ACT Government
Territory and Municipal Services

AUGUST 2014 - 2017

MOLONGLO RIVER RESERVE (URBAN SECTION – 'the PARK') OPERATIONAL PLAN

MOLONGLO RIVER RESERVE (Urban Section – 'the Park')

About this Plan

This Plan has been developed to help guide on-ground works and activities that will implement key components of the Molonglo Valley Plan for the Protection of Matters of National Environmental Significance (ACTPLA 2011; NES Plan), the Molonglo Adaptive Management Strategy (TAMS 2013), Molonglo River Reserve Plan of Management (*in prep*), the ACT Nature Conservation Strategy 2013-2023 (ESDD 2013), the ACT Strategic Bushfire Management Plan (ESA 2009), the ACT Weeds Strategy 2009-2019 (DECCEW 2009), the ACT Pest Animal Management Strategy 2012-2022 (ESDD 2009) and numerous ACT action plans, strategies and policies.

The Plan is designed to be used in conjunction with the Molonglo River Reserve and Offset Areas Ecological Management Guidelines (TAMS *in prep*), the Molonglo River Park Concept Plan Report (Hassell 2012), the Molonglo Development Fire Management Strategy (TAMS *in prep*), the Ecological Guidelines for Fuel and Fire Management Operations (ACT Government 2012), the BOP and the eWOP. The Plan is the primary planning tool for providing for adaptive management approaches based on the results of monitoring, evaluation and review. Justification and further information on management protocols and methods identified in the Operational Plan are found in the above documents.

This Plan will be put into effect through works programs, which will be reviewed and updated annually.

Background

The Molonglo Valley Plan for the Protection of Matters of National Environmental Significance (2011; the NES Plan) identifies the urban section of the Molonglo River Corridor (including NES Patches Q, R, S, K1, K2, D1, T and T1) as an offset site. The area was included in the Canberra Open Space system in the 1970s and will soon be incorporated into the new Molonglo River Reserve, for which a statutory Plan of Management is being prepared in 2014. The new Molonglo River Reserve will include two existing reserves (Lower Molonglo River Nature Reserve and Kama Nature Reserve) and a new section that includes the river corridor up to Scrivener Dam (Figure 1).

Incorporation of the entire river corridor from Scrivener Dam to the confluence with Murrumbidgee River in one reserve provides a whole of corridor approach to the development and management of the Molonglo River downstream of the dam (Hassell 2011).

The Molonglo River Reserve has been divided into three sections, including a Rural Section (773 ha), Kama (155 ha) and an Urban Section (581 ha; Figure 1). The Urban Section (the 'Park') is the focus of this operational plan and it has been further divided into five management zones (Figure 2) to assist in protected area management. Management zones have been determined based on common environmental values and management challenges (e.g. proximity to urban areas, timing of development, recreation and fire management). There is a management plan for the Lower Molonglo River Corridor Nature Reserve (ACT Government (2001) and a separate Operational Plan for Kama (ACT Government 2014).

Management will change as the adjacent suburbs are developed. As this occurs the operational plan will require revision and updating. The only management zones that are currently impacted by development are Zone 3 (i.e. areas adjacent to Coombs) and small sections of Zone 4 and 5 (i.e. the sewer link bridge).

Recreational nodes and gateway parks are located throughout the Park and provide opportunities for higher intensity recreation away from sensitive areas. They will provide interpretation and places for orientation and induction into the Park. Details for proposed development and strategic management of recreation/activity nodes within the Park and in gateway parks between the urban area and the Park are found in the Concept Plan (Figure 3; Hassell 2011).

A carefully co-ordinated approach in management will be required to achieve outcomes as defined in the overall Molonglo River Reserve Plan of Management (*in prep.*) where activities within high recreation areas may directly or indirectly impact on areas designated for conservation outcomes.

The Park Description

The Park consists of the river, the river banks and associated slopes from Scrivener Dam to the south-western edge of Kama and includes NES Patches Q, R, S, K1, K2, D1, T and T1 (Figure 4). The width of the Park ranges from approximately 100 m to 700 m.

The Park is bordered by the suburb of Coombs in Zone 3 and agricultural land in the remaining zones. Over the next 30 years the entire Park will be surrounded by residential development, with a commercial centre facing the river adjacent to Zone 4 (Figure 3). Development south (Molonglo Stage 2) of the Park is expected to commence within the next five years (adjacent to Zone 3 and 4) and development north (Molonglo Stage 3) of the Park is expected to commence within the next 20 years (adjacent to Zone 5) (Figure 3).

Conservation Values

The Park (581 ha) is part of a key corridor including the Murrumbidgee River (and through to the Brindabella Ranges), Molonglo River, Kama and Belconnen Woodlands (Figure 1). It protects five listed Heritage sites, 70.9 ha of critically endangered Yellow Box -Blakely's Red Gum Grassy Woodland (BGW), extensive populations of the Pink-tailed Worm-lizard, breeding habitat for the Rainbow bee-eater, habitat for declining woodland birds, several rare plant species and a total of eight native vegetation communities (Figures 4, 6, 7).

Land Use History

From the 1920s the Park was used for grazing, pine plantations and recreation, and from the 1920s to the 1970s a small area called Sludge Ponds downstream of Coppins Crossing was associated with the sewerage treatment works at Weston Creek. From the 1970s the entire corridor was included as part of Canberra open space system and from 2000 areas of the corridor 13 km downstream of Coppins Crossing to the Murrumbidgee River was classified as Nature Reserve.

In 2001 and 2003, the majority of the Park was burnt (Figure 5), including the riparian zone and pine plantations. Pine plantations south of the river (Zone 4) were not replanted, while pine plantations to the north of the river in Zones 1 and 2 were replanted after the 2001 fire.

Zones 4 and 5 are currently grazed with cattle under an agistment licence and areas adjacent to Coombs (Zone 3) are currently slashed.

Exploded ordnance waste has been found within the Molonglo River Valley, including sections of the Kama Nature Reserve through to Coppins Crossing Road. While no unexploded ordnances have been found in the

Park, there remains the possibility that they may be encountered in the future. An investigation of parts of zone 4 and 5 in 2014 found no evidence of UXOs

Proposed Land Uses

As suburbs are developed adjacent to the Park the land uses in the river corridor will change significantly. The Molonglo River Park/Coombs Riverside Park Design FSP Report (Hassell 2013) identifies nodes within which high-low intensity recreation is to occur, with proposed intensity of use within these nodes governed by the requirements to protect conservation (ecological, geological and other environmental) values and maintain low fire fuel loads.

The four zones defined in the concept plan do not correspond directly to the zones identified in this operational plan as they do not reflect the management issues. The relationships between the design zones and management zones are shown in Table 1. Within each of these zones there will be areas of varying recreational and conservation use. The Concept Plan (Hassell 2011) and Design Plan (Hassell 2013) outline in more detail the proposals for the recreational nodes.

There are existing management tracks throughout the Park. Additional sealed and unsealed paths are proposed within and adjacent to all of the management zones. They include sealed trunk paths, multipurpose paths (unsealed), unsealed equestrian paths and minor unsealed paths or boardwalks (Figure 3). Proposed and existing infrastructure works within the Park can be seen in Table 2.

Table 1.Relationship between design zones (Hassell 2011) and management zones.

Operational Plan Management Zones	Molonglo River Park landscape zones
Zone 1 Scrivener Dam to Barrer Hill (north and south slopes)	1. Eastern Narrows
Zone 2 Barrer Hill restoration area	2. Misery Point (north slopes)
Zone 3 Stage 1 development (Weston Creek to proposed East West Arterial Road, south slopes)	2. Misery Point (south slopes) 3. Coppins Crossing (south slopes)
Zone 4 Stage 2 development (proposed East West Arterial Road to western boundary of Stage 2, south slopes)	3. Coppins Crossing (south slopes) 4. Western Gorges (south slopes)
Zone 5. Stage 3 development (proposed East West Arterial Road to western boundary of Kama, north slopes)	3. Coppins Crossing (north slopes) 4. Western Gorges (north slopes)

Table 2. Proposed or existing civil infrastructure works within the Park include (see also Figure 3):

Infrastructure	Construction, access and maintenance requirements within the Park	Management Zone
Existing or close to construction		
Molonglo Valley Interceptor Sewer (MVIS)	Maintained by ACTEW. Road access required.	2 and 3
132kV power lines	Maintained by ActewAGL. Road access required. Possible vegetation management in the corridor under the lines.	1, 4 and 5
Mains water pipeline	Maintained by ACTEW and associated river crossing	4 and 5

Low level river crossings (4)	Maintained by TAMS and ACTEW using access roads. Includes Southwell Crossing, Clos Crossing (ACTEW asset) and the Llewellyn Crossing from Equestrian Park	1 and 2
Management roads	Maintained by TAMS. Used by utility managers, Reserve managers, fire operations and recreation users.	All
Recently completed, under construction or in advanced planning		
High level "Link Bridge"	Constructed by ACT Government and maintained by TAMS. Maintenance access will be required for the bridge (TAMS) and sewer (ACTEW). At bridge level, access will be along the pedestrian trail but occasional vehicle access will be required below for pier maintenance.	4 and 5
"Sewer 3 Central"	Constructed and maintained by ACTEW. There will be ground disturbance during construction. Vehicle access will be required for maintenance.	4
Water Quality Control Ponds and outlets	Constructed by ACT Government and maintained by TAMS. Pond construction involves ground disturbance within the Park where the pond abuts the Park boundary. Outlets use existing creeklines that flow through the Park to the river. Erosion control works will be required if creeklines further erode. North Weston Ponds, Coombs Pond, Holdens Creek Pond and Cravens Creek Pond.	1, 3 and 4
Anticipated or may become required		
John Gorton Drive bridge	This will be a significant construction project with potential impact on the Park, including ground and river disturbance. Multiple services are likely to be carried with the bridge. Access below the bridge will be required for maintenance.	4 and 5
Further sewers in Molonglo Stage 2 and 3.	Constructed and maintained by ACTEW. Significant ground disturbance is expected during construction. Vehicle access will be required for maintenance.	3, 4 and 5
Further Water Quality Control Ponds and outlets	As before.	1, 3, 4 and 5
New odour control plants and vent towers for the MVIS	Constructed and maintained by ACTEW. Ground disturbance during construction of plants and vent towers. Road access will be required for maintenance.	To be determined
11 kV underground power line and possible other overhead power lines	Constructed and maintained by ActewAGL. Alignment of the powerlines is currently under discussion (2014).	To be determined
East West Arterial bridge	As for John Gorton Drive bridge.	3, 4 and 5
Possible new watermains and gas lines	If required, will cross with the new bridges. Ground disturbance and on-going vehicle access required.	To be determined

Ecological values of the Park

Connectivity

The Park is part of a key corridor including the Murrumbidgee River (and through to the Brindabella Ranges), Molonglo River, Kama and Belconnen Woodlands (Figure 1). Vegetation within the riparian zone is contiguous, however the majority of Zone 1 in particular is heavily infested with willows and other weeds, while vegetation further downstream is less degraded. Vegetation to the north and south of the Molonglo River Reserve (including Kama and the Rural Section) includes Box-Gum Woodland, other woodland and forest, grassland, pine plantations and cleared or cultivated pasture.

The river and river floodplain form an important corridor for the movement of fish, birds (including migratory species and raptors) and other fauna. The river plays an important role in seed dispersal for many plants (native and exotic). The habitat for the Pink-tailed Worm-lizard is almost contiguous across much of the slopes of the Park (Figure 4).

Ecological communities

The Park contains eight ecological communities, two of which are threatened (Table 3); and areas of degraded or exotic vegetation (including former pine plantations and agricultural land). See Appendix A for a list of all ecological communities within the Park.

Table 3: Threatened ecological communities in the Molonglo River Corridor (Figure 4)

Ecological Community	Cwlth*	ACT**	NSW***	Area	Mgmt Zone
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland)	**Critically endangered**	**Endangered**	**Endangered**	**70.9 ha + 17 ha degraded (not EEC) (Large parts of PTWL habitat identified as Box-Gum Woodland derived grassland in the NES Plan may be NTG, Rocky Temperate Grassland)**	**2, 3**
Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT (Natural Temperate Grassland):	**Endangered**	**Endangered**			
Rocky Natural Grassland (note: not identified in the NES Plan, subsequently re-defined (Sharp et al, in prep.)				Refer to BGW above	2, 3, 4, 5
Snow Gum Grassy Woodland (Snow Gum – Candle Bark tall grassy woodland)			**Endangered**	**58.5 ha**	**1, 2, 3, 5**

Flora

The Park contains 89 native plants species, two threatened plant species (Zone 3) and 16 rare protected plant species (Table 4). See Appendix B for a list of flora surveyed in the Park.

Table 4: Threatened or rare plants in the Park (derived from various studies within the corridor, as collated and referenced in Table 2.12, Sharp et al, in prep.)

Scientific Name	Common Name	Cwlth*	ACT**	NSW***	Notes
Leucochrysum albicans var. *tricolor*	Hoary Sunray	Endangered	Protected		Zone 3

Scientific Name	Common Name	Cwlth*	ACT**	NSW***	Notes
Pomaderris pallida	Birch Pomaderris	Vulnerable	Protected	Vulnerable	Zone 3
Calotis lappulacea	Yellow Burr Daisy		Protected		Zone 2
Cheilanthes distans	Bristly Cloak Fern		Protected		Zone 2 and 3
Desmodium brachypodum	Large Tick-trefoil		Protected		Zone 2
Dianella longifolia var. *longifolia*	Blue Flax Lily		Protected		Zones 2, 4
Discaria pubescens	Australian Anchor Plant		Protected		Zones 2 and 3
Diuris punctata	Purple Donkey Orchid		Protected		Zone 2
Imperata cylindrica var. *major*	Blady Grass		Protected		Zone 1
Indigofera adesmiifolia	Tick Indigo		Protected		Zone 2
Swainsona monticola	Notched Swainson-Pea		Protected		Zone 3

Fauna

The Park currently provides a diversity of habitat and foraging for at least 22 threatened and/or protected bird species, one threatened reptile species, one threatened invertebrate species and one threatened fish species (Table 5). This section of the Park supports a significant proportion of the national population of the vulnerable Pink-tailed Worm-lizard. Genetic analysis suggests that the Molonglo River is a major barrier to Pink-tailed Worm-lizard movement and that animals north and south of the river are separate populations.

