Bungendore Bicycle and Pedestrian Facilities Plan

Integrated Transport Strategy



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Integrated Transport Strategy

Client: Queanbeyan-Palerang Regional Council

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Table of Contents

Execu	tive Summa	iry	i
1.0	Introduct	tion	1
	1.1	Background	1
	1.2	Study Objectives	1
	1.3	Process	1
	1.4	Study Area	2
	1.5	Structure of Report	2
20	Characte	eristics of the Study Area	5
2.0	2 1	Land Lise	5
	2.1	2.1.1 Bungandara population	5
		2.1.1 Dungenuore population	5
		2.1.2 Fedesulari and use shanges	5
	0.0	Z. 1.3 Future land use changes	1
	2.2		8
		2.2.1 Mode use	8
		2.2.2 Road hierarchy and traffic volumes	8
		2.2.3 Public transport	10
		2.2.4 Pedestrian and cyclist facilities	12
		2.2.5 Path usage	15
	2.3	Crashes	17
3.0	Commur	nity Consultation	18
	3.1	Stage 1 Consultation	18
	3.2	Stage 2 Consultation	19
	3.3	Stage 3 Consultation	20
4.0	Relevant	t Policies, Programmes and Planning Principles	21
	4.1	State Policy	21
	4.2	Local Policy	23
	4.3	Planning Principles	23
	4 4	Network Design Principles	24
	45	Pedestrian Planning Principles	25
	4.0	151 Different nedestrian user types	20
		4.5.1 Different pedesthan dser types	25
		4.5.2 Waking user groups	20
		4.5.4 Approach	20
	16	Pike Plenning Principles	21
	4.0	A 6.1 Disvelo upor esterorizo	20
		4.0.1 Dicycle user categories	20
- 0	Native	4.6.2 The Dicycle network	29
5.0	Network	Plans	31
	5.1	Network Constraints and Opportunities	31
	5.2	Network Master Plan	31
	5.3	Catchments	33
		5.3.1 Pedestrian catchments	33
		5.3.2 Cyclist catchments	37
		5.3.3 End of trip facilities	37
		5.3.4 Network hierarchy and design standards	37
6.0	Route Pr	riority Strategy and Implementation Plan	38
	6.1	Route Prioritisation	38
		6.1.1 Route connectivity	38
		6.1.2 Route continuity	38
		6.1.3 Proximity to schools and aged care	38
		6.1.4 Road safety	39
		6.1.5 Cost of routes	39
	6.2	Implementation Plan	39
		6.2.1 Bungendore proposed works plan	39
		6.2.2 Cost rates	30
		6.2.3 Path program	۵۵ ۵۱
			41

7.0	6.2 6.2 6.2 Plan Implem 7.1 Imj 7.2 Mo	2.4 2.5 2.6 2.7 nentatio plemer	Marked mixed traffic streets Street crossing program Kerb ramp replacement program Off-network program n and Monitoring tation	43 43 44 45 46 46 46 46
8.0	References		-	47
Appendix	A Schedule of	Works		А
List of Fig	gures			
Figure 1: Figure 2: Figure 3: Figure 3: Figure 5: Figure 5: Figure 6: Figure 6: Figure 7: Figure 8: Figure 8: Figure 9: Figure 10 Figure 10 Figure 11 Figure 12 Figure 13 Figure 14 Figure 15 Figure 16 Figure 17 Figure 18 Figure 19 Figure 20	Proposed wa Proposed wa Key tasks fo Bungendore Bungendore 2016 Census Bungendore Traffic count Bungendore Bungendore Bungendore Six custom Importance COM mode Safe syster Proposed v Seniors wa School wall Shopping v	alking a orks pla or comp e study a pedes s journe road h ts in the e existin re Strav e Strav or Glo el for be m appro valking ca walking ca walking works p	and cycling network master plan for Bungendo an for Bungendore leting a bicycle and pedestrian facilities plan area rian and bicycle key generators and attractors ey to work mode use in Bungendore ierarchy e region g walking and cycling network a heat map – riding a heat map – riding a heat map – running network outcomes bal Gateway Cities shavioural change bach and cycling network master plan for Bungend atchment tchment catchment lan for Bungendore	re iv v 3 4 5 6 8 9 11 13 13 16 17 21 22 24 24 27 ore 32 34 35 36 40

List of Tables

Table 1: Bungendore population statistics	5
Table 2: Network features	24
Table 3: Different pedestrian types	26
Table 4: Infrastructure cost rates	39
Table 5: Bungendore proposed footpaths	42
Table 6: Bungendore proposed shared paths	42
Table 7: Bungendore proposed mixed use roads	43
Table 8: Bungendore proposed street crossing facilities	44

Executive Summary

AECOM has prepared an integrated bicycle and pedestrian facilities plan for Bungendore; there are other similar reports for Queanbeyan and Braidwood as part of an Integrated Transport Strategy (ITS) for Queanbeyan-Palerang Regional Council (QPRC). The facilities plan will help Council to manage priorities and funding for future works.

Key steps in developing this strategy were to:

- Identify a functional network for walking and cycling. This is intended to create a practical network for pedestrians and cyclists, best serving the needs of the local community.
- Identify routes to service different users of the networks using a catchment analysis for seniors, school, shopping and recreation.
- Prioritise routes and works into an action plan and implementation plan.

From a cyclist and pedestrian perspective, the most important features of the road and traffic environment in Bungendore appear to be:

- The town is a small size to enable walking and cycling, with over 80% of residents within 1.5 kilometres of the town centre. Kings Highway passes through the centre of the town, running parallel to the main Street (Gibraltar Street)
- Within the precincts of Bungendore, traffic speeds are relatively moderate with the majority of streets posted at 50 km/h.
- Traffic volumes are generally light (fewer than 1,000 vehicles per day), with the highest volume (Kings Highway) having 4,000 vehicles a day. The grid street pattern provides opportunities for a variety of routes, but is compromised (in terms of accessibility) at a number of points due to watercourses and street closures.
- On street parking arrangements are typically parallel parking. There is 90 degree centre of the road parking along Gibraltar Street and some 60 degree parking on parts of Ellendon Street.
- At most intersections, the intersecting streets connect at a large radius. This has the following impacts: vehicles can take the corner at faster speeds, distances for crossing the road are relatively long, and kerb ramps (and hence footpaths) are relatively distant from the kerb of the path of travel.

There have been three rounds of consultation on this project that have been considered in developing the Action Plan and Implementation Plan for bicycle and pedestrian facilities in Bungendore, as follows:

- 1. Setting context and identifying issues, as part of Stage 1 consultation.
- 2. Developing a draft action plan, implementation plan and report for comment as part of Stage 2 consultation.
- 3. Developing a draft action plan, implementation plan and report for public exhibition and comment (Stage 3).

The action plan, implementation plan and report have now been finalised for Council endorsement, taking account of final comments in Stage 3.

During community consultation in this project the following issues were raised regarding walking and cycling in Bungendore:

- A cycle link (shared path) is needed from Bungendore to Showground.
- Missing footpath links from along Ellendon Street from southern residential into the CBD.
- Complete shared path loop within park at front of Council.
- Turallo Creek Bridge has a path on opposite side of where the shared path is along Tarago Road.

- The population of cycling is increasing and active travel should be encouraged.
- The provision of cycle racks and other infrastructure in the village should be encouraged.
- Bungendore is an ideal town for cycling because of the flat topography and it is relatively safe.
- It would help if bicycles could be taken on trains.
- Consideration of a footpath link from Elmslea Estate to Gilbraltar Street.
- Integrate a dirt trail along Turallo Creek to the flood mitigation work around Tarago Road. Consider extending dirt trail under the bridge at Tarago Road.
- Include cycle carriage on bus and train routes from Bungendore to Canberra.
- Footpath Forester Street (West) integrate with Ellendon Street.
- There is uneven path over the railway and along the highway which is dangerous.
- Footpath under Rail Bridge at culvert near Dog Park to access east Bungendore under the rail tracks from integrated pathways.
- Existing footpath that runs from Malbon Street and across the railway crossing should be upgraded. There is a concern for safety for pedestrians with prams who currently have to step onto the road and then back onto the footpath.
- Upgrade the existing footpath along Molongo Street.
- Create a cycling route around the Bungendore town centre.
- Build a path along the creek.
- The shared path on Eleanor Street is too narrow.
- There is no footpath on Hyland Drive.
- Pedestrian crossing across Malbon Street.
- Footpath connection to a proposed Molonglo Rail Trail should it ever occur.
- Future walking track along Turallo Creek at the back of Old Elmslea.
- Track suitable for horses to the Showgrounds and link to the Wamboin trails.
- Dangerous gravel humps along Forster Street that are a hazard for our young bike riders.

The proposed walk and cycle network master plan for Bungendore endeavours to address these and other identified issues where appropriate and is shown in Figure 1. The red and blue dotted lines indicate proposed paths.

It is important to note that:

- This a strategic network, rather than an itemisation of every route that might ultimately be desired.
- Hierarchy definitions shown in the master plan are defined for planning purposes. The action and implementation plans then interpret these into the physical networks that should be implemented, and the priorities for these.
- The bicycle and pedestrian facilities plan has a definite timeframe. Networks shown are based on a timescale of about 10 years. It is assumed that the plan will be reviewed every five years.
- Changes in land uses can have large impacts on walking and cycling needs, but not all land use changes that will occur can be predicted and incorporated into the networks.

The proposed works plan for bicycle and pedestrian facilities in Bungendore is shown in Figure 2. It includes priorities for shared path or footpath improvements. High priority works (1 - 4 years) are shown with a green box outline.

This figure demonstrates how the works proposed in the path program combine with existing paths, plus the proposed street crossing points and existing crossing places, to create an overall network. In this sense, "existing" also includes those paths that developers have committed to providing (where known).

The estimated cost of these works for Bungendore is approximately \$2,399,000, with \$750,500 of works considered high priority (to be built in next 4 years). The priority works includes:

- 3,789 m of new footpaths
- 10,760 m of new shared paths
- Three new pedestrian refuges.

In addition, a budget of \$6,750 per year is proposed for a kerb ramp replacement program and bicycle parking in Bungendore.

