Master Plan) that have been endorsed by Council are incorporated in this Strategy.

Actions are presented in the following tables with priorities, costs and performance measures. The actions have been categorised according to the following themes:

⁴ Indicators are: Macroinvertebrate assemblages are maintained at AUSRIVAS band A level. Assessed using protocols as per the ACT AUSRIVAS sampling and processing manual (<http://ausrivas.canberra.edu.au/ausrivas>) and non-dominance (<20% cover) of filamentous algae in riffles for 95% of the time. Assessed using standardised collection and processing methods as per Norris et al (2004)

⁵ Indicator: sediment deposition is limited to <20% of total depth of pools measured at base flow using techniques per Ecovise Environmental (2005) methods

- Pollution control
- Flood management
- Education – community, Council staff, developers etc
- Access and recreational opportunities
- Rehabilitation (weed and erosion control, regeneration, revegetation)
- Planning and development
- Coordination of works
- Research and monitoring

Key actions are mapped in **Figure 8**, and further illustrated in **Appendices B** and **K**.

In summary the main actions recommended for the corridor are:

- Increase riparian habitat and amenity of the river and its tributaries through pollution reduction, erosion control, stormwater treatment, rubbish removal, weed removal, regeneration and revegetation
- Improve public access along the corridor by a network of sealed paths and unsealed tracks suitable for walkers and cyclists, allowing for circuits of variable length and condition
- Strict planning and development controls to ensure future development does not adversely affect the river corridor
- Improved coordination of rehabilitation activities within the corridor by government agencies and the community (led by Council)
- Increased community education and involvement

Cost estimates in the following tables are provided as a guide only. More accurate costs would need to be calculated prior to seeking funds.



Photo: Outdoor classroom at Glebe Park

Table 9: Pollution control actions

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	COUNCIL RESPONSIBILITY
P1	Audit and offer advice on how to improve performance of privately owned on-site sewage treatment systems to reduce environmental impacts. This will continue to be done as part of Council's on-site sewage management program	Ongoing	<\$10K	Advice regarding on-site sewage treatment systems readily available to privately landholders	Environmental Health
P2	Audit the performance of the sewerage infrastructure, and investigate upgrading the plant and sewerage infrastructure in older areas	Med	<\$10K	Results of audit; report on the value of upgrading sewerage plan & infrastructure	Infrastructure
P3	Review procedures related to sewage management (e.g. pumping stations, overflows) to reduce adverse environmental impacts and risks	Med	<\$10K	Update procedures and train relevant staff	Infrastructure
P4	Maintain GPTs after heavy rainfall (rather than every six months)	High - ongoing	<\$10K p.a.	GPTs maintained after heavy rainfall	Infrastructure
P5	Install or relocate rubbish bins in easily accessible and appropriate locations (bin design to minimise risk of attracting pest fauna)	High	<\$10K	Rubbish bins available and regularly serviced	Infrastructure
P6	Liaise with the golf course managers to reduce impacts to the river from excessive fertiliser use and encroachments	High	<\$10K	Reduce fertiliser runoff and encroachments	Environmental Health
P7	Construct a barrier to prevent people from pushing shopping trolleys off the concrete ledge near the lower (Morrisett St) bridge	Low	<\$10K	Barrier constructed	Infrastructure
P8	Continue to work with the caravan park lessee regarding park and adjacent riparian management prior to end of lease in 2019	Ongoing	<\$10K	Good park and adjacent riparian management prior to cessation of the lease	Internal Business
P9	Remove unused steel poles and reposition 'unauthorized access' sign near Dane St	Low	<\$10K	Poles removed	Infrastructure
P10	Establish a River Team comprising professional bush regeneration staff to be responsible for planning and rehabilitation of the river corridor and tributaries (e.g. rubbish removal, weed control, revegetation, environmental education)	High - ongoing	>\$200K p.a.	Permanent work crew established	Environmental Health

Table 10: Access and recreation actions

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
A1	Investigate route for creation of an unsealed, multi-use track within or near the corridor to provide a recreational link between the track/path network associated with the urban area and Googong Dam; include public access routes from surrounding areas; close off and rehabilitate informal tracks where possible	Low	\$10-50K	Route options identified	Infrastructure
A2	Install signage to indicate the length and types of paths/tracks available	High/ongoing	\$10-50K	Signage installed	Environmental Health
A3	Install signage at the southern end of Glebe Park and the end of Dane Street to indicate the public access route between these locations; update signage if route changes	High	<\$10K	Signage installed	Environmental Health
A4	Increase appropriate community use of CBD parkland and facilities by promoting recreation and water based events (e.g. Queanbeyan Regatta)	High	<\$10K	Greater community use of CBD parkland and facilities	Community Services
A5	Investigate options for public access between Thorpe Ave and Woodger Pde Reserve	High	\$10-50K	Preferred public access route determined	Legal and internal services and Infrastructure
A6	Construct public access between Thorpe Ave and Woodger Pde Reserve	Med	>\$500K	Public access available	Infrastructure
A7	Keep the community and affected landholders informed about public access issues near Thorpe Ave	High/Med	<\$10K p.a.	Relevant parties kept informed	Legal and internal services
A8	Formalise public access through community land adjacent the golf course (Lot 17 DP 223652 and Lot 20 DP 538743) in accordance with the concept plans by dsb Landscape Architects; track should connect to existing fire trail; use suitable native plant species (Appendix J)	Med	>\$50K	Public access developed adjacent the golf course	Environmental Health
A9	Maintain the fire trail south of the golf course, including signage to prohibit unauthorized vehicle access	Ongoing	\$10-50K p.a.	Fire trail maintained in good condition	Infrastructure
A10	Construct sealed path from the low bridge to the northern end of Blundell Road, then unsealed path from Blundell Road to near the railway crossing	Low	>\$50K	Paths constructed	Infrastructure
A11	Install additional seats near path to provide resting places and views of the river	High	<\$10K	Seats installed	Infrastructure
A12	Retain some mown areas near the city centre to facilitate community events such as the Regatta and provide space for informal recreation	Ongoing	\$10-50K p.a.	Continue mowing	Infrastructure

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
A13	Improve access across Barracks Flat Creek; crossing design should be sympathetic to natural landscape	Med	\$10-50K	Concept design developed and crossing constructed	Infrastructure
A14	Upgrade playground infrastructure and immediate surrounds at Ray Morton Park to have gas BBQ, picnic tables, lighting, lawn area, shade trees, a shade/rain cover and exercise equipment. Playground equipment should be fenced	Med	>\$50K	Playgrounds upgraded	Infrastructure
A15	Remove wood fire places and concrete tables at Marj Christian Riverside Park	Med	<\$10K	Fireplaces and tables removed	Infrastructure
A16	Relocate / upgrade playground in Queen Elizabeth Park as per the CBD Master Plan	Low	>\$50K	Playground relocated and upgraded	Infrastructure
A17	Conduct a feasibility and scoping study for the construction of a pedestrian bridge from Queen Elizabeth Park to the River Café	High	\$10K	Study completed	Infrastructure
A18	Investigate the need for additional carparking near the River Café	Med	<\$10K	Additional parking constructed	Infrastructure
A19	Install lighting under Queens Bridge to improve public safety	High	<\$10K	Lighting installed	Infrastructure
A20	Construct deck between Queens Bridge and the suspension bridge (see CBD Master Plan); deck design to incorporate habitat features and educational signage as described in the Platypus Strategy (Appendix B)	Low	>\$50K	Bridge and deck designed and constructed	Infrastructure
A21	Construct a cantilevered boardwalk along the Queens Bridge (as per the CBD Master Plan)	Low	>\$50K	Boardwalk designed and constructed	Infrastructure
A22	Convert the existing footpath along Queens Bridge into a planted buffer (as per the CBD Master Plan)	Low	\$10-50K	Footpath converted	Infrastructure
A23	Construct a lawn amphitheatre in Queen Elizabeth Park with performance space overhanging the river	Low	>\$50K	Lawn amphitheatre designed and constructed	Infrastructure
A24	Construct deck esplanade at Queen Elizabeth Park	Low	>\$50K	Deck designed and constructed	Infrastructure
A25	Repaint Queens Bridge	Low	\$10-50K	Bridge painted	Infrastructure
A26	Install sculptures on Queens Bridge to mark gateway to/from CBD and river threshold	Med	>\$50K	Sculptures and signs installed	Infrastructure
A27	Install signs on Queens Bridge to mark gateway to/from CBD and river threshold	Med	<\$10K	Sculptures and signs installed	Infrastructure
A28	Investigate suitability of a low speed limit on roads adjacent public playgrounds and parks	Med	<\$10K	Feasibility determined	Infrastructure
A29	Formalise access to the river for boating and maintenance	High	\$10-50K	River access formalised	Infrastructure
A30	Install signage regarding fishing bag/size limits, and information about fish, platypus, water rats and other aquatic species	High	<\$10K	Signs installed	Environmental Health
A31	Investigate the location for fish cleaning tables/taps & bins with DPI (Fisheries).	Med	<\$10K	Fish tables and bins provided	Environmental Health

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
A32	Investigate location for disabled fishing access	Med	<\$10K	Disabled fishing access identified	Environmental Health
A33	Resolve public access at the southern end of Barracks Flat	Med	\$10-50K	Reduction of adverse impacts associated with uncontrolled access	Environmental Health
A34	Prior to the end of the caravan park lease in 2019, investigate site conditions and opportunities, and prepare a master plan to convert the site into parkland featuring pathways, native vegetation, BBQ facilities etc	Med	\$10-50K	Masterplan for the caravan park site	Environmental Health
A35	When the caravan park lease expires, remove / adapt existing infrastructure and implement masterplan for the site	Low	>\$50K	Replace caravan park with public parkland	Environmental Health
A36	Establish planted buffer zones to formalise community access along the river	High	\$50-100K	Buffer zones planted	Environmental Health
A37	Improve conditions and install signage at the outdoor classroom at Glebe Park	Med	<\$10K	Classroom suitable for use	Environmental Health

Table 11: Rehabilitation actions (weed and erosion control, regeneration, revegetation)

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
R1	Prepare a weed strategy which identifies and maps major weed infestations (extent, species, location) and erosion in the upper section of the corridor based on desktop assessment (aerial photos), community input and field validation, and includes any actions specified in R2 to R12 below	Med	\$10-50K	Weeds mapped	Infrastructure
R2	Develop weed control / bush regeneration plans in collaboration with other landowners and Landcare. Give priority to areas identified in the Platypus Strategy (Appendix B – with photopoints of locations) plus areas where weeds pose the greatest threat to biodiversity, erosion needs to be stabilised, areas of previous rehabilitation, areas adjacent good quality bushland with potential to expand, and areas subject to willow removal	High - ongoing	<\$50K p.a.	Detailed vegetation management plans	Environmental Health
R3	Staged rehabilitation* of the upper section of the corridor	High - ongoing	\$10-50K p.a.	Expand areas of good quality bushland	Environmental Health
R4	Staged rehabilitation* of the middle and lower sections of the main channel	High - ongoing	>\$50K p.a.	Main channel rehabilitated	Environmental Health
R5	Rehabilitate* tributaries (i.e. install stormwater controls such as GPTs and constructed wetlands, stabilise erosion, remove weeds and revegetate/regenerate). Highest priority to tributaries that have previously been subject to rehabilitation effort, are in relatively good condition and/or have community involvement	High - ongoing	>\$50K p.a.	Tributaries rehabilitated	Environmental Health
R6	Rehabilitate* middle section of Buttle Creek between High Street and Ford Street	High	>\$50K	Rehabilitated creek	Environmental Health
R7	Trial 'no mow' zones** on lower banks and slopes adjacent to the river to encourage natural regeneration; monitor closely to ensure that native species are establishing; control weeds as required; install temporary signs to indicate the aims of no mow areas	High - ongoing	<\$10K p.a.	Expand areas of natural regeneration from the river's edge	Environmental Health
R8	Liaise with local nurseries to ensure the availability of local provenance tubestock for revegetation by Council and others – consider seed collection programs as per Florabank guidelines	High	<\$10K p.a.	Suitable seeds and plants available	Environmental Health
R9	Repair stormwater drain/culvert, stabilise erosion and revegetate (opposite Dane St)	High	\$10-50K	Infrastructure repaired and landscape restored	Infrastructure
R10	Revegetate along the river bank to screen the fire trail from houses on the opposite site of the river to Dane St, stabilise erosion and improve habitat	High	\$10-50K	Area between fire trail and river rehabilitated	Environmental Health

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
R11	Revegetate and stabilize the bank near and below the weirs	High	\$10-50K	Bank improvements	Environmental Health
R12	If required for asset protection, only burn up to 5% of a remnant patch of EEC at a time; allow perpetually unburnt sections to act as refuges	Ongoing	<\$10K p.a.	Mosaic burns	Infrastructure
R13	Identify and prioritise all barriers to fish passage (including road crossings and culverts) for future remediation (modification/fishway construction) or removal in association with NSW DPI	Low	<\$10K	Reduce barriers to aquatic species	Environmental Health
R14	Investigate weir modification to allow for fish passage with DPI (Fisheries)	Low	\$10-50K	Concept design for weir modifications	Environmental Health
R15	Liaise with Rural Lands Protection Board to control pest fauna, including public education	Med	<\$10K	Reduce numbers of pest fauna	Environmental Health
R16	Continue restocking with native fish and enhancing native fish habitat (e.g. resnagging) in association with DPI (Fisheries)	Ongoing	\$10-50K p.a.	Increase numbers of native fish	Environmental Health

*In planning and implementing rehabilitation works, consider requirements of threatened species and EECs e.g. population of Pale Pomaderris plants; do not plant trees and shrubs in Pink-tailed Worm Lizard habitat (i.e. Native Grasslands); do not disturb rocks in Pink-tailed Worm Lizard habitat; leave fallen timber on the ground.