The Park forms an important link for birds and other fauna between the Belconnen Hills and along the river valley through to the Murrumbidgee River and beyond.

The river currently contains native fish species including Murray Cod, Golden Perch, Carp Gudgeon and Smelt. Both Murray Cod and Golden Perch are stocked into LBG and while they naturally exist in the river, they can also be washed over from LBG. It is not known whether the fish in the river move to and from the Murrumbidgee River as the water from the Molonglo Sewerage Treatment Works appears to limit fish movement from the Murrumbidgee. There are also several physical barriers to fish along the river channel such as weirs and road crossings which may limit fish movement except under higher flows.

See Appendix C for a list of fauna surveyed in the Park.

Table 5: Threatened or declining fauna in the Park

Scientific Name	Common Name	Cwlth*	ACT**	NSW***	Notes
Aprasia parapulchella	**Pink-tailed Worm-lizard**	**Vulnerable**	**Vulnerable**	**Vulnerable**	**37.4ha of high quality habitat and 30.5ha of moderate quality habitat**
Perunga ochracea	Perunga Grasshopper		Vulnerable		Three records from 2009 in Zone 3 and 4
Macquaria australasica	Macquarie Perch****	Endangered	Endangered		Last recorded prior to 1990, extinct in the Molonglo River below LBG
Maccullochella peelii	Murray Cod****	Vulnerable			Present
Bidyanus bidyanus	Silver Perch****		Endangered		Now extinct in the ACT
Polytelis swainsonii	**Superb Parrot**	**Vulnerable**	**Vulnerable**	**Vulnerable**	**Habitat, foraging woodland**
Lathamus discolor	**Swift Parrot**	**Vulnerable**	**Vulnerable**	**Endangered**	**Habitat**
Xavthomyza phrygia	Regent Honeyeater	Endangered Migratory	Endangered		Woodland, corridor
Calyptorhynchus lathami	Glossy Black Cockatoo****		Vulnerable		In woodland and river corridor
Climacteris picumnus	Brown Treecreeper		Vulnerable	Vulnerable	
Hieraaetus morphnoides	Little Eagle****		Vulnerable	Vulnerable	One active nest in 2002-03, nesting and foraging
Lalage sueurii	White-winged Triller		Vulnerable		
Merops ornatus	Rainbow Bee-eater	Migratory			Breeding in sandy banks along the river
Stagonopleura guttata	Diamond Firetail	Near threatened		Vulnerable	Regionally declining
Petroica phoenicea	Flame Robin			Vulnerable	Regionally declining
Callocephalon fimbriatum	Gang-Gang Cockatoo****		Protected	Vulnerable	Woodland
Calyptorhynchus funereus	Yellow Tailed Black-cockatoo****		Protected		In woodland, riparian/aquatic and river corridor
Lophochroa leadbeateri	Major Mitchell's Cockatoo****		Protected		Woodland at Coppins Crossing
Sphecotheres vieilloti	Australasian Figbird****		Protected		Riparian/aquatic

Scientific Name	Common Name	Cwlth*	ACT**	NSW***	Notes
Aahiacetus leucogaster	White-bellied Sea-eagle****	Migratory			One unconfirmed breeding record
Gallinago hardwickii	Latham's Snipe****	Migratory			International migratory agreement
Hirundapus caudacutus	White-throated Needletail****	Migratory			Woodland
Myiagra cyanoleuca	Satin Flycatcher****	Migratory			Riparian/aquatic
Rhipidura fififrons	Rufus Fantail****	Migratory			Riparian/aquatic
Aphelocephala leucopsis	Southern Whiteface				Regionally declining
Artamus cyanopterus	Dusky Woodswallow				Regionally declining
Artamus superciliosus	White-browed Woodswallow				Regionally declining

*Australian Government Environment Protection and Biodiversity Conservation Act 1999
**Nature Conservation Act 1980 (ACT)
***National Parks and Wildlife Act 1974 (NSW)
**** Various sources, referenced in Sharp et al, in prep
# Canberra Ornithologists Group

Geodiversity in the Park

The landform includes open flat floodplain, deeper valley floors and adjacent slopes. The geology is derived from volcanic activity. The soil in the floodplain is alluvial, and is highly erodible, of low fertility and low waterholding capacity (Jenkins 2000 in Sharp 2011).

The heritage listed Lower Molonglo Geological Area (Figure 7) occurs in the western sections of Zones 4 and 5, on the northern and southern banks of the river downstream of Coppins Crossing. The Lower Molonglo Geological Site is a significant outcrop of limestone that contains evidence of a rich and diverse array of marine fossils, including corals, trilobites, brachiopods, gastropods and ostracods; and includes species that were first described from specimens found at the site. It is one of the best-known and richest Middle Silurian faunal assemblages in eastern Australia, dating from 425 million BP. The outcrop is of value in dating similarly aged rocks elsewhere in the region. The just-visible outcrops are manifestations of a continuous feature, and the underground sectors between the outcrops are equally significant (Registration of Lower Molonglo Geological Site, Stromlo. Notice 2013 Notifiable Instrument NI 2013—39).

Cultural heritage values in the Park

Identified heritage places and objects

Lower Molonglo Geological Area (Decision about Registration of Lower Molonglo Geological Site, Stromlo (Notice 2013 Notifiable Instrument NI 2013—39; Figure 7), see above.

There are several listed Aboriginal Places of significance including artefacts, campsites and two scar trees (Table 6). The Blundell's Cottage site at 'Riverview' (Zone 3) is not heritage listed; however the site will be conserved and incorporated into the management of the Park.

Table 6. Listed heritage sites within the Park.

Heritage site	Site description	Notes
Lower Molonglo Geological site	Significant outcrop of limestone that contains evidence of a rich and diverse array of marine fossils	
12/1	Aboriginal Isolated Artefact	
MOL IF5	Aboriginal Isolated Artefact	
MOL A2	Aboriginal Artefact Scatter	
PAD1	Aboriginal campsite	To be conserved in situ
PAD5 Misery Point	Aboriginal campsite	To be conserved in situ
MRC 14	Fallen Aboriginal Scarred tree	
MRC15	Standing Aboriginal scarred tree	

see http://prdapp008/app/flex/heritageaudit/index.html

Visitor and Community Awareness in the Park

Recreation activities

Unsealed vehicle tracks throughout the area are used for horse and mountain bike riding, walking, cross-country running, orienteering and picnicking. Tracks within the Park link with the Stromlo Forest Park, the Arboretum and the Equestrian Park; and the main tracks are part of the Bicentennial National Trail. There are four vehicle crossings over the river – Coppins Crossing, Clos Crossing, Southwell's Crossing and Llewellyn Crossing (Figure 8).

Along the river itself recreation is confined to walking and fishing. The Territory Plan doesn't allow for swimming in the river due to poor water quality and safety risks associated with sudden water releases from the Lake. Other prohibited recreation activities within the Park include camping, car rallies, fires, flying, hunting and off-road vehicles.

The NES Plan acknowledges that the river corridor (the Park) will be an important area for both conservation and recreation. With increased development of adjacent suburbs, recreation is expected to intensify. Areas of high recreation (visitor nodes), low recreation (containing walking tracks and fenced PTWL habitat areas) are defined in the Molonglo River Park concept plan (Figure 3; Hassell 2011) and design report (Appendix B in Hassell 2013). Signage will be used to inform and educate visitors and provide directions for services and firefighters. Signage will be based on the development of a signage strategy, reflecting the nature of the use of the area as an urban park and conservation reserve (Hassell 2013).

Park access

Existing entrances to the Park include via Lady Denman Drive, the Bicentennial trail network, the National Arboretum, Coombs urban interface, Coppins Crossing and Kama. Pedestrian, cyclist and horse rider access over the river is via Clos, Southwell's and Llewellyn crossings. The Link Bridge, once constructed, will also provide formal pedestrian and cyclist access over the river downstream of Coppins Crossing.

With increased development of adjacent suburbs more formal access points (gateway parks) will be developed. See Figure 3 for proposed access tracks and internal tracks (Hassell 2011, 2013).

Interpretation and information

There are currently no information signs. Interpretation signs will be designed and erected as the adjacent suburbs are developed.

Key Stakeholders

Community involvement

PCS will consult and engage with community groups to assist and implement conservation management works.

Bush on the Boundary Molonglo

Bush on the Boundary (BoB) groups consist of various Government and non-governmental stakeholder groups with an interest in the urban edge. BoB Molonglo was established in 2011 and is facilitated by the Molonglo Catchment Group. BoB Molonglo is focussed on the new urban development of Molonglo with a particular interest in the initial suburbs of Wright and Coombs, as well as the Molonglo River Reserve Plan of Management.

Land management, monitoring and research

Parks and Conservation Service (Territory and Municipal Services)

- Land management (incl. fire management)
- NES vegetation and habitat condition monitoring (locations on Figure 9)
- Restoration of Pink-tailed Worm-lizard habitat
- Development of a low-impact monitoring technique for PTWL
- Barrer Restoration Program

City Services (Territory and Municipal Services)

- Land management of recreation nodes, tracks and land adjacent to the Park.

Conservation Planning and Research (Environment and Planning Directorate)

- Implementation of Action Plans for Pink-tailed Worm-lizard, Box-Gum Woodland, Natural Temperate Grassland and threatened fish species.

Rural neighbours

- Northern border of zone 5, west of Coppins Crossing rd (Grazing licence): Mr Renato Gaspari (ph: 02 62275694; mob: 0408 023 789)
- Northern border of zone 5, east of Coppins Crossing rd (Grazing licence): Molonglo Cattle Group (Graeme Haynes: 0407 919 661; Ryan Walsh: 0411 030 281; Noel Davis: 0407 910 919)
- Southern border of zone 4, west of Coppins Crossing rd (Grazing licence): Ian Hughes (ph: 02 6288 6709; mob: 0412 296 224)
- Southern border of zone 4, east of Coppins Crossing rd (Grazing licence): Molonglo Cattle Group (Graeme Haynes: 0407 919 661; Ryan Walsh: 0411 030 281; Noel Davis: 0407 910 919)

Infrastructure

ACTEW

- Maintenance of roadsides on Pipeline Road
- Maintenance of water and sewer mains.

TAMS

- Maintenance of internal tracks
- Maintenance of the Special Purpose Reserve and Lower Molonglo River Corridor Nature Reserve downstream of Coppins Crossing
- Infrastructure to be developed within the Park will be managed by ACTEW and/or TAMS.

Management Objectives

The Molonglo River Reserve Draft Plan of Management identifies the following objectives relevant to the Molonglo River Park:

PLAN OF MANAGEMENT

A. Effectively manage conservation objectives and recreation demands within the Reserve.

GEOLOGY, LANDFORMS, SCENERY AND SOILS

B. Preserve the condition of the heritage geological site (Zones 4, 5).
C. Ensure that no land remains close to or below a critical threshold for landscape function in the long term.
D. People are able to access, view and enjoy a diversity of scenery that is dominated within the Reserve by natural features.

ECOLOGICAL CONSERVATION

E. The population size of threatened species increases and the extent of listed dryland threatened communities is at least maintained and their condition improved.
F. Maintain the diversity of all other native species and improve the ecological condition of the dryland matrix.
G. Raise the ecological condition in the river and riparian zone from fair/moderate to good and achieve sustainable populations of native fish in the river.
H. Manage vegetation to achieve fire protection for people and property and effective protection of threatened habitat and other ecological conservation values.
I. Improve connectivity within and outwards from the Reserve, particularly linkage along the river corridor linkage to Kama Nature Reserve and linkage to the Arboretum and associated woodland offsets.

ABORIGINAL CONNECTIONS

J. Respect, promote and protect Aboriginal use, past and current, of the land and waters of the Lower Molonglo River.

SETTLEMENT HISTORY

K. Protect, promote and respect the European cultural heritage in the Reserve.

RECREATION

L. Provide a range of recreation opportunities that are well valued by users and that can co-exist with other values and objectives of the Reserve.
M. Residents in Molonglo view, treat and protect the Reserve as their 'treasured front yard' and set a new high standard in the ACT for their behaviour in a nature reserve.
N. The Reserve adds value to the ACT as a distinct recreation destination, a long-distance recreation link, and an attractive contribution to the Canberra Open Space System.
O. Safeguard visitors from serious harm.

INFRASTRUCTURE AND OPERATIONS

P. Avoid or minimise the impact on Reserve values of building and maintaining infrastructure and facilities in or nearby the Reserve.
Q. Minimise harm to people and the environment from Reserve operations.

COMMUNITY, PARTNERS, FRIENDS & NEIGHBOURS

R. Achieve productive working relationships with neighbours that contribute to maintaining Reserve values.
S. Achieve strong community support for the Reserve and active contributions towards its management.

GOVERNANCE AND KNOWLEDGE

T. Inform future decision making with a structured, evidence-based process.
U. Foster the development of new knowledge and its application to management actions for achieving other Reserve objectives.

The NES Plan

Management is to be implemented in accordance with the requirements of the *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance* (NES Plan) (ACTPLA 2011) and the Molonglo Adaptive Management Strategy, TAMS 2013. The NES plan identifies that conservation activities are based around two processes: avoidance and mitigation of impacts on Matters of National Environmental Significance (MNES); and on-ground management to provide maintenance and improvement of MNES values.