A summary of projects and costs is included in Appendix A.

Construction of any works identified in this project will be subject to the availability of funding.



Figure 1: Proposed walking and cycling network master plan for Bungendore



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1.1 Background

Queanbeyan-Palerang Regional Council (QPRC) has commissioned AECOM Pty Ltd (AECOM) to prepare an Integrated Transport Strategy (ITS) in order to plan for the transport needs of the growing population of Queanbeyan, Bungendore and Braidwood. To meet Council's requirement for the project, AECOM has prepared an integrated bicycle and pedestrian facilities plan for Bungendore; there are other similar reports for Queanbeyan and Braidwood.

The facilities plan will help Council to manage priorities and funding to address the study objectives listed below.

1.2 Study Objectives

The objective of preparing this report is to review and update the bicycle and pedestrian plans developed by Hub in 2010. More specific objectives are:

- 1. Facilitate improvements in pedestrian and cycle connectivity and ensure the safe crossing of roads.
- 2. Facilitate improvements in the level of personal mobility and safety for all members of the community, in particular vulnerable road users, enhancing pedestrian and bicycle infrastructure and facilities.
- 3. Facilitate the integration of the pedestrian and bicycle network with other transport services.
- 4. Create an attractive alternative to car travel by providing active transport (walk/bike) links to community facilities including schools, churches, transport interchange, local shops, swimming pools, and sport and recreation facilities.
- 5. Ensure that pedestrian and bicycle facilities remain appropriate and relevant to the surrounding land use and user groups.
- 6. Provide a plan showing existing pathways and proposed new pathways.
- 7. Create an action plan map showing:
 - a. existing paths and active transport facilities,
 - b. new pedestrian and bicycle routes, and
 - c. treatment (e.g., existing sealed road shoulder, shared concrete path).

1.3 Process

There are three key stages to this project:

- 1. Setting objectives and data collection. This included:
 - a. Technical Analysis AECOM utilised the geographical and spatial capabilities of GIS modelling software in order to undertake an analysis of the available transport data for Bungendore. The analysis consisted of analysing traffic volumes, crash statistics, existing facilities and existing and planned paths.
 - b. Site Visits In conjunction with the community consultation meetings Bungendore was visited in June and December 2017.
 - c. Community Consultation Residents of Bungendore were invited to a drop-in information session where they were able to identify issues and opportunities associated with the pedestrian or cyclist networks.
- 2. Draft action plan and draft report. This has included the development of routes, works priorities and estimated implementation costs. This was reviewed as part of a second round of community consultation.

3. Final action plan and report. The plan and report was finalised following the second round of community consultation.

Key steps in developing this strategy were to:

- Identify a functional network for walking and cycling. This is intended to create a practical network for pedestrians and cyclists, best serving the needs of the local community.
- Identify routes to service different users of the networks using a catchment analysis for seniors, school, shopping and recreation.
- Prioritise routes and works into an action plan.

The final outcome of this element of the project is the development of a strategy plan for walking and cycling in Bungendore, as represented by the action plan and implementation later in this report.

Figure 3 shows the key tasks undertaken for completing the bicycle and pedestrian facilities plan

1.4 Study Area

The study area for Bungendore is shown in Figure 4.

1.5 Structure of Report

The structure of this report is as follows:

- Section 2 outlines the characteristics of the study area, including land use, transport movements and crashes.
- Section 3 summarises the outcomes of stakeholder and community consultation carried out to date.
- Section 4 outlines details of relevant policies, programmes and planning principles.
- Section 5 presents the pedestrian and bicycle network master plan and a catchment analysis for key user groups.
- Section 6 describes the bicycle and pedestrian route priority strategy and implementation plan, including estimated costing of works.
- Section 7 outlines the implementation and monitoring of the bicycle and pedestrian facilities plan.

Appendix A provides a schedule of works of projects that form part of the plan.

Figure 3: Key tasks for completing a bicycle and pedestrian facilities plan





5

2.0 Characteristics of the Study Area

2.1 Land Use

The topography in Bungendore is generally flat with only slight rises and falls. Elmslea Estate does have a less moderate topography and people living in these areas may find the undulating terrain a disincentive to walking and cycling. This could well apply to people with mobility restrictions. On the other hand, this terrain also provides vantage points from which to enjoy views, and many people find that undulating terrain adds interest and is more rewarding for recreational walking and cycling.

2.1.1 Bungendore population

Bungendore is located about 27 km east of Queanbeyan and is relatively close to employment in Queanbeyan and Canberra, as well as Australia's Headquarters Joint Operations Command (HQJOC). It is a popular tourist area located on the Kings Highway. Table 1 presents a summary of population trends from recent Census data. It shows a relatively high rate of growth over the past 5 years (about 3.5% per annum).

	2011		2016	
Age Group	Number	%	Number	%
0 - 14 years	878	24.7	988	23.6
15 - 24 years	377	10.6	461	11.0
25 - 64 years	2,013	56.6	2,334	55.9
65 and over	287	8.1	395	9.5
Total	3,555	100%	4,178	100%

Table 1: Bungendore population statistics

Source: ABS Census, 2011 & 2016

2.1.2 Pedestrian and cyclist trip generators and attractors

The locations of pedestrian and cyclist attractors and generators in Bungendore are shown in Figure 5. The major generators and attractors for Bungendore include:

- Schools
- Shopping and commercial centres
- Community centres
- Recreational facilities.

These are primarily located in the town centre, with residential uses outside of the centre.

The town centre is a major attractor for residents and visitors as it provides for most of the commercial and retail activity in the town. The sports fields and other open spaces are attractors particularly for youth. Community facilities such as the Civic Centre, community centres and bowls club are significant attractors for seniors.

The largest generators of pedestrian movement include schools, shops, clubs, aged housing and medical facilities.

Shops

Retail and commercial activity is centred around the Historic Bungendore area and generally focused on Gibraltar Street, from Molonglo Street to Ellendon Street, with lower levels of activity extending from here along Gibraltar Street almost to Butmaroo Street and in Ellendon Street to Malbon Street and in Malbon Street either side of Ellendon Street. There are a number of residential properties along these streets which interrupt the concentration of retail/ commercial land uses.



Figure 5: Bungendore pedestrian and bicycle key generators and attractors

Schools

Bungendore Public School is located opposite the Bungendore Railway Station, with frontages to Gibraltar Street and Majara Street and access across its grounds to the Kings Highway/ Malbon Street. Associated with this are:

- A school crossing with refuge in Gibraltar Street
- A school crossing in Majara Street opposite the train station, whose grounds are used for parking by parents
- A refuge on the Kings Highway/ Malbon Street, just west of Majara Street
- School bus drop off and pick up in Majara Street, opposite the train station
- School zones on Majara Street, Gibraltar Street and Malbon Street/ the Kings Highway
- Footpaths along the school frontages on Majara Street and Gibraltar Street, and connecting the refuge on the Kings Highway/ Malbon Street with the Majara Street
- Footpath and a footpath on the south side of Malbon Street.

A pre-school is located on the north side of Turallo Terrace, between Butmaroo Street and Majara Street, opposite the oval. There is also a childcare centre at the western end of Forster Street. There are no street treatments particularly associated with either of these.

Recreation Areas

The oval is located between Turallo Terrace, Gibraltar Street, Majara Street and Butmaroo Street. This has a pool and playground located adjacent to it and forms the main recreation grounds for Bungendore and main recreation resource for Historic Bungendore.

2.1.3 Future land use changes

Development of the New Elmslea estate has absorbed most of the new housing demand. There is scope for this to extend to the north-east to accommodate further growth and the walking and cycling network should expand with this. Current zoning for the residential development in New Elmslea would also allow for the development of cottage industries, and a small convenience store as part of a community activities centre. Such development would depend on economic conditions and the quality of the development application in meeting design requirements.

The area around Ellendon Street, between Trucking Yard Land and King Street, has generally larger lot sizes. This area presents an opportunity for the residential density to increase. In the area between Trucking Yard Lane, the railway line and Hoskinstown Road, a subdivision fronting Trucking Yard Lane has been approved; a further application with greater density has recently been received.

The area between Turallo Terrace and Turallo Creek, east of the railway line and west of Mecca Lane, has been identified as village zone and potentially could be developed for residential usage. In the longer term, the area to the south-east of Historic Bungendore —south of Rutledge Street and east of the railway line — could become a future area for residential development, notwithstanding the potential for a bypass of Bungendore to skirt this area.

The location for the sports fields is still under consideration. However, current thinking on the preferred site is to the west of Tarago Road. The vicinity of Mecca Lane has been identified as a desirable location for a new playground, possibly provided in conjunction with the sports fields.

2.2 Transport Movements

2.2.1 Mode use

Figure 6 shows mode use splits that were recorded using the 2016 Journey to Work census data for Bungendore. It shows that use of public transport is negligible and that car is the main mode of transport to work.



Figure 6: 2016 Census journey to work mode use in Bungendore

Of particular relevance to this study is that only 3% of the population walked to work in Bungendore and cycling was negligible. Given the relatively small distances between residential and commercial areas (80% less than 1.5 km) there is opportunity to improve this.

2.2.2 Road hierarchy and traffic volumes

The current road hierarchy of arterial, collector and local roads is shown in Figure 7. The road hierarchy generally represents expected traffic volumes, travel speeds and hence the type of pedestrian facilities which are appropriate for the various road categories.

Malbon Street forms the east-west aligned section of the Kings Highway as it passes through Bungendore, bisecting Historic Bungendore and at the same time providing the only formal vehicular, pedestrian or cycle link between the eastern and western sections of Historic Bungendore.

To the east, the Kings Highway continues to Braidwood; to the west, the Kings Highway turns south on the outskirts of Historic Bungendore, creating a western edge to the town. North of this point, the road continues as Molonglo Street, its name changed to Tarago Road at the bridge. As Tarago Road and then Bungendore Road, this then leads to Tarago, some 20 km north-east of Bungendore, connecting to Bungendore Road to continue north to Goulburn.

A connection from the Kings Highway east of Mecca Lane south of Malbon Street and around the town to join the Kings Highway south of Trucking Yard Lane has been proposed as a bypass for the town. This would require a crossing of the railway line; while not an immediate priority for the region it should be outlined and any corridor reservations and planning should start to occur now.