**No mow zones are areas where mowing is allowed to cease to encourage natural regeneration. Weed control and rubbish removal will be needed. This can be a cost-effective way to improve habitat and stabilize river banks. No mow zones should be monitored closely to determine the proportion of native species regenerating. However, if native species are not regenerating, it may be preferable to reinstate mowing until the area can be replanted with native species and follow-up weed control etc is implemented.

Table 12: Flood management actions

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
F1	Investigate raising the level of the eastern approach to Queens Bridge to avoid flooding	High	\$10-50K	Feasibility report	Infrastructure
F2	Finalise and adopt the Flood Management Plan	High	\$10-50K	Plan	Infrastructure
F3	Remove flood debris and willows from downstream of the low level bridge to the ACT border in a manner that minimizes adverse impacts to river stability and ecology. Revegetate the river bank with native species	High	\$300K	Debris removed and river bank stabilized	Infrastructure

Table 13: Planning and development actions

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
D1	Development applications and other significant activities within 40 m of the top of bank to be referred to Council's Environment & Sustainability Advisory Committee for comment. Assessment should carefully consider potential impacts to the river corridor (e.g. water quality, flows, groundwater, ecology, amenity)	Ongoing	<\$10K p.a.	Minimal impacts from development	Sustainability and Better Living
D3	Future roadwork upgrades and new crossings, culverts and bridges should take into account best management practice as outlined in the NSW DPI "Fish passage requirements for waterway crossings"	Ongoing	<\$10K p.a.	River crossings to allow fish passage	Infrastructure
D4	New infrastructure in the corridor should be designed with an architectural style consistent with the riparian landscape	Ongoing	<\$10K p.a.	Consistent architectural style applied	Infrastructure
D5	Infrastructure design should allow for the possibility of flood inundation	Ongoing	<\$10K p.a.	Minimal flood damage to infrastructure	Infrastructure

Table 14: Actions relevant to coordination of works

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
C1	Better data sharing and communication between community groups and council, including notification of significant activities and developments along the river corridor	Ongoing	<\$10K p.a.	Shared knowledge as basis for decision-making	Environmental Health
C2	Liaise with agencies responsible for management of the corridor upstream (including Googong Dam) and downstream	Ongoing	<\$10K p.a.	Shared knowledge as basis for decision-making	Environmental Health
C3	Investigate extension of the ACWA (Actions for Clean Water) program into the Queanbeyan River	Med	<\$10K	Extend ACWA program	Environmental Health
C4	Refer to water sharing plan regarding water extraction licenses & flows	Ongoing	<\$10K p.a.	Shared knowledge as basis for decision-making	Environmental Health
C5	Liaise with the ACT Government to implement a long-term program to remove willow infestations, to formalise walking tracks and community access and to remove build up of litter from the river in areas within its jurisdiction	Med	<\$10K p.a.	Continue rehabilitation and recreation links downstream	Environmental Health
C6	Give careful consideration to the sequence of on-ground works	Ongoing	<\$10K p.a.	Avoid damaging previous works / unnecessary cost	All
C7	Update Council's asset management/GIS database with information about infrastructure within the river corridor (e.g. bins, playgrounds, toilets, fences, signs, seats, paths, BBQs, stormwater controls, bridges, pipes)	High	<\$10K p.a	Current data available	Infrastructure
C8	Refer to the asset database and GIS maps when developing proposals for new infrastructure in the corridor	Ongoing	<\$10K p.a	Informed decision-making	All

Table 15: Education actions for community, Council staff, developers etc

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
E1	Provide developers and landowners with a brochure/list of suitable local provenance plant species to use in landscaping and revegetation projects (e.g. via local nurseries, Council's website, newsletters & DA process) - refer to Appendix J	High	<\$10K	Planting list available in a variety of formats	Environmental Health
E2	Develop logo for the Queanbeyan River corridor that incorporates the river's values to use in signage, promotions etc	High	<\$10K	Logo developed	Environmental Health
E3	Stormwater drain stencilling to raise community awareness about where stormwater flows to and the risk of polluting local waterways	Low	<\$10K	Drain stencilling done	Environmental Health
E4	Investigate how specific groups (e.g. schools, environmental, recreation, business) can be involved in river management (e.g. canoeists/kayakers could assist with on-river clean up; engage and educate recreational anglers) and develop a community involvement program in consultation with Waterwatch and DPI Fisheries Conservation Group	High	<\$10K	Database of contacts; community involvement program developed	Environmental Health
E5	Install/update regulatory signage, focusing on known problem areas and issues (e.g. rubbish dumping, trail bikes, discarded fishing line)	Med	\$10-50K	Signage updated	Environmental Health
E6	Upgrade High Street reserve so that it includes a fenced area for off-lead dog activity. Dogs should be on-lead in other areas along the river corridor	High	\$10-50K	Greater dog control	Infrastructure
E7	Enforce penalties re dumping rubbish and pollutants	Ongoing	<\$10K	Penalties issued	Infrastructure
E8	Continue sustainability programs to improve water use efficiency (e.g. Waterwise)	Ongoing	<\$10K p.a.	Sustainability programs continued	Infrastructure
E9	Distribute/promote existing educational material produced by the CMA and NSW DPI e.g. 'Key tips for a fish friendly farm' brochure, 'Don't dump that fish' (available online) and 'What is Gambusia?' brochure. Raise awareness about pest fish - carp and redfin	Ongoing	<\$10K p.a.	Existing educational material promoted	Environmental Health
E10	Carp fishing competition and education. Liaise with the Invasive Animals CRC at Canberra University regarding effective carp removal techniques. The Capital Regional Fishing Alliance has offered to assist with the competition and education	Low	<\$10K	Fishing competition	Environmental Health
E11	Promote demonstration sites of 'best practice' rehabilitation to highlight to the community what is being achieved and how they can be involved	Low	<\$10K	Promotion material & signs	Environmental Health

E12	Train Council staff & contractors regarding the importance of the river corridor; suitable management of playing fields regarding fertiliser and water use; requirements for protection/management of EECs and threatened species; and basic rehabilitation techniques (e.g. weed identification, plant selection)	High	\$10-50K	Staff and contractors trained	infrastructure
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Table 16: Research and monitoring actions

CODE	ACTION	PRIORITY	COST	PERFORMANCE MEASURE	RESPONSIBILITY
M1	Liase with ACTEW regarding impacts associated with flow releases from Googong Dam, and spread of aquatic weeds (e.g. <i>Egeria densa</i>)	Ongoing	<\$10K p.a.	Shared knowledge as basis for decision-making	Environmental Health
M2	Continue current water quality monitoring (including macroinvertebrates) and make results publicly available via State of Environment Reports and Council's website	Ongoing	\$10-50K p.a.	Gauge effectiveness of rehabilitation efforts; inform community regarding health and safety of waterway	Environmental Health
M3	Seek grant funds or in-kind contribution (e.g. university research project) for comprehensive water quality monitoring project. Samples to be taken where each tributary and point source discharges to the river. Samples to be taken immediately following at least ten major rain events and tested for wide spectrum of parameters including nutrients. Results should be made publicly available	Low	\$50-100K	Inform community regarding health and safety of waterway; good basis for decision-making	Environmental Health
M4	Support community involvement in platypus & water rat monitoring, Waterwatch and Frogwatch	Ongoing	<\$10K p.a.	Gauge effectiveness of rehabilitation efforts	Environmental Health
M5	Further studies and consultation with the Aboriginal community to ensure protection of heritage sites and increase awareness of Aboriginal heritage. In particular, investigate opportunities to incorporate information about Aboriginal heritage in walking paths/tracks e.g. via signage	Med	\$10-50K	Improved protection and understanding of Aboriginal heritage	Environmental Health
M6	Monitor fish restocking	Ongoing	<\$10K p.a.	Gauge effectiveness of restocking	Environmental Health

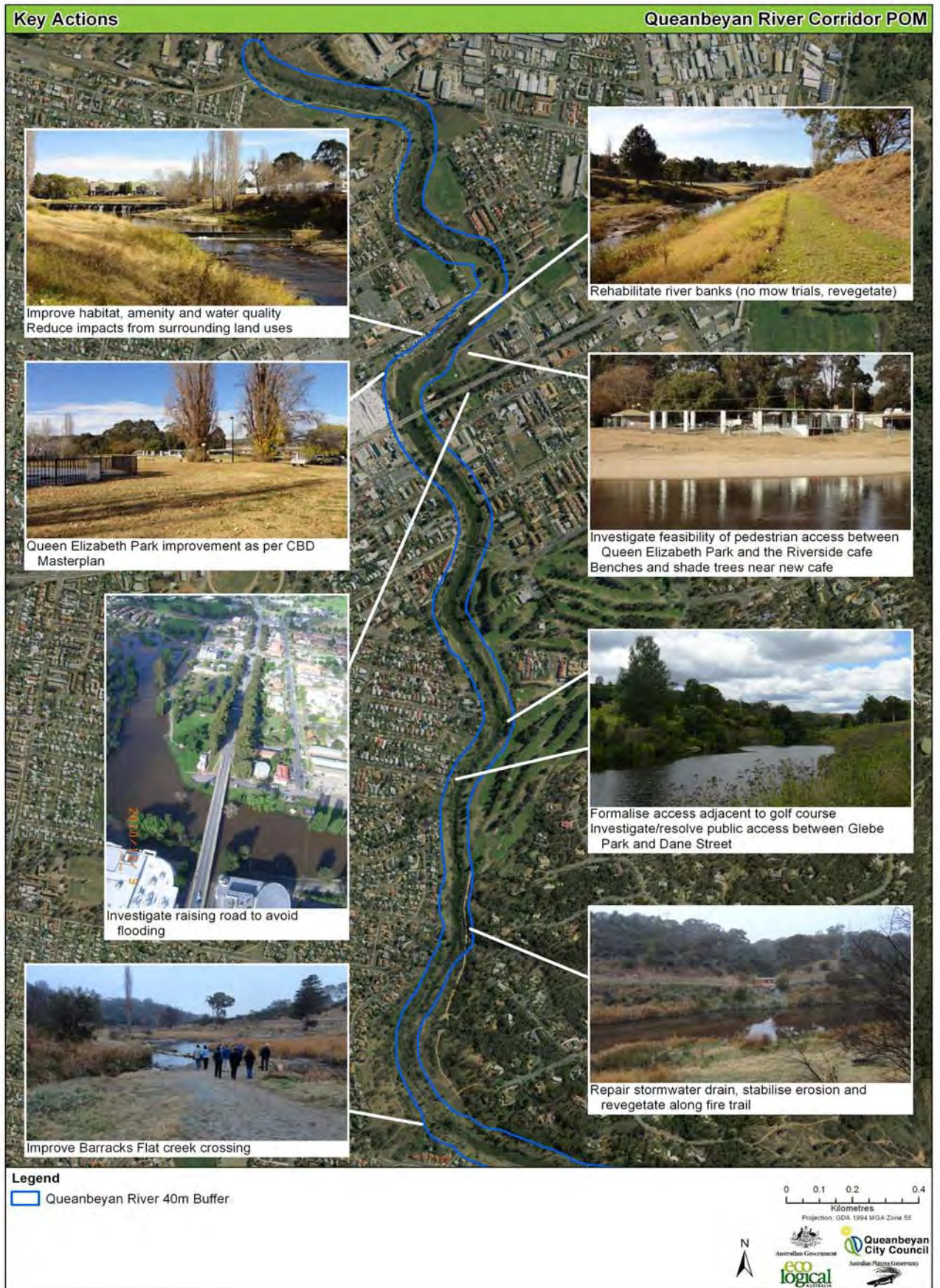


Figure 8: Key actions

5 Implementation

Rehabilitation of the river corridor will enable ecosystems and the Queanbeyan community to be more resilient to the consequences of predicted climatic changes. This strategy identifies the need for significant investment in the rehabilitation and improvement of the Queanbeyan River corridor. This can best be achieved incrementally across the entire corridor, with the strong support of the community, and with substantial allocation of funds and resources.

The following table provides guidance to assist the implementation process for the main actions.