The Operational Plan is the day-to-day management planning tool that provides detail about on-ground works and activities and will be the primary mechanism for providing for adaptive management approaches based on the results of monitoring, evaluation and review. Operational Plans should be read together with the *Molonglo River Reserve and Offset Areas Ecological Management Guidelines* (TAMS, *in prep*).

A *Monitoring Procedures Manual* (Sharp and Milner 2014) has also been prepared for the Molonglo that sets out in detail the methods for undertaking the ongoing monitoring of vegetation condition and threatened species habitat (dryland) monitoring. Other monitoring is documented elsewhere: PTWL abundance/detectability (Milner and Osborne, in prep), Superb Parrot breeding activity (Davey 2011), water quality and landscape function (Tongway and Hindley 2004) and fish populations (CPR unpublished).

The objectives are consistent with requirements for management of the Park as an offset site as defined in the NES Plan (ACTPLA 2011), as follows:

Develop a management plan for Molonglo River Reserve to provide for the maintenance and enhancement of the ecological condition of:

- NES Action 5. Box-Gum Woodland within the reserve (subsequently much of this was determined to be Natural Temperate Grassland, type Rocky Grassland (Sharp et al, in prep.).
- NES Action 32. All Pink-tailed Worm-lizard habitat within the reserve.

Implement the management plan for Zones 2, 3 and 4 to provide for the maintenance and enhancement of the ecological condition of:

- NES Action 6. Box-Gum Woodland within the reserve.
- NES Action 26. Natural Temperate Grassland within the reserve
- NES Action 33. All Pink-tailed Worm-lizard habitat within the reserve

Pg 37-38, NES Plan: The management plan for Zone 2, 3 and 4 is to incorporate:

- Protection of MNES values.
- 20 m buffers around high and moderate quality Pink-tailed Worm-lizard habitat.
- Appropriate fire management and biomass control to achieve/maintain environmental condition targets.
- Control of access to achieve/maintain environmental condition targets.
- Weed management, priority given to reducing weed species that have the greatest adverse ecological impact.
- Feral animal management to avoid native animal predation and rabbit grazing.
- Management of hydrological processes.
- Restoration of the ecological attributes lost within the lower Molonglo Valley
- Appropriate condition monitoring against the objectives for management.

Pg 26, NES Plan: the management plan is to incorporate:

- NES Action 23. Establish and manage an off-site restoration project, as an indirect offset, for Box-Gum Woodland (subsequently identified as Barrer Hill, Zone 2).

Pg. 34-35, NES Plan: Construction Environmental Management Plans

- NES Action 4, 31. Develop, implement and independently monitor Construction Environmental Management Plans to ensure that unforseen direct or indirect impacts from construction activities within the development area and the river corridor are avoided.

These plans will be required as part of the Development Approval process. They will include (at a minimum):

- Safeguards for controlling heavy machinery movement to avoid adjacent habitat areas (e.g. temporary fencing)
- Erosion prevention and mitigation measures
- Weed and disease control measures
- Measures to relocate animals that are found within construction areas
- Appropriate monitoring and reporting.
- Where impacts to Pink-tailed Worm-lizard occur as part of the development the CEMPs will also include a rehabilitation component.

Concept Plan for the Molonglo River Park (Hassell 2011) and Molonglo River Park/Coombs FSP Report (Hassell 2013)

The NES Plan identifies that the Concept Plan will be used to establish management zones, to identify areas designated for conservation as well as identifying recreation areas and resolving public access, in the context of protection of BGW and PTWL habitat.

The primary principles identified that direct the concept plan are:

- To protect and enhance natural habitat values
- To provide recreation opportunities for the local community
- To provide for effective fire protection

Over and above the principles identified in the NES Plan and Plan of Management, the concept plan identifies that:

- activity areas will be sited away from sensitive habitats;
- resilient landscapes will be created that will adapt to change over time;
- quality of the water discharging into the river from Lake Burley Griffin will improve; and
- programs of research and interpretation will be used to encourage understanding of local stewardship of the Park's natural resources.

Management Challenges and Principles for Molonglo River Reserve (Urban Section)

Challenges	***Principles*** *(from the 'Molonglo River Reserve and Offset Areas Ecological Management Guidelines)*
1. Biomass management	• Management of the Park's natural values and biodiversity protection commitments under the NES Plan, need to meet fire protection, soil and streambank stability and recreation and amenity objectives. • Biomass management will include weed reduction, PTWL habitat maintenance and restoration, planned burns[1], stock grazing, brush-cutting and selective slashing (mostly along management and recreation tracks and Park boundaries) to maintain diversity of structure, habitat and composition for threatened species and communities. Particular guidelines include: ○ Retain groundflora biomass within Natural Temperate Grassland, PTWL habitat and BGW between 1.5-4 t/ha on average measured in autumn. ○ Biomass removal should not be undertaken if the biomass level is below 1.5 t/ha. ○ Maintain approximately 70% groundcover to minimise erosion but still retain open spaces to allow for recruitment of forbs and other non-dominant species. ○ Undertake burns no more frequently than ten years apart in woodlands, three to five years apart in high quality grassland and five years apart in PTWL habitat, or according to the *Ecological Guidelines for Fuel and Fire Management Operations* if these are modified. ○ Avoid burning on steep slopes to minimise erosion. ○ Avoid burning during spring to minimise interruption to plant regeneration processes and nesting birds. ○ Burn in mosaics with no area burnt more frequently than the ecological fire threshold allows and no more than 25% of apatch at one time. Mosaic burns will aim to promote ecological diversity through creating a network of different post fire patches and habitat types (incl. open grassy patches and dense mid-storey patches important to woodland birds).Undertake low intensity patchy burns resulting in low impacts on woody vegetation; shrubby peas should be periodically burnt at a higher intensity to encourage seed germination). ○ Maintain a buffer of at least 20 m around PTWL habitat during control burns if undertaken outside the recommended fire frequency. ○ In high conservation value areas (NES Patch A and B): avoid burning during spring to minimise interruption to plant regeneration processes and nesting birds. ○ In low diversity native pasture: burn between 1-3 years apart from mid August to end of October to reduce exotic annuals. ○ Minimize ignition of woody debris in woodland areas by only burning in winter. ○ Avoid grazing in the river corridor, particularly in the riparian zone, due to damage caused by livestock to river banks and water quality. ○ Use grazing above the river corridor to enhance habitat and to reduce fire fuel, if other methods of biomass management are not appropriate or possible. ○ Removal of grazing in some areas is likely to result in high levels of regeneration of Burgan (especially within PTWL habitat), which will require management to control and contain. ○ Current research indicates levels of 4 – 6 dse in moderate to good seasonal

[1] Planned burns may include burns undertaken solely for ecological purposes, or burns for wildfire mitigation where these are not in conflict with meeting ecological outcomes.

	conditions will reduce biomass and maintain habitat condition. ○ In high conservation value areas: graze at high intensity for short periods between late summer and early winter, to reduce opportunity to selectively graze disturbance sensitive species. ○ In low diversity native pastures: graze at high intensity for short periods between mid August to the end of October to reduce exotic annuals. ○ Slash at a minimum height of 100 m along tracks and boundaries for visibility and provision of a fire break ○ Remove clippings if they are likely to smother established plants ○ Use a hand-held brush-cutter if required to reduce biomass in rocky areas including Pink-tailed Worm-lizard habitat ○ Slashing or other activities must not result in debris entering waterways or be left beside stream banks ○
2. Fire fuel mitigation and wildfire suppression	• BOP activities must be conducted in accordance with the *Ecological Guidelines for Fuel and Fire Management Operations,* the *Molonglo River Reserve and Offset Area Ecological Management Guidelines,* the *Molonglo Development Fire Management Strategy*, the *Strategic Bushfire Management Plan* and Management Principles identified within Challenge 1 (Biomass Management). • Revegetation and other habitat enhancement works within fuel management zones (incl. IAPZ, OAPZ and SBFAZ; (Figure 10) must meet specified fuel management standards. This includes the maintenance of low fuel levels (incl. reduction in weed species), use of low fire hazard species in revegetation, restrictions to the size and discontinuity of woodland units and restrictions to the retention of litter as habitat, whilst at the same time meeting conservation directions defined in the NES Plan. • Chemical fire retardant, fire fighting foam or wetting agents will not be used in or near the riparian zone or PTWL habitat. • Stock grazing is not an option for fuel reduction in areas adjacent to the river once adjacent development works is complete. • No planned burns are to occur in Black Cypress Pine Forest and River She-oak Dry Riparian Forest until at least 2028, as they are fire-sensitive and were burnt extensively in the 2003 wildfire. • The control of particularly fire-hazardous weeds such as African Lovegrass and Wild Oats is required for the reduction of fuel hazard, as well as protection of biodiversity. • Rock picking and ground reshaping should not occur in PTWL habitat or within 20 m buffer zones. Any activity that dislodges surface rocks or may lead to a potential decrease in native grass cover or introduction of weed species must be avoided.
3. Enhancement of habitat values	• Management of Zone 2 is to be undertaken in conjunction with the Barrer Box-Gum Woodland Restoration Plan (SMEC and GA 2014). • Areas dominated by weeds may require long-term strategic control involving reduction in nutrient levels, removal, control of secondary weed invasion, revegetation and enhancement of other habitat attributes. • Interconnection of habitat is critical to maintaining viable populations of PTWL in the Molonglo River. Restoration and habitat enhancement in Zones 2, 3, 4 and 5 will aim to improve PTWL habitat connectivity, enhance habitat and reduce fuel levels. • No tall shrubs and trees will be planted within 20 m of PTWL habitat or within the Natural Temperate Grassland. • Timber removed for development must be retained as coarse woody debris within the woodlands. • Creek lines within Zone 1 and southern sections of Zone 3 are extensively eroded and

	incised. • High sediment, nutrient loads, cold and low oxygen bottom releases from Scrivener Dam, pollution from urban run-off and heavy metal pollution from upstream mining activities have degraded the quality of the river downstream of Scrivener Dam.
4. Invasive plants	• St John's Wort, African Lovegrass, Chilean Needlegrass, Blackberry, Sweet Briar, other woody weeds are abundant along the river corridor and slopes. Willows are common in Zone 1 and southern sections of Zone 3. African Lovegrass is extensive in the floodzone on sandy flats in the river corridor. New incursions to be treated immediately and soil disturbance minimized to reduce potential for invasion. • Treatment of invasive weeds at entry points, along management tracks and walking trails and within infrastructure easements as well as within areas of high ecological values should be a priority of the weed control program. • Priority species for control include St John's Wort, African Lovegrass, Chilean Needlegrass and Blackberry. • The occurrence of high biomass grassy weeds such as Phalaris, Cocksfoot and Fescue will be controlled using ecological burns, strategic grazing and herbicide application. • Woody weeds (including Blackberry) may provide habitat for declining woodland birds. Phased woody weed control and a mid-storey shrub regeneration or replacement program will reduce impacts on the bird community. • Weed management programs should consider the use of multiple control techniques (incl. herbicide application, manual removal, shading, strategic grazing, ecological burns, nutrient manipulation etc).
5. Invasive animals	• Feral Pigs, Feral Dogs, Foxes, Rabbits, Feral Cats, Fallow Deer and Goats are present in the corridor and have direct predator impacts or compete for resources • Indian Mynas and other invasive introduced birds may impact native species and habitat as urban development builds up adjacent to the Park. • Predation by European Wasps can significantly impact on the abundance of native invertebrates and in doing so impact on lizard and bird abundance. • Uncontained suburban pets may become an issue within the Park as suburbs are developed to the south and north of the Park. • Options for a coordinated control program with neighbouring landholders require investigation to identify best practice methods for landscape scale control. • Neighbouring suburbs are to be designated cat containment areas. • Pest management programs should consider the use of multiple control techniques (incl. baiting, trapping, fumigation, shooting, exclosure fencing etc).
6. Water quality	• Maintaining good water quality within the park will be reliant on the quality of water flowing through Scrivener Dam and off surrounding urban areas. • Water quality will also be impacted by localised erosion that may be exacerbated by increased recreational use
7. Infrastructure: vehicles and track maintenance	• Strict vehicle hygiene should be observed at all times as the threat of potential weed incursion from utility, contractor and authorised vehicles are very high. • Only low-impact vehicles, such as quad bikes, should be used to undertake management activities off the management trail network. • All vehicle access (including quad bikes) is to be excluded from PTWL habitat areas and managed in other areas to avoid soil compaction or soil disturbance (e.g. bogging of vehicles). • Formal management tracks and trails require cyclical maintenance and erosion control. • Illegal vehicle access should be monitored and procedures put in place to reduce

	unauthorized access. • The rocky grassland along the corridor (including PTWL habitat) is a safety risk to any vehicles driven off-track. • Recreation trails (including pedestrian and bicycle paths, equestrian trails and walking/hiking trails) will also provide access for management and servicing.
8. Infrastructure: utility	• Maintenance of all utilities to be undertaken within best-practice guidelines and in accordance with the code of practice. • Construction Environmental Management Plans (CEMPs) will be developed and implemented for all utilities and other construction within the Park. • Infrastructure development will be consistent with PTWL and Box Gum woodland River Park loss limits and only allowed in the Park if no prudent and feasible alternative occur off park
9. Adjacent roads, urban areas and rural leases	• Weed incursions from vehicle access and increased recreational access may be a source of weed seeds. • The river is a source of weed invasion, particularly African Lovegrass • The river is subject to regular flooding, with increased risk from post-development runoff. This is a safety risk and may result in erosion of the highly erodible soils along the corridor slopes. • Informal access tracks are likely to increase with urban development and cause damage to habitat and contribute towards erosion.
10. Visitor and community awareness	• Areas within the Park are defined as recreational zones or conservation zones, with overlapping natural areas and urban parks. • Gateway parks will provide access to the Park at particular nodes (e.g. water quality control ponds) and cater for more intensive recreation away from Conservation Zones (Hassell 2013). • Access to the Park is via Lady Denman Drive, the Bicentennial trail network, the National Arboretum, Coombs urban interface, Coppins Crossing and Kama. Following development of the adjacent suburbs there will be access points along the length of the river (Figure 3). • PTWL habitat areas and buffers will be fenced off to reduce impact. • Dogs are permitted in the Park as long as they are on a leash and on designated walking paths. • There will be a significant increase in visitation and subsequent pressures once residential areas in the vicinity of the Park are further established. • As the suburbs are developed, prohibited activities are likely to increase, including off-road vehicle use, camping, fires, hunting and swimming. • The Park may be subject to firewood or rock collection. • Rock-rolling or other PTWL habitat disturbance may be an issue as visitor use increases. • Ecological and cultural heritage values of the Park will be protected and promoted through signage and protective fencing.