Figure 7: Bungendore road hierarchy



The main street is Gibraltar Street, which runs in an east-west direction parallel to and a block north of the Kings Highway. This joins Molonglo Street at a roundabout, and continues to the west and then north-west as Bungendore Road. Macs Reef Road branches off Bungendore Road about 9 km north-west of Bungendore, joining the Federal Highway after another 10 km, not far from Sutton.

King Street, about 630 metres south of and running parallel to Malbon Street/ the Kings Highway, forms the southern edge of Historic Bungendore, and forms a rough boundary between residential and rural residential lots. A small light industrial area is centred on King Street, between Butmaroo Street and Ellendon Street.

Trucking Yard Lane runs east-west from the Kings Highway to the unformed continuation of Majara Street, some 740 metres south of and parallel to King Street. (The unformed continuation of Majara Street is also known as Trucking Yard Lane). Trucking Yard Lane currently forms the southern edge of Bungendore; however there is a proposal for a subdivision on Trucking Yard Lane, on the eastern outskirts of the southern part of town.

Ellendon Street is the only street running north-south between King Street and Trucking Yard Lane, apart from the Kings Highway. In this area, Ellendon Street runs roughly half-way between the Kings Highway and the (unformed) Majara Street alignment which runs along the edge of the rail line. Ellendon Street ends in a four-way intersection at Trucking Yard Lane, with Hoskinstown Road continuing as a south-east running road. This crosses the rail line for the 16 kilometres to Hoskinstown, with several roads branching off it, dividing into Captains Flat Road and Rossi Road five kilometres past Hoskinstown.

A summary of recent traffic counts in the region are shown in Figure 8. These are expressed in average daily vehicle volumes.

As the Kings Highway passes through Bungendore, people using the highway to access the South Coast (notably Batemans Bay) and Bungendore, plus visitors to Bungendore itself, contribute to traffic volumes on weekends, public holidays and school holidays. Unlike most other areas, the overall traffic levels on the main roads in Bungendore do not decrease on weekends. Traffic on the Kings Highway is generally higher on weekends than during the week. The Kings Highway is also a route for freight traffic and agricultural traffic.

2.2.3 Public transport

Coaches and buses

There is one QCity bus route between Bungendore and Queanbeyan, which operates on demand. There is also a number of school bus services operate in the area, including feeder buses to high schools in the ACT.

All inter-town bus routes in Queanbeyan meet at the interchange in Collett Street. Currently, there are no "Park and Ride" facilities or means to transport bicycles on buses in Bungendore, as RMS consider bicycle racks on buses are a safety hazard.

Coaches passing through Bungendore to other locations will stop at Bungendore, but pick up/ set down needs to be coordinated with these services and does not represent an equivalent service to a public transport bus service.

Rail

The Bungendore Railway Station sits about mid-block between Gibraltar Street and the Kings Highway/ Malbon Street intersection. The rail line from Queanbeyan enters from the south, roughly parallel to the Kings Highway, bisecting Historic Bungendore before veering north-east out of the town.

Figure 8: Traffic counts in the region



P:\CBR\60544563\8. Issued Docs\8.1 Reports\Active Travel\Bungendore - PAMP&Bike Plan FINAL 18 September 2019.docx Revision 6 – 18-Sep-2019 Prepared for – Queanbeyan-Palerang Regional Council – ABN: 95 933 070 982 Bungendore Railway Station is still serviced by NSW TrainLink services, with daily services as follows:

- Mid-morning and mid-afternoon/ evening from Bungendore to Canberra (trip time about 50 minutes)
- Early morning and lunch/ evening from Canberra to Bungendore (trip time about 40 minutes)
- Early morning and early afternoon/ later afternoon from Bungendore to Sydney (trip time about 3 hours)
- Early morning and lunch/ evening from Sydney to Bungendore (trip time about 3 hours).

None of these rail services would suit standard commuting patterns. The rail line is also used by a few freight trains each night. About five kilometres south of the railway station, a line branches off the line to Queanbeyan and runs to Captains Flat. This line has been disused since 1968.

2.2.4 Pedestrian and cyclist facilities

A map of the existing facilities is shown in Figure 9.

2.2.4.1 Overall network

Shared path network

The current shared path network is somewhat disconnected with no clear signage or paths linking through the town centre. The majority of the path network is about 1.2 metres in width. This width is not suitable for shared use. It is also the minimum general footpath width, which does not allow for pedestrians to comfortably be able to pass a stroller or wheelchair without leaving the path.

There appears to be little delineation between the shared path and footpath networks - albeit this may relate to the preliminary nature of works. For children up to 12 years of age either can be used for cycling, however adults and children over the age of 12 generally cannot legally use footpaths. This can become relevant in some circumstances. In particular, intersections and the different onward paths of cyclists as opposed to pedestrians are not well defined; design requirements for pedestrians and cyclists can be distinct, which is not recognised in the design standards adopted.

Shared path signage is the means by which shared use is legally designated under the Australian Road Rules. While this has limited impact on actual functionality, consistent signage of shared use paths is considered important to assist in generating an appreciation of when it is suitable for cyclists to share paths with pedestrians.

Footpath network

The footpath network has progressed since the review undertaken in the previous PAMP. However, some of the established footpath network is quite dated and there is inconsistency in treatments especially at road crossings. Many of the paths do not have kerb ramps. This repents hazards for people in wheelchairs, prams or children on bikes. Where a driveway crosses a footpath, this should be made clear and the gradient and material of the driveway should conform to footpath standards for the width of the footpath. Interestingly in New Elmslea, the driveway rather than the footpath is continuous. Where driveways are not sealed or these is gravel adjacent the path, loose material can spill onto the path which may form a trip hazard.

Tree plantings are often quite close to the footpath. As the trees mature, they are likely to cause cracking of the footpaths, creating trip hazards and becoming a costly maintenance item. This should be considered for new path infrastructure.

Not all streets require footpaths, especially where traffic volumes and speeds are low. There is also a desire from some residents to retain the rural feel of the verge without a footpath. The locations where there are high vehicle speeds, high vehicle volumes or high numbers of vulnerable users should be prioritised for implementation of a safe, all weather, well-marked path.



Figure 9: Bungendore existing walking and cycling network

Note: Current as of December 2017

While the low traffic volumes may make walking on streets safe, if a lack of kerb ramps accompanies the lack of footpaths, people with disabilities may have difficulty travelling from the footpath network to the road network. In this regard, it should be noted that roll-over kerbing does not meet the Australian Standards relating to kerb ramp gradients and does not necessarily provide the ability for people in wheelchairs or electric scooters to safely move from footpaths to street level.

A need for additional safe crossing locations was identified. Pedestrian refuges are only provided at certain locations. Away from these, it can be difficult to cross increasingly busy streets. With an ageing population, the time required to safely cross streets is likely to increase.

Information

There is very little directional or way finding signage for the active travel links. This can impact on the functionality and uptake of the routes as residents and visitors to Bungendore are generally not aware of the walking and cycling opportunities available. It can also lead to confusion and conflict over permitted users. Apart from street signs, there is a lack of directional or interpretive signage for new residents or visitors.

2.2.4.2 Facilities in different areas of Bungendore

The walking, and to a lesser extent cycling, conditions in Bungendore vary significantly between areas within Bungendore. The five main areas are:

- Old Elmslea
- New Elmslea (Elmslea Estate)
- Historic Bungendore
- South Bungendore
- Outlying areas.

Old Elmslea

Old Elmslea has a larger allotment size and is separated from both New Elmslea and Historic Bungendore by Molonglo Road/ Tarago Road. Although there are reserves providing access from the ends of Elmslea Drive and Reardon Place, these do not have formed walking tracks and nor are these complemented by crossing points on Molonglo Road/ Tarago Road. For both walking and cycling, Old Elmslea is therefore isolated from New Elmslea and, particularly, from Historic Bungendore. Traffic volumes are relatively low and shared road space is considered appropriate but better links and connections need to be provided at the extents, especially to the planned sports precinct further to the south-west.

New Elmslea

New Elmslea (Elmslea Estate) incorporates planning of a relatively extensive network of off-road walking trails. Better provision of shared facilities could be included. The estate has sealed trails both north-south through the centre of the development and around the edge of the development (with the exception of along Tarago Road). The central pathway in particular provides for utility and commuter access, in addition to the recreational opportunities provided by the trails around the development; however, it is not a shared path. The grid-based form of development coupled with the central pathway and strategically located cut-throughs where the road network does not provide access mean that levels of permeability are maintained for active travel.

Elmslea Estate has a reasonable level connectivity and permeability. A path proposed under the railway bridge, linking to the eastern side of Historic Bungendore, would increase access and permeability opportunities.

Historic Bungendore

Historic Bungendore contains the non-residential land uses of the town and some of the older residences. These include the main destinations for residents and visitors to Bungendore, where the footpaths will have generally higher walking levels than the rest of Bungendore. The non-residential land uses in Historic Bungendore, fairly permeable grid road network and standard sized housing lots lead to overall modest trip distances. This generally supports utility walking and cycling, and walking and cycling to school. In terms of walking and cycle paths and so it does not have a full path network.

Some of the streetscape beautification works are improving the quality and linkages of the path network. There are still some gaps in the network and the proposed action plans looks to address the higher priority items.

South Bungendore

This covers the area to the south of the town typically from King Street where the lots are larger more rural lots with some industrial uses. It also covers the new housing areas off Hereford Street and Finch Street. New development on Finch, Hopkins and Jacombs Streets have a footpath network and provide links to the Majara Street shared path.

The housing area off Hereford Street was not constructed with a footpath network. Given the road alignment and relatively small number of blocks accessed here, resulting in lower speeds and lower volumes, mixed use of the road network is considered appropriate. Better links to the Majara Street shared path and Ellendon Street connections would be beneficial.

Outlying areas

Bungendore is a centre for many nearby adjacent rural land holdings, estates and some places of employment. Typically none of these have a forded active travel network. Rural settings typically pose a number of accessibility issues which include:

- Longer distances from origins to destinations for walking and cycling, discouraging walking and cycling and translates to a high cost per person to provide facilities.
- Higher speed limits on rural roads.