Table 17: Implementation guide

ITEM	DESCRIPTION
Asset management	<p>Council's asset management / GIS database should be updated with information about the types, locations and condition of infrastructure within the river corridor (e.g. bins, playgrounds, toilets, fences, signs, seats, paths, BBQs, stormwater controls, bridges, pipes). This information should be used when planning new infrastructure and rehabilitation / revegetation in the corridor. This will ensure facilities are delivered in areas where they are most needed, and can be appropriately designed, scheduled and maintained/serviced.</p>
Communications strategy	<p>Many of the actions in this strategy aims to educate and involve the community in management of the corridor. There are a number of avenues currently available for consulting or disseminating information to the community (e.g. Council's website, government brochures, Waterwatch and Landcare activities, signage, media).</p> <p>Council's Environmental Manager is the main coordinator of community activities affecting the corridor. Council is supported in this role by the Molonglo Catchment Waterwatch Coordinator, and the Environment and Sustainability Advisory Committee. To improve coordination of communications, it is recommended that this group:</p> <ul style="list-style-type: none"> • Develops a logo for use in all communications material (including signage) • Establishes a stakeholder database which is shared and regularly updated • Develops templates for signage and other forms of communication relevant to the corridor • Coordinates community activities such as monitoring, on-ground works and recreational events (e.g. the Regatta)

Bush regeneration team - 'River Team'	<p>A team of professional bush regenerators should be established to:</p> <ul style="list-style-type: none"> • Plan and prioritise rehabilitation activities, including establishment and maintenance of vegetated buffer zones identified in the Platypus Strategy (giving consideration to the requirements for infrastructure maintenance and development) • Identify, monitor and establish no mow areas to encourage natural regeneration along the river • Control weeds (e.g. near threatened species' habitat, in areas where willows have been removed) • Remove rubbish in public areas within the corridor • Assist with track maintenance • Discourage unwanted activities e.g. trail bikes, rubbish dumping • Assist / supervise community groups undertaking rehabilitation work • Revegetate to stabilise erosion, and improve landscape amenity and habitat • Assist with seed collection • Undertake monitoring and update the NSW Atlas of Wildlife records
Access adjacent to Queanbeyan Golf Course	<p>The concept design by dsb Landscape Architects should be open to public comment prior to detailed design and construction. Plant selection should be consistent with species in Appendix J</p>
CBD (encompassing Queen Elizabeth Park, Ray Morton Park, Queanbeyan River Recreation Reserve, the caravan park and weirs)	<p>The proposed study into the feasibility of a new pedestrian bridge / pontoon from Queen Elizabeth Park to the other side of the river should be combined with detailed plans to improve amenity, reduce erosion and improve habitat of the river banks by no mow zones and revegetation; reduce pollutants to the river from surrounding land uses; and upgrade facilities near the new cafe. Additional actions proposed for this area have been identified in this plan (and the CBD Masterplan), but have a lower priority</p>
Access between Glebe Park and Dane Street	<p>There are a number of options available to resolve public access between Glebe Park and Dane Street. The community should be further consulted further to determine the preferred route, prior to detailed design and construction (including landscaping and signage). Until the access issue is resolved, Council should erect signage at Dane St and the southern end of Glebe Park to indicate the available pedestrian route</p>
Rehabilitation of the stormwater drain and surrounds opposite Dane Street	<p>Bank stabilisation, stormwater infrastructure repair and revegetation are required on the river bank opposite the end of Dane Street</p>
Barracks Flat crossing and tributary	<p>Improvements to the creek crossing and rehabilitation of the Barracks Flat tributary should be achieved in conjunction with proposed development of adjacent land</p>

5.1 FUNDING AND RESOURCES

Funding and in-kind contributions should be sought from a range of sources to implement this Strategy, for example:

- State and Commonwealth government environmental grants (e.g. Environmental Trust, Regional Australia, fisheries habitat action grants⁶)
- Council levies and funds
- Community volunteers
- Donations
- Sponsorship from local businesses

Responsibility for implementation of this plan rests primarily with Queanbeyan City Council. Implementation of the actions outlined in the strategy is dependent on the demands made on Council, its preferred priorities in any one financial year and the availability of resources each financial year. Possible external sources of funding should therefore be sought to assist Council in undertaking capital works associated with this strategy.

External grants are generally available annually but may vary as to the sum of capital assistance available and the criteria for preferred projects being promoted by the funding body. Grants are generally not available to contribute towards maintenance works which remain the responsibility of Council. In addition grants are only available for a limited time and are not available every year. The availability of grants can be limited to only twelve months or may be available for a set period. Financial assistance from grants is generally confined to a dollar for dollar contribution. This requires Council to contribute 50% of the costs of the project and the funding body contributing the other 50%.

The total amount and number of grant funds that are available from any one source at any one time is very limited. The availability of grant funding is also competitive between all applicant Councils. Therefore, Council cannot entirely rely on grants to commence and supplement a project. However, it should apply to any grant body for assistance where any of its projects comply with the grant criteria.

This Riparian Corridor Strategy can assist Council in the preparation of suitable grant applications. In addition, the State and Federal Governments periodically introduce new grant programs. These may address a specific social, economic or environmental issue. Council will need to monitor these as they are introduced.

The consequence of a failure to adequately maintain a valuable asset (including healthy ecosystems and public amenity) is seen in the cost to rehabilitate the asset at a later date, which is usually higher to the community. Further consequences result in a loss of public accountability in asset management as well as a reduction in asset service value. Ongoing maintenance and replacement of existing assets is preferred as a course of action where the asset has high community value and use. However if the rate of deterioration has exceeded reasonable ongoing maintenance expenditure, repair or replacement costs, the Council will need to give consideration to further action.

⁶ <http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/ahr-grants-program>

5.2 LEASES AND LICENSING

In accordance with s. 47B of the *Local Government Act 1993* a lease, licence or other estate cannot be granted over community land categorised as a natural area for a building or structure that is not a building or structure prescribed by the Act or Regulations. It is the intention of this strategy not to permit leasing of any natural areas but seeks the protection and conservation of these areas for future generations. As such only the issuing of licences on the community land subject to the general and specific conditions of uses set out in this strategy will be permitted.

Principles for licensing and leasing community land are tabulated below.

Requirements for leasing or licensing Crown land should be referred to the Department of Primary Industries - Crown Lands Department e.g. *Guidelines for the Creation of New Commercial Leases for Caravan Parks on Crown Land in NSW* (LPMA 2009).

Table 18: Principles for licensing and leasing community land

ISSUE	PRINCIPLE
Lease agreements	No lease agreements are to be made for community land within the corridor
Permitted Uses	No leases or licences are to be issued for the occupation or private use or crossing of those areas categorised as Natural Area. Except to construct, connect, maintain or any other works required to any essential public utility services located or to be created in the reserve or for an emergency services.
Licences Permitted Uses	Licences aimed at education or scientific purposes will be allowed if the use is integral to the learning experience and no other alternative is available. Licences will only be allowed if the activity will result in no damage to any flora, fauna or any other natural aspect of the community land and each application is to be decided on its own merit at the discretion of relevant Council staff.
Private Access	<p>No private access is to be authorised within the Natural Areas, to provide protection to the natural values.</p> <p>Access may be permitted where Council determines that a hazard on private property poses a direct threat to public health, safety or private property.</p> <p>In accordance with the provisions of the respective legislation access will be permitted to construct, connect, maintain or any other works required to any essential public utility services located or to be created or emergency services.</p> <p>Where access is approved to an adjoining private property owner access will be conditional and subject to an appropriate terms and conditions of the permit and the payment of all fees and charges as imposed by Council in accordance with its operational plan.</p>
Hours of Use	Hours of use of the community land will be subject to the outcomes of any negotiations between Council and the licensee and objectives of the land category.

Licence Terms	<p>Agreed negotiated period between Council and the licensee, generally not exceeding 1 year, with long term projects not exceeding 5 years, and to be reviewed and renewed six monthly.</p> <p>Seasonal licences or permits should be offered where applicable.</p> <p>Daily, weekly or monthly permits authorised to be offered at Council's discretion.</p> <p>It is mandatory for all licensees to provide Council with accurate usage and participation data and any other data requested in writing by Council before the issuing of any licence.</p>
Income	Any licensing fees and charges are to be expended by Council at its discretion for the benefit of the community.
Damage Deposit	A damage deposit may be requested before a licence is granted if the activity is or is likely to cause damage to any asset, either natural or man-made. The required deposit amount will be determined by relevant Council staff and will consider both the value of the asset and the cost of remediation of the asset in the event of damage.
Reporting	All income created through licensing will be reported annually to Council auditors.
Insurance	<p>Licensees must provide Council with copies of their Certificates of Currency for their Public Risk Liability Insurance that must be to the sum as stipulated in their licence agreements and as set out by Council's executive.</p> <p>Where a licensee has public risk liability insurance protection by their affiliation with an Association then they are required to provide proof of cover by way of a letter from their Governing Association that they are included in the Association's current policy.</p>

5.3 APPROVALS

On-ground works proposed within reserves may not require development consent if they fall within the framework of exempt development under the State Environmental Planning Policy (Infrastructure) 2007 (the SEPP). In summary, exempt development must be carried out by or on behalf of a public authority (such as the Council) and be of minimal environmental impact. Examples of exempt development listed under Schedule 1 of the SEPP include maintenance of existing trails and installation of certain types of directional or information signs.

Development consent in accordance with the *Environmental Planning and Assessment Act 1979* may be required for more substantial works such as constructing new paths and bridges.

A Section 132C licence from the OEHL will be needed to conduct environmental management works such as weed control and revegetation in areas where an endangered ecological community is present.

A Section 200 permit under Part 7 *Fisheries Management Act 1994* (FM Act) may be required to dredge, modify water flows or reclaim. Such activities may be required for environmental rehabilitation purposes.

A Section 216 permit under the FM Act may be required to release or stock fish into natural waterways.

5.4 MONITORING AND ADAPTIVE MANAGEMENT

Monitoring and adaptive management are required to ensure the management objectives listed in **Section 4.2** are being achieved, or at least worked towards. If monitoring results indicate that activities are causing environmental conditions to deteriorate, additional management measures may need to be implemented (e.g. education, enforcement, soil erosion controls, and weed and rubbish removal). If conditions deteriorate further, consider restricting access to these areas temporarily or permanently.

Results of monitoring will be essential to inform adaptive management practices. Environmental managers often deal with considerable uncertainty and complexity about how ecosystems and the physical environment interact. Adaptive management is a widely accepted approach to natural resource management that involves learning from implementation. By following the adaptive management cycle, practitioners ensure that learning is focussed on management needs and that new knowledge feeds back to inform future management choices.

The effectiveness of each action should be reviewed against the performance measures in **Tables 9-16** in **Section 4.2**. The timeframes for performance review will depend on the time required for implementation of each action. This is particularly important where action is staged for implementation, because there is an opportunity to review techniques etc prior to commencement of each stage. The whole strategy should be reviewed two years, six years and ten years after implementation starts.

People (including students) involved in monitoring or research that could potentially impact a threatened species, population or ecological community or their habitats (*Threatened Species Conservation Act 1995*), or any protected species listed under the *National Parks and Wildlife Act 1974*, need to hold a current Section 132C Scientific Licence from the OEH. People seeking to trap, capture or collect native fauna are also required to obtain an Ethics Licence from NSW Industry and Investment.

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Appendix A: Lands within Queanbeyan River Corridor

LOT	DEPOSITED PLAN	ADDRESS	OWNERSHIP	CURRENT LAND ZONE	DRAFT QLEP 2012 ZONE
7339 7340	1166314	51 Wickerslack Lane, Googong	Crown Land	1 (a) 7 (a)	E2
76	42304	100 Wickerslack Lane, Googong	Crown Land	1 (a)	E3 W1
1	218721	135 Wickerslack Lane, Googong	Private	1 (d)	E4
2, 3	218721	139 Wickerslack Lane, Googong	Private	1 (d)	E4
4	218721	143 Wickerslack Lane, Googong	Private	1 (d)	E4
5	218721	145 Wickerslack Lane, Googong	Private	1 (d)	E4
6, 7	218721	151 Wickerslack Lane, Googong	Private	1 (d)	E4
8	218721	155 Wickerslack Lane, Googong	Private	1 (d)	E4
9	218721	161 Wickerslack Lane, Googong	Private	1 (d)	E4
10 - 12	218721	171 Wickerslack Lane Googong	Private	1 (d)	E4
13, 15	218721	173 Wickerslack Lane, Googong	Private	1 (d)	E4
14	218721	183 Wickerslack Lane Googong	Private	1 (d)	E4
34, 38	226218	187 Wickerslack Lane, Googong	Community Land	1 (d)	E4
32 102 104 111, 112 92 7 2	754875 375866	229 Wickerslack Lane, Googong	Private	7 (e)	E2
1	711905	30 Lonergan Drive, Greenleigh	Private	1 (a) Rural	E2, E4, RE2, DM
51	754907	39 Lonergan Drive, Greenleigh	Private	1 (a) Rural	E2, E3
113 115, 116 1	754875 375866	100 Lonergan Drive, Greenleigh	Private	7 (e)	E2
51	835313	113 Barracks Flat Drive, Karabar	Community Land	6 (a)	RE1
39	1007139	133 Barracks Flat Place, Karabar	Community Land	6 (b) 2 (d)	RE1
2	552380	47 Pindari Crescent, Karabar	Community Land	7 (a)	E2
6	837155	12 River Drive, Karabar	Private	2 (d) 6 (b)	R3 RE1

112	705742	14A Granville Close, Greenleigh	Community Land	7 (a)	E2
20	837155				
23	869351				
105	707719				
243	803621				
20	818066	18B River Drive, Karabar	Community Land	6 (a)	RE1
58, 59	221948	28 Dane Street, Queanbeyan	Community Land	7 (a)	E2
24	239425	29 Dane Street, Queanbeyan	Community Land	7 (a)	E2
17	223652				
20	538743	1 Dodsworth Street, Queanbeyan	Community Land	6 (a)	RE1
Crown Reserve	R83835	Golf Course 1 Brown Street, Queanbeyan	Crown Land	6 (a)	RE1
Pt Lot 1 Sec 20	758862	Glebe Park			
1, 2	252019	11 Thorpe Avenue, Queanbeyan	Community Land	6 (a)	RE1
48	14068	15 Thorpe Avenue, Queanbeyan	Community Land	6 (a)	RE1
127	32640	17 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
128	32640	19 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
130	32640	23 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
131	32640	25 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
132, 133	32640				
1	825934	27-31 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
2	825934	33 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
D	159255	35 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
E	159255	37 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
A	157774	39 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
1	805759	41 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
2	805759	43 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
3, 4	541939	45 Thorpe Avenue, Queanbeyan	Private	2 (a)	R2
2	710056	51A Thorpe Avenue, Queanbeyan	Community Land	2(a)	RE1
129	32640	49 Hayes Street, Queanbeyan	Private	2 (a)	R2
3, 4	792307	61 Isabella Street, Queanbeyan	Community Land	6 (a)	RE1
Crown Reserve	R46437	51 Trinculo Place, Queanbeyan	Crown Land	6 (a)	RE1
Pt Lot 6 1 2	1099164 597143 749033	Ray Morton Park 6 Trinculo Place, Queanbeyan	Community Land	6 (a)	RE1
Pt Lot 7322	1165688	Morisset Street Round about 13 Waniassa Street, Queanbeyan	Community Land	6 (a)	RE1
9	1129959				
1	593382				
1	749033				RE1
10, 11	1129959	9 Waniassa Street, Queanbeyan	Community Land	6 (a)	W1

Pt Lot 7322	1165688 Crown Reserve 85693	Queen Elizabeth Park 41 Morisset Street, Queanbeyan	Crown Land	6 (a)	RE1
125	1000250 Crown Reserve R85693	Riverside Caravan Park 41A Morisset Street, Queanbeyan	Crown Land	6 (a)	RE1
7319 7320 7323 7324 7325	1165688	100 Morisset Street, Queanbeyan	Crown Land	6 (a)	RE1
Crown Reserve	R88284	38A Carinya Street, Queanbeyan	Crown Land	6 (a)	RE1
6 Sec 6	978284	2A Ford Street, Queanbeyan	Community Land	6 (a)	RE1 W1
3	1021603	2-8 Ford Street, Queanbeyan	Community Land	6 (a)	RE1 W1
Crown Reserve	R89205	Blundell Park 20 Ford Street, Queanbeyan	Crown Land	6 (a)	RE1
116	821709	63 Carinya Street, Queanbeyan Including access road	Crown Land	6 (a)	RE1
7341	1166442	10 Jinaroo Street, Queanbeyan	Crown Land	6 (a)	RE1
1	705520	31 Jinaroo Street, Queanbeyan	Community Land	6 (a)	RE1
Crown Reserve	R95617	Riverside Cemetery 40 Erin Street, Queanbeyan	Crown Land	6 (a) 5 (a)	RE1 SP1

Parcels of land identified as being part of the river corridor are tabulated below and illustrated in **Figures 2 to 4**.