11. Scientific studies	• There are existing and potential scientific studies within the Park (Figure 9), including:
	  ○ PTWL habitat restoration research program (Zone 4; TAMS and ANU)
	  ○ Research into the development of a low-impact monitoring technique for PTWL (Zone 4; TAMS and UC).
	  ○ Barrer Box-Gum Woodland Restoration Program and associated future research projects (Zone 2; TAMS)
	  ○ MNES vegetation and habitat condition monitoring (Zone 2, 3 and 4; TAMS)

	○ Research into the impact of outflows from the LMWQCC on fish connectivity (EPD) ○ Fish abundance and habitat monitoring (EPD) ○ Water quality monitoring (EPD) ○ Woodland bird monitoring points need to be established (COG)
12. Community Engagement	• Opportunities should be given to involve volunteers in studies and management, including bird surveys, pest animal and plant surveys to provide a sense of responsibility and belonging. • As residential areas are developed in the vicinity of the Park, consideration should be given to establish and appropriately resource a ParkCare group.
13. Documentation	• Documentation of the Park values needs to be provided to all stakeholders to facilitate appropriate visitor behavior. • Monitoring is a requirement under the NES plan. • Documentation of the attributes and records of actions, activities, maintenance, damage, monitoring and research are required to implement adaptive management. • Monitoring results need to be collated, reviewed and used to review the operational plan if required. • Report on all activities within the annual NES Plan report.

Management Actions

Refer to the management principles above and the *Molonglo River Reserve and Offset Areas Ecological Management Guidelines* (TAMS *in prep.*). Funding source reference: Molonglo recurrent (Mr); Molonglo Capital Works (Mcw); NES recurrent (NESr); NES Capital Works (NEScw); refer to Appendix D for funding schedule and estimates.

Strategies	Actions	Who	Source
1. Manage biomass to maintain optimal structure and diversity	1.1 Develop a biomass management program that includes PTWL habitat restoration, burning, slashing, brush-cutting and stock and kangaroo grazing; and is consistent with the *Molonglo Development Fire Management Strategy, ACT Threatened Species Fire Management prescription guidelines* and best practice management for MNES values: 1.1.1 Consider conditions (timing, seasonal constraints and specific requirements of threatened species and communities) under which biomass management is implemented. 1.1.2 Collate and map existing information on location of vegetation associations, weed patches, location of rare species, potential habitat trees and other site attributes. 1.1.3 Review monitoring results, effectiveness of previous management strategies and Biodiversity Triage Matrix to identify strategies and priorities for the forthcoming year. 1.1.4 Identify, map and monitor condition of areas that are under pressure from kangaroo grazing and camping. 1.1.5 Liaise with relevant agencies and organisations, including the Vertebrate Pest Officer, Rural Programs Officer, Fire Management Officer, Environmental Weeds Officer, CPR and external research organisations that are undertaking studies in the Park. 1.1.6 Identify appropriate areas, timing, intensity, density and type of stock that can be used if grazing is to be applied.	R3, Ecologist, CPR	Mr, NESr
	1.2 Implement the integrated biomass management program: 1.2.1 Monitor biomass levels to determine whether biomass reduction activities should be applied. 1.2.2 Undertake planned management according to the biomass management program. 1.2.3 Undertake regular inspections to ensure there is no damage to vegetation and PTWL habitat. If impacts are detected undertake immediate reparation work to improve condition before effects of impacts become major.	R3, GSO, Ecologist, FMU, Rural landholder Contractor	Mr, Mcw, NESr, NEScw,
	1.3 Monitor the integrated biomass management program: 1.3.1 Monitor change in condition based on benchmark attributes: plant species diversity, cover and habitat diversity and targeted monitoring of PTWL populations and habitat (see *Monitoring Procedures Manual for Molonglo Offset Areas*). 1.3.2 Monitor biomass and other fuel hazards annually in autumn to guide biomass management actions required in the forthcoming year. 1.3.3 Monitor revegetation sites annually for three years or until the vegetation is established to the pre-defined level, whichever is the later date. 1.3.4 Review the program after five years or when scientific research and/or monitoring results indicate that the objectives of this plan are	R3, Ecologist	Mr, NESr

	not being met through the biomass management program. 1.3.5 Undertake regular inspections to ensure there is no damage to vegetation and PTWL habitat (e.g. weed invasion). If impacts are detected undertake immediate reparation work to improve condition before effects of impacts become major.		
2. Minimise the impacts of wildfire	2.1 Co-ordinate, in accordance with *Strategy 1*, the Regional Fire Management Plan (RFMP) and the *Molonglo Development Fire Management Strategy*, an integrated fuel management program: 2.1.1 Manage fire and fuel to protect and enhance the Park's ecological and cultural assets. Including: • the protection of MNES • the protection of heritage sites • the protection of habitat features and diversity • the protection of waterways • promotion and protection of natural regeneration and restoration • the control of herbaceous biomass and post-fire weeds 2.1.2 Meet with the Fire Management Officer to discuss district requirements for BOP and finalise budget for forthcoming year.	R3, Ecologist, FMU	Mr, NESr
	2.2 Implement the integrated mosaic fuel management program for the protection of ecological and cultural heritage assets: 2.2.1 Undertake fuel management inside the Park if it will achieve ecological outcomes as defined in the objectives and above management principles.. 2.2.2 Control weeds, particularly African Lovegrass, Wild Oats and St John's Wort to reduce fuel hazard. 2.2.3 Re-establish weedy areas with native grassland species, including Kangaroo Grass. 2.2.4 Rehabilitate PTWL habitat and buffers that do not meet fuel management standards, through increasing rock density (30-50%) and increasing native ground cover. 2.2.5 Maintain tracks within the Park that are wide enough to support fire trucks. 2.2.6 Ensure revegetation and other habitat enhancement works within fuel management zones (incl. IAPZ, OAPZ and SBFAZ; (Figure 10) are consistent with specified fuel management standards (SBMP 2009). 2.2.7 Any native fauna exposed during rock removal is to be relocated to habitat nearby and the incident reported to Conservation Planning and Research. 2.2.8 No trees with hollows or potential hollows to be removed	R3, GSO, Ecologist, FMU, Rural landholder Contractor	Mr, Mcw, NESr, NEScw

	without consultation with CPR. 2.3 Monitor the fuel management program against condition of the ecological and cultural heritage assets: 2.3.1 Use the results of the condition monitoring program to determine whether fire fuel management is impacting threatened species and communities and modify it if required (see *Monitoring Procedures Manual for Molonglo Offset Areas*).	R3, Ecologist	Mr, NESr
3. Enhance habitat values	3.1 Develop a restoration program for each of the zones within the Park, with priority to areas that improve habitat connectivity, reduce erosion and/or reduce bare ground (e.g. where weed control has been undertaken). Refer to the Molonglo River design report and Local Indigenous planting list (Appendix B in Hassell 2013): 3.1.1 Identify and map areas where enhancement of habitat, connectivity or erosion control is required. 3.1.2 Investigate how to reduce annual introduced species and reduce likely high nutrient levels, and restore using indigenous species. 3.1.3 Identify weedy patches in Zone 3, 4 and 5 and determine if they should be replanted with indigenous grassland or woodland species, as appropriate. 3.1.4 Liaise with government ecologists (CPR) and fire management officers (FMU).	R3, Ecologist, CPR	Mr, NESr
	3.2 Implement the restoration program: 3.2.1 Implement the restoration program developed for Zone 2 (Barrer Hill and Misery Point) according to the Barrer Box-Gum Woodland Restoration Plan (SMEC and GA 2014). 3.2.2 Implement the PTWL restoration and habitat connectivity program for Zone 2, 3, 4 and 5. 3.2.3 Ensure restoration is in compliance with fuel management standards and access requirements. 3.2.4 Enhance habitat diversity and reduce erosion through restoration of fallen timber, hollows, rocks and structural diversity of the vegetation, utilising materials from developed areas where appropriate. 3.2.5 Utilise timber or groundstorey species removed from within Molonglo to enhance habitat in selected zones. 3.2.6 Undertake immediate remediation works and site rehabilitation if habitat has been disturbed. 3.2.7 Remove dominant weeds in Zone 1 and re-establish a woodland structure to complement the natural values of the park, while providing for recreational opportunities (Hassell 2011).	R3, Ecologist, Contractor	Mr, MCW, NESr, NEScw
	3.2.8 Ensure connectivity for most wildlife is maintained along the River corridor by ensuring that gaps between large trees and shrub understorey along the corridor do not exceed 150m. 3.3 Monitor the restoration program: 3.3.1 Monitor the success of revegetation to determine whether appropriate species have been used and whether follow-up planting is required. 3.3.2 Monitor whether there has been any change in utilisation of habitat resulting from revegetation, especially bird abundance and/or diversity.	R3, Ecologist	Mr, NESr

4. Reduce the impact of invasive plants	4.1 Develop an integrated weed management program for the Park: 4.1.1 Map the distribution of environmental weeds. 4.1.2 Review monitoring results, effectiveness of previous management strategies, Weed Management Priorities Table and Biodiversity Triage Matrix to identify strategies and priorities for the forthcoming year. 4.1.3 Meet with Environmental Weeds Officer to discuss district requirements for EWOP and finalise budget for forthcoming year. 4.1.4 Engage Park stakeholders and coordinate with neighbours in the planning and implementation of upcoming control programs. 4.1.5 Prioritise treatment of invasive weeds at Park entry points, management tracks, walking trails and within infrastructure easements and areas of high conservation value. 4.1.6 Prevent the incursion of new pest plants through the strategic placement and design of park infrastructure, visitor management, fencing, surveillance, staff training, community education and rapid response to new pest plants reports.	R3, Ecologist	Mr, NESr
	4.2 Implement an integrated weed management program: 4.2.1 In PTWL habitat undertake species specific spot spraying and cut/paint for shrubs and trees. 4.2.2 Undertake in-house control and map areas controlled. 4.2.3 Undertake field contract supervision and map areas controlled. 4.2.4 Review the effectiveness of the program and identify follow-up actions. 4.2.5 Undertake follow-up actions. 4.2.6 Undertake site rehabilitation. 4.2.7 Coordinate volunteers to assist with control, follow up and site rehabilitation. 4.2.8 Maintain and monitor vehicle hygiene by ensuring vehicles are clean of mud, soil, dry vegetation or seeds to limit the spread of weeds.	R3, GSO, Contractor	Mr, Mcw, NEScw
	4.3 Monitor the distribution and abundance of environmental weeds within the Park: 4.3.1 During routine patrols, collect data on distribution and abundance of environmental weeds. 4.3.2 Undertake pre-treatment distribution mapping. 4.3.3 Undertake post-treatment distribution mapping. 4.3.4 Coordinate volunteers to assist with data collection. 4.3.5 Record all mapping data in the Reserve Weed Management folder on ArcGIS. 4.3.6 Monitor weed control to identify whether there has been a change in native plant diversity as a result of weed control. 4.3.7 Involve stakeholders in the monitoring program. 4.3.8 Monitor bird species abundance to determine if they have been impacted by removal of woody weeds.	R3, GSO, Ecologist	Mr, NESr

5. Reduce the impact of invasive animals	5.1 Develop an integrated pest animal management program for the Park: 5.1.1 Map the distribution of damage and/or habitat of pest animals. 5.1.2 Review monitoring results, effectiveness of previous management strategies, Invasive Animal Management Priorities Table and Biodiversity Triage Matrix to identify strategies and priorities for the forthcoming year. 5.1.3 Meet with the Vertebrate Pest Officer to discuss district requirements for pest species and finalise budget for forthcoming year. 5.1.4 Utilise methods that minimise soil disturbance, particularly in PTWL habitat. 5.1.5 Engage Park stakeholders and coordinate with neighbours in the planning and implementation of upcoming control programs.	R3, Ecologist	Mr, NESr
	5.2 Implement an integrated pest animal management program: 5.2.1 Undertake in-house control and map and report on results. 5.2.2 Undertake field contract supervision and map and report on results. 5.2.3 Undertake follow-up actions. 5.2.4 Undertake site rehabilitation. 5.2.5 Coordinate volunteers to assist with control, follow up and site rehabilitation. 5.2.6 Enforce responsible pet ownership (no dogs and containment of domestic cats in neighbouring areas).	R3, GSO, Contractor	Mr, Mcw, NEScw
	5.2.7. Treat any European Wasp nest located within the River Park 5.3 Monitor the distribution and abundance of pest animals within the Park: 5.3.1 Undertake pre-treatment distribution mapping. 5.3.2 Undertake post-treatment distribution mapping. 5.3.3 Coordinate volunteers to assist with data collection. 5.3.4 Record all mapping data in the Reserve Pest Species Management folder on ArcGIS. 5.3.5 Engage stakeholders in the monitoring program. 5.3.6 Review the effectiveness of the program and identify follow-up actions.	R3, GSO, Ecologist	Mr, NESr
6. Water Quality	6.1 Native vegetation cover will be maintained and increased to help reduce localised erosion. 6.2 Fuel, spray and other chemicals will not be stored within the River Corridor.	R3, GSO	Mr
7. Control vehicle movement and impacts	7.1 Ensure all stakeholders entering the site comply with strict hygiene requirements, including ensuring vehicles are clean before entering the site to reduce the threat of weed introduction and spread. 7.2 Inform all stakeholders to remain on authorised tracks only. 7.3 Identify and undertake any specific trail maintenance requirements. 7.4 During routine inspections monitor for illegal access and the establishment of any unauthorised tracks. 7.5 Use only low impact vehicles (e.g. quad bikes) for off-track access. 7.6 Maintain vehicle tracks and associated infrastructure. 7.7 Limit vehicle access when soil is moist or wet.	R3, GSO	Mr

