RMCG

AUGUST 2020

Turallo Creek Bungendore – Management Plan

Final Draft

Queanbeyan-Palerang Regional Council

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Executive Summary

PURPOSE OF THE PLAN

The purpose of the plan is to review current management of Turallo Creek and provide a planning framework that will identify and prioritise its capital, maintenance and management requirements, anticipating cost and resource demands for the future.

This Management Plan covers a 1.4 km section of Turallo Creek in the township of Bungendore, from Tarago Road bridge at the western end to where Turallo Creek crosses Turallo Terrace at the low level crossing to the east. The plan covers the water course and the immediate riparian zone (approximately three metres either side of the bank crests).

MANAGING THE RIPARIAN ZONE

The corridor is a vastly altered environment since European settlement and comprises of a mix of native and exotic vegetation. There are remaining natural values that need to be protected and there is scope for habitat and biodiversity enhancement. The creek is valued by the local community for the green space is provides within residential areas and recreational opportunities it provides.

There were six high priority risks identified for Turallo Creek:

1. Spread of willows and woody weeds downstream (seed dispersal and vegetative reproduction)
2. Erosion, sedimentation and nutrient loading from stormwater runoff from town areas causing a deterioration in water quality and ecological damage
3. Build-up of fallen limbs in creek and loss of stream capacity exacerbating a flood event
4. Recurring weed infestations preventing access for maintenance
5. Disturbance of objects of Aboriginal sites during rehabilitation work
6. Emergency incident occurring along the creek / in the watercourse.

These risks can be mitigated by removing exotic species from the waterway and riparian zone, removing fallen limbs from the waterway, using native vegetation to stabilise banks and enhance storm water filtration, avoiding soil disturbance during rehabilitation works and undertaking regular monitoring and weed control to maintain access.

PLANNING FRAMEWORK FOR REHABILITATION

To address the risks and retain amenity values a five stage approach to rehabilitating the creek is recommended. Stage 1 focusses on clearing willows and woody weeds from the watercourse along the entire length of the creek. Stages two to five focus on removing vegetation from the riparian zone and revegetating the area as per figure E1. Details are outlined in accompanying Project Plan.

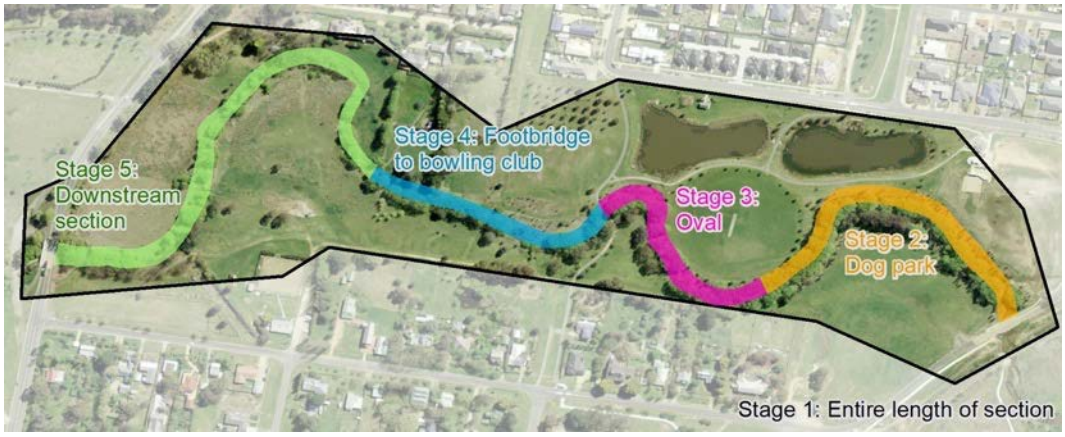

Figure E1: Staged approach to Turallo Creek rehabilitation

1 Introduction

1.1 DEVELOPMENT OF THE PLAN

This Management Plan covers a 1.4 km section of Turallo Creek in the township of Bungendore, from Tarago Road bridge at the western end to where Turallo Creek crosses Turallo Terrace at the low level crossing to the east. The plan covers the water course and the immediate riparian zone (approximately three metres either side of the bank crests).