Appendix B: Platypus Awareness and Conservation Strategy

Refer to separate document

Appendix C: Community brochure



Guided Walks

- Saturday 4th June @ 1pm
Meet at the steps of 'The Q'
- Sunday 5th June @ 7am
Meet at River Drive Reserve

How you can get involved:

- * Come along to one of our events to speak directly to the consultants.
- * Email your comments to Eco Logical Australia queanbeyanriverplan@ecoaus.com.au
- * Call Beth Medway from Eco Logical Australia on 8536 8612 or 1300 646 131

Enviro Expo

- Sunday 5th June
Queanbeyan Conference Centre
APC Platypus talk @ 10am

Written responses to:

- Queanbeyan River Project
Queanbeyan City Council
PO Box 90
Queanbeyan NSW 2620

Public Displays

- Thursday 2nd June, 5pm - 8pm
@ Riverside Plaza Food Court
- Saturday 4th June, 10am - 12 noon
@ 'The Q' Foyer

Queanbeyan River Corridor Plan of Management & Platypus Awareness and Conservation Strategy

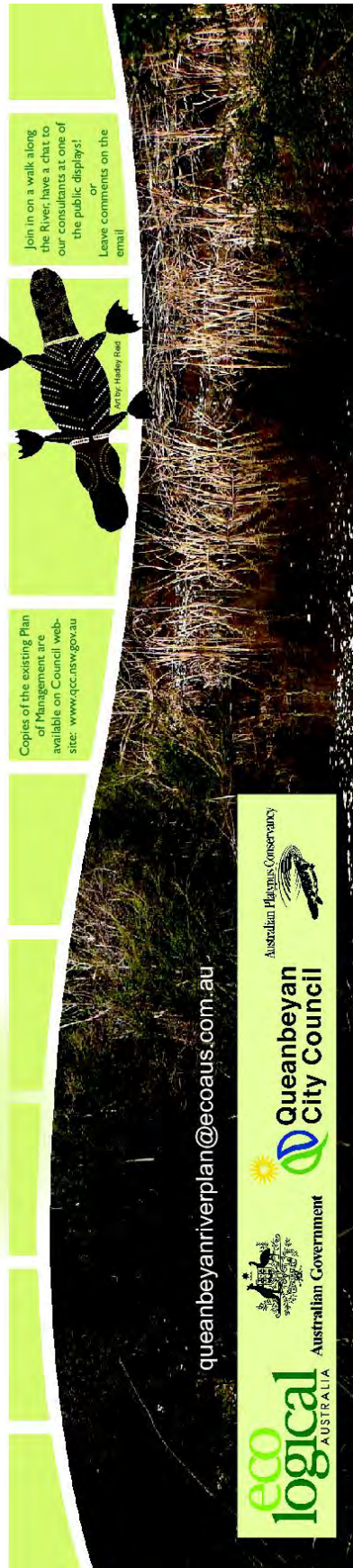
It's your chance to have your say
on the future of the River Corridor!

Copies of the existing Plan of Management are available on Council web-site: www.qcc.nsw.gov.au



by: Hasky Reed

Join in on a walk along the River, have a chat to our consultants at one of the public displays! or Leave comments on the email



queanbeyanriverplan@ecoaus.com.au

Queanbeyan River Corridor Plan of Management

RECREATION

Do you think it is important to have recreation facilities available for use by the public?
What type of facilities would you like e.g. playgrounds, BECs?
How can we improve the river and better access to recreation areas?

THE RIVER

How would you like the river maintained in the future?
Which parts of the river are important to you?
Would you like viewing platforms and other structures along the river?

FLOODING

Do you think our natural environment is important?
How can we protect our natural environment?
Do you have any ideas on how to improve biodiversity?

NATIVE FAUNA

Do you think our natural environment is important?
How can we protect our natural environment?
Do you have any ideas on how to improve biodiversity?

REVEGETATION

How can we preserve our heritage and identify of significant areas along the river?
Is education and signage important to you?

HERITAGE

How can we preserve our heritage and identify of significant areas along the river?
Is education and signage important to you?

COMMUNITY

Would you like the opportunity to help manage the river corridor?
Do you enjoy walks along the river?
Do you think there should be more organised events on and around the river?
Tell us your ideas.

AQUATIC PLANT CONTROL

Why is Council preparing a new Plan of Management for the River?

Council is asking the community, government agencies, private individuals and businesses to give some direction for the future management of the Queanbeyan River. Please assist in supporting this project by providing your comments and ideas in this initial phase of consultation. The aim is to collect background data and information to prioritise the key issues and actions which must be addressed along the River over the next 10 - 20 years.

The project is two fold:

1. To revise a New Plan of Management (PoM) for the Queanbeyan River Corridor.
2. To prepare a Plan of Management (PoM) for the Queanbeyan River Corridor.

Funding for this project has been made possible due to The Australian Government's Water for the Future initiative and the Strengthening Basin Communities program. The objective of this program is to support local governments to prepare or update plans for adaptation for a future with less water.

The existing Queanbeyan River Corridor Plan of Management was prepared and adopted by Council in 1999. The document is now 11 years old and dated. It has limited direction for the future and is missing critical elements such as climate change adaptation. This document is available on Council website or at the Queanbeyan City Library.

Information will be collated and used to prepare the two Draft Reports. These documents will contain actions to be prioritised, funded and implemented over the next 10 years.

The Plan will cover such issues as:

- * Land Description
- * Flora & Fauna
- * Zoning
- * Heritage & Culture
- * Values
- * Water Quality
- * Vision
- * Visual Amenity
- * Recreation & Use
- * Education & Interpretation

PRIVATE LAND - While Council acknowledges that this Plan is not able to specifically control areas of private land, it is important to recognise that much of the land adjoining the river and in the broader catchment is in private ownership and control. Landowners and managers are welcome to use the principles and objectives detailed in the Plan to guide their own management practices along the River. In fact there are many cases where it is beneficial for the Council and adjoining landowners to work together to restore and rehabilitate areas of the River. Recent examples include willow removal and revegetation, noxious weed control or riparian zone protection and rehabilitation.



Appendix D: A0 poster

Queanbeyan River Corridor Plan of Management

You are invited to participate in development of the Queanbeyan River Corridor Plan of Management

To register an interest in attending the consultation sessions or to be on our project mailing list, please:

Email queanbeyanriverplan@ecoaus.com.au
 Call Queanbeyan City Council on 6285 6268
 Write Queanbeyan City Council, PO Box 90, Queanbeyan NSW 2620

You are welcome to attend:
 An open display at the Riverside Plaza on Thursday 2nd June 5pm to 7pm
 An open display at The Q foyer on Saturday 4th June 10am to 12 noon
 A walk along the river corridor between the CBD and Glebe Park on Saturday 4th June from 1pm.
 Meet at the front steps of The Q building
 A walk along the river corridor between River Drive and Dane Street on Sunday 5th June from 7am.
 Meet at River Drive Reserve
 Council's Environment Expo on Sunday 5th June at Queanbeyan Conference Centre, 252 Crawford Street, Queanbeyan



How would you like the river maintained in the future?
 Which parts of the river are important to you?
 Would you like viewing platforms and other structures along the river?



Do you think our natural environment is important?
 How can we protect our natural environment?
 Do you have any ideas on how to improve biodiversity?



How can we preserve our heritage and identity of significant areas along the river?
 Is education and signage important to you?



Do you think it is important to have recreation facilities available for use by the public?
 What type of facilities would you like e.g. playgrounds, BBQs?
 Would you like more pathways and better access to recreation areas?



Would you like the opportunity to help manage the river corridor?
 Do you enjoy walks along the river?
 Do you think there should be more organised events on and around the river?
 Tell us your ideas.



Appendix E: Community notice

Queanbeyan River Corridor Plan of Management

12 April 2011

Queanbeyan City Council has engaged specialist consultants Eco Logical Australia and the Australian Platypus Conservancy to prepare the 'Queanbeyan River Corridor Plan of Management and Platypus Awareness and Conservation Strategy'.

The project is funded through the Australian Government's 'Water for the Future' initiative and the 'Strengthening Basin Communities' program.

The Plan of Management will identify actions to be implemented over the next ten years and provide a vision for the river corridor to be achieved by 2030.

The community is encouraged to participate in the project by providing information about the river corridor and ideas for future management.

In the initial stages of the project, the community is invited to:

- An open display on Thursday 2nd June 5 pm to 7 pm at Riverside Plaza Food Court
- An open display on Saturday 4th June 10 am to 12 noon at The Q foyer
- A walk along the river corridor between the CBD and Glebe Park on Saturday 4th June from 1 pm. Meet at the front steps of The Q building
- A walk along the river corridor between River Drive and Barracks Flat on Sunday 5th June from 7 am. Meet at River Drive Reserve
- Council's Environment Expo on Sunday 5th June at the Queanbeyan Conference Centre, 252 Crawford St, Queanbeyan

The community will have further opportunity to comment on the project when the Draft Plan of Management is on public exhibition at the end of 2011.

To register an interest in this project, please send your contact details to queanbeyanriverplan@ecoaus.com.au or to Natasha Abbott, Manager Environment and Health, Queanbeyan City Council, PO Box 90, Queanbeyan NSW 2620 or phone 6285 6000.

Appendix F: Initial feedback

Many long-term residents described changes in the river condition and morphology over the years, particularly in response to construction of dams and weirs, flood/drought conditions, and willow infestation and removal. People felt that the river is a significant natural asset that should be protected and improved. Most respondents have used the corridor for recreation (e.g. walks, canoeing) and/or value it for amenity (e.g. views). A number of people have been actively involved in on-ground works along the corridor (e.g. weed removal and planting natives).

The community provided valuable insights to what they would like to see happen in the river corridor. The main, consistent themes were:

- Council has done an excellent job in removing the willows to open up the river, and this should continue
- Native species should be planted where the willows have been removed to prevent erosion, improve habitat for native animals and improve the appearance of the river banks
- Ongoing weed and rubbish control is needed
- There should be a continuous public access path along or near the river, preferably on both sides with varying distance loop walks available

All comments have been grouped below according to topic and are essentially as they were provided to the consultants and Council. The comments have been reviewed during preparation of the Plan and those that are supported by Council have been included as actions in **Section 4**.