	7.8 Avoid off-track access when weeds are seeding to minimise weed spread. 7.9 Slash no lower than 100 mm using a flail mower along designated tracks.		
8. Reduce impacts of construction and management of utilities and other infrastructure	8.1 Construction Environmental Management Plans (CEMPs) will be developed and implemented for all construction activities that may directly or indirectly impact the ecological values in the park. They will be developed by qualified environmental professionals with a focus on protecting adjacent areas and will include: 8.1.1 Safeguards for controlling heavy machinery movement (eg. use of fencing); 8.1.2 Erosion prevention and mitigation measures; 8.1.3 Weed and disease hygiene and control measures; 8.1.4 Measures to relocate animals that are found within construction areas; 8.1.5 Appropriate monitoring and reporting; 8.1.6 A rehabilitation component in PTWL habitat, including use of rocks and topsoil elsewhere, use of materials to increase connectivity of PTWL habitat, weed control and fencing.	R3, D&D, Ecologist	Mr, NESr
	8.2 Infrastructure maintenance should be undertaken within best-practice guidelines for endangered species and communities.	R3	Mr
	8.3 Manage infrastructure-related disturbance through the licensing and approvals process: 7.3.1 Licensed works must adhere to the code of practice. 7.3.2 Under the Planning and Development Act 2007, an Environmental Impact Statement (EIS) may be required for any works that could impact the soil, vegetation or threatened species.	R3	Mr
	8.4 Undertake site inductions for all personnel working within the Park to identify values and their specific management requirements. 8.5 Supervise infrastructure-related works and site rehabilitation closely during implementation. 8.6 Monitor infrastructure-related disturbance after completion and ensure follow-up rehabilitation is undertaken if required.	R3, D&D, Ecologist	Mr, NESr
	8.7 When providing conditions of approval ensure conditions are unambiguous and prescriptive (e.g. rehabilitate site with 5g native seed mix per sq m) and ensure >80% ground cover before handover.	R3	Mr
9. Ensure activities in adjacent land does not impact the Park	9.1 Liaise with organisations, businesses and lessees responsible for land management in areas adjacent to the Park. 9.2 Participate in the planning and development process for works on land adjacent to the Park. 9.3 Monitor works, landscaping and land management activities on adjacent land to ensure the values of the Park will not be impacted. 9.4 Ensure recreation nodes do not impact areas of PTWL habitat or other conservation values in terms of: 9.4.1 Introduction of invasive species; 9.4.2 Damage during construction; 9.4.3 Changes to hydrology and nutrient cycling; 9.4.4 Damage or disturbance to habitat.	R3	Mr

10. Enhance visitor and community awareness	10.1 Manage recreational activities: 9.1.1 Liaise with City Services to ensure management is compatible in recreation nodes and conservation areas 10.1.2 Review the nature and scale of recreational activities that are compatible with maintaining the values of the Park. 10.1.3 Provide information to users and inform all stakeholders to remain on authorised tracks only. 10.1.4 Maintain recreation tracks and associated infrastructure. 10.1.5 Monitor impacts of recreation activities. 10.1.6 Maintain Park security to prevent accidental or malicious damage to infrastructure, indigenous, European and natural values. 10.1.7 Use the review of compatible recreation activities to guide good visitor behaviour.	R3	Mr
	10.2 Promote awareness of values to visitors and other stakeholders: 10.2.1 Publish and promote profiles of the ecological and other values in the Park. 10.2.2 Maintain and update interpretive signage. 10.2.3 Provide updated information about the Park. 10.2.4 Seek direct contact with Park users. 10.2.5 Facilitate and undertake guided walks, community and school talks. 10.2.6 Undertake site inductions for all personnel or organisations undertaking organised activities within the Park to identify values and their specific management requirements. 10.3 Protect cultural heritage assets according to existing management plans.	R3, Ecologist, D&D	Mr, NESr, Mcw
11. Encourage and support scientific studies	11.1 Maintain links with existing and potential research organizations. 11.2 Consult CPR in relation to any changed management activities in PTWL and other threatened species habitat.	Ecologist	NESr
	11.3 Maintain a library of research and monitoring relevant to the Park, including contacts, specific requirements, maps of locations and reports and papers.	Ecologist	NESr
	11.4 Facilitate the planning, coordination and implementation of research projects: 11.4.1 Encourage and support scientific studies that aim to enhance the protection of MNES and other significant flora, fauna communities. 11.4.2 Identify opportunities for research and monitoring programs that evaluate the effectiveness of management practices in situ.	Ecologist	NESr
	11.5 Review the implications of research and monitoring results for management.	R3, Ecologist	Mr, NESr
12. Encourage and support community engagement	12.1 Develop a volunteer program: 12.1.1 Maintain a list of volunteers who wish to be involved in projects. 12.1.2 Identify works projects suitable for volunteers.	R3	Mr
	12.2 Support and encourage CVA and other volunteers to participate in the conservation of the ecological and cultural heritage values of the Park: 12.2.1 Co-ordinate and supervise volunteers while undertaking work in the Park.	R3, Ecologist	Mr, NESr

	12.3 Consider establishing, guiding and resourcing a ParkCare group once there is volunteer support for a ParkCare group. 12.3.1 Liaise with the PCS ParkCare support officer.	R3	Mr
13. Document values	13.1 Maintain records of actions undertaken and other relevant information: 13.1.1 Provide annual reports on management implementation. 13.1.2 Maintain a comprehensive database of the ecological and cultural heritage values of the Park. 13.1.3 Update ACT wildlife atlas records and vegetation database with data on rare species	R3, D&D, Ecologist	Mr, NESr
	13.2 Maintain and promote monitoring programs: 13.2.1 Undertake annual vegetation and habitat condition monitoring program. 13.2.2 Undertake Superb Parrot, woodland bird and PTWL monitoring programs. 12.2.3 Monitor the impacts of weed control on the native diversity and revegetation success. 13.2.4 Regularly monitor fire fuel levels. 13.2.5 Monitor water quality, sediment and erosion control, especially before and after planned burns 13.2.8 Assist with the coordination and implementation of CPR and COG monitoring programs. 13.2.9 Promote and assist with monitoring of other species within the Park. 13.3 Review and implement monitoring results: 13.3.1 Review monitoring results annually for identification of issues that require short-term management. 13.3.2 Analyse monitoring results and provide reports every five years and consider implications for management.	Ecologist	NESr

Maps[2]

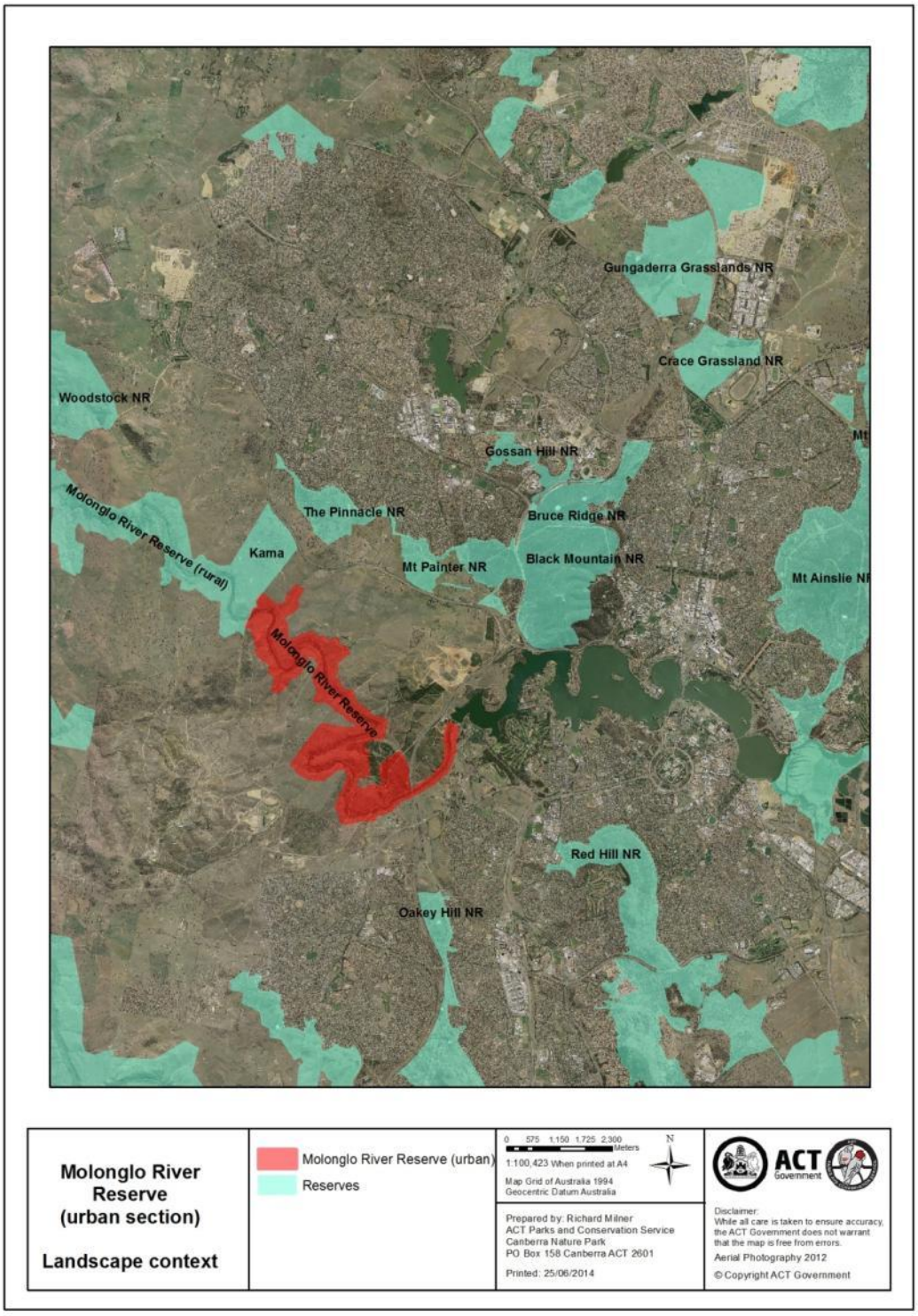

Figure 1: Molonglo River Reserve landscape context.

[2] Information provided in the following maps may change as more information becomes available. Users should refer to (insert hyperlink) for current spatial data.

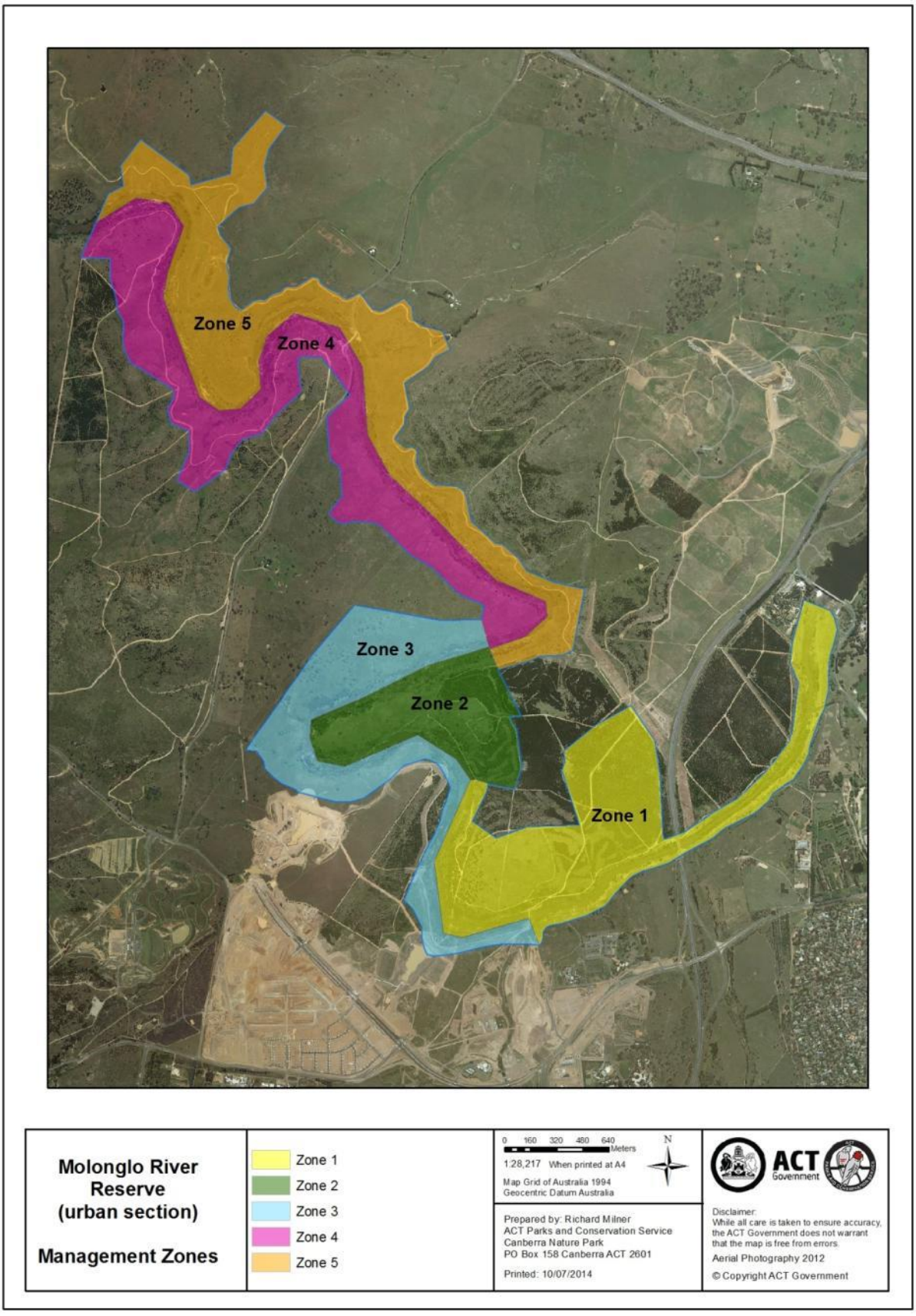

Figure 2. Molonglo River Reserve (Urban Section) management zones.