Although the watercourse is Crown land, Queanbeyan-Palerang Regional Council (QPRC) is responsible for the care and management of land to its lot boundaries or except where under licence from Crown Lands. A land tenure map of the water course is provided in Figure 1-1.

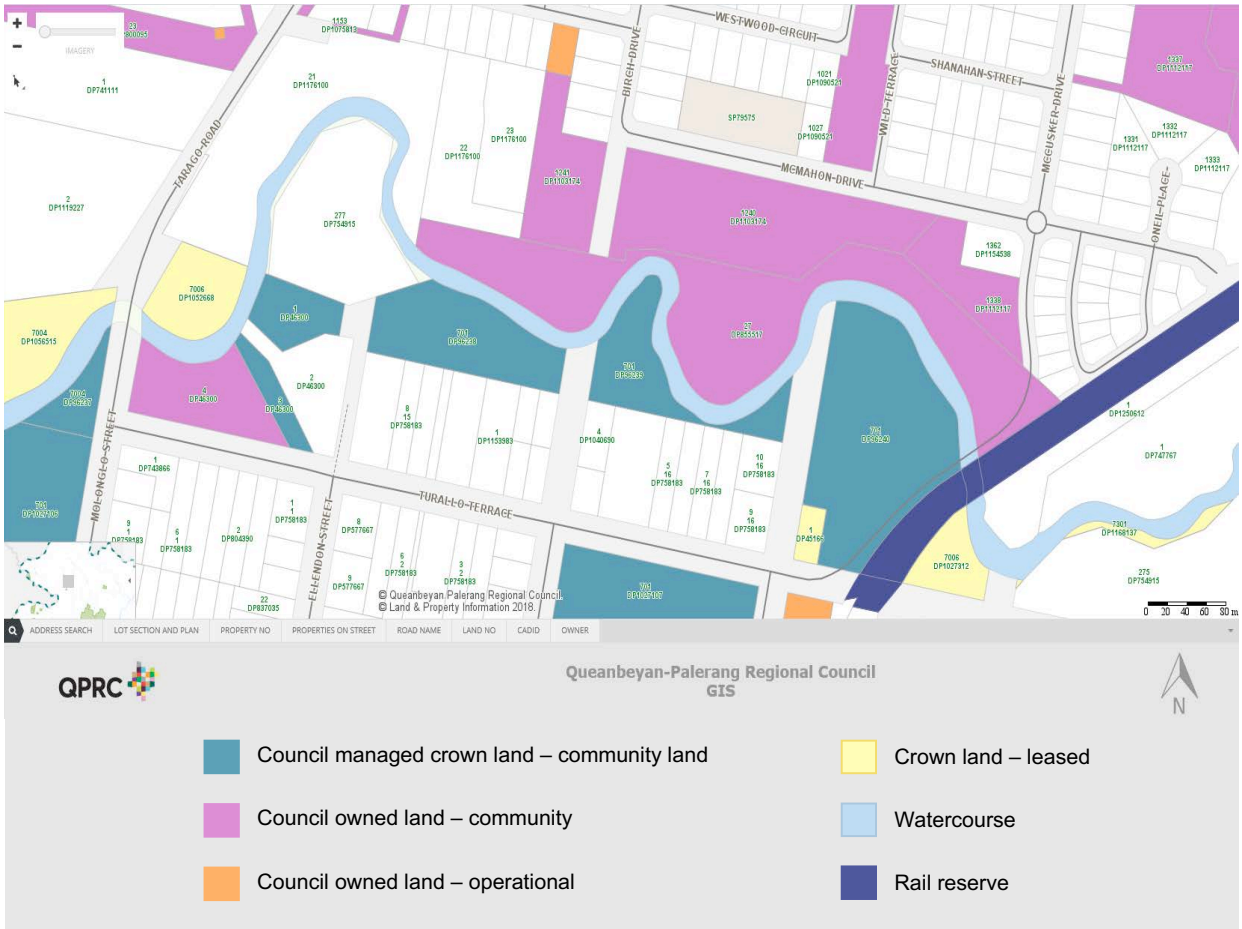

Figure 1-1 Land tenure map - Turallo Creek

The purpose of the plan is to review current management of the watercourse and provide a planning framework that will identify and prioritise its capital, maintenance and management requirements, anticipating cost and resource demands for the future.