Weeds

- Question why exotic trees have been planted along edge of River Drive
- Weeds that are starting to take hold, especially now that the willows have been removed, include ivy, privet and blackberry
- Weed infestation (blackberries) in some difficult-to-access areas on the opposite side of the river to River Drive
- Weeds in Council's land
- Weeds being removed from River Drive are being dumped in the river
- Blackberries should be removed from land near small acreage at Googong
- Need different treatment to remove prickly pear from near pump station (River Dr) because previous techniques haven't worked
- Woody weeds and privet should be removed from golf course side of the river, and natives planted
- Council should remove environmental weeds from public land
- Aquatic weeds are enhanced by fertiliser washed into river after rain
- The two tributaries upstream of Dane Street gorge need rehabilitation – Valley Creek runs into rural land on the east side of the river, Barracks Creek on the western side is mostly in a reserve but has severe blackberry infestation and will come under further pressure as Edwin Land Drive is being built
- Replace invasive street tree species (e.g. *Photinia* on Woodger Pde)

- Establish a weed removal service in collaboration with Parkcare groups and Australian Native Plant Society (and their weed swap strategy)

Landscape

- Concrete paths are good near the CBD, but there should be even, 'natural' tracks elsewhere to be consistent with bushland surrounds
- Non-natives (e.g. English elm and black poplar) in parkland between Glebe Park and Queens bridge have historic value and match the historic buildings in the area
- Don't want more sealed paths; prefer unsealed paths to fit in with the landscape
- Don't get landscape architect to prepare plans for revegetation/rehabilitation
- Prefer the river corridor to be more natural
- Buttle Creek underpass is good location for community involvement and beautification. Consider building stormwater treatment devices (e.g. GPT, constructed wetland). Extend the work done by Landcare in Buttle Creek closer to the main river
- Prefer a natural bushland setting

Water quality/Stormwater

- Stormwater silt trap near River Drive is not effective because the river silts up, although this impact may decrease now that much of the building construction in the area has finished
- Problems with stormwater pollution include apparent high volume of detergent (or similar) discharged to river. Need better stormwater controls and education – especially for future development areas
- All tributaries should be subject to rehabilitation and stormwater controls
- Stormwater pipe discharging into river opposite Dane Street is an eyesore and needs better control
- Current and future areas need much better treatment of stormwater and sewage
- Queanbeyan township causes water quality problems mainly because of untreated stormwater from older areas
- Water quality is affected by eroded area of Jumping Creek, debris from stormwater (need more controls), and fertiliser from golf course (especially on the 16th fairway)
- Small acreage properties are on septic and pump water out of river
- Aquatic weeds are enhanced by fertiliser washed into river after rain
- Fertiliser use e.g. from golf course and playing fields is a problem because it causes algal blooms and aquatic weed proliferation

Native vegetation / habitat

- All areas adjacent tracks/paths should have landscaping with native species
- Need to revegetate with natives – consider microhabitat when selecting species
- Rehabilitation along River Drive is successful
- Need strategy to replace exotic trees with natives
- Rehabilitate habitats
- Want more habitat in the river e.g. snags for birds to roost
- Revegetation should use species that are indigenous to the area, not just native plants (or exotics)
- Need replanting with natives (including shrubs to encourage small birds) to prevent weeds invading areas that were cleared of willows and during the floods

- Landcare activities at Buttle Creek, Gale, off River Drive, Glebe Park (with local residents' group); also do seed collection and propagation
- Gale area has good benchmark sites for vegetation communities on different soil types
- Need more reeds in shallow sections of the river – to improve water quality and habitat

Impacts on fauna

- Pest fauna (e.g. foxes, feral cats, white ducks) should be removed
- A number of residents have seen native fauna (e.g. platypus, water rats, wombats) in the corridor. Others were surprised that native animals are in the area
- Fishing should focus on getting the carp out of the river
- Hunting native animals with guns and bows has happened and the police have been involved
- Changes in vegetation after 1984 fires – some areas have native species (*Melaleuca* sp.?) become monoculture
- Quest is a new community environmental group that would like to be involved in rehabilitation projects
- What impact will new urban development at Googong have on the river?
- 'Platypus sanctuary' in front of houses that have river frontage
- BFD virus is making many parrots sick (sulfur crested cockatoos, corellas and galahs)
- Investigate how a fishway could be constructed with the weir
- Need shrubs on caravan park side of the weir to provide cover for platypus and other species that need to move across
- Need comprehensive ecological survey
- Legless lizard (threatened species) was seen between Dane St and Barracks Flat Creek – so shouldn't have heavy machinery in these areas
- Rabbits are increasing and need to be controlled
- Research needed regarding the effect of removal of heavily seeding environmental weeds on bird species – possibly in collaboration with Birds Australia
- Gale area is an important biodiversity corridor

Recreational

- Improve the playground areas and immediate surrounds so that they have gas BBQ, picnic tables, lighting, area of good lawn (e.g. for Tai Chi), a shade/rain cover and exercise equipment.
- Need paths wide enough to allow children's bikes
- A few seats should be provided along the track network, but keep infrastructure minimal because prefer bushland setting
- Extend the track system along the river to provide linkages to Googong Dam upstream, and downstream to recreational tracks in the ACT. This could become a tourist attraction
- Doesn't matter if the paths are within the flood zone – it is more important to have a path network than delay constructing one because of negotiations with landholders who have property in the river corridor
- Canoeing and kayaking are popular activities now that the river is more open
- Small sandy beaches are good
- Glebe Park is very popular because the BBQ is within the fenced playground, toilets are good and clean, and there is plenty of parking. This should be a benchmark for other playgrounds in the area
- CBD area should be more formal with space for events like the regatta

- Open areas and playgrounds should have shade trees
- Need a picnic table near the low level bridge
- Install bubblers along paths
- There should be more river walks for the community (Waterwatch will organise these)
- Should be more community activities like the regatta, and these should be promoted more
- Have designated fishing areas, especially for kids
- Potential for kayak tours
- Parkland near the CBD needs more local vegetation to enhance views and improve ecosystem sustainability
- Need more footpaths near the swinging bridge
- Keep some open areas along the river with improved bike paths
- Need more seats to look over the river, especially near the CBD

Maintenance

- Need for better coordination and implementation of on-ground works (e.g. weed spraying and brush-cutting killing planted natives; heavy machinery rolling over planted natives)
- More 'clean up' is needed to remove rubbish and debris following floods, and on a regular basis
- More rubbish bins needed
- Stormwater silt trap near River Drive is not effective because the river silts up, although this impact may decrease now that much of the building construction in the area has finished
- Future removal of willows should include removal of all debris so that there is not the risk of problems (e.g. damage to downstream fences) if a flood occurs
- All stumps should be removed
- Need follow-up watering to any replanting, especially in summer
- Reinststate the old system of having permanent work crews to look after the river
- Need more community involvement in rehabilitation and monitoring
- Need plants to screen the view of the fire trail on the eastern side of the river from the opposite side of the river
- Need more bins and in easily accessible locations
- Steel marker poles near Dane Street should be removed
- Needs to be more clean up downstream of the low level bridge
- Quest is a new community environmental group that would like to be involved in rehabilitation projects
- Need ongoing maintenance, especially weed control and cleaning stormwater controls
- Weeds in the upper catchment are a big problem and will affect areas downstream
- Council should develop a weed management strategy and educate Council staff
- Council should prosecute private landowners that don't manage weeds
- Build barrier to stop people pushing shopping trolleys off the concrete ledge near the lower bridge
- Pipe culvert on the fire trail side near Greenleigh needs to be repaired
- Walkway on River Drive at Barracks Flat Creek should have a small culvert to cross the creek
- Need lots of follow-up to control weeds
- Don't build viewing platforms
- Need a concrete pathway between the suspension bridge and main bridge to give access to the coffee shop and art gallery without the need to negotiate the Queen's bridge

- Replace large rocks that were used to cross river before flood washed them away. Don't want more formal structures across river
- Bridge needs painting

Management

- Plan of Management should have measurable actions
- Council needs greater focus on managing natural resources and needs to apply for more grants to do this
- Need to report on how much of the previous plan of management has been achieved
- Need cross-border coordination of regional corridors
- Initiative to update the 1999 plan is welcome and the new plan should have firm policies regarding public access to the river corridor (on both sides of the river) and co-ordination of work by different agencies
- Need good coordination between agencies e.g. link in with the Molonglo Gorge, ACT Parks, Conservation and Lands work and ACT Woodlands Strategy
- In upper catchment there should be much wider riparian buffers in land use zones and if development is considered

Infrastructure

- Need to raise the road and walkway on the northern side of Queens Bridge so that it doesn't become inundated during floods and prevent access. This view was supported by the SES representative
- Infrastructure should be consistent with modern/heritage style of Queanbeyan
- There shouldn't be any permanent structures (e.g. kiosk, Riverside Sportsground club) in the flood zone
- A low level crossing should be constructed near River Drive
- Don't remove the weir
- Location of new paths should consider likely problems if it is in the flood zone compared to problems of being close to residences
- Need more carparking near the kiosk
- Investigate if the lower level bridge can be raised to cope with flood
- Need more litter traps on drainage lines, especially near the lower bridge

Public safety

- Lighting is needed under the bridge for public safety at night
- Remove old wood fire place and concrete tables at Trincolo Park. Focus on safety and amenity in these areas. May need low fence near river and/or sign to warn people of steep drop
- Introduce a low speed limit on roads next to the river because of public safety issues
- Need better, safe access along the golf course
- More signage needed, e.g. trail bikes prohibited, risk from golf balls near golf course

Education

- Community would like to know what controls/management apply to the sewer pump station near River Drive, especially if there is an overflow or malfunction
- Signage and education to encourage use of local dog park

- Educate private landowners about suitable plant species
- Need stormwater drain stencilling to raise community awareness about water pollution
- Needs signs for major features e.g. Queens Bridge, Queanbeyan River
- Nesting boxes have been installed in areas where the indigenous group has been working along the river. No data about species' use
- Platypus should be used in all signs and promotions for Queanbeyan – emblem
- Need more bins, education and enforcement to stop litter
- Molonglo Catchment Group / Landcare / Waterwatch encourage people to get involved e.g. planting, fauna monitoring, riparian survey
- Build a viewing hide/platform to watch wildlife (e.g. platypus) near the CBD. Construct using sustainable materials and create habitat. Install educational signs. Make this a showcase site
- Canoeists get involved in Clean Up Australia, which helps to get rubbish from inaccessible areas
- Need educational signs (e.g. to explain habitat features)
- Need maps to show paths/tracks, and to give background about history and the environment
- Community education needed regarding invasive weeds
- Need more education for landowners, especially those along the river
- Residents would like to work with Council to do appropriate replanting on private land
- Need better understanding of European heritage, including a heritage walk and signage
- Need to acknowledge Aboriginal history with signage near the CBD

Access

- Need access adjacent to the river where private property boundaries extend to the river. Council should consider acquisition or other means
- Residents of the blocks that extend to the river would fight against any proposed acquisition or attempt to provide public access through their lots. This would be a very expensive process
- Public access to the riverfront needs to be provided consistently i.e. same for caravan park and private property
- Need better access paths to the new kiosk between the suspension bridge and Queens Bridge
- New small bridge has been constructed but is not available for public use because of problems associated with accessing private land along river. Bridge has been fenced off. Need to investigate how to get public access between the new bridge and Council land (Kathleen Street). Steps could be constructed to low level adjacent the river or construct path along the existing maintenance track. Need revegetation
- Want a track from Googong to CBD, but sections are very steep
- Need to keep excising all unauthorised vehicles (4WD, trail bikes) from the corridor (and maintain fences, gates etc)
- In areas where the river edge is in private ownership, get a registered survey then develop a plan for Council to purchase at least 20 m along the river to provide public access
- River corridor should be a wildlife protection area and dogs should be restrained at all times
- Develop a walking track from Googong Dam to the Riverside Plaza and beyond to Lake Burley Griffin

- Residents who own land with river frontage at Thorpe Avenue do not want a pathway across their land

Caravan Park

- Caravan Park has approx. 40,000 visitors annually
- The caravan park is on Crown Land. It is owned by the NSW Government, managed by Council and leased by a private company (Marellen Pastoral Co.)
- There are eight years remaining on the current lease
- The leasee is negotiating to extend the lease or create a new lease for 25 years
- Council owns the amenities building and is responsible for maintenance
- The leasee would like to take responsibility for all maintenance, including to the river's edge, if the lease is extended to 25 years
- Problems with sewage overflows in the caravan park and into the river
- The caravan park is within the flood zone. A flood evacuation plan has been prepared. During recent flood the park was evacuated quickly, with no problem. However, the evacuation did not follow the plan i.e. evacuate to the Showground
- Consider viability of constructing a floating pontoon between the lower level of the caravan park (currently used by campers) and the new kiosk on the opposite side of the river
- Plant trees could be planted along river's edge to improve amenity and screen caravans from the other side of the river, including the kiosk
- Concern about additional cabins proposed for the caravan park
- Concern about caravans discharging wastewater directly into the river (observed during field inspection with the community)
- Need to audit impact of caravan park on river
- Remove caravan park to increase riparian area and public access, and improve water quality



Photo: Community participants in an early morning walk along the river



Photo: Representatives from ELA, APC and ACT Waterwatch at the Enviro Expo display



Photo: Display in local shopping centre

Previous consultation

For reference, the following issues were raised by the community during consultation for the previous Plan (Connell Wagner 1999):

- Maintain the natural beauty and character of the area/preserve the area in its natural beauty for future generations
- Improve water quality/clean up creek
- Provide planning framework for future change
- Consultation with ACTEW over environmental flows
- Protect and enhance the natural and cultural heritage values
- Connect sympathetically to adjoining residential, commercial and native areas
- Appropriate use/access, in safe and healthy ways for residents and visitors
- Maximise/optimize benefits to the community
- Promote ecologically viable and sustainable systems
- To protect and enhance the natural and cultural heritage of the river corridor

Consultation with agencies for this plan

The following agency representatives were contacted in July and/or August 2011.

DEPARTMENT	CONTACT PERSON
Waterwatch	Tanya Rucosky Noakes Dr Stephen Skinner
NSW Office of Environment and Heritage	Michael Saxon Paul Packard Phil Boot
NSW Office of Water	Tim Smith Steven Webb Daniella Doughtly
NSW Department of Primary Industries - Fisheries	Mathew Gordalous Luke Pierce Adam Lugg Charlie Curruthers Cameron Westaway Trevor Daly
Murrumbidgee CMA	Matt De Jongh
Dept of Lands	Steven Watts John Flarrey
SES	Steve Forbes

Appendix G: Public exhibition

This appendix presents the letter templates that were used to notify people of the public exhibition period. It also includes a summary of minutes taken from the public meeting and points raised in written submissions. Council has a separate consultation report that includes details of who attended the public meeting, who made submissions, copies of the submissions and an analysis.

S&BL :NA:na
File: SF100455

8 November 2011

ADDRESS 1
ADDRESS 2
ADDRESS 3

Dear Sir/Madam,

RE: EXHIBITION OF DRAFT PLAN OF MANAGEMENT
QUEANBEYAN RIVER CORRIDOR &
PLATYPUS AWARENESS AND CONSERVATION STRATEGY

At its meeting of 26 October 2011 Council endorsed the Draft Queanbeyan River Corridor Plan of Management incorporating Platypus Awareness and Conservation Strategy for public exhibition.