Figure 3. Mologlo River Reserve (Urban Section) Concept Plan (Hassell 2011).

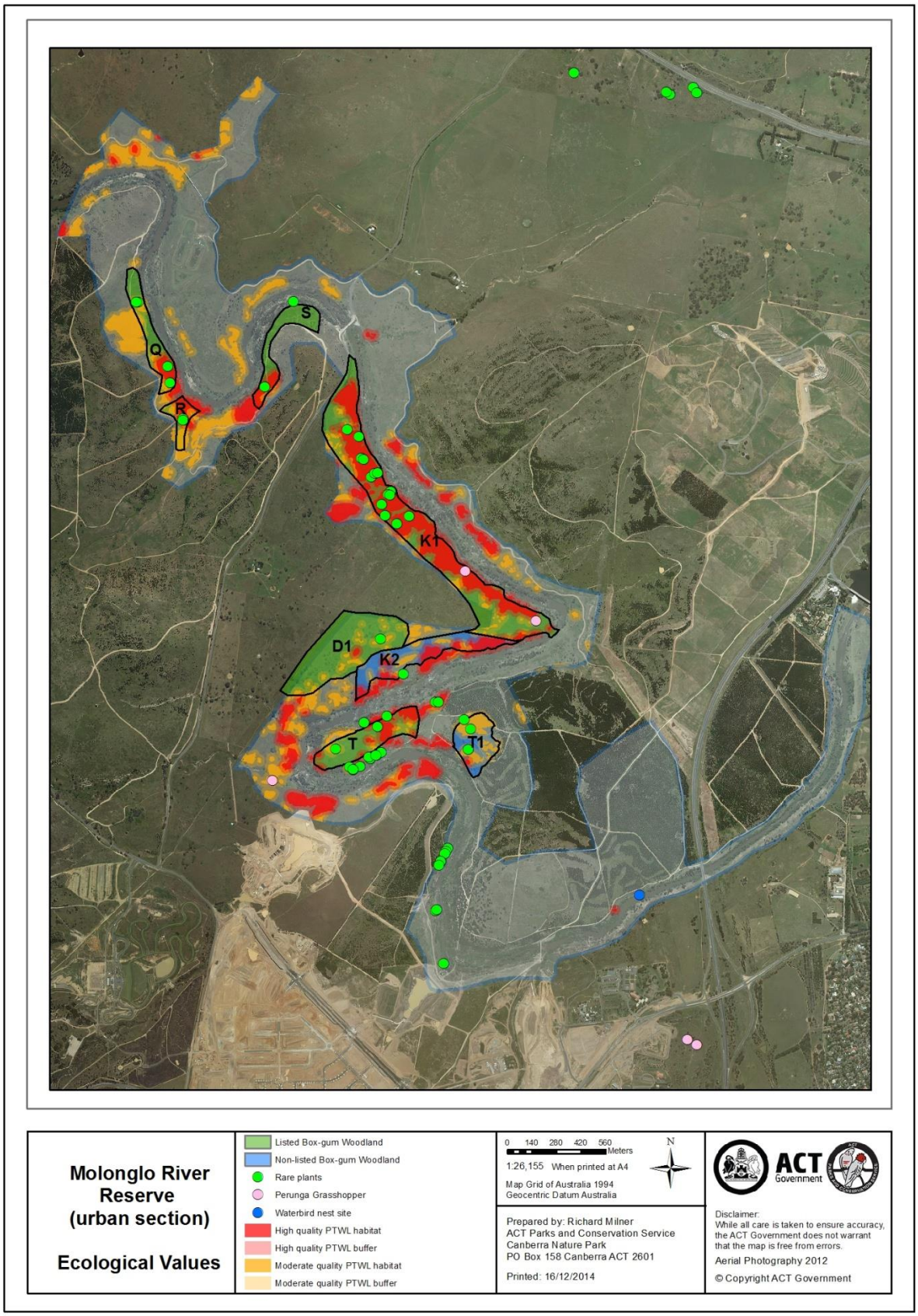

Figure 4: Molonglo River Reserve (Urban Section) ecological values and NES patches.

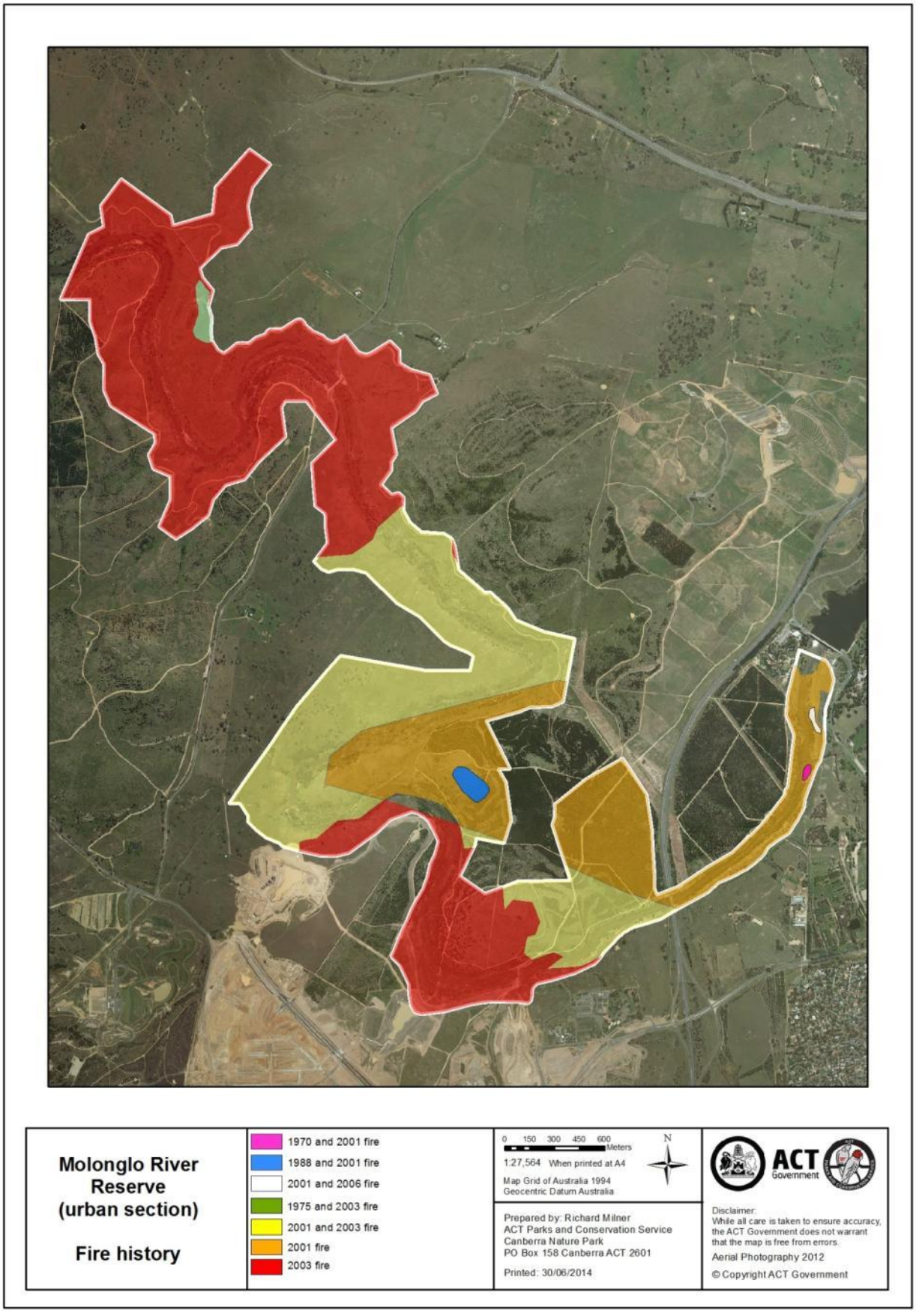

Figure 5: Molonglo River Reserve (Urban Section) fire history.

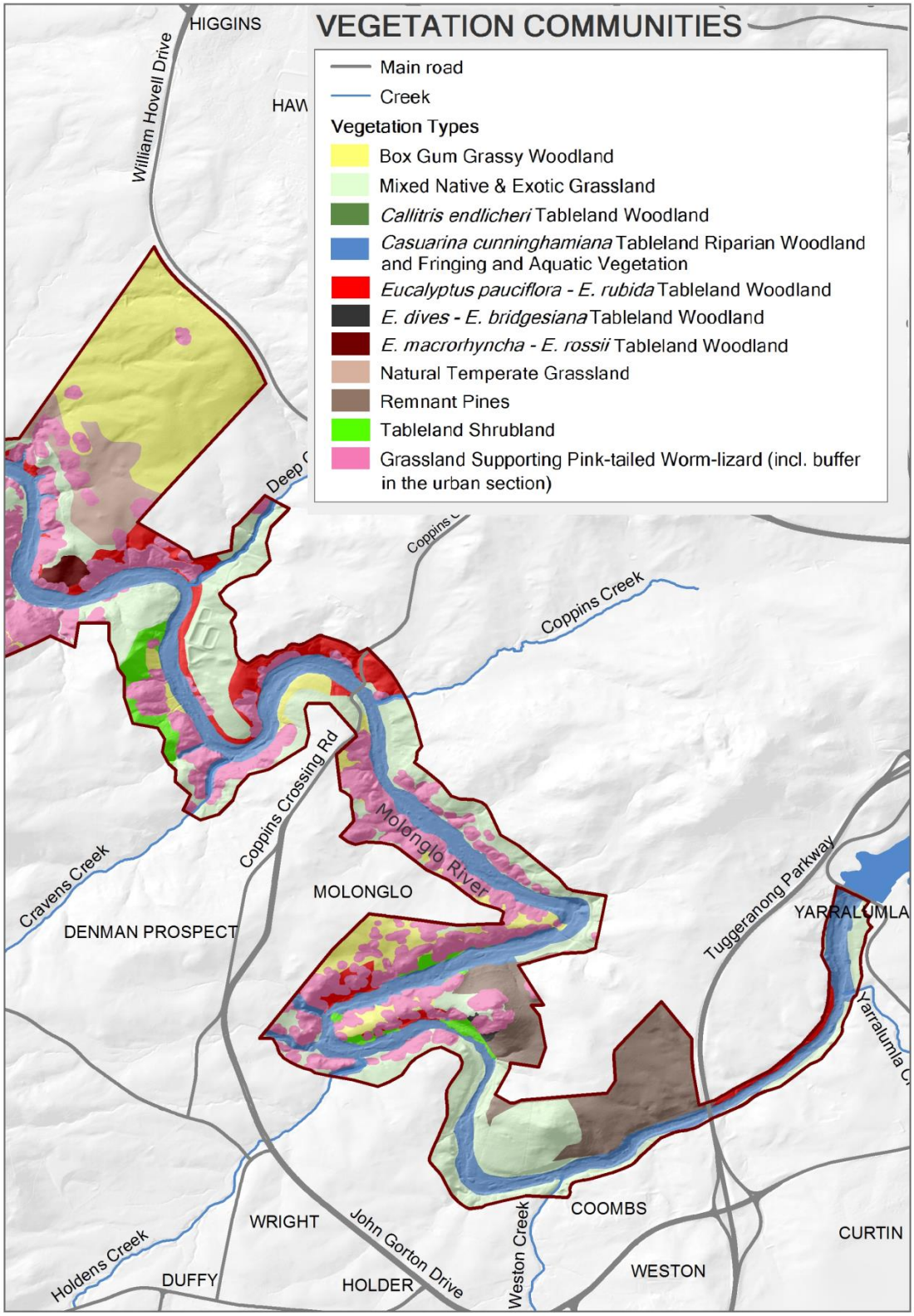

Figure 6: Molonglo River Reserve (Urban Section) vegetation communities.

Figure 7: Molonglo River Reserve (Urban Section) heritage sites.