The intent of the plan is to provide a practical and useful document to guide Council on the day-to-day management, planning and priorities for the watercourse over the next five years.

OBJECTIVES

When Councils manage public land they are required to comply with legislative and policy requirements. The NSW *Local Government Act 1993* sets out core objectives for the management of public land under control of local councils. The relevant Core Objectives for watercourse areas (s 36M) as they apply to Turallo Creek are as follows:

- To manage the creek to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and flows, and
- To manage the watercourse to protect the riparian environment, particularly in relation to riparian vegetation, habitats and bank stability, and
- To restore the degraded watercourse, and
- To promote community education, and community access to and use of the watercourse, without compromising other core objectives.

In addition to these general Core objectives, Council has a specific objective of a staged rehabilitation program aimed at the removal of woody weeds and replacement with native riparian species that will:

- Reduce limb drops into the watercourse, stabilise its banks, and reduce siltation and loss of stream capacity that exacerbates flooding
- Improve year-round water quality
- Provide habitat for a diversity of native animals
- Improve the general amenity of this popular recreation area.

One of the highest priorities is to undertake rehabilitation works to remove willow and other weeds along the creek. These works will reduce the spread of woody weeds downstream (seed dispersal and vegetative reproduction) and lessen the build-up of fallen limbs in the creek. These cause damage to infrastructure, people and vehicles when heavy wood debris is moved during high water velocities. Recurring weed infestations also prevent access for maintenance and tree roots and fallen limbs across pathway are a trip hazard for users of the reserve.

A separate Project Plan outlining a schedule of works required for immediate rehabilitation of this section of the creek has been developed as an addendum to the plan of management. The plan of management provides a framework for subsequent implementation of works.

The development of this plan has been largely informed by a review and consolidation of available information, site visits, interviews with a range of stakeholders and advice and information from the QPRC.

The plan should be subject to a review within five years from its adoption by Council.

COMMUNITY CONSULTATION

During the development of this Management Plan and the Project Plan, RMCG and Council consulted with landholders, the contractor already engaged to undertake works along Turallo Creek and a representative from the Bungendore Community Landcare Group. Those conversations have informed the design of the management plan.

The Management Plan will be advertised and placed out for public exhibition for the statutory periods required under both the Local Government Act 1993 and Crown Lands Act 1989.

During the exhibition period submissions will be accepted until the advertised date. Appropriate amendments arising from the submissions will be incorporated into the proposed final plan. The submissions and proposed final plan will be provided as a report to Council for consideration and adoption.

Figure 1-1: Turallo Creek

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Ngambri as the Traditional Owners of the Country on which this project was conducted. We recognise their continuing connection to land, waters and culture and pay our respects to their Elders past, present and emerging.

Moreover, we express gratitude for the knowledge and insight that Traditional Owner and other Aboriginal and Torres Strait Islander people contribute to our shared work.

2 Management of the riparian zone

2.1 MANAGEMENT CONTEXT

Apart from the actual watercourse of Turallo Creek, which is Crown land, the surrounding reserve is predominantly Council owned and managed land. Toward the western end of this stretch of the creek are two privately owned properties, Lot 21 DP 1176100 (north of the creek) and Lot 277 DP 754915 (south), as well as part of Travelling Stock Reserve 70386 (Lot 7006 DP 1052668) north of the creek and adjacent to Tarago Road. Community and Council access to the creek is from Tarago Rd in the west, McMahon Drive to the north and Turallo Terrace from the south and east, and for 400 metres of the creek reserve at the western end, access is via private land. The watercourse is part of a wider recreational area running between Warren Little Oval, a skate park, a dog park and walking tracks. The creek has recreational, natural and cultural heritage values.

Within QPRC, management of the watercourse, riparian zone and the reserve public land is the responsibility of the Natural and Built Character portfolio within Council. Specifically:

- The Land-Use Planning service is responsible for developing Plans of Management for public land (under the Community Land program)
- The Urban Landscapes service is responsible for the management and maintenance of urban spaces and landscapes within Bungendore, including council's reserves and crown land under council control (under the Parks/Playgrounds and Community Land programs)
- The Natural Landscapes service is responsible for the control of weeds posing a biosecurity impact (under the Biosecurity program) and enhancement of natural areas (under the Biodiversity program).