The plan provides actions to enhance the river corridor for public enjoyment and to protect the natural environment for the next 10 years. Attached to the document is the Platypus Awareness and Conservation Strategy. This document is interesting reading and provides everything you need to know about platypus and water rats and what the community can do to protect them for the future.

Council is pleased to provide you with a copy and would like to invite you to comment on the Plan of Management.

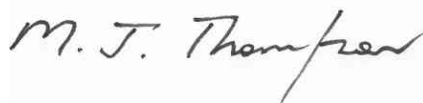
A public presentation of the two documents and an opportunity to speak to the consultants will be held on:

Thursday 17th November 2011
6.00pm
Harry Hesse Room
262 Crawford Street

All comments on the Draft Plan should be forwarded to: queanbeyanriverplan@ecoaus.com.au or post to the General Manager, PO Box 90, Queanbeyan NSW 2620. Submissions will be received until close of business on 12 December 2011.

Should you have any further enquiries please contact Natasha Abbott of Council's Sustainability and Better Living Group on (02) 6285 6268 during normal office hours.

Yours faithfully



M J Thompson
Group Manager
Sustainability and Better Living

S&BL :NA:na
File: SF100455

8 November 2011

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The document is now available for viewing as a hardcopy at the Queanbeyan City Library or at Council's main administration office at 257 Crawford Street. Alternatively the Plan can be downloaded from Council's website at www.qcc.nsw.gov.au.

The plan provides actions to enhance the river corridor for public enjoyment and to protect the natural environment for the next 10 years. Attached to the document is the Platypus Awareness and Conservation Strategy. This document is interesting reading and provides everything you need to know about platypus and water rats and what the community can do to protect them for the future.

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Yours faithfully



M J Thompson
Group Manager
Sustainability and Better Living

Summary of community feedback

This section summarises the key points made at the community meeting and in written submissions.

- Need to resolve land ownership along Thorpe Ave and notify wider community of result
- Supports ongoing weed removal
- Need for Council staff education
- Church originally suggested native tree species be planted to commemorate 150 years, and would support relocation of Chinese elms or replacement with natives
- Need for weed control between Googong Dam and Fairlane Estate
- Need for consideration of landowners requirements in relation to quantity and quality of water releases from Googong Dam
- Support efforts to use platypus in tourism promotions
- Need for plan to have broader catchment approach
- Need for qualified Council staff to be responsible for care and promotion of river and natural areas
- The river corridor can be a vector for fire, possible refuge for the community and source of water in an emergency
- Need to provide access points along the river to obtain water for fire trucks
- Need more than one road access for entry/exit from residential areas
- Rubbish and rubbish bins should be removed from corridor
- Domestic pets and motor craft (including toys) should be banned from corridor
- Need small firebreak between bush and properties along river
- Remove trees growing close to homes along the river because of fire hazard
- Remove vegetation that is not indigenous to Queanbeyan and replant with native species e.g. *Casuarina cunninghamiana*
- Need to clarify if the land along Thorpe Ave is private or leasehold to the river.
- Queanbeyan Riverside Tourist Park won the 2011 Queanbeyan Business Excellence Award for the category of 'tourism, hospitality, events'
- Would like more details of the sewage spill
- Foreshore adjacent to the caravan park is not part of leased area therefore is Council's responsibility to maintain
- Implementation of the flood evacuation plan worked well and should be seen as a positive in the plan
- Believes that caravan park should be retained in current location because of links to CBD
- Welcome opportunities to be involved in environmental education and signage
- Support the actions
- Agree the caravan park should be removed
- Trail bikes are a problem after school and on weekends when there is no ranger
- Need to improve signage at Dane St
- Trail bike access should be made more difficult
- Council should manage dog e.g. educate owners to clean up; unrealistic to ban dogs
- Should have public access along river between Glebe Park and Glenrock Creek and on to Dane St
- Concern about stability of fire trail opposite Dane St and stormwater outflow from Greenleigh Estate
- Funds should be spent on fish restocking rather than a 'fish ladder'
- Additional information / clarification re flora species
- Support the strategy

- Supports retention of the caravan park, extension of the lease and preparation of a site-specific management plan
- Seeks retention of existing owner's rights along the river, including properties extending to the river's edge
- Seek sympathetic development along the river
- Seek to retain the two weirs with modifications to allow fish passage
- Seek balance between ecology and commercial/social activity in the urban area
- Propose that development controls not be overly prescriptive, particularly where private land is within the riparian corridor
- Funding assistance should be made available to private landowners for riparian improvements and rehabilitation works
- Priority should be given to funding improvements that are highly accessible/visible e.g. parklands adjacent the CBD
- Recommend review of the plan every two years or on an as needs basis e.g. when the flood management plan is completed, or legislation changes. Stakeholders should be allowed to comment during review process
- Development of more detailed plans should be done in consultation with affected landowners
- Referral of DAs within 40 m of top of bank to Council's ESAC is supported but should not delay processing DAs. Suggest that minor works be excluded from ESAC consideration
- Specific comments are given on a number of actions and would require minor rewording
- Plan should have a more strategic, whole-of-catchment approach and doesn't adequately deal with:
 - Growth at Googong township
 - Infestation of *Egeria densa* (leafy elodea) in Googong Dam and the threat to downstream waterways. *E. densa* is a Class 5 noxious weed
 - Adequacy of controlled flow releases from Googong Dam
 - The need for total catchment management principles to be applied to address declining water quality, erosion, weeds etc
 - The need to maintain and improve natural areas upstream of the junction Jumping Valley Creek (urban fringe)
 - Flood debris downstream of the lower level bridge
 - Recent planting of 200 Chinese elms, which is inconsistent with the Council's planting policy
- Submission proposes fourteen recommendations to be incorporated in the plan and endorsed for immediate action. These relate to:
 - Exotic weed control in the upper catchment
 - Studies to monitor water quality, sediment stability, *E. densa*, and publication of results on Council's website
 - Community awareness and involvement programs
 - Removal of flood debris
 - Review storage and release policies for Googong dam
 - Council culture and skills
 - Relocation of Chinese elms and replace them with native species
- Should adopt the structure and approach in the 1999 River Plan
- Plan is positive step to manage the river
- Prefer an 'urban wilderness park' with unpaved walking tracks and discrete signage in upper reaches
- No litter bins in the upper catchment
- Community education needed regarding wombats

- Opportunities for community involvement that don't have a 'conflict of interest'
- Maps to be made available on-line
- Need to protect and promote other iconic species such as wombat and lyrebird
- Support removal of the caravan park, and improvement of areas in front of Riverside Plaza and the Art Gallery
- Support a walking 'loop' that promotes heritage and biodiversity

Appendix H: Threatened flora and fauna

Threatened flora species recorded or potentially occurring in the study area

THREATENED FLORA SPECIES	STATUS		POTENTIAL HABITAT IN THE RIPARIAN CORRIDOR
	TSC Act	EPBC Act	
<i>Caladenia tessellata</i> Thick-lipped Spider Orchid	E	V	This species is generally found in grassy sclerophyll woodland on clay loam or sandy soils and is known from one record in the Queanbeyan LGA, within Dry Forest along the Queanbeyan River corridor.
<i>Pomaderris pallida</i> Pale Pomaderris	V	V	This species usually grows in open forest or shrub communities surrounded by Brittle Gum, Red Stringybark or Cypress Pine Woodland. In the Queanbeyan LGA, it is only known from two records in Dry Forest within the Queanbeyan River Corridor below Googong Reservoir and east of Wickerslack Lane.

Table modified from ELA 2008

Threatened fauna species recorded or occurring in the study area

THREATENED FAUNA SPECIES	STATUS		POTENTIAL HABITAT AND KNOWN LOCATIONS IN THE QUEANBEYAN LGA
	TSC Act	EPBC Act	
Microchiropteran Bats			
Eastern Bentwing Bat <i>Miniopterus schreibersii oceanensis</i>	V	-	This bat uses caves as roosting sites and woodlands or forests for foraging. It has been recorded in the Queanbeyan LGA near the centre of Queanbeyan City, in the Googong area, in the Carwoola area, as well as just outside the LGA along the Queanbeyan River corridor south of Carwoola. Foraging, roosting and potential breeding habitat for this species is likely to be relatively widely distributed within the LGA in association with areas of woodland, forest, or scattered trees. Important roosting sites are most often associated with deeper caves or abandoned mines, and are likely to be scarce in the LGA.
Other Mammals			
Koala <i>Phascolarctos cinereus</i>	V	-	This species inhabits eucalypt woodlands and forests with a fragmented distribution through eastern Australia. The species is irregularly recorded in the Queanbeyan LGA and records are associated with the Queanbeyan River corridor. These records include a 2007 sighting on the eastern outskirts of Queanbeyan City in the riparian zone and a 1984 record from the north of Googong Dam.
Birds			
Australian Painted Snipe <i>Rostratula benghalensis australis</i>	V	V	This migratory species is usually found in vegetated, shallow (<50cm), temporary or infrequently filled wetlands, preferring the fringes of these habitats where there is a cover of grasses, lignum, low scrub or open timber. It has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp, although is most common in the Murray-Darling Basin. This species was recorded during the survey period but has not otherwise been recorded within the Queanbeyan LGA. It is possible that the species occurs occasionally in areas of wet grassland associated with the river and creek corridors within the LGA.
Barking Owl	V	-	This species is associated with open forests and woodlands across much of northern and eastern Australia but is considered to be sparse on the higher parts of the tablelands and rare in the ACT. The species preys on a range of terrestrial and arboreal mammals, birds and insects. Breeding habitat and

THREATENED FAUNA SPECIES	STATUS		POTENTIAL HABITAT AND KNOWN LOCATIONS IN THE QUEANBEYAN LGA
	TSC Act	EPBC Act	
<i>Ninox connivens</i>			roosts are usually associated with large hollows in eucalypts and patches of dense cover in riparian areas or around wetlands. There are no recent records of the species in the LGA however there may be suitable habitats in association with the extensive areas of Dry Forests found on the Queanbeyan Escarpment and in the Queanbeyan River Corridor.
Diamond Firetail <i>Stagonopleura guttata</i>	V	-	This species is found in grassy eucalypt woodlands, including Box-Gum Woodlands and also occurs in NTG, and in secondary grasslands. It is often found in riparian areas and is known from the Queanbeyan River corridor, south of Carwoola and has also been recorded east of Tralee, in woodland at Tralee Station, east of Jerrabomberra and, immediately beyond the Queanbeyan LGA, to the east of Googong and west of Burra Creek.
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	-	This species has been recorded in Dry Forest along the Queanbeyan River corridor, just outside the Queanbeyan LGA south of Carwoola and in Queanbeyan East. Potential foraging habitat for this species is likely to be relatively widely distributed within the LGA in association with remnant woodlands and forests. Potential breeding habitat is likely to be much more restricted as the species prefers taller forests with an abundance of old growth attributes.
Hooded Robin <i>Melanodryas cucullata</i>	V	-	This species generally prefers lightly wooded country, usually open eucalypt woodland, and often occurs in or near clearings or open areas. It requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. The species is known from a cluster of records just outside the LGA south of Carwoola along the Queanbeyan River corridor and around the north-western shores of Googong Reservoir. It has also been recorded on Tralee Station, near Jerrabomberra and outside the Queanbeyan LGA west of Burra Creek. Potential habitat for the species is likely to be relatively widespread within the LGA in association with remnant woodlands and forests and concentrated in those areas where larger more structurally diverse patches of remnant vegetation are concentrated such as in the north-eastern and eastern extremities of the LGA and in the Mt Jerrabomberra, Barracks Creek, Jerrabomberra Creek and the Queanbeyan River Corridor areas.
Masked Owl <i>Tyto novaehollandiae</i>	V	-	This species inhabits eucalypt forests and woodlands from the coast to the western plains. The study area is likely to include a reasonable amount of potential habitat for the species as it prefers habitats that provide a mosaic of sparse grassy and dense shrubby ground cover on gentle terrain. However it is also known to prefer forests with high densities of old hollow trees and to avoid young regrowth areas. There are no recent records of the species in the LGA however the most likely suitable habitats for the species within the study area would appear to be in association with the extensive areas of Dry Forests found on the Queanbeyan Escarpment and in the Queanbeyan River Corridor.