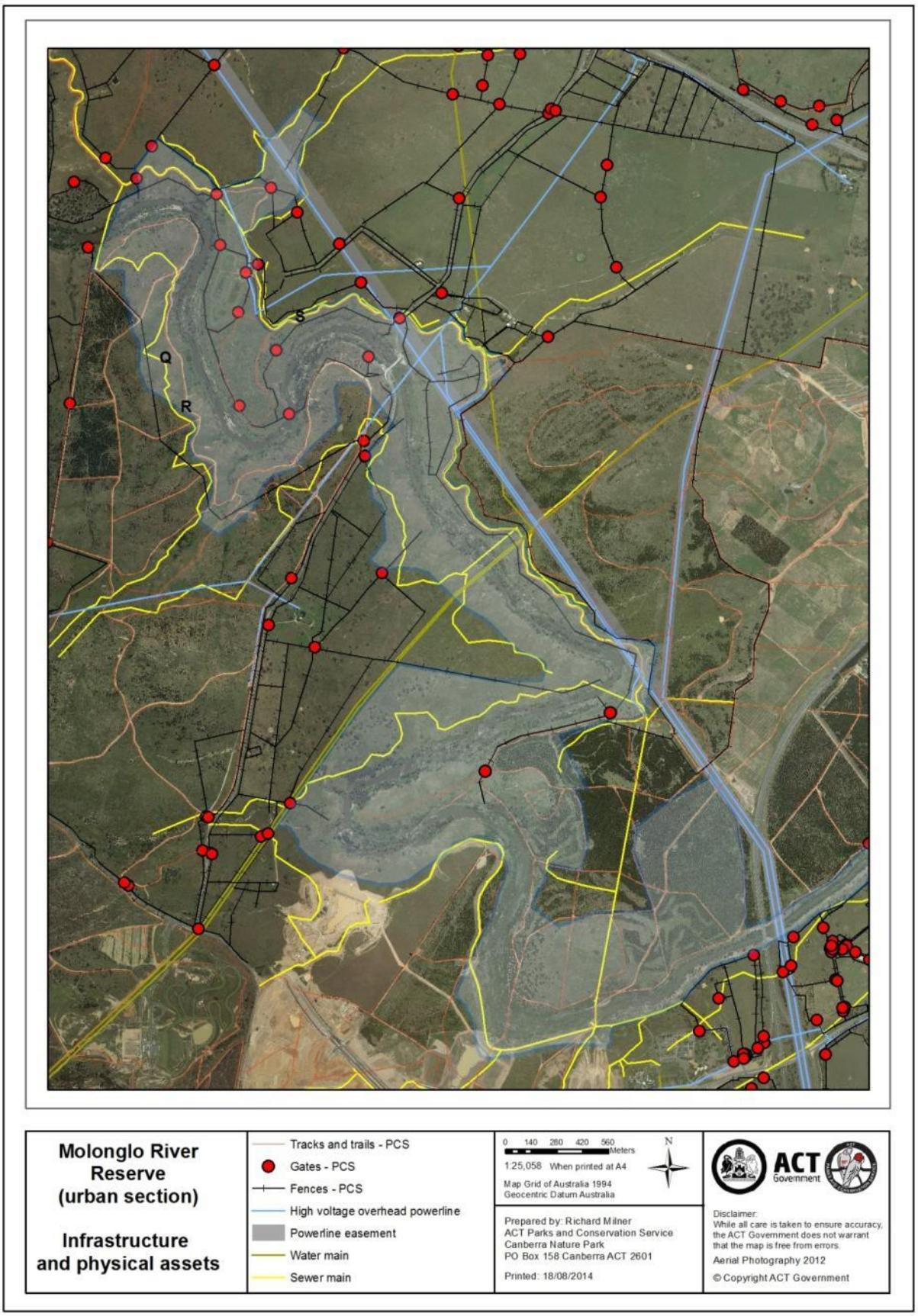

Figure 8: Molonglo River Reserve (Urban Section) infrastructure and physical assets.

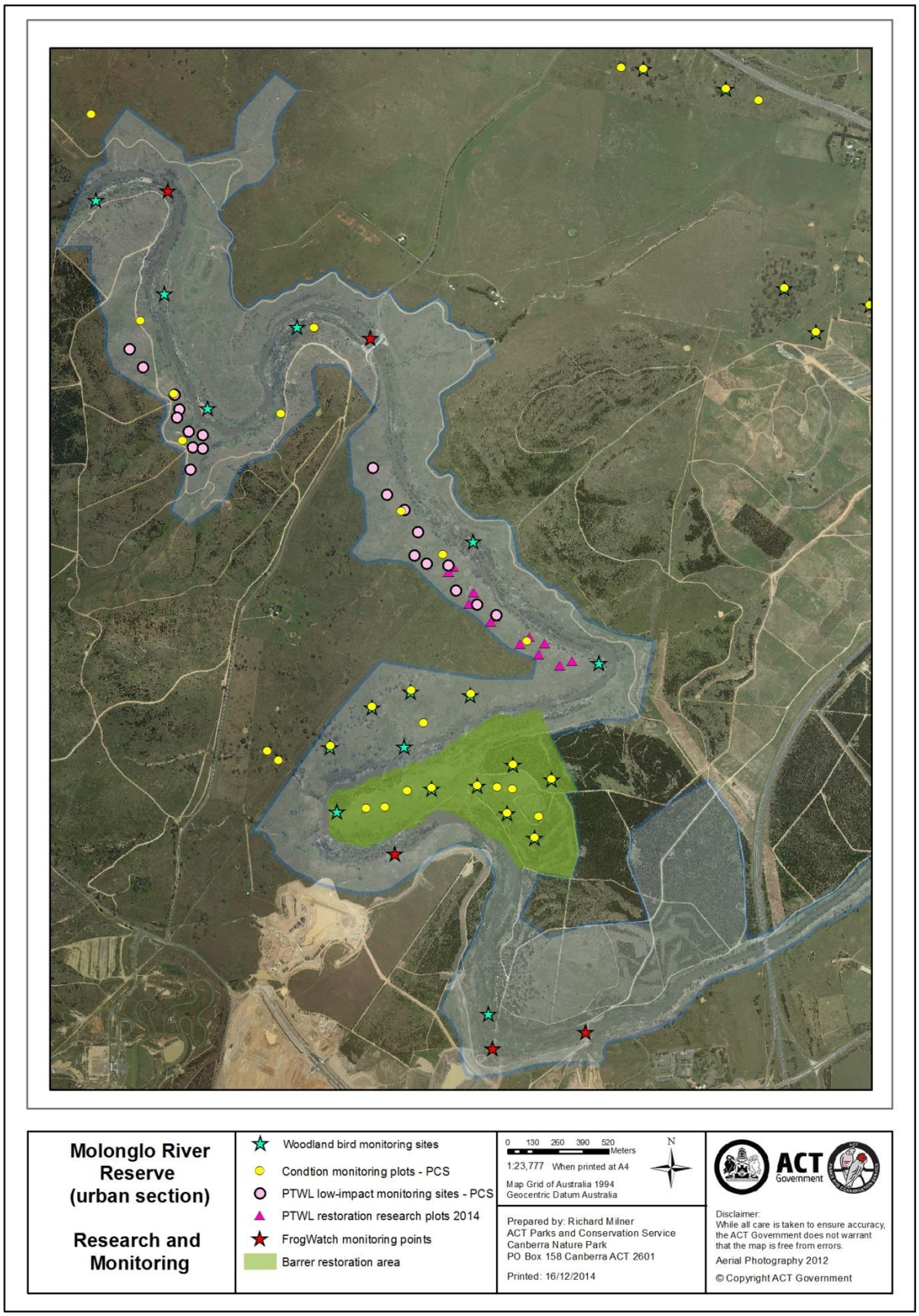

Figure 9. Molonglo River Reserve (Urban Section) research and monitoring sites.

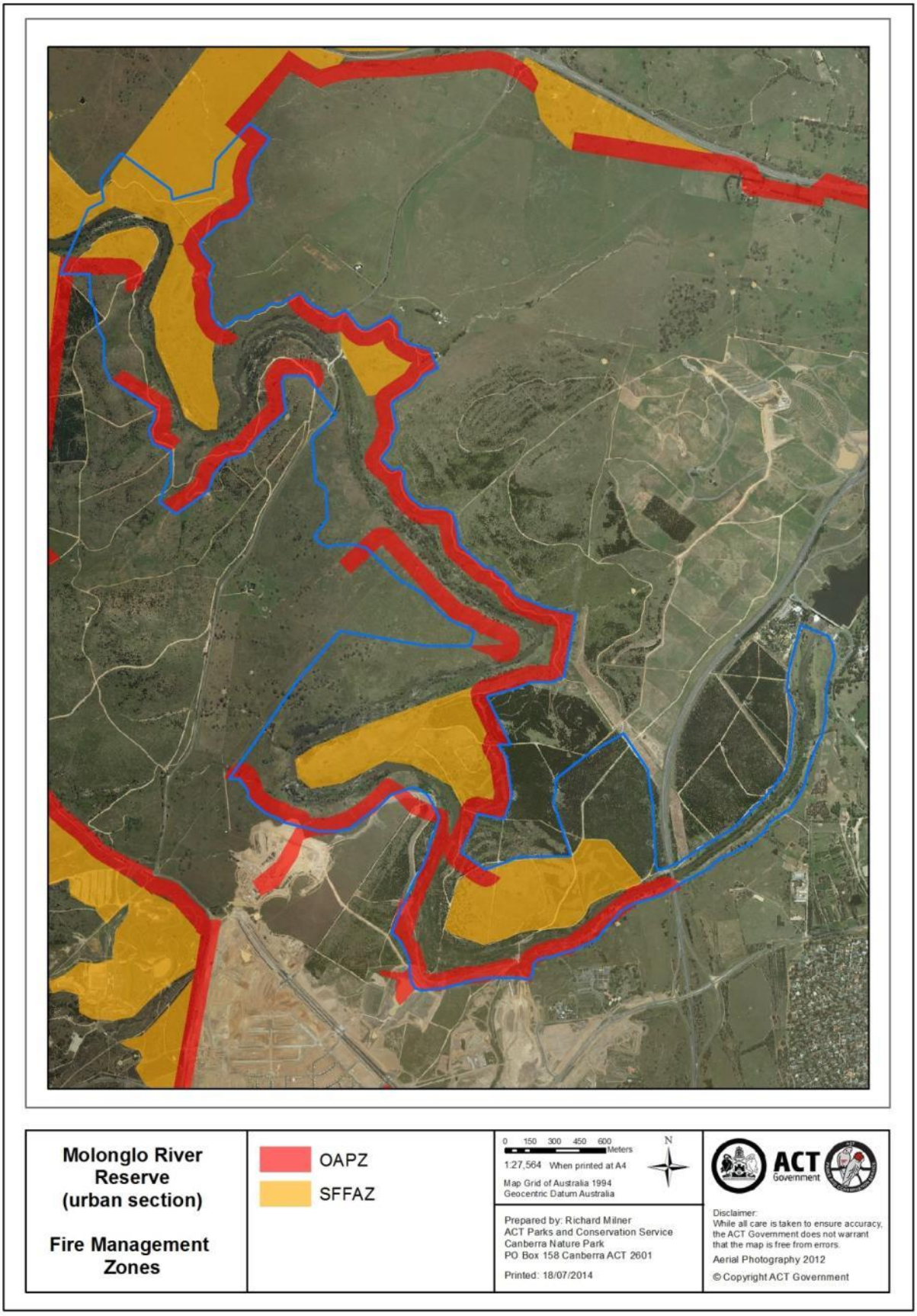

Figure 10: Molonglo River Reserve (Urban Section) fire management zones.

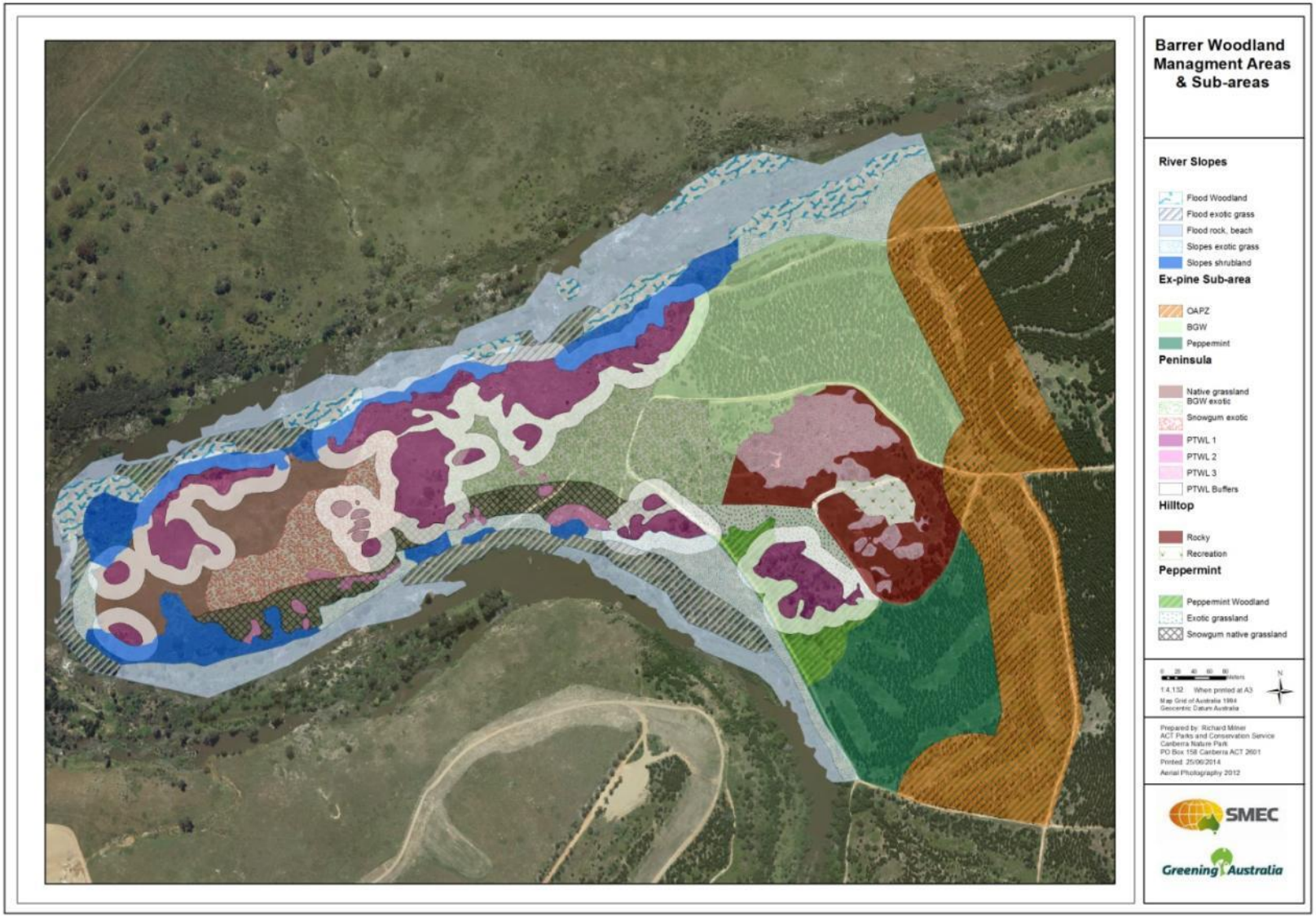

Figure 11. Barrer box-gum woodland restoration plan.