Management of the target section of the Turallo Creek will focus on executing the immediate and planned rehabilitation works then maintaining the replanted areas for community enjoyment into the future.

2.2 TURALLO CREEK

The Turallo Creek traverses the Bungendore valley located in the Southern Tablelands. It flows into Lake George, an ancient lake located north east of Canberra and the dominant hydrological feature of the area. The creek is over 32 km in length, its headwaters located in the north western edge of the Tallaganda National Park.

The plan covers a 1.4 km section of the water course (stream bed of varying widths averaging three metres) and the immediate riparian zone (three metres either side of the banks) through the township of Bungendore. This covers an area of approximately 10,000 m2 or 1 hectare of land area.

There are four sections of the creek in the township and these are referred to as:

1. Dog Park
2. Oval
3. Footbridge to Bowling Club
4. Downstream section.

The extent of the creek is shown in Figure 2-1 and a description of the geography and management issues along each section of the creek follows.

Figure 2-1: Map signposting sections along the Turallo Creek

DOG PARK

Infested with multi stemmed willow trees and segments of native plantings on the outer edges of the riparian zones.

The section of Turallo Creek adjacent to the dog park is approximately 250m long. The creek is shallow in parts with some deeper pools (1-2m approximately). Parts of this section are incised but overall banks are stable due to the significant root system of the present willows. There are 10 year old native tree plantings on the southern and northern side of the creek. Access is difficult due to the established native plantings and during wetter periods the ground is soft on the north side making it difficult for vehicles and machinery to operate without causing significant soil disturbance (Figure 2-2).

Figure 2-2: Turallo Creek - Dog park section

OVAL

The section of Turallo Creek adjacent to Warren Little Oval is approximately 400 m long. Sections of this creek are close to private property borders near the preschool (south side) and the edge of Warren Little Oval (north side). Warren Little Oval was planted with Manchurian Pears on the outer rim to improve landscape amenity. Parts of this section are shallow and other parts have deeper pools (>2m approximately) compared to the dog park section. Willows dominate the watercourse and the riparian zone and there are a few larger honeysuckle plants (*Lonicera japonica*), privet (*Ligustrum spp.)* and blackberry (*Rubus fruticosus agg. spp*.) (Figure 2-3).

Figure 2-3: Turallo Creek - Warren Little Oval section

FOOTBRIDGE TO BOWLING CLUB

This section of Turallo Creek between the bowling club and footbridge is approximately 210m long. Parts of the riparian zone are heavily infested with blackberry and willows, which makes access to the watercourse difficult. These areas are deep (approximately >3m) and incised. Other parts are shallower and less vegetated however there are clusters of willows spread through these more open areas. On the outer edge of the riparian zone are some established native trees (Figure 2-4).

Figure 2-4: Turallo Creek – Footbridge to bowling club section

DOWNSTREAM SECTION

This section of the water course is approximately 540m long. It is bordered by private landholders on both sides so will require permission to access the waterfront for works. This stretch of creek is heavily infested with a mix of mature willow trees and suckers as well as juvenile elm trees and blackberry.

Figure 2-5: Turallo Creek – Downstream section

2.3 VALUES OF THE CREEK

NATURAL RESOURCES AND ENVIRONMENTAL

The Turallo creek watercourse is a vastly altered environment since European settlement in the late 1820s. However, there are remaining natural values that need to be protected and offer scope for enhancement of habitat and increased biodiversity. The sections of the creek both upstream and downstream of Bungendore traverse farmland where there has been major loss of biodiversity and fragmentation of habitat. The maintenance of riparian corridors, even if highly modified, can assist in the preservation of habitat for local flora and fauna and watercourses provide important corridors between larger bushland reserves. Even in a highly modified state, watercourses such as this represent important refuges during drier periods.

The creek section in Bungendore comprises three vegetation communities: grassland, exotic woodland and native and introduced plantings. The grasslands consist mainly of introduced grasses, herbs and forbs that are regularly maintained as parkland and of little or no conservation value.