The key aspects of consideration for Bungendore as they apply to walking and cycling are:

- The (well-used) Showgrounds on Bungendore Road given the type of users and frequency a sealed off-road path is considered desirable in the longer term to provide a link of approximately 3 km to the town.
- The HQJOC facility likely a commuter based demand so adequate sealed shoulders could be provided to this facility.
- The Buckingham development areas north of Bungendore a sealed shoulder on Tarago Road from Hope Drive to Bungendore Road (approximately 4.5 km) could help provide improved cycle amenity and safety and would present a viable alternative for some adult cyclists.
- Inter-town trips, such as to Captains Flat or Queanbeyan.

2.2.5 Path usage

A heat map provided by Strava for riding and running trips can be used to help create an understanding of cyclist and pedestrian movements within Bungendore and highlight routes that may benefit from cyclist and pedestrian network improvements. These are presented in Figure 10 (riding) and Figure 11 (running). Of note is the strong usage along Tarago Road to the north of Bungendore. It should be noted that this data is skewed towards the users of Strava which would typically include recreational or training users rather than commuter or school usage.

Figure 10: Bungendore Strava heat map - riding



Source: Strava Heat Maps (Accessed June 2018)

Figure 11: Bungendore Strava heat map - running



Source: Strava Heat Maps (Accessed June 2018)

There is a strong demand around the southern part of the town as well as along the northern section of Elmslea Estate. Forster Street functions heavily as an east west connection for both the cycling and walking usage. Cycling links then deviate to King Street or the Kings Highway as the east west link as Forster Street does not continue through. A shared path connection through to link Forster Street west to the highway would provide connectively benefits.

2.3 Crashes

A crash analysis of the study area indicated that there were one recorded injury crash involving a cyclist in Bungendore along Majara Street during the period between the 1st of January 2012 and the 31st of December 2016. There were no recorded crashes involving a pedestrian during this period.

3.0 Community Consultation

There have been three rounds of consultation on this project that have been considered in developing the Action Plan and Implementation Plan for bicycle and pedestrian facilities in Bungendore, as follows:

- 1. Setting context and identifying issues, as part of Stage 1 consultation.
- 2. Developing a draft action plan, implementation plan and report for comment as part of Stage 2 consultation.
- 3. Developing a draft action plan, implementation plan and report for public exhibition and comment (Stage 3).

An outline of the consultation processes and outcomes follows. More details are given in the project consultation reports.

3.1 Stage 1 Consultation

Activities and tools implemented in Stage 1 included:

- A stakeholder workshop to discuss the vision and objectives of the Integrated Transport Strategy (ITS) and key issues, barriers, needs, gaps and opportunities.
- A community survey to collect people's feedback.
- Information sessions held at venues in Bungendore during the week commencing 20 June 2017, with six attendees.
- Letter to key stakeholders with information attached informing them of the project, consultation process and feedback opportunities.
- Posters displayed at each of the public information sessions with background information about the project and analyses to date.
- Feedback sheets available at the public information sessions for attendees to write down their thoughts and ideas about transport in the region.
- Text for the QPRC website about the consultation process.
- Email and phone feedback available through transportstrategy@gprc.nsw.gov.au.
- QPRC Communications, Media and Public relations drafted a media release with help from AECOM to inform people about the consultation.

During the community consultation the following issues were raised regarding the pedestrian and bicycle network in Bungendore:

- A cycle link (shared path) is needed from Bungendore to Showground.
- Missing footpath links from along Ellendon Street from southern residential into the CBD.
- Complete shared path loop within park at front of Council.
- Turallo Creek Bridge has a path on opposite side of where the shared path is along Tarago Road.
- The population of cycling is increasing and that active travel should be encouraged.
- Provision of cycle racks and other infrastructure in the village should be encouraged.
- Bungendore is an ideal town for cycling because of the flat topography and it is relatively safe.
- It would help if bicycles could be taken on trains.
- Consider a footpath link from Elmslea Estate to Gilbraltar Street.
- Integrate a dirt trail along Turallo Creek to the flood mitigation work around Tarago Road. Consider extending dirt trail under the bridge at Tarago Road.

- Include cycle carriage on bus and train routes from Bungendore to Canberra.
- Footpath Forester Street (West) integrate with Ellendon Street.
- There is uneven path over the railway and along the highway that is dangerous.
- Footpath under Rail Bridge at culvert near Dog Park to access east Bungendore under the rail tracks from integrated pathways.

3.2 Stage 2 Consultation

A Stage 2 Stakeholder Workshop was held on Tuesday 29 August 2017 in Queanbeyan. Attendees included representatives from AECOM, QPRC, Googong Residents Association, TfNSW, QCity Transit, QueanBUG and ACT Government.

Stakeholders were asked to provide feedback on strategic response statements that were developed to address key issues of concern arising from the Stage 1 consultation. In addition, stakeholders were asked to provide comments and identify priorities on the Action Plan Maps that were developed from feedback from Stage 1 consultation.

High priority works were identified for Bungendore arising from the Stage 2 workshop. These were presented to the community for feedback during the Stage 2 community consultation in December 2017.

Activities and tools implemented in Stage 2 included:

- A community survey to collect people's feedback.
- A total of four Information sessions held at venues in Queanbeyan, Bungendore and Braidwood during the week commencing 4 December 2017.
- Posters displayed at each of the public information sessions with background information about the project and analyses to date.
- Feedback sheets available at the information sessions for attendees to write down their thoughts and ideas about transport in the region.
- Text for the QPRC website about the consultation process.
- Email and phone feedback available through <u>transportstrategy@qprc.nsw.gov.au</u>.
- QPRC Communications, Media and Public relations drafted a media release with help from AECOM to inform people about the consultation.

The primary feedback from this consultation with regards active travel was as follows:

- Suggestions:
 - A cycling route around the Bungendore town centre and a footpath around the creek.
 - Upgrade the existing footpath that runs from Malbon Street and across the railway crossing. There is a concern for safety for pedestrians with prams who currently have to step onto the road and then back onto the footpath.
 - Upgrade the existing footpath along Molongo Street.
- Concerns:
 - The existing shared path on Eleanor Street is too narrow.
 - There is no footpath on Hyland Drive.
 - Concern for the safety of cyclists sharing the road with vehicles.

3.3 Stage 3 Consultation

This report and associated plans and reports for the ITS were exhibited for comment on Council's website from 1 March 2019 to 16 April 2019. There were 16 responses received from website surveys and five formal written responses. Of these, seven survey responses were received in relation to Bungendore and one written response,

The primary feedback from this consultation with regards active travel was as follows:

- Suggestions:
 - Pedestrian crossing across Malbon Street.
 - Footpath connection to the proposed Molonglo Rail Trail.
 - Future walking track along Turallo Creek at the back of Old Elmslea.
 - Track suitable for horses to the Showgrounds and link to the Wamboin trails.
- Concerns:
 - Dangerous gravel humps along Forster Street that are a hazard for our young bike riders.
 - Concern for the safety crossing Malbon Street.

4.0 Relevant Policies, Programmes and Planning Principles

4.1 State Policy

The *Draft Future Transport Strategy 2056* sets out the vision, strategic directions and customer outcomes for the infrastructure and services plans for Greater Sydney and Regional NSW. The strategy is focused on six state-wide outcomes for the future mobility of NSW, shown in Figure 12. The aim is to positively impact the economy, communities and environments of the state, with these six outcomes are set to be the focus on every planning decision. These outcomes also guide the priorities set for regional communities which currently experience lower service levels and slower population growth than Greater Sydney.

Figure 12: Six customer and network outcomes



Source: NSW Government, Draft Future Transport Strategy, 2017

The draft Strategy highlights that regional NSW has 19 regional cities and 27 regional centres. The 19 regional cities include two Global Gateway Cities (Greater Newcastle and Canberra), which serve extended catchments around Canberra-Queanbeyan and the Hunter areas as shown in Figure 13 below. Greater Sydney is the third Global Gateway City for NSW. Improved transport will broaden the catchment around each of these Global Gateway Cities, improving access to major service precincts, advanced industries and international infrastructure for the purposes of travel and trade.

Significant investment in connecting regional cities is outlined in the Strategy. These connections will be made through smarter procurement and the deployment of technology-enabled and innovative service models.



Figure 13: Importance of Global Gateway Cities

Source: NSW Government, Draft Future Transport Strategy, 2017

The future regional transport network will be planned around a 'hub and spoke' model within a strategic framework of servicing principles allowing for local adaptation and interpretation. Servicing principles include connectivity, flexibility and efficiency, access and equity, legibility and timeliness, provision of accurate information and safety. The network will support local towns and Regional Cities and Centres and help make them better places to live, visit and do business.

This draft Plan was published by the NSW Government in late 2017. It supports the *Future Transport Strategy 2056* and sets a 40 year vision for transport in Regional NSW to support communities and productive economies. An emphasis has also been placed on the importance of providing stronger links between regional cities and centres, rather than focussing on connections to Sydney or the interstate capitals. Along with this shift in focus, the draft Plan identifies Canberra as one of three Global Gateway Cities. These cities are to provide the state-level services and facilities required to support the growing population in NSW.

The draft Plan highlights the following objectives for transport in Regional NSW:

- A safe, secure and resilient transport system that efficiently connects communities
- A transport system that improves productivity and supports regional economies and communities
- An equitable transport system that helps to vitalise our communities

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- Accessible transport options for all customers
- A regional transport system that is reliable, flexible, personalised and responsive to customer needs
- A transport system that is affordable and makes best use of resources and assets.

Broad initiatives for implementation over the next 40 years include improving inter-region and regional city connectivity, and expanding the regional public transport network. The initiatives apply generally in aspects such as the road network, public transport, active travel, freight, and town centre infrastructure initiatives. These initiatives include a regional interchange program, walking and cycling programs, town access improvement programs and a regional airport program.

For the South-East and Tablelands region where Canberra is situated, the NSW Government has proposed several policy, service and infrastructure initiatives for investigation (listed below). These initiatives are intended for potential commitment or implementation over the next 20 years.