THREATENED FAUNA SPECIES	STATUS		POTENTIAL HABITAT AND KNOWN LOCATIONS IN THE QUEANBEYAN LGA
	TSC Act	EPBC Act	
Powerful Owl <i>Ninox strenua</i>	V	-	Habitat for this owl species tends to be within eucalypt forest containing a diverse array of understorey plants and appropriate habitat for its primary prey species (gliders and large possums and especially Ringtail Possums). Given the likely paucity of large hollows suitable for breeding and the relatively low abundance of preferred prey species resulting primarily from historical vegetation modification, potential habitat for this species is likely to be relatively limited within the study area. There are no recent records of the species in the LGA however there is a recent record from Canberra. The most likely suitable habitats for the species within the study area would appear to be in association with the extensive areas of Dry Forests found on the Queanbeyan Escarpment and in the Queanbeyan River Corridor.
Speckled Warbler <i>Pyrholaemus sagittatus</i>	V	-	The Speckled Warbler lives in a wide range of eucalypt dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. In the Queanbeyan LGA, the species is known to occur in the Tralee – Poplars-Jerrabomberra Creek area, around the Queanbeyan River corridor and on the western shores of Googong Reservoir. Potential habitat within the LGA is likely to be relatively widely distributed in association with larger patches of remnant native vegetation.
Superb Parrot <i>Polytelis swainsonii</i>	V	V	This species occurs throughout eastern inland NSW and inhabits Box-Gum Woodlands. It utilises hollows in large Blakely's Red Gum, Yellow Box, Apple Box and Red Box for nesting. This species forages in Box-Gum Woodland up to 10km from nesting sites and feeds in trees, on the ground and in understorey shrubs. Potential habitat for this species is relatively widespread within the LGA in association with grassy woodlands, however it has not been recorded within the LGA with the majority of records being in the northern parts of the ACT, including in residential areas.
Reptiles			
Pink-tailed Worm-lizard <i>Aprasia parapulchella</i>	V	V	This species inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by Kangaroo Grass. Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. This species occurs at "Talpa" near Googong and is also known from east of Jerrabomberra Creek north of Fernleigh Park on a lightly timbered southwest slope, with scattered surface rocks, Queanbeyan East, east of Karabar along the Queanbeyan River, and from Beatty Hill. However potential habitat for the species is likely to be present in those areas within the LGA supporting Grassy Woodlands or Native Grasslands or pasture with partially embedded surface rocks.
Rosenberg's	V	-	Rosenberg's Goanna is found in heath, open forest and woodland. Termite mounds are a critical habitat component for this species, as they are used for nesting. The species shelters in hollow logs, rock crevices and in the burrows, of other species, including rabbits, or in burrows they dig for themselves.

THREATENED FAUNA SPECIES	STATUS		POTENTIAL HABITAT AND KNOWN LOCATIONS IN THE QUEANBEYAN LGA
	TSC Act	EPBC Act	
Goanna <i>Varanus rosenbergi</i>			The Canberra – Queanbeyan Landscape Unit, which lies in and beyond the north-western part of the Queanbeyan LGA contains the most frequent sightings of Rosenberg's Goanna. Within the Queanbeyan LGA, there are recorded sightings of this species, in the Gale Precinct, in Cuumbeun NR south of Captains Flat Road, along the Queanbeyan River in the south east of Karabar and in the northeast of Googong. Suitable foraging and breeding habitat for this species has also been reported to occur in North Terrace and Jerrabomberra Heights.

Table modified from ELA 2008

Appendix I: Weeds

Noxious Weeds

Under the NSW *Noxious Weeds Act*, the following plants are declared noxious weeds within the Queanbeyan Local Government Area. Source: NSW Primary Industries (Agriculture) noxious weed declarations for Queanbeyan City Council website (<http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/noxweed/noxious>).

BOTANICAL NAME	COMMON NAME	CLASS*	CATEGORY
<i>Lycium ferocissimum</i>	African Boxthorn	4	Regional
<i>Pennisetum macrourum</i>	African Feathergrass	5	All of NSW
<i>Eragrostis curvula</i>	African Love Grass	4	Regional
<i>Sisymbrium runcinatum</i>	African Turnipweed	5	All of NSW
<i>Sisymbrium thellungii</i>	African Turnipweed	5	All of NSW
<i>Alternanthera philoxeroides</i>	Alligator Weed	2	National
<i>Eichhornia azurea</i>	Anchored Water Hyacinth	1	All of NSW
<i>Ambrosia artemisiifolia</i>	Annual Ragweed	5	All of NSW
<i>Sagittaria montevidensis</i>	Arrowhead	4	All of NSW
<i>Cynara cardunculus</i>	Artichoke Thistle	5	All of NSW
<i>Tamarix aphylla</i>	Athel Tree	5	National
<i>Xanthium</i> spp.	Bathurst/Noogoora/ Californian/Cockle Burrs	4	
<i>Festuca gautieri</i>	Bear-Skin Fescue	5	All of NSW
<i>Centaurea nigra</i>	Black Knapweed	1	All of NSW
<i>Rubus fruticosus</i> (agg. spp.)	Blackberry	4	All of NSW
<i>Chrysanthemoides monilifera</i>	Boneseed	2	National
<i>Asparagus asparagoides</i>	Bridal Creeper	4	National
<i>Orobancha</i> spp. (except <i>O. cernua</i> var. <i>australiana</i> and <i>O. minor</i>)	Broomrapes	1	All of NSW
<i>Ambrosia confertiflora</i>	Burr Ragweed	5	All of NSW
<i>Cabomba</i> spp	Cabomba	5	All of NSW
<i>Stachytarpheta cayennensis</i>	Cayenne Snakeweed	5	All of NSW
<i>Nassella neesiana</i>	Chilean Needle Grass	4	National
<i>Asystasia gangetica</i> subspp. <i>Micrantha</i>	Chinese Violet	1	All of NSW
<i>Gaura parviflora</i>	Clockweed	5	All of NSW
<i>Sonchus arvensis</i>	Corn Sowthistle	5	All of NSW
<i>Cuscuta</i> spp. Except <i>C. australis</i> , <i>C. tasmanica</i> and <i>C. victoriana</i>	Dodder	5	All of NSW
<i>Hygrophila polysperma</i>	East Indian Hygrophila	4	

BOTANICAL NAME	COMMON NAME	CLASS*	CATEGORY
<i>Amelichloa brachychaeta</i> <i>Amelichloa caudate</i>	Espartillo	5	All of NSW
<i>Myriophyllum spicatum</i>	Eurasian Water Milfoil	1	All of NSW
<i>Cenchrus brownii</i>	Fine-Bristled Burr Grass	5	All of NSW
<i>Pennisetum setaceum</i>	Fountain Grass	5	All of NSW
<i>Cenchrus biflorus</i>	Gallon's Curse	5	All of NSW
<i>Carthamus glaucus</i>	Glaucus Starthistle	5	All of NSW
<i>Cuscuta campestris</i>	Golden Dodder	4	
<i>Scolymus hispanicus</i>	Golden Thistle	5	All of NSW
<i>Ulex europaeus</i>	Gorse	3	National
<i>Cestrum parqui</i>	Green Cestrum	3	
<i>Harrisia</i> spp.	Harrisia Cactus	4	All of NSW
<i>Hieracium</i> spp.	Hawkweed	1	All of NSW
<i>Conium maculatum</i>	Hemlock	4	All of NSW
<i>Heteranthera reniformis</i>	Heteranthera	1	All of NSW
<i>Equisetum</i> spp.	Horsetail	1	All of NSW
<i>Hydrocotyl ranunculoides</i>	Hydrocotyl	1	All of NSW
<i>Hymenachne amplexicaulis</i>	Hymenachne	1	National
<i>Acacia karroo</i>	Karoo Thorn	1	All of NSW
<i>Bassia scoparia</i> , except <i>Bassia scoparia thichophylla</i> subspecies	Kochia	1	All of NSW
<i>Clidemia hirta</i>	Kosters curse	1	All of NSW
<i>Lagarosiphon major</i>	Lagarosiphon	1	All of NSW
<i>Lantana</i> spp.	Lantana	4	National
<i>Egeria densa</i>	Leafy Elodea	4	All of NSW
<i>Phyla canescens</i>	Lippia	4	All of NSW
<i>Ludwigia longifolia</i>	Long-Leaf Willow Primrose	4	
<i>Nassella tenuissima</i>	Mexican Feather Grass	1	All of NSW
<i>Argemone mexicana</i>	Mexican Poppy	5	All of NSW
<i>Miconia</i> spp.	Miconia	1	All of NSW
<i>Mikania micrantha</i>	Mikania	1	All of NSW
<i>Mimosa pigra</i>	Mimosa	1	National
<i>Cenchrus echinatus</i>	Mossman River Grass	5	All of NSW
<i>Carduus nutans</i>	Nodding Thistle	4	
<i>Romulea</i> spp. (except <i>R. rosea</i> var. <i>australis</i>)	Onion Grass	5	
<i>Oxalis</i> (except <i>O. chnoodes</i> , <i>O. exilis</i> , <i>O. perennans</i> , <i>O. radicata</i> , <i>O. rubens</i> and <i>O. thompsoniae</i>)	Oxalis	5	
<i>Cortaderia</i> spp.	Pampas Grass	4	
<i>Parthenium hysterophorus</i>	Parthenium Weed	1	All of NSW
<i>Echium</i> spp.	Paterson's Curse, Viper's Bugloss, Italian Bugloss	4	
<i>Annona glabra</i>	Pond Apple	1	National

BOTANICAL NAME	COMMON NAME	CLASS*	CATEGORY
<i>Acacia nilotica</i>	Prickly Acacia	1	National
<i>Cylindropuntia</i> spp.	Prickly Pear	4	National
<i>Opuntia</i> spp. (except <i>O. ficus-indica</i>)	Prickly Pear	4	National
<i>Orzya rufipogon</i>	Red Rice	5	All of NSW
<i>Toxicodendron succedaneum</i>	Rhus Tree	4	All of NSW
<i>Cryptostegia grandiflora</i>	Rubbervine	1	National
<i>Sagittaria</i>	Sagittaria Platyphylla	5	National
<i>Salvinia molesta</i>	Salvinia	2	National
<i>Cytisus scoparius</i>	Scotch Or English Broom	4	National
<i>Onopordum</i> spp.	Scotch/Illyrian/Stemless/ Taurian Thistles	4	
<i>Gymnocoronis spilanthoides</i>	Senegal Tea Plant	1	All of NSW
<i>Nassella trichotoma</i>	Serrated Tussock	4	National
<i>Chromolaena odorata</i>	Siam Weed	1	All of NSW
<i>Brassica barrelieri</i> sub spp. <i>oxyrrhina</i>	Smooth – Stemmed Turnip	5	All of NSW
<i>Picnomon acarna</i>	Soldier Thistle	5	All of NSW
<i>Centaurea maculosa</i>	Spotted Knapweed	1	All of NSW
<i>Hypericum perforatum</i>	St John's Wort	3	
<i>Rosa rubiginosa</i>	Sweet Briar	4	
<i>Helianthus ciliaris</i>	Texas Blueweed	5	All of NSW
<i>Ailanthus altissima</i>	Tree Of Heaven	4	
<i>Solanum viarum</i>	Tropical soda apple	2	
<i>Trapa</i> spp.	Water Caltrop	1	All of NSW
<i>Eichhornia crassipes</i>	Water Hyacinth	2	National
<i>Pistia stratiotes</i>	Water Lettuce	1	All of NSW
<i>Stratiotes aloides</i>	Water Soldier	1	All of NSW
<i>Salix</i> spp. (except <i>S. babylonica</i> , <i>S. reichardtii</i> , <i>S. calodendron</i>)	Willows, except weeping and pussy willow	5	All of NSW
<i>Striga</i> spp. (except <i>S. parviflora</i>)	Witchweed	1	All of NSW
<i>Limnocharis flava</i>	Yellow Burrhead	1	All of NSW
<i>Cyperus esculentus</i>	Yellow Nutgrass	5	All of NSW

***Control categories**

CATEGORY	DESCRIPTION
1	The plant must be eradicated from the land and the land must be kept free of the plant
2	The plant must be eradicated from the land and the land must be kept free of the plant
3	The plant must be fully and continuously suppressed and destroyed
4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority. The plant may not be sold, propagated or knowingly distributed.
5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with

Other weeds to watch

In addition to noxious weeds identified above, there are a number of other weeds and exotic species that are particularly of concern in the riparian corridor of Queanbeyan but may not be a problem elsewhere. The following list has been compiled by the Molonglo Waterwatch coordinator (pers. com. S. Skinner 21/11/11). In summary, the greatest weed threat to the area is from exotic woody weeds (e.g. elms, prunus, poplars, privet, pyracantha), and the invasive annual and biennial weeds that thrive in moist alluvial soils of flood-runners.