Native and introduced plantings have been established as linear plantings along the creek, forming a largely exotic woodland. Existing vegetation, both native and exotic, provides groundcover, stabilises the soil and provides a filtration role by reducing nutrient loading and sedimentation resulting from urban stormwater runoff

LANDSCAPE AMENITY

Watercourses form a network of green corridors within urban environments. Providing the riparian zone is sustained, they have aesthetic appeal and enhance the amenity of the area. Well vegetated watercourses help cool urban ‘heat islands’, providing respite from a warming climate. Residents will be very appreciative of having access to well maintained vegetated habitat areas close to their neighbourhood.

RECREATION

This stretch of Turallo Creek and surrounds provides a popular and central recreational area for the town, as well as important walking and cycling access between the northern part of the town and commercial and civic centre. It is a popular picnic and outdoor exercise area and suitable recreation activities along the watercourse include dog walking and exploration, photography, bird watching and frog spotting. These activities when focused around a walking trail and surrounding parkland do not require supporting infrastructure other than a suitably maintained path. The social benefits that a well maintained water course in an urban environment can bring are considerable and can help build a healthy community.

2.4 MANAGING CURRENT AND FUTURE RISKS

Risk management is a process of identifying, assessing, treating and monitoring risks. Risk is the chance of something happening that will have a negative effect.

The level of risk reflects:

- The likelihood of the unwanted event
- The potential consequences of the unwanted event.

Council is responsible for the day to day management of the area and several risks sit within its responsibility. Understanding the risks related to the watercourse will assist with informed decision making and to guide priorities for Council investment in management activities.

A risk assessment of responsibilities relating to managing the water course found six high risks and 13 main areas of concern across four risk categories (Table 2-1). These included three natural assets protection risks, seven watercourse maintenance risks, one risk to Aboriginal cultural heritage and two public safety (visitor use) risks. These risks are given highest priority for attention and are addressed within this plan.

The risk assessment guidelines are shown in Appendix 1.

Table 2-1: Risk assessment: risks for the land manager of the creek

RISK CATEGORY	RISK- AREA OF CONCERN	LIKLIHOOD	CONSEQUENCE	RISK LEVEL
Natural assets protection	1. Spread of woody weeds downstream (seed dispersal and vegetative reproduction).	High	Medium	High
	2. Erosion, sedimentation and nutrient loading from stormwater runoff from town areas causing a deterioration in water quality and ecological damage.	High	Medium	High
Watercourse maintenance	3. Acute changes in water quality due to, for example, outbreaks of Blue-Green algae or botulism during periods of low flow	Medium	Medium	Medium
	4. Build-up of fallen limbs in creek causing damage to infrastructure, people and vehicles from heavy wood debris being moved during high water velocities and loss	High	High	High

RISK CATEGORY	RISK- AREA OF CONCERN	LIKLIHOOD	CONSEQUENCE	RISK LEVEL
	of stream capacity exacerbating a flood event.			
	5. Fallen limbs across pathway, tree roots.	Medium	Low	Low
	6. Recurring weed infestations preventing access for maintenance.	High	Medium	High
	7. Excessive stream bank disturbance during woody weed removal.	Medium	Medium	Medium
	8. Off target damage to native vegetation and fauna during weed removal (by machinery, herbicide).	Medium	Medium	Medium
	9. Inappropriate tree and shrub native vegetation selection for replanting.	Low	Medium	Low
	10. Insufficient communication with adjoining landowners about access / scheduling rehabilitation works.	Low	Medium	Low
Aboriginal cultural heritage	11. Disturbance of objects of Aboriginal sites during rehabilitation work.	Medium	High	High
Public safety - visitor use	12. Emergency incident occurring along the creek / in the watercourse.	Medium	High	High
	13. Reputational damage from inadequate control and maintenance of woody weeds along the creek.	Medium	Medium	Medium

3 Planning framework for rehabilitation

3.1 RISK MITIGATION AND TREATMENTS

The risk assessment concluded that there were six high risks and 12 main areas of concern with managing the watercourse. Appropriate mitigation treatments for each of the identified high risks are shown in Table 3-1. The probable residual risk after implementing each treatment is also shown; all risks can be reduced to either a medium or low risk rating.