4.2 Local Policy

QPRC has a 'three tier' hierarchy of plans consisting of a Community Strategic Plan, a Delivery Program and Operational Plan.

Planning for QPRC is framed around the Community Strategic Plan. It is a 10 year document (2013 – 2023), which identifies the community's key priorities, and outlines strategies of how Council and other stakeholders will achieve those priorities. It is informed by a number of key strategic documents, including:

- The Delivery Program details activities the Council will undertake to achieve the objectives of the Community Strategic Plan and is updated every 4 years.
- The Operational Plan directly addresses the actions outlined in the Delivery Program and identifies activities (projects and programs) Council will be undertaking within the financial year. The Operational Plan, which is supported by a detailed budget, allocates responsibilities for each action or set of actions, and identifies suitable measures to determine the effectiveness of the activities undertaken.

4.3 Planning Principles

The intent of understanding the need for facilities and provision of appropriate infrastructure, education campaigns and users awareness is centred around providing viable alternatives to private motor car usage. The benefits of this are well known and include reduced emissions, improved health and social cohesion.

The approach used in the development of the new walking and cycling plan for the area focused on the providing the necessary enabling conditions for riding and walking to become an attractive mode of transport for a range of trips for various age, gender and cultural backgrounds. Infrastructure is a critical part of the enabling process but is a means to an end not an end product in itself. Enabling people to walk and cycle is to support them to adopt a new behaviour or to do more of an existing behaviour.

Behavioural change and the uptake of walking and cycling can be attributed to three things -Capability, Opportunity and Motivation (COM). Collectively these are known as the COM model for behavioural change. It is illustrated in Figure 14.

The three aspects work together to promote and enable the behavioural goal. This plan has been developed to help provide improved physical opportunities for trips and improve the amenity and safety for users. In applying this plan the principles for cyclists and pedestrians have been outlined.



4.4 Network Design Principles

The over-riding principles of designing this network are outlined in Table 2. While these are derived from cycling aspects the principles are the same.

Table 2: Network features

Route feature	Comments
Safety	Minimal risk of injury, low perceived danger, space to ride / walk, minimum conflict with vehicles
Coherence	Infrastructure should form a coherent entity, link major trip origins and destinations, have connectivity, be continuous, signed, consistent in quality, easy to follow, and have route options
Directness	Route should be direct, based on desire lines, have low delay through routes for commuting, avoid detours and have efficient operating speeds
Attractiveness	Lighting, personal safety, aesthetics, integration with surrounding area, access to different activities
Comfort	Smooth slip-resistant surface, gentle gradients, avoid complicated manoeuvres, reduced need to stop, minimum obstruction from vehicles

Source: Adapted from Cycling Aspects of Austroads Guidelines Table 2.2

The key facilitators to grow cycling and walking participation in the area include:

- A pedestrian and cyclist friendly town centre.
- Developing off road facilities that provide key links between key origin and destinations.
- Provide separated facilities for higher speed links reducing conflict between high speed cyclists and lower speed cyclists / pedestrians.
- Improving efficiency of links by making them more direct and providing signage and line marking as appropriate.
- Ensuring all school and key public transport nodes are connected to the proposed network.

While there are similarities the principles for the pedestrian and cyclists have been separated.

4.5 Pedestrian Planning Principles

4.5.1 Different pedestrian user types

When assessing existing infrastructure it is critical that consideration is given to the different user groups. This section of the report explores the different user groups that could be considered as the primary and vulnerable users in the assessment.

When planning for pedestrian facilities ideally the placement of facilities should match the usage patterns. There are a number of pedestrian user groups that have to be focused on, with the aim to encapsulate all pedestrian users' mobility and access needs.

The AustRoads Guide to Traffic Engineering Practice, states that pedestrian facilities are often designed to cater for the 'average' pedestrian. In order to meet the needs of different users the AustRoads identifies ten broad groups of pedestrians:

- 1. Commuters
- 2. Children walking to school
- 3. Utility activities*
- 4. Parents/carers with prams
- 5. Wheelchair users
- 6. People with disabilities
- 7. Seniors and people with mobility aids
- 8. Recreational pedestrians
- 9. Runners/joggers
- 10. Dog walkers.

*Includes people undertaking shopping actives with trolleys and bags

The Queensland Government 'Designing for Pedestrian and Cyclists Course' handbook identifies three groups as shown in Table 3.

4.5.2 Walking user groups

For the purpose of providing usable and practical facilities these user types can be narrowed down to three key user groups of:

- 1. Vulnerable walkers- school children, the elderly, disabled walkers, adults with strollers/ trolleys
- 2. Mobile adults people who walk or use their bicycle for transport to travel for a purpose around their communities
- 3. Sport and fitness riders and walkers power walkers, joggers, fitness riders.

These user types were applied in the assessment of the Bungendore area.

Table 3: Different pedestrian types

User Type	Purposes	Operating Characteristics
Vulnerable to traffic	Elderly walkers Disabled walkers Parents with prams Children to 15 years of age Traffic shy adults	Speeds slower than 4 km/h Vulnerable Lower reaction times Lower skill levels Shorter trip distances
Mobile adults	Purposeful adult walkers Commuters Recreational/social walkers Tertiary students	Speeds 2 – 8 km/h Purposeful walking Higher skill levels Medium to quick reaction times Medium to long trip distances
Sports and fitness	Runners Triathletes Fitness walkers Recreational and social walkers	Speeds higher than 8 km/h Quick reaction times High skill levels Often walk in groups Medium to long trip distances Need high-quality walking surface

4.5.3 Principle intent

There is an opportunity to provide a better balance of priority focus in the town through recommendations outlined in this plan. A modern urban core (town centre) should provide the following movement prioritisation:



Delivery and service vehicles are an important part of any vibrant core and will be considered with any recommendations. Taxis are considered with public transport.

A shift to this hierarchy of transport priority in the town core would result in a stronger focus on pedestrian safety, function and amenity in exchange for a potential increase in delay for private motor vehicles. In a town like Bungendore the impacts should be fairly minimal and a good balance achieved.

The recent streetscape works along Gibraltar Street has provided wider footpaths, centre of road parking, improved pavements markings, pedestrian refuges, roundabouts, and landscaping throughout the centre. This series of infrastructure improvements should continue to be expanded upon into the future, in order to provide the best pedestrian experience throughout the commercial and school areas.

Wayfinding and consistency are important aspects in network legibility and pedestrian experience. Clarity of pedestrian facilities and links can greatly assist in wayfinding, legibility and usage.

4.5.4 Approach

In determining appropriate facilities, our approach to this project has incorporated the Safe Systems approach. The Safe System approach is a guiding philosophy that operates on the principle that it is not acceptable for a road user to be killed or seriously injured if they make a mistake. The approach aims to create a forgiving road system based on the following four principles:

- 1. People make mistakes People make mistakes and some crashes are inevitable.
- 2. People are vulnerable Our bodies have a limited ability to withstand crash forces without being killed or seriously injured.
- 3. We need to share responsibility System designers and people who use the roads must share responsibility for creating a road system where crash forces do not result in death or serious injury.
- 4. We need to strengthen all parts of the road transport system We need to improve the safety of all parts of the system, roads and roadsides, speeds, vehicles, and road use so that if one part fails, other parts will still protect the people involved.

The principles and the interaction between them are outlined in Figure 15.

Figure 15: Safe system approach



Source: ARRB Group.

Safe speeds and safe roads and roadsides are the principle domain in which Council has the ability to influence traveller behaviour. An understanding of the road users in each area can also assist in developing effective solutions.

All new footpaths should be a minimum of 1.5 m wide to allow two wheelchairs or prams to pass each other without the need for one of them to leave the path.

4.6 Bike Planning Principles

In developing options for the bicycle network there are various principles that should be considered.

The planning approach includes shared use paths and on-road cycling facilities (bicycle lanes or advisory treatments) as means of providing for cyclists. Off-road bicycle facilities (shared use paths, bicycle-only paths) provide separation to motor vehicles and hence are often favoured for their perceived safety. However in the Australian context, right-of-way provisions at intersections and side streets, risks from vehicles entering and exiting driveways, and often poor maintenance standards can have a significant impact on the safety performance of off-road facilities. Therefore, the planning approach does not rely on off-road facilities as the sole or even main form of bicycle facility, but uses both on-road and off-road facilities depending on circumstances.

Off road facilities in Bungendore are located where there are fewer driveway or crossing conflicts. In some instances this necessitates the need to cross a road to get to one facility. For example the Majara Street shared path. Road crossings have attempted to be limited and provided on lower volume roads.

On-road bicycle treatments can be the most cost-effective way of providing for cycling trips, and research demonstrates that these are also effective at increasing cyclist safety. However, on-road cycling is generally not suited to young children without supervision; hence children under the age of 12 are legally allowed to cycle on footpaths in Australia. Youths or adult parents/ guardians accompanying such children are also legally allowed to cycle on footpaths.

Even where sealed paths exist on a route, it is often desirable for higher speed cyclists to be separated from pedestrians, child cyclists and slower cyclists by providing on-road facilities.

Bicycle lanes or advisory bicycle treatments can also provide a traffic safety role, by calming the traffic, creating a driving environment that encourages slower speeds and designating a space outside the travel lanes that pedestrians can enter when crossing a road.

There are a number of types of on-road treatment possible. The amount of space, speed environment, whether or not parking is permitted on a street and the turnover rates of on-street parking all affect the type of treatment that might be provided. These differences and applications are detailed in guides such as cycling aspects of Austroads Guidelines 2017 edition. Bicycle lanes have associated with them certain regulatory requirements. For example, bicycles must use a bicycle lane if one is provided (unless turning right); cars cannot drive in a bicycle lane except to turn left.

Within Bungendore there are currently no on-road cycle lanes marked. There are wide shoulders on:

- Tarago Road between Rutledge Street and Turallo Terrace
- Kings Highway between Duralla Street and Mecca Lane.

Connectivity to and from these shoulders is limited and marking of other on road cycle lanes such as along the Kings Highway would require the removal of on-street parking or the widening of the pavement. Parts of the Kings Highway and Bungendore Road also have sealed shoulders of reasonable widths but it is not consistent.