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See also *act.gov.au**tams**E&R**PCL**Image**DESIGN AND DEVELOPMENT**Molonglo River Park**ngh doc review**Molonglo Stage 2 docs* for a list of all reports related to the Molonglo corridor.

Appendix A: Vegetation Communities

Vegetation communities found within the Molonglo River Reserve (Eco Logical Australia 2013).

Ecological Community	***Cwlth****	***ACT****	***NSW*****	***Area***	***Mgmt Zone***
Within the Park					
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland)	Critically endangered	Endangered	Endangered	70.9 ha + 17 ha degraded (not EEC) (Large parts of PTWL habitat identified as Box-Gum Woodland derived grassland in the NES Plan may be NTG, Rocky Temperate Grassland)	3,4
Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT (Natural Temperate Grassland) * Rocky Grassland (note: not identified in the NES Plan, subsequently re-defined (Sharp et al, in prep.) * Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT: River Tussock – Kangaroo Grass Wet Tussock Grassland	Endangered	Endangered		Refer to BGW above	2, 3, 4, 5
River She-oak Dry Riparian Forest				233.3 ha	1, 2, 3, 4, 5
River Bottlebrush – Burgan Tableland Shrubland				25.3 ha	2, 3, 4, 5
Snow Gum – Candlebark Grassy Woodland			Endangered	104.8 ha	1, 2, 5
Broad-leaved Peppermint – Apple Box Shrubby Woodland				4.8 ha	2, 4, 5
Red Stringybark – Scribbly Gum Tall Dry Forest				24.9 ha	5
Tableland Aquatic and Fringing Vegetation Complex				River itself	1, 2, 3, 4, 5
Other degraded native or exotic vegetation including pine plantation				unknown	1, 2, 3, 4, 5
Additional communities downstream of the Park					
Black Cypress Pine Tableland Woodland				133.4 ha	na

Appendix B: Flora Species List

Species present in NES patches (Eco Logical Australia 2013 and NES monitoring 2013).

Native Flora Species
Acacia rubida
Acaena novae-zelandiae
Acaena ovina
Anthosachne scaber (Elymus)
Aristida ramosa
Asperula conferta
Austrostipa bigeniculata
Austrostipa densiflora
Austrostipa scabra
Bothriochloa macra
Brachyloma daphnoides
Bulbine bulbosa
Bursaria spinosa
Calotis lappulacea
Carex appressa
Carex breviculmis
Carex inversa
Carex sp.
Cassinia longifolia
Cheilanthes austrotenuifolia
Cheilanthes sieberi
Chrysocephalum apiculatum
Convolvulus angustissimus
Crassula sieberana
Cryptandra speciosa
Cymbonotus lawsonianus
Cymbopogon refractus
Cynoglossum suaveolens
Daucus glochidiatus
Desmodium varians
Dianella longifolia
Dianella revoluta
Dichelachne crinita
Einadia nutans
Enneapogon nigricans
Epilobium billardereanum
Eragrostis brownii
Erodium crinitum
Eryngium ovinum
Eucalyptus blakelyi
Eucalyptus dives
Euchiton sp. (native)
Geranium solanderi
Glycine clandestina
Glycine tabacina
Haloragis heterophylla
Hibbertia riparia
Hydrocotyle laxiflora
Juncus austral
Juncus filicaulis
Juncus bufonius
Kunzea ericoides
Leptospermum sp.
Linum marginale
Lomandra bracteata
Lomandra filiformis
Lomandra filiformis coriacea
Lomandra longifolia
Lomandra multiflora
Melichrus urceolatus
Microlaena stipoides
Microtis unifolia
Oxalis perennans
Panicum effusum
Pimelia curviflora
Poa labillardierei
Poa sieberiana
Rumex brownii
Rytidosperma caespitosum
Rytidosperma carphoides
Rytidosperma laevis
Rytidosperma pallidum
Rytidosperma racemosum
Rytidosperma sp
Schoenus apogon
Scleranthus biflorus
Senecio sp.
Solanum cinereum
Sorghum leiocladum
Stackhousia monogyna
Themeda triandra
Tricoryne elatior
Triptilodiscus pygmaeus
Vittadinia muelleri
Vittadinia sp.
Wahlenbergia communis
Wahlenbergia luteola
Wahlenbergia stricta

Exotic Flora Species
Acetosella vulgaris
Aira sp.
Alternanthera spp
Amaranthus deflexus
Arctotheca calendula
Avena sp.
Briza minor
Bromus diandrus
Bromus hordeaceus
Bromus molliformis
Bromus rubens
Bromus sp.
Carthamus lanatus
Centaurium erythraea
Cerastium glomeratum
Chenopodium sp
Chondrilla juncea
Cirsium vulgare
Conyza sp.
Crataegus monogyna
Cynodon dactylon
Cyperus eragrostis.
Dactylis glomerata
Echium plantagineum
Eleusine tristachya
Epilobium spp
Eragrostis curvula
Erodium brachycarpum
Erodium cicutarium
Hirschfeldia incana
Holcus lanatus
Hordeum (Critesion) sp.
Hypericum perforatum
Hypochaeris glabra
Hypochaeris radicata
Latuca saligna
Lactuca serriola
Linaria pelisserana
Linaria spp (arvensis?)
Lolium perenne
Lolium rigidum
Lycium ferocissimum
Marrubium vulgare
Medicago sp.
Modiola caroliniana
Nassella trichotoma
Oenothera mollissima
Oenothera stricta
Onopordum acanthium
Paronychia brasiliana
Paspalum dilatatum
Petrorhagia nanteuilii
Phalaris aquatica
Pinus radiata
Plantago lanceolata
Psilurus incurvus
Rosa rubiginosa
Rubus fruticosus
Rubus parviflora
Salvia verbenaca
Sanguisorba minor
Silene gallica
Solanum nigrum
Sonchus spp
Sonchus asper
Tolpis barbata
Tragopogon sp.
Trifolium angustifolium
Trifolium arvense
Trifolium campestre
Trifolium glomeratum
Trifolium subterraneum
Trifolium sp.
Verbascum thapsus
Verbascum virgatum
Vulpia muralis
Vulpia sp.

Total native species	89
Total introduced species	77
Percentage native species	54

Appendix C: Fauna Species List

Birds	***Breeding***
Australasian Darter	y
Australasian Grebe	y
Australasian Pipit	y
Australian Hobby	
Australian King-Parrot	
Australian Magpie	y
Australian Pelican	
Australian Raven	y
Australian Reed-Warbler	
Australian White Ibis	
Australian Wood Duck	y
Barking Owl	
Black Swan	y
Black-faced Cuckoo-shrike	y
Black-fronted Dotterel	y
Black-shouldered Kite	y
Black-winged Stilt	
Brown Falcon	
Brown Goshawk	y
Brown Quail	y
Brown Songlark	
Brown Thornbill	y
Brown Treecreeper	y
Brown-headed Honeyeater	
Brush Cuckoo	
Budgerigar	
Buff-rumped Thornbill	y
Cattle Egret	
Collared Sparrowhawk	
Common Blackbird	y
Common Bronzewing	y
Common Myna	y
Common Starling	y
Crescent Honeyeater	
Crested Pigeon	y
Crimson Rosella	y
Diamond Firetail	
Dollarbird	
Double-barred Finch	y
Dusky Moorhen	
Dusky Woodswallow	y
Eastern Great Egret	
Eastern Rosella	y
Eastern Spinebill	
Eastern Yellow Robin	
Eurasian Coot	
Eurasian Skylark	y
European Goldfinch	y
European Greenfinch	
Fairy Martin	y
Fan-tailed Cuckoo	y
Flame Robin	
Fork-tailed Swift	
Fuscous Honeyeater	
Galah	y
Gang-gang Cockatoo	
Glossy Black-Cockatoo	
Golden Whistler	
Golden-headed Cisticola	y
Great Cormorant	
Grey Butcherbird	
Grey Currawong	
Grey Fantail	y
Grey Goshawk	
Grey Shrike-thrush	y
Grey Teal	y
Hoary-headed Grebe	
Horsfield's Bushlark	
Horsfield's Bronze-Cuckoo	y
House Sparrow	y
Laughing Kookaburra	y
Leaden Flycatcher	y
Little Black Cormorant	y
Little Corella	
Little Eagle	
Little Grassbird	
Little Pied Cormorant	y
Little Raven	
Long-billed Corella	
Magpie-lark	y
Masked Lapwing	y
Masked Woodswallow	
Mistletoebird	y
Musk Duck	
Nankeen Kestrel	y
Nankeen Night-Heron	
New Holland Honeyeater	y
Noisy Friarbird	
Noisy Miner	

Northern Mallard	
Olive-backed Oriole	
Pacific Black Duck	y
Painted Button-quail	
Pallid Cuckoo	y
Peregrine Falcon	y
Pied Cormorant	
Pied Currawong	y
Purple Swamphen	y
Rainbow Bee-eater	y
Red Wattlebird	
Red-browed Finch	y
Red-capped Robin	
Red-rumped Parrot	y
Restless Flycatcher	
Rock Dove	y
Rose Robin	
Royal Spoonbill	
Rufous Fantail	
Rufous Songlark	y
Rufous Whistler	y
Sacred Kingfisher	
Satin Bowerbird	
Scarlet Robin	
Shining Bronze-Cuckoo	
Silver Gull	
Silvereye	y
Southern Boobook	y
Southern Whiteface	y
Speckled Warbler	y
Spotted Harrier	
Spotted Pardalote	
Straw-necked Ibis	y
Striated Pardalote	y
Striated Thornbill	
Stubble Quail	
Sulphur-crested Cockatoo	y
Superb Fairy-wren	y
Superb Parrot	y
Swamp Harrier	
Tawny Frogmouth	
Tree Martin	y
Varied Sittella	y
Wedge-tailed Eagle	y
Weebill	

Welcome Swallow	y
Whistling Kite	
White-bellied Sea-Eagle	
White-browed Scrubwren	y
White-browed Woodswallow	
White-eared Honeyeater	
White-faced Heron	
White-fronted Chat	y
White-naped Honeyeater	
White-necked Heron	
White-plumed Honeyeater	y
White-throated Gerygone	
White-throated Needletail	
White-throated Treecreeper	y
White-winged Chough	y
White-winged Triller	y
Willie Wagtail	y
Yellow Thornbill	y
Yellow-faced Honeyeater	y
Yellow-rumped Thornbill	y
Yellow-tailed Black-Cockatoo	y
Yellow-tufted Honeyeater	

Mammals
Echidna
Platypus
Common Wombat
Common brushtail possum
Sugar Glider
Eastern grey Kangaroo
Eastern wallaroo
Red-necked wallaby
Swamp wallaby
Bush rat
Eastern water rat
Feral dog
European fox
Feral cat
Feral pig
Feral goat

Reptiles	
Long-necked tortosie	*Chelodina longicollis*
Stone gecko	*Diplodactylus vittatus*
Marbled gecko	*Phyllodactylus marmoratus*
Pink-tailed worm-lizard	*Aprasia parapulchella*
Olive legless lizard	*Delma inornata*
Bearded dragon	*Pogona barbatus*
Tree dragon	*Amphibolurus muricatus*
Nobbi dragon	*Amphibolurus nobbi*
Gippsland water dragon	*Physignathus lesueurii*
Striped skink	*Ctenotus robustus*
Copper-tailed skink	*Ctenotus taeniolatus*
Skink	*Ctenotus uber orientalis*
Cunningham skink	*Egernia cunninghami*
Delicate skink	*Lampropholis delicata*
Garden skink	*Lampropholis guichenoti*
Boulenger's skink	*Morethia boulengeri*
Common blue-tongue	*Tiliqua scincoides*
Worm snake	*Ramphotypholops nigrescens*
Red-bellied black snake	*Pseudechis porphyriacus*
Eastern brown snake	*Pseudonaja textilis*

Amphibians	
Eastern banjo frog	*Limnodynastes dumerilii*
Spotted grass frog	*Limnodynastes tasmaniensis*
Frog	*Crinia parinsignifera*
Common eastern froglet	*Crinia signifera*
Peron's tree frog	*Litoria peronii*

Appendix D: Funding source, schedule and estimates

Funding Source	Code	2014-15	2015-16	2016-17	2017-18
Molonglo Capital Works	Mcw	$2602K			
Molonglo Recurrent	Mr	$452K	$510K		
NES Capital Works	NEScw	$1025K	$850K	$812K	$792K
NES Recurrent	NESr		$236K	$238K	$265K