Table 3-1: Risk mitigation priorities

#	RISK DESCRIPTION	RISK LEVEL	MITIGATION TREATMENT	REVISED RISK[1]
	Natural assets protection			
1	Spread of willows and woody weeds downstream (seed dispersal and vegetative reproduction).	High	▪ Removal of exotic pest plant species (crack willow, privet, hawthorn, blackberry, briar and honeysuckle etc.) from the waterway and riparian zone will reduce the spread of weed species downstream and protect natural habitats. ▪ Methods used for removing trees should be chosen based on prioritising health and safety and minimising off-target damage.	Medium
2	Erosion, sedimentation and nutrient loading from stormwater runoff from town areas causing a deterioration in water quality and ecological damage.	High	▪ Vegetation provides effective natural stormwater filtration so replanting with appropriate species can enhance this filtration effect - revegetation of riparian zone with wetland species, grasses, shrubs and trees. Wetland and groundcover species minimise soil loss.	Medium
	Watercourse maintenance			
3	Build-up of fallen limbs in creek and loss of stream capacity exacerbating a flood event.	High	▪ Remove fallen limbs from waterway. Subsequent removal of willows will reduce the amount of limb fall over the longer term.	Low
4	Recurring weed infestations preventing access for maintenance.	High	▪ Removal of target weed species (blackberry, hawthorn, fennel, honeysuckle, sweet briar, ivy) to maintain access to the creek. ▪ Follow up inspections and maintenance as required. ▪ Methods used for weed control should be chosen based on prioritising health and safety and minimising off-target damage.	Low
	Aboriginal cultural heritage			
5	Disturbance of objects of Aboriginal sites during rehabilitation work.	High	▪ Avoid soil disturbance. ▪ Follow *Unanticipated Find Protocol* if any objects are uncovered during works.	Medium
	Public safety - visitor use			
6	Emergency incident occurring along the creek / in the watercourse.	High	▪ Keeping track clear of vegetation related hazards; caution signage to alert visitors.	Medium

[1] Residual risk level based on revised likelihood and consequence due to implementation of mitigation measures

3.2 OPTIONS FOR REHABILITATION

Rehabilitation of the creek can be approached in several ways. The options and their advantages and disadvantages are presented in Table 3-2.

Table 3-2: Creek rehabilitation works options

OPTION		ADVANTAGES	DISADVANTAGES
1	COMPLETE REHABILITATION: Removal of all woody weeds along both sides of the 1.4km stretch of Turallo Creek followed by extensive revegetation - As one project or contract	▪ Flooding potential is reduced ▪ Allows for immediate replanting and stabilisation of cleared areas ▪ Significant improvement in biodiversity within 10 years.	▪ Large scale disturbance ▪ Large impact on amenity for local users and residents ▪ Large upfront costs ▪ Community are not on-board with this option.
2	STAGE ONE BANK (AT A TIME) REHABILITATION: Clearing of woody weeds along one bank (north or south) followed by revegetation - Then clearing of the other bank in five years time	▪ Immediate habitat loss is minimised ▪ Allows for immediate stabilisation and replanting ▪ Significant biodiversity improvements within 10 years ▪ Less impact on amenity for local users and residents.	▪ Native tree species will still be competing with exotic species due to their extensive live root systems in the creek bed ▪ Creates space for plant suckers ▪ Does not alleviate flood issues downstream caused by breaking limbs upstream ▪ Large upfront costs.
3	STAGED SECTIONAL REHABILITATION: Removing weeds and rehabilitating sector by sector by progressive replanting - As a series of projects or contracts executing one per year over 7 years	▪ Manageable sized contracts that can fit within Councils budget ▪ Allows immediate replanting and stabilisation of cleared areas ▪ Lowers impact on amenity values during the rehabilitation	▪ Biodiversity benefits are delayed due to longer timeframe.

The recommended approach to the Turallo Creek rehabilitation project is Option 3 Removing weeds and rehabilitating sector by sector by progressive replanting.

Staging works involves removal of woody weeds from within the watercourse and riparian zone in manageable sections of the creek, followed by targeted revegetation with a combination of local native wetland species, grasses and other groundcovers, shrubs and trees. This allows immediate replanting and stabilisation of cleared areas, ensures that habitat loss is minimised, and retains the amenity values of the majority of the creek area throughout the rehabilitation process.