4.6.1 Bicycle user categories

In determining infrastructure treatments and priorities, it is important to understand who will be using the facility and what their needs and capabilities are. The type of cyclist that use bicycle networks can be categorised based on their experience and skill levels.

The four general categories used to describe cyclists in this report are:

- Children cyclists
- Adult local cyclists
- Adult commuters
- Recreational cyclists.

Children cyclists in the Primary School age range do not have fully developed cognitive skills. This makes them a vulnerable road user due to their lack of experience and little to no understanding of road rules. It is necessary for these children to be supervised when riding. Separation from motor vehicles is important when identifying suitable infrastructure for these users.

4.6.1.2 Adult local cyclists

Adult local cyclists are those who accompany children for short trip bicycle rides. Trip purposes include a range of activities such as recreational trips and short trips to local shops.

4.6.1.3 Adult commuters

Adult commuters are the most advanced riders who are less affected by motor vehicles on the road. These riders are able to share lanes with vehicular traffic, although dedicated lanes may be preferred. Speed is a more important factor than separation from motor vehicles. Hence, facilities should be designed and maintained to allow reasonable high speed riding. This may sometimes result in parallel facilities to cater for different user categories such as on road lanes and off road shared path facilities.

4.6.1.4 Recreation cyclists

Recreation trip lengths may vary depending on the level of experience of the rider. Skill levels also vary from beginner primary school aged children to advanced adult riders. These riders typically avoid busy roads and direct routes as the trip purpose is mainly the cycling experience.

4.6.2 The bicycle network

The bicycle network consists of a number of interconnected routes signed for bicycle use either on road or off road, and covering Bungendore.

The cycling speed and distance covered, has an impact on the spacing of routes. Assuming an average cycle speed of 15 km/h, or 20 km/h for commuter cycling on local roads, then cyclists living or working within 500 metres of a cycle route are within acceptable distance to the facility. Within a smaller town such as Bungendore this should be reduced further where possible to within 250 m. This distance would take an average cyclist 1-2 minutes to cycle on local streets to join a bicycle route. However, the network must provide a level of service comparable with the intended cyclist's level of experience, road safety expectations, and directness of route. It is a principle in the development of the Bungendore bicycle plan that as far as practicable, most of the settled urban area is within 250 m of a bicycle route, both in the north-south and east-west orientations.

Bicycles are vehicles under the Australian Road Rules; therefore all streets are cycling streets. In reality, however, due to the differences in speed of travel, size of cars and trucks and the personal safety differences between the cyclist and the car driver, in order to be pro-active in addressing these imbalances, specific engineering works are required to establish a bicycle network. Essentially a bicycle network consists of a hierarchy of routes.

In this plan, the network functions have been adopted from the NSW Bicycle guidelines. If Council wish to further refine a hierarchy for their active travel network it is recommended that consistency is applied across the whole Council area. When considering definitions and treatments other jurisdictions within close proximity should be reviewed to consider merits and possible ease of integration.

The bicycle network functions are:

Regional bicycle routes

These are longer distance regional routes connecting the major regions of the town and beyond. As they are often on highly trafficked roads, taking advantage of the most direct road alignments, they require the highest level of bicycle facility. They are often on-road sharing the road space with cars and trucks and are designed for use by experienced commuter cyclists. Some are on State and regional roads where RMS agreement and implementation may be required.

Local bicycle routes

These are connectors within suburbs and cater to local trips to school, shops, community facilities and local recreation attractors. These link to the Regional Routes and are typically shorter distance facilities that are disproportionately used by less experienced cyclists such as children, teenagers and less experienced adult cyclists. These are typically off road routes but when they are on-road, the cycle lanes are normally on slower, lower volume council roads. These can also be more circuitous taking advantage of open space corridors, the local topography, access to views and linking in a leisurely fashion to land use attractors along the way. As these routes are inevitably shared with pedestrians, they are not designed for high bicycle speeds. Detailed design of such routes can add value to the cycling experience; this can include stopping areas/picnic areas, network distance signage, points of interest signs as well as under-cover seating for wet weather protection.

Mixed Traffic Streets

These link with the residential street system to provide residential access to destinations. Where the road link is used to connect between local or Regional bicycle routes on road markings and watch for cyclists signage can aid with the legibility of the cycle network. While not all residential streets will be marked as mixed traffic streets, indicating road with reasonable topography, low vehicle volumes and speeds as cycle friendly streets on bike maps can help users identify suitable path links to take.

5.0 Network Plans

5.1 Network Constraints and Opportunities

The study area already presents a large range of opportunities for pedestrian and cycle movement. QPRC wishes to enhance these facilities through the development and implementation of the bicycle and pedestrian facilities plan and through future re-development of sites when they occur. Existing facilities should link in with highly used cyclist and pedestrian routes and upgraded when required.

Opportunities for improved walking and cycling facilities in Bungendore include:

- Improved connections to existing off-road shared paths
- Existing road crossing facilities such as pedestrian refuges
- Parks and open space where cycle networks can be built to encourage recreation activities
- Rail trails which can be used for recreational cycling
- Low volume streets.

Constraints to improved walking and cycling facilities in Bungendore include:

- Topography (steep grades and creeks)
- High volume roads such as the Kings Highway
- Through streets with a significant amount of kerbside parking
- Large distances and poor road shoulder conditions for travellers leaving Bungendore.

The lack of footpaths and appropriate safe crossing facilities are the major constraint to active travel. Along major roads, where footpaths are missing, their construction is necessarily a high priority.

For those with disabilities, there are many barriers, depending on the nature of the disability. It must be remembered that most seniors, especially those over 75 years of age, suffer from some form of disability, usually less agility and poorer eyesight.

5.2 Network Master Plan

A network master plan has been developed for Bungendore according to the approach and principles already described in this report. The proposed walk and cycle network master plan for Bungendore is shown in Figure 16. The red and blue dotted lines on Gibraltar, Majara, Malbon and Forster Street indicate that it is proposed that the existing footpaths will be widened to form shared paths.

It is important to note that:

- This a strategic network, rather than an itemisation of every route that might ultimately be desired. They identify routes with an additional level of priority to those that could be desired on every street.
- Hierarchy definitions shown in the master plan figure are defined for planning purposes. The action plans then interpret these into the physical networks that should be implemented, and the priorities for these.
- The bicycle and pedestrian facilities plan has a definite timeframe. The networks shown are based on a timescale of about 10 years. It is assumed that the plan will be reviewed every five years.
- Changes in land uses can have large impact on walking and cycling needs, but not all land use changes that will occur can be predicted and incorporated into the networks. Also, some longer term routes — such as a town boundary walk for Bungendore — will not be achievable in the network timeframe, and shorter-term routes are shown as intermediate staging for the desirable long-term route.



Figure 16: Proposed walking and cycling network master plan for Bungendore

5.3 Catchments

To help identify priority link items and where greater density of activities are likely to occur, catchment maps for key generators and vulnerable users have been developed. The catchments have been developed based on the path network rather than as the crow flies to help identify actual distances and missing links. The distances are based on the current path and road network.

5.3.1 Pedestrian catchments

Having established the constraints and opportunities, the conceptual pedestrian generators, attractors and catchment areas are illustrated for various pedestrian target groups. Catchments are based on distance covered at a defined walking speed.

If walking (or cycling) is to be encouraged, then the planning method must be changed to be pro-active rather than reactive to existing behaviour. This has been the method used in bicycle transport facility.

5.3.1.1 Seniors and mobility impaired catchments

Figure 17 illustrates the 0.9 km walking radii around senior's attractors such as retail nodes, railway stations and community centres. The aged housing is located in respect to these. While path and road distance used to establish the catchment for planning purposes is 0.9 km - it is expected that the actual walking distance is likely to be more than this. Some seniors' attractors have no identifiable cluster of aged housing near them. This does not mean that there are no elderly living within the catchment of that facility.

5.3.1.2 School catchments

For schools, the potential walking catchments are linked to the walking radius around the school within which bus travel is not subsidised. The path link distances used in the walking catchment are 1.6km radius for primary schools (Figure 18).

As can be seen, the catchment areas overlap substantially illustrating that every street is a walking street to school. It is therefore not realistic just to plan for the school frontage or a single route to a school. Essentially children walk from all directions - it will be necessary to ensure that on roads of higher road classification, high speed or volume, appropriate crossing facilities are in place and on arterial and sub arterial roads where children would be expected to walk there are continuous footpaths.

As the streets converge on the school, it is more likely that pedestrian crossing facilities already exist. However it must be remembered that on streets even over 1km away from the school, children would still be expected to cross traffic routes to access the school by foot. In many cases, parents would then drive their children to school if safe appropriate crossing facilities are not available, thus increasing unnecessary vehicle trips.

5.3.1.3 Shopping walking catchments

The conceptual walking catchment for shopping is presented in Figure 19. The path link distance used to establish the catchment for planning purposes is 1.3 km - it is expected that the actual walking distance would vary according to topography and street permeability. Bungendore town centre is a key attractor and it may be that people would be prepared to walk longer distances if continuous good quality paths and crossings were available.

Again as with school routes, it will be necessary to ensure that appropriate crossing facilities are in place particularly on arterial and sub arterial roads and there are continuous footpaths.

Figure 17: Seniors walking catchment



Figure 18: School walking catchment



Figure 19: Shopping walking catchment



5.3.2 Cyclist catchments

Cyclist catchments extend well beyond the town boundary, so they are not shown for Bungendore.

5.3.3 End of trip facilities

AGTM11 (Austroads 2017) and the Australian Standard AS2980.3 provides information on bicycle parking and end-of-trip facilities. The Australian Standard classifies bicycle parking facilities by the level of security provided for the parked bicycle by the following classes:

- Security level A facilities individual locker with high security locking mechanism.
- Security level B facilities secure rooms or structures protected from the weather allowing users to lock the bicycle frame and both wheels.
- Security level C facilities a bicycle parking space where the bicycle frame and both wheels can be locked.