COMMON NAME	SCIENTIFIC NAME
Alligator weed	<i>Alternanthera philoxeroides</i>
Athel pine (athel tree)	<i>Tamaris aphylla</i>
Barley grass	<i>Hordeum spp.</i>
Bitou bush & boneseed	<i>Chrysanthemoides monilifera</i> & <i>Chrysanthemoides monilifera sub. Sp. monilifera</i>
Black alder	<i>Alnus glutinosa</i>
Black knopweed	<i>Centaurea nigra</i>
Black wattle	<i>Acacia decurrens</i>
Box elder maple	<i>Acer negundo</i>
Bracelet honey-myrtle	<i>Melaleuca armillaris</i>
Bracken	<i>Pteridium Esculentum</i>
Bridal creeper	<i>Asparagus asparagoides</i>
Broad-kernel espartillo	<i>Achnatherum caudatum</i>
Broomrapes	<i>Orobache spp. (except the native O. cernua var australiana and O. minor)</i>
Buffalo burr	<i>Solanum rostratum</i>
Cabomba	<i>Cabomba caroliniana</i>
Caltrop	<i>Tribulus terrestris</i>
Capeweed	<i>Arctotheca calendula</i>
Chinese violet	<i>Asystasia gangetica (subspecies mircantha)</i>
Coastal wattle	<i>Acacia longifolia var sophorae</i>
Coolatai grass	<i>Hyparrhenia hirta</i>
Cotoneaster (grey, large-leaf, silver leaf, willow-leaf, Himalayan)	<i>Cotoneaster spp. (franchetii, glaucophyllus, pannosus, salicifolius, simonsii)</i>
Devil's Claw	<i>Ibicella lutea/Probosidea louisianica</i>
Docks	<i>Rumex spp.</i>
Dodder	<i>Cuscuata spp. (except native spp.)</i>
East Indian hygrophila	<i>Hygrophila polysperma</i>
English & Chinese elms	<i>Ulmus spp.</i>
English Ivy	<i>Hedera helix</i>
Eurasian water milfoil	<i>Myriophyllum spicatum</i>
Fat hen	<i>Chenopodium album</i>
Fennel	<i>Foeniculum vulgare</i>
Firethorn/pyracantha (& scarlet firethorn)	<i>Pyracantha spp. (angustifolia, fortuneana & coccinea)</i>
Great mullein	<i>Verbascum Thapsus</i>

Green cestrum	<i>Cestrum parqui</i>
Guildford grass, onion grass	<i>Romulea rosea</i>
Hawkweek	<i>Hieracium app.</i>
Hemlock	<i>Conium maculatum</i>
Horsetail	<i>Equisetum spp.</i>
Hymenachne	<i>Hymenachne amplexicaulis</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Johnson grass	<i>Sorghum halepense</i>
Karoo thorn	<i>Acacia karroo</i>
Kochia	<i>Bassia scoparia/Kochia scoparia</i>
Lagarosiphon	<i>Lagarosiphon major</i>
Lantana	<i>Lantana camara</i>
Lobed needle grass	<i>Nassella charruana</i>
Longstyle feather grass	<i>Pennisetum villosum</i>
Mesquite	<i>Prosopis spp.</i>
Mexican feather grass	<i>Nassella tenuissima Stipa tenuissima</i>
Miconia	<i>Miconia spp.</i>
Mimosa	<i>Mimosa pigra</i>
Mount Morgan wattle/Queensland silver wattle	<i>Acacia podalyriifolia</i>
Nettle tree	<i>Celtis australis</i>
Pampas grass (pink & common)	<i>Cortaderia spp. (jubata & selloana)</i>
Parkinsonia	<i>Parkinsonia aculeate</i>
Parrot's feather	<i>Myriophyllum aquaticum</i>
Parthenium weed	<i>Parthenium hysterophorus</i>
Perennial Canada thistle	<i>Cirsium arvense</i>
Periwinkle/blue periwinkle	<i>Vinca major</i>
Pond apple	<i>Annona glabra</i>
Poplars, Lombardy, Canadian and others	<i>Populus spp.</i>
Prairie ground cherry	<i>Physalis viscosa/physalis virginiana</i>
Prickly acacia	<i>Acacia nilotica</i>
Prickly pears	<i>Opuntia & Cyllindropuntia spp.</i>
Privet	<i>Ligustrum lucidum, L. Sinense and L. Vulgare</i>
Purpletop	<i>Verbena spp.</i>
Pyracantha	<i>Angustifolia & related spp.</i>
Ragwort	<i>Senecio jacobaea</i>
Rosemary grevillea	<i>Cryptospegia grandiflora</i>
Rubber vine	<i>Cryptostegia grandiflora</i>
Saffron thistle	<i>Carthamus lanatus</i>
Salvinia	<i>Salvinia molesta</i>
Senegal tea plant	<i>Gymnocoronis spilanthoides</i>
Service tree, rowan	<i>Sorbusspp. (domestica and aucuparia)</i>
Siam weed	<i>Chromolaena odorata</i>
Sifton bust	<i>Cassiania accuata</i>

Silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Slender thistle	<i>Carduus spp. (pycnocephalus & tenuiflorus)</i>
Snowy River wattle	<i>Acacia boormanii</i>
Sorrel	<i>Rumex acetosella</i>
Spanish broom	<i>Spartium junceum</i>
Spear thistle	<i>Spartium vulgare</i>
Spiny burrgrass	<i>Cenchrus incertus/Cenchrus longispinus</i>
Spotted knapweed	<i>Centaurea maculosa</i>
Storksbill, wild geranium	<i>Erodium spp.</i>
Thornapple	<i>Datura spp.</i>
Vulpia	<i>Vulpia spp.</i>
Water caltrop	<i>Trapa spp.</i>
Water hyacinth (& anchored water hyacinth)	<i>Eichhorina spp. (crassipes & azurea)</i>
Water lettuce	<i>Pistia stratiotes</i>
Water soldier	<i>Stratiotes aloides</i>
White Sally wattle	<i>Acacia floribunda</i>
Wild Plums	<i>Prunus spp.</i>
Wild radish	<i>Raphanus raphanistrum</i>
Willow-leaved hakea	<i>Hakea salicifolia</i>
Wireweed	<i>Polygonum aviculare</i>
Witchweed	<i>Striga spp. (except native spp & Striga parviflora)</i>
Yellow bamboo	<i>Phyllostachys aurea</i>
Yellow burrhead	<i>Limnocharis flava</i>
Yorshire fog	<i>Holcus lanatus</i>

Priority Weeds List

The Molonglo Catchment Priority Weeds List identifies 22 weeds that pose a significant threat to our local environment, as well as to agriculture and amenity. Many of these weeds are already widespread, whilst some of them have just begun moving into the catchment and pose a high risk of spreading further if left unchecked. The need for these weeds to be treated as priorities is indicated consistently in the existing federal, state, territory and regional weed lists.

The list was developed through consultation with local weed experts including Council weed officers, staff from Parks, Conservation and Lands ACT and the Murrumbidgee Catchment Management Authority (CMA), and community volunteers with long term experience in weed management.

The list is accurate in identifying species that are a priority for control due to their invasiveness, impacts and ability to spread. It is presented in alphabetical order for ease of reference. When planning weed management on your property, you may wish to conduct a formal prioritisation process in order to ensure that you direct your efforts towards the highest priority species on your individual patch of land.

The following list has been compiled by the Molonglo Catchment Group. Refer to the 'Regional Weed Strategy – Murrumbidgee Catchment' Published by the Murrumbidgee CMA, for a simple and easy to use prioritisation process.

African boxthorn
African lovegrass
Blackberry
Broom (Cape/Montpellier & Scotch/English)
Burrs (Noogoora & Bathurst)
Chilean needle grass
Cootamundra wattle
False acacia/black locust
Fireweed
Gorse
Hawthorn
Horehound
Paterson's curse and viper's
Bugloss
Poplars (white & Lombardy)
Privet
Radiata/Monterey pines
Serrated tussock
St. John's wort
Sweet briar/briar rose
Thistles (Scotch, Illyrian & nodding)
Tree of heaven
Willows (except weeping willow and two types of sterile pussy willow)

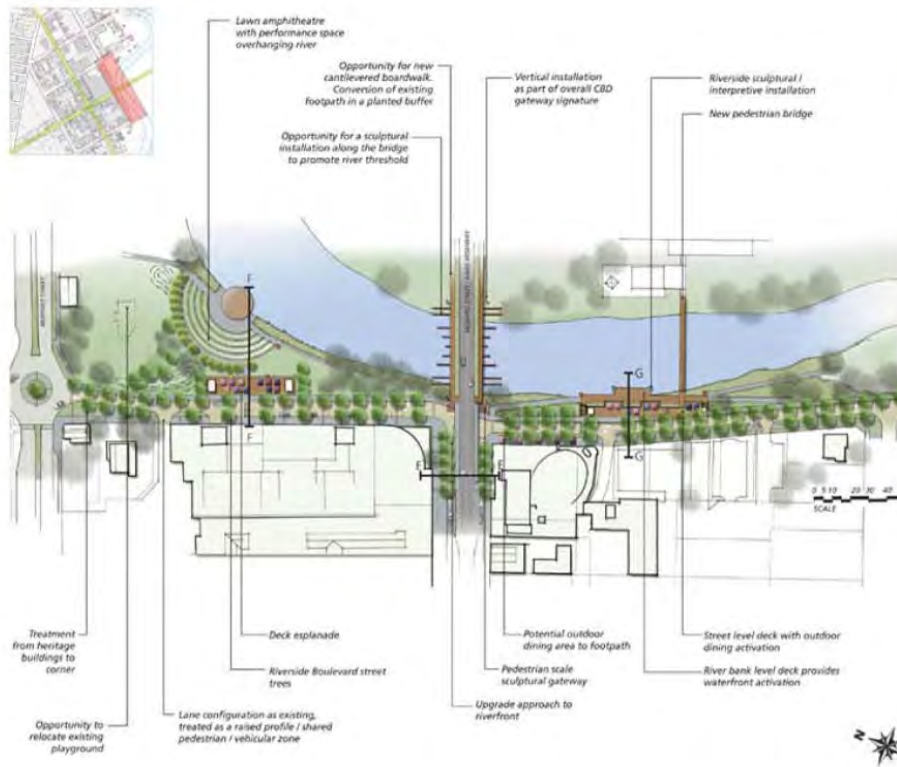
Appendix J: Species suitable for revegetation

The following list of species that are considered suitable for use in revegetation of the Queanbeyan river riparian zone.

VEGETATION TYPE	SCIENTIFIC NAME	COMMON NAME	
Trees	<i>Casuarina cunninghamiana</i>	River She Oak	
	<i>Eucalyptus blakelyi</i>	Blakely's Red Gum	
	<i>Eucalyptus bridgesiana</i>	Apple Box	
	<i>Eucalyptus mellidora</i>	Yellow Box	
	<i>Eucalyptus pauciflora</i>	White Sally	
	<i>Eucalyptus viminalis</i> (probably dominant)	Ribbon Gum	
	<i>Brachychiton populneus</i>	Kurrajong	
Shrubs	<i>Acacia dealbata</i>	Silver Wattle	
	<i>Acacia parramattensis</i>	Parramatta Wattle	
	<i>Acacia Mearnsii</i>	Green Wattle	
	<i>Acacia rubida</i>	Red-stemmed Wattle	
	<i>Bursaria spinosa</i>	Sweet Bursaria (Australian Blackthorn)	
	<i>Callistemon sieberi</i>	River (or Swamp) bottlebrush	
	<i>Cassinia quinquefolia</i>	Cough Bush	
	<i>Clematis microphylla</i>	Small-leaved Clematis	
	<i>Gynatrix pulchella</i>	Hempbush	
	<i>Hakea microcarpa</i>	Small-fruited Hakea	
	<i>Indigofera australis</i>	Austral Indigo	
	Ground covers	<i>Austrodanthonia spp.</i>	Wallaby Grass
		<i>Austrostipa scabra</i>	Speargrass
		<i>Bubine bulbosa</i>	Bulbine Lily
<i>Carex appressia</i>		Tall sedge	
<i>Chrysocephalum apiculatum</i>		Yellow Buttons	
<i>Chrysocephalum semipapposum</i>		Clustered Everlasting	
<i>Dianella longifolia</i>		Flax Lily	
<i>Hardenbergia violacea</i>		False Sarsparilla	
<i>Lepidosperma laterale</i>		Variable Sword-sedge	
<i>Lomandra longifolia</i>		Spiny Mat-rush	
<i>Microlaena stipoides</i>		Weeping Grass	
<i>Pennisetum alopecuroides</i>		Swamp Foxtail	
<i>Phragmites australis</i>		Common Reed	
<i>Poa labillardieri</i>		Tussock Grass	

VEGETATION TYPE	SCIENTIFIC NAME	COMMON NAME
	<i>Ranunculus papulentus</i>	Buttercup
	<i>Stackhousia monogyna</i>	Creamy Candles
	<i>Themeda australis</i>	Kangaroo Grass
	<i>Thysanotus tuberosus</i>	Fringed Lily
	<i>Typha spp.</i>	Bulrush
	<i>Rubus parvifolius</i>	Native Raspberry
	<i>Wurmbea dioica</i>	Early Nancy

Appendix K: Relevant actions from the CBD Master Plan (Place 2009)



Collett St Riverside

Plan

Collett Street would be upgraded to create an activated and vibrant CBD riverfront. Treated as a shared pedestrian/vehicular zone with a raised road profile, feature road surface and street tree planting, Collett St. would invite the activation of the riverfront with more pedestrian friendly conditions.

The adjacent Park developments could include raised and river level boardwalks, an informal amphitheater / performance space and new, footpaths.

The crossings of the river could be further developed, with a new pedestrian bridge and the integration of a cantilevered boardwalk along Kings Hwy.

To emphasize the importance of this threshold, architectural treatments to the bridge and gateway elements would be key components of the interventions.

View South Along Collett Street

The activation of Collet St. and adjacent parklands can also engage the river in a more direct way, by creating a new pedestrian crossing of the river and creating active spaces in a closer proximity to the river. Raised and river level boardwalks give the opportunity to create beer gardens or similar outdoor dining experiences.

This active node would also enhance the arrival to the river along the cultural spine that links the Queanbeyan Performing Arts Centre.

Opportunities to create artistic, interpretative and recreational exploration routes of the river front and CBD would have in these areas an ideal setting.

Both the riparian corridor and the urban frontage would benefit from additional planting as well as to helping to create a more ecological feel within the context of the urban activation development.



Existing conditions



Artist impression of proposed conditions

**HEAD OFFICE**

Suite 4, Level 1
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Sutherland NSW 2232
T 02 8536 8600
F 02 9542 5622

SYDNEY

Level 6
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Sydney NSW 2000
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F 02 9993 0573

ST GEORGES BASIN

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St Georges Basin NSW 2540
T 02 4443 5555
F 02 4443 6655

CANBERRA

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Canberra ACT 2601
T 02 6103 0145
F 02 6103 0148

HUNTER

Suite 17, Level 4
19 Bolton Street
Newcastle NSW 2300
T 02 4910 0125
F 02 4910 0126

NAROOMA

5/20 Canty Street
Narooma NSW 2546
T 02 4476 1151
F 02 4476 1161

COFFS HARBOUR

35 Orlando Street
Coffs Harbour Jetty NSW 2450
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F 02 6651 6890

ARMIDALE

92 Taylor Street
Armidale NSW 2350
T 02 8081 2681
F 02 6772 1279

BRISBANE

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West End QLD 4101
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WESTERN AUSTRALIA

3/29 Ord Street
West Perth WA 6005
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WOLLONGONG

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F 02 4322 2897