3.3 STAGED REHABILITATION WORKS

A separate project plan has been developed for the rehabilitation of Turallo Creek (see addendum). The works are proposed in five stages (over seven years). Stage 1 – removal of willows, other woody weeds and debris from the watercourse – is currently underway. An overview of the stages and estimated costs is provided in Table 3-3.

The target weeds are:

- *Salix x fragilis* – Crack willows (non-weedy Weeping Willows (*S. babylonica*) will remain)
- *Rubus fruticosus agg.* spp. – Blackberry
- *Crataegus monogyna* - Hawthorn
- *Foeniculum vulgare* – Fennel

- *Ulmus procera.* – Elm trees (self sown and suckers only where they are causing problems to maintain the integrity of the original plantings)
- *Populus spp.* – Poplar (self sown and suckers only where they are causing problems to maintain the integrity of the original plantings)
- *Ligustrum spp*. - Privet
- *Lonicera japonica.* – Honeysuckle
- *Rosa rubiginosa* – Sweet Briar
- *Fraxinus angustifolia subsp. angustiflolia* – Desert Ash
- *Hedera helix* – Ivy.

Table 3-3: Rehabilitation stages and estimated costs

STAGE	DESCRIPTION OF WORKS	TIMING	STATUS	INDICATIVE COST
Stage 1.	▪ Clearing of willows and woody weeds from within the watercourse between Turallo Terrace (east end where road crosses Turallo Creek) and Tarago Road (west end).	2019-2022 Year 1, 2 & 3	Commenced	$132,000
Stage 2.	▪ Removal of target weeds from the riparian zone adjacent to the current informal dog park. ▪ Revegetation with trees in cleared areas. Planting of understory ground covers, grasses and shrubs.	2022-2023 Year 4	Planned	$27,500
Stage 3.	▪ Removal of target weeds from the riparian zone adjacent to the Warren Little Oval. ▪ Manchurian pears (*Pyrus ussuriensis)* on the border of Warren Little Oval to remain. ▪ Revegetation in cleared areas of the riparian zone with grasses, ground covers and shrubs.	2023-2024 Year 5	Planned	$39,500
Stage 4.	▪ Removal of target weeds from the riparian zone adjacent to the section adjacent to the bowling club. ▪ Revegetation in cleared areas of the riparian zone with grasses, ground covers, shrubs and trees.	2024-2025 Year 6	Planned	$32,500
Stage 5.	▪ Removal of target weeds from riparian zone throughout section bordered by private properties. Access is required through private property. ▪ Retain non-weedy plantings with amenity and landscape values (including mature oak avenue, weeping willows, historic plantings on Elmslea Homestead, weeping cherry and eucalypt groves. ▪ Revegetation in cleared areas of the riparian zone.	2025-2026 Year 7	Planned	$42,500

3.4 MONITORING AND MAINTENANCE

A suitable maintenance program will need to be based on principles of environmental sustainability and aimed at improving landscape amenity and the remaining natural values of the creek. The extent and frequency of maintenance of vegetation along and in the watercourse, following the rehabilitation works, will to some extent be governed by Council's available resources. Service levels are generally reviewed each year in the light of the annual budget allocation.

Beyond the identified works outlined in this plan and the rehabilitation Project Plan, Council will undertake seasonal maintenance inspection of the watercourse to prioritise activities that will ensure target vegetation along the corridor is maintained. Monitoring of the revegetation works and weed control works should be done on an annual basis.

The monitoring program will cover the following:

Instream

- The extent of fallen trees and limbs.

Stream banks

- Stability of soil and banks
- Hazards (leaning trees etc.)
- Presence of stumps, stubs and loose ground.

Track

- Signage
- Tree debris
- Grass and annuals cut back.

Regrowth

- Regrowth from stumps (target weeds species) and other weeds.

Environmental improvement

- Tracking progress with survival rates of revegetation and indicators of stream quality and biodiversity.

Progress on environmental improvement will be promoted through both internal and external media, and Council will encourage citizen science initiatives such as Waterwatch, Bugwatch and contribute bird, frog and other sightings into a cloud based data collection platform such as NatureMapr or similar.

An inspection and maintenance check list is provided in Appendix 2.

4 Funding sources

The maintenance and upgrade of reserves are a significant cost component of Council's operations and their continued maintenance depends upon its financial resources.