5.3.3.1 Security level A bicycle parking

There are currently no lockers at Bungendore railway station. In NSW, lockers at major transport hubs are managed by Transport for NSW, with over 130 bike locker locations available across the network. Individuals are able to request for an investigation that bike lockers are available for hire through the following website:

https://appln.transport.nsw.gov.au/bikelockers/

5.3.3.2 Security level B bicycle parking

Locked cages are most appropriate near transport hubs, employment centres and educational institutions. Given the scale this is not considered to be critical for Bungendore. Employee bicycle parking should be considered for commercial tenancies.

5.3.3.3 Security level C bicycle parking

Low security bicycle parking is more appropriate for short-term parking such as near retail centre, libraries and recreation facilities such as parks. Facilities should be located in well-lit areas and as close to the user's destinations.

Recommended locations for low security bicycle parking rails are:

- Main street
- Adjacent sports oval
- Within school grounds for students.

5.3.4 Network hierarchy and design standards

The network planning for Bungendore has adopted the following network features:

- Commercial zones; the most frequent destinations for walking and cycling trips
- Secondary zones; other major destinations for walking and cycling trips, for example schools and recreation facilities
- Main access routes; these provide main level of access to the destination zones (and vice versa), forming a spine for local walking and cycling
- Local access routes; parts of the general street network that have strategic value in providing walking and cycling access to main access routes, secondary zones and commercial zones
- Cut throughs; generally short sections of path that provide access where no road or street alignment otherwise exists recreational routes; for providing recreational opportunities
- Regional routes; for fast and unhindered cycle travel between towns and other regional destinations.

6.0 Route Priority Strategy and Implementation Plan

The Action Plan for improved bicycle and pedestrian facilities for Bungendore is shown in Figure 16. This Chapter sets out the priorities and estimated costs for implementing the works.

6.1 Route Prioritisation

Council has identified commitments such as the Gibraltar Street and Kings Highway upgrade works and the roundabout at the intersection of Tarago Road and Kings Highway. Routes will be developed in stages when funding becomes available.

The selection of active travel routes was based on consideration of the following elements:

- Connectivity with existing infrastructure
- Route continuity
- Proximity to a schools and aged care
- Proximity to public transport
- Safety
- Cost.

This provides a good framework for assessment. In cases where two parallel routes were identified only one was taken forwards based on consideration of the above factors and engineering judgement. In some cases short links within a route were prioritised if they provided a path connection.

Routes have been allocated as high priority with the intent to undertake the works within the next five years and medium priority for likely future path links that should be considered with any planning or new development works.

Shared paths as opposed to footpaths have typically been proposed as they provide for a wider range of users and provide adequate widths for two way passing of wheelchairs and prams. The width rather than surface treatment has been outlined as the defining characteristic of proposed paths in this study.

Each town has their own local character and walking and cycling infrastructure should reinforce this character. This infrastructure is also important as part of presenting a picture of how the town (and QPRC) regard their walking and cycling to residents and visitors. At the same time, infrastructure needs to be functional, and this functionality needs to be balanced against aesthetics in developing a good streetscape design outcome.

6.1.1 Route connectivity

Where a local route connects to an attractor or a generator, there is greater likelihood of that facility being used. Connectivity is a key determinant of the potential use of the network. This is particularly relevant to local routes, the main purpose of which is to create a facility which can be used for a range of trip purposes, thus decreasing the need to use a car. This criterion therefore creates a relationship between the local route length, and the number of attractors and generators served by the route. This also includes new development areas.

The types of facility and selected alignments have been considered in determining priorities.

6.1.2 Route continuity

This criterion relates to new route connectivity to other proposed routes as well as to connecting to existing routes. There is clear value in growing an existing facility rather than building a new isolated route, as there is usually an existing bicycle user base whose range can be expanded.

6.1.3 Proximity to schools and aged care

Facilities close to schools or aged care housing typically cater for the more vulnerable road users who rely on active travel.

Where possible, the bicycle network should address the existing bicycle road safety issues reflected in the bicycle crash record. The most recent five year RMS crash data base is the key input in assessing this criterion and this showed that there were no bicycle crashes in Bungendore during this period.

6.1.5 Cost of routes

There is typically a balance between amenity and cost. Wider paths can offer a greater amenity but may reduce the extent to which the network can be developed with the available funding. In developing a masterplan for the active travel network, greater amenity has been targeted where higher usage is expected.

6.2 Implementation Plan

To avoid fragmentation of works an integrated approach was undertaken to balance each of the criteria and associated works. The networks identified in the plan present a 15 year timeframe. Typically the high priority items cover a 0 - 4 year time frame and the medium priority works relate to a 5 - 15 year time frame. However, the plan should be reviewed at the end of five years for currency and changed conditions, the implementation of works, likely forward works, available funding levels, changes in strategy, etc.

6.2.1 Bungendore proposed works plan

The proposed works plan for bicycle and pedestrian facilities in Bungendore is shown in Figure 20. It includes priorities for shared path or footpath improvements. High priority works (1 - 4 years) are shown with a green box outline.

This figure demonstrates how the works proposed in the path program combine with existing paths, plus the proposed street crossing points and existing crossing places, to create an overall network. In this sense, "existing" also includes those paths that developers have committed to providing (where known).

6.2.2 Cost rates

The cost rates used in the implementation plan are based on the cost of recent similar works, in consultation with Council staff, and are presented in Table 4. These rates have been used to determine the indicative costs based on route lengths. More detailed costing will be undertaken in the design phase.

Table	4:	Infrastructure	cost	rates
	•••			

Item	Rate	Cost
Concrete Path	Per square metre	\$150
Bitumen path	Per square metre	\$60
Pedestrian refuge island	Per item	\$25,000
Mixed Street signage and line marking	Per metre	\$30

Note: 2018 cost rates

In regard to these, it should be noted that:

- Path rates (concrete and bitumen) have been nominated by Council.
- The cost rates exclude design and drafting of plans, community consultation or traffic control associated with works, and which might occur in-house or as part of other projects.
- Proposed streetscape improvements and the Malbon Street roundabout have already received funding and are not costed as part of this plan.

Figure 20: Proposed works plan for Bungendore



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6.2.3 Path program

The estimated cost of path improvements in Bungendore is given in Table 5 for footpaths and Table 6 for shared paths. The tables itemises each of the routes in the path program, with an estimated cost. The tables also assign a map reference to each path and lists paths in (roughly) priority order.

It should be noted that depending on the condition of the existing footpath it may be possible to convert a footpath to a shared path at a lower rate than what is nominated in the table above. Without a detailed study of the condition of existing paths it has been decided to cost all shared paths at the higher amount which is likely to be conservative.

This program addresses the priority infrastructure required to link existing facilities to form usable networks. These will typically comprise footpaths within the town core, but shared use paths are also proposed as they cater for both pedestrian and cyclists affording greater use and path capacity.

For the high priority treatments, the priorities are:

- Completion of all commercial zone footpaths and links within the town centre
- Completion of major east west links between the train station and the commercial area
- Completion of facilities around the central sports fields and recreational areas
- Providing new path for some links rather than upgrading existing footpaths to meet specified performance criteria (e.g. widening existing paths)
- Linking major trip origins (i.e. residential precincts) and destinations (major non-residential land uses)
- Providing continuous routes where there are missing links.

Furthermore, many streets in and around Bungendore and surrounding extents have an insufficient seal width to accommodate on-road bicycle facilities. It is therefore assumed that cyclists likely to undertake longer distance trips outside the townships would be reasonably comfortable with on-road cycling and large scale road widening or shoulder sealing (an expensive exercise) is not proposed. This should instead be carried out in conjunction with other works along these roads.

Given these priorities, it should be noted that land use development has the potential to influence inclusions in the path program, should such development occur within the five- year timeframe of this implementation plan. For example, development of the sports fields would naturally lead to a need for an access path to the sports fields, which is currently listed as a medium priority.

The memorandum of understanding for Council Projects funded by the RTM outlines terms of funding assistance for these works, as follows:

- Pedestrian crossings on, and kerb ramps provided to access footpaths adjacent to, streets under the care and control of the RMS are generally eligible for 100% RMS funding, subject to available funds and other funding priorities, if provided in accordance with an approved pedestrian facilities plan.
- Bicycle facilities provided in compliance with an approved Bicycle Plan are generally eligible for 50% funding from the RMS, subject to the availability of funds and competing funding priorities. This also applies to shared use paths.

Table 5: Bungendore proposed footpaths

REFID	Priority	Link Description	Path Length (m)	Total Cost
F3	High	Malbon Street - between Majara Street and Butmaroo Street	190	\$34,000
			sub total	\$34000
F1	Medium	Connecting Kings Highway to Ellendon Street	340	\$59,500
F2	Medium	Connecting Malbon Street, Gibraltor Street and Ellendon Street	370	\$66,000
F5	Medium	Between Powell Street and Kings Hwy along Gibraltar Street	740	\$132,000
F6	Medium	From Ashby Drive, along McCusker Drive and along Hyland Drive	760	\$136,000
F7	Medium	From Day Circuit to Ashby Drive	360	\$63,000
F10	Medium	Forster Street - Between Ellendon Street and Molonglo Street	230	\$40,500
F11	Medium	Turallo Creek Track – between Tarago Road and Elmslea Drive	199	\$35,000
			sub total	\$532,000
			Total	\$566,000

Note: 1. All estimated costs rounded to nearest \$500 2. REFID is shown in Figure 20

Table 6: Bungendore proposed shared paths

REFID	Priority	Link Description	Path Length (m)	Total Cost
S2	High	Off-Road - Molonglo Street towards Community Gateway	900	\$135,000
S5	High	Mick Sherd Oval	350	\$52,500
S8	High	Ellendon Street - King Street to Finch Street	320	\$48,500
S10	High	Forster Street - Ellendon Street to Majara Street	500	\$74,500
S11	High	Ellendon Street - Gibraltor Street to Turallo Creek	380	\$57,000
S13	High	Gibraltor Street - Ellendon Street to Molonglo Street	210	\$31,500
S15	High	Ellendon Street - Gibraltor Street to Kings Highway	240	\$36,000
S16	High	Majara Street - Gibraltor Street to Kings Highway	720	\$108,000
S17	High	Forster St - Between Molonglo Street and Ellendon Street	280	\$42,500
S19	High	Gibraltor Street - Majara Street and Ellendon Street	370	\$56,000
		High Priori	ity Sub-Total	\$641,500
S1	Medium	Bungendore Road - Molonglo Street towards the Showground	500	\$74,500
S3	Medium	Off-Road - Community Gateway towards Kings Highway	1810	\$271,500
S4	Medium	Wild Terrace - McMahon Drive to Larmer Street	870	\$130,000

REFID	Priority	Link Description	Path Length (m)	Total Cost
S6	Medium	Off-Road - Kings Highway to Bungendore Road	830	\$124,500
S9	Medium	Ellendon Street and Trucking Yard Lane	680	\$102,000
S12	Medium	Kings Highway - From Majara Street along Kings Hwy	1350	\$202,000
S14	Medium	Molonglo Street - Gibraltar Street to Turallo Creek	260	\$39,000
S18	Medium	Molonglo Street - Between Forster Street and King Street	190	\$29,000
Medium Priority Sub-Total				
Total				

Note: All estimated costs rounded to nearest \$500

2. REFID is shown in Figure 20

6.2.4 Marked mixed traffic streets

Eyre Street is the only road nominated as a mixed use road in the plan for Bungendore. The map reference and cost for this is given in Table 7.