The implementation of actions identified in the plan will proceed as determined through Council's delivery program and annual operational plan and budget.

Council funds these works from a number of sources, including:

- Rate revenue
- Australian and state government grants, including Crown Reserves Improvement Fund
- Sponsorship by local community organisations
- Private sector contributions such as commercial sponsorship of projects.

Groups with an interest in community land such as service clubs, sporting clubs, Landcare and other volunteer groups are encouraged to conduct activities aimed at caring for the water course, such as working bees, planting, care and maintenance of planted trees, and activities such as Waterwatch, Bugwatch and uploading plant and animal sightings to NatureMapr.

Council will continue to pursue prospects to obtain in-kind labour and funds from grants, sponsorship and other funding opportunities to progress the rehabilitation works along the creek. It is important that there be a medium-long term commitment to this project, as each stage of weed removal leaves a stretch of creek vulnerable to erosion and with poor visual and recreational amenity.

In the longer term, it is intended that the watercourse will form the focal point of a Plan of Management for the entire area of public open space bounded by Tarago Road and Turallo Terrace low level crossing, as this is a major recreational focus for the town, as well as a prominent access point between the commercial centre, school, council facilities and the northern extent of the town. This will require a budget commitment to match initial external funds and to maintain the site for enjoyment by the community.

Appendix 1: Risk assessment guidance

The risk assessment process for the Plan of Management[2]:

– **How likely is the risk to occur?**

LIKLIHOOD	DESCRIPTION
Low	Could occur at some time (less than once in 10 years)
Medium	Might occur at some time (at least once in 3 years)
High	Wil probably occur in most circumstances (at least once a year)

– **What are the consequences?**

LIKLIHOOD	DESCRIPTION
Low	Assets/maintenance – minor repairs or remediation Safety – minor injury possibly requiring on-sire first aid only
Medium	Assets/maintenance – major repairs/remediation or construction work Safety – injury requiring medical attention
High	Assets/maintenance – irreversible damage to reserve or loss of asset Safety – life threatening causing permanent injury or death

Risk evaluation matrix

Risk evaluation matrix

	Consequence		
Likelihood	**High**	**Medium**	**Low**
High	**A**	**A**	**B**
Medium	**A**	**B**	**C**
Low	**B**	**C**	**D**

Risk rank and classification

Risk rank and classification

Rank	Classification
A	Risk is intolerable and cannot be justified on any grounds.
B	Risk must be reduced unless the cost or effort of reducing the risk is grossly disproportionate to the benefits gained.
C	Risk may be reduced unless the cost or effort of reducing the risk is disproportionate to the benefits gained.
D	Maintain current systems of monitoring and review. Generally, no additional action is required to reduce the risk.

[2] Victorian Government, Department of Environment, Land, Water and Planning 2015. Committees of Management Responsibilities and Good Practice Guidelines

Appendix 2: Inspection and maintenance checklist

CREEK SECTION:		INSPECTION GRADE:				
Date:		**Season: (Circle)**	**Spring**	**Summer**	**Autumn**	**Winter**
Starting point:						
Creek inspector: (name)		**Phone:**		**Email:**		

ITEM	RATING SYSTEM 1-5 (1 – 5, WITH 1 BEING LOWEST RISK AND 5 BEING HIGHEST RISK	INSPECTION COMMENTS AND REQUIRED ACTIONS	LOCATION - CREEK SECTION
Instream			
Extent of fallen trees and limbs			
Stream banks			
Stability of soil			
Hazards cleared (dead limbs, leaning trees, etc)			
Presence of stumps, stubs and loose rock			
Track			
Signage bright, clean, in good condition			
Tree debris and trimmings cleared well off track			
Grass and annuals cut back			
Regrowth			
Regrowth from stumps (target weed species) and other weeds			

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Document review and authorisation

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1.0	Draft	07.07.20	J. McRobert M.Ludeman	J. McRobert	M. Sandford	J. McRobert	M. Appleby
2.0	Final draft	19.08.20	M.Ludeman	J. McRobert	J. Longford	J. McRobert	M. Appleby
2.1	Final draft (land tenure map added)	27.08.20	M. Ludeman J. McRobert	J. McRobert	-	J. McRobert	M. Appleby