Table 7: Bungendore proposed mixed use roads

REFID	Priority	Link Description	Path Length (m)	Total Cost
M1	Medium	Eyre Street –from Lamer Street along Eyre Street	435	\$6,500

Note: All estimated costs rounded to nearest \$500

2. REFID is shown in Figure 20

6.2.5 Street crossing program

The greatest safety hazard for road users is at intersections. Intersections and street crossings therefore have a high priority in the action plan.

A lack of kerb ramps also affects access for people with disabilities (a particular area of interest for council, given statutory requirements such as the Disability Discrimination Act and Disability Standards for Accessible Public Transport) and for people using strollers, etc. Construction of street crossings will also provide kerb ramps.

The priority for street crossings is where crossings:

- Are of high traffic volume streets
- Are used by high pedestrian and/ or cyclist volumes
- Link routes to form or enhance networks.

Kerb extensions, raised pedestrian crossings and road crossing facilities provided on local and regional roads (those not under the care and control of the RMS) are generally eligible for up to 50% funding by the RMS, subject to availability of funds and competing funding priorities.

Table 8 outlines the proposed crossing facilities, in the form of refuge islands. The location of these are shown in Figure 16 and described in Table 8.

Table 8: Bungendore proposed street crossing facilities

REFID	Priority	Link Description	Items	Total Cost
PR1	High	Refuge Island - Ellendon Street near Forster Street	1	\$25,000
PR2	High	Refuge Island - Powell Street near Kings Highway	1	\$25,000
PR3	High	Refuge Island - Ellendon Street north of Gibraltar Street	1	\$25,000
			Total	\$75,000

6.2.6 Kerb ramp replacement program

A kerb replacement program has been actioned and many of the links with footpaths have installed pram ramps. All sites with footpaths or shared paths should have kerb ramps installed. The kerb ramps associated with older footpaths generally do not meet current disability standards in terms of gradients, ease of mounting, directional guidance provided by Tactile Ground Surface Indicators (TGSIs); are poorly located and aligned; and in some cases do not exist at all.

If kerb ramps are only installed with new infrastructure, they are not provided in a strategic way - i.e. to create usable routes - and accessible routes and networks would not be created in a reasonable timeframe.

The kerb ramp replacement program aims to provide or replace kerb ramps in existing footpaths, to create a basic framework of accessible routes within each town within five years. Priority should be determined by the following factors:

- Amount of pedestrian use
- Currently programmed works (whether the kerb ramp would otherwise be constructed)
- Providing continuously accessible routes, especially in commercial and secondary destination zones, but also other locations well- used by frail pedestrians (typically the elderly) and/ or people using prams or strollers
- Providing number of circular loops to cater for some degree of recreational opportunities.

The cost of constructing new kerb ramps is about \$1,100 per kerb ramp, plus around \$160 per square metre of footpath where footpath construction or reinstatement is required in addition to the kerb ramp.

A kerb ramp replacement program of \$5,500 per year is proposed in the first instance. This would provide for some five kerb ramps to be replaced each year, or 25 over the life of the program. This should allow sufficient funds to complete the kerb upgrade works within Bungendore. Other works, such as constructing new kerb and installing new footpaths, will also provide new kerb ramps. Kerb ramps will typically need to be provided in pairs, so that kerb ramps facing each other across a street or intersection are both compliant.

It is understood that Council has undertaken an audit of kerb ramps and is undertaking a kerb ramp replacement program.

"Kerb ramps provided to access footpaths adjacent to roads under the care and control of the RMS are eligible for 100% funding by the RMS, subject to availability of funds and competing funding priorities. Kerb ramps provided as an upgrade of existing pedestrian facilities on local and regional roads (those not under the care and control of the RMS) are eligible for up to 50% funding by the RMS, under the local government pedestrian facilities program subject to availability of funds and competing funding priorities".

6.2.7 Off-network program

The preceding programs have all concentrated on creating the pedestrian and cycling networks for Bungendore. However, to maximise the use, utility and ultimately value of these networks, a number of other activities can be undertaken. This includes capital works activities, policy or planning activities, and promotional activities.

These are termed "off-network" activities and this program covers these activities.

Bicycle parking

An almost complete lack of bicycle parking was noted during the community consultation and site visit. Basic bicycle parking levels are specified in the design standards. Bicycle parking provided in addition to this should be installed on an incremental basis, with additional parking dependent on observations of take up.

It is suggested that the bicycle program allow for at least five rails to be installed each year. It is preferable for the rails to be installed singly or as pairs of rails, rather than only installed at a single location each year. At a cost of about \$250 each, this would be \$1,250 a year.

The school was noted to have some bicycle parking; much of it poorly used. The observed racks do not provide support for bicycles, in compliance with ASZ890.3, or protection from the weather.

Bicycle facilities provided in compliance with an approved Bicycle Plan are generally eligible for 50% funding from the RMS, as outlined in the Council Projects Funded by the RTA Memorandum of Understanding, subject to the availability of funds and competing funding priorities.

Proposed locations for bicycle parking are:

- Sporting oval
- Along the main street
- Outside the supermarket.

Activities raising awareness of the bicycle and pedestrian facilities plan

In assisting to enable behavioural change, motivation can play an equally important factor as opportunity. Pedestrian and cycling infrastructure can create the opportunity. Hand in hand with this should be walking and cycling motivation, education and awareness - those things that enable the physical facilities to be used to its best extent. Education, promotion and encouragement activities could include:

- Educate communities about the new facilities provided and opportunities these present
- Encourage the use of facilities
- Create goodwill between the community and Council.

The cost to implement these actions will depend on the type and extent of activities selected for implementation, the degree to which they fall under existing budgets, the degree to which grant funding or resources are available to assist in their implementation and the degree to which Council actively pursues these actions. Hence a firm cost estimate cannot be given.

Bicycle training courses, BikeWeek activities, bicycle use promotions and map production may be eligible for part funding from the RMS, subject to the availability of funds and competing funding priorities.

7.0 Plan Implementation and Monitoring

7.1 Implementation

The staged implementation plan identified through this study would need to be assessed and implemented based on specific site conditions and reflect the latest pedestrian and bicycle facilities standards at the time of implementation. The staged action plan would be considered by Council as part of other projects (e.g. road upgrade, place making projects etc.) or included as standalone items in future Delivery Programs and Operational Plans.

Construction of any works identified in this study will be subject to the availability of funding.

7.2 Monitoring

As the pedestrian and bicycle network is developed, it will be important to monitor the progress of the network over time. Monitoring could relate to the following three areas:

- Route conditions and overall route quality
- Changes in demand
- Implementation of work program.

Monitoring of the quality of pedestrian and bicycle routes could be undertaken by measuring the quality of the route against the existing design criteria as part of a "look and see" audit process. This will enable the overall quality of routes to be improved, problems to be addressed and resources to be targeted appropriately. Council would monitor the pedestrian and bicycle plan deliverables as per the action plan. A typical assessment would involve an assessment of route conditions by a person familiar with pedestrian and bicycle design issues and would involve a site visit along the specified route.

8.0 References

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Appendix A

Schedule of Works

Appendix A Schedule of Works

REFID	Priority	Link Description	Path Length (m)	Total Cost
F3	High	Malbon Street - between Majara Street and Butmaroo Street	190	\$34,000
PR1	High	Refuge Island - Ellendon Street near Forster Street	1 item	\$25,000
PR2	High	Refuge Island - Powell Street near Kings Highway	1 item	\$25,000
PR3	High	Refuge Island - Ellendon Street north of Gibraltar Street	1 item	\$25,000
S2	High	Off-Road - Molonglo Street towards Community Gateway	900	\$135,000
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S17	High	Forster St - Between Molonglo Street and Ellendon Street	280	\$42,500
S19	High	Gibraltor Street - Majara Street and Ellendon street	370	\$56,000
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F5	Medium	Between Powell Street and Kings Hwy along Gibraltar Street	740	\$132,000
F6	Medium	From Ashby Drive, along McCusker Drive and along Hyland Drive	760	\$136,000
F7	Medium	From Day Circuit to Ashby Drive	360	\$63,000
F8	Medium	Butmaroo Street – Between Turallo Terrace and Kings Highway	460	\$69,000
F9	Medium	Molonglo Street – Between Gilbraltar Street and Rutledge Street	460	\$69,000
F10	Medium	Forster Street - Between Ellendon Street and Molonglo Street	230	\$40,500
F11	Medium	Turallo Creek Track – between Tarago Road and Elmslea Drive	199	\$35,000
M1	Medium	From Lamer Street along Eyre Street	430	\$6,500
S1	Medium	Bungendore Road - Molonglo Street towards the Showground	500	\$74,500
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S14	Medium	Molonglo Street - Gibraltar Street to Turallo Creek	260	\$39,000
S18	Medium	Molonglo Street - Between Forster Street and King Street	190	\$29,000

Note: 1. Type of work: F = footpath, S = shared path, M = marked mixed traffic street, R = refuge 2. Location of work – described in above table and in Figure 20.