

Queanbeyan-Palerang Regional Council 22-Jun-2020

Braidwood Bicycle and Pedestrian Facilities Plan

Integrated Transport Strategy



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Integrated Transport Strategy

Client: Queanbeyan-Palerang Regional Council

ABN: 95 933 070 982

Prepared by

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Table of Contents

Execu	tive Sumr	nary		i
1.0	Introdu	iction		1
	1.1	Background		1
	1.2	Study Objectives		1
	1.3	Process		1
	1.4	Study Area		2
	1.5	Structure of Repo	ort	2
2.0	Chara	cteristics of the Stud	v Area	5
	21	Land Use	,	5
		211 Braidwo	od population	5
		212 Pedest	rian and cyclist trip generators and attractors	5
		213 Future	and use changes	7
	22	Transport Moven	and use changes	7
	2.2		50	7
		2.2.1 Mode u 2.2.2 Road h	ierarchy and traffic volumes	, 8
		2.2.2 Roduli	ranchort	11
		2.2.3 Fublic t	ransport	11
	0.0	Crochec		11
20	Z.S Comm	UIDSINES		14
3.0	2.4		tion	10
	3.1	Stage 1 Consulta	(IION)	10
	3.2	Stage 2 Consulta	(IION)	17
4.0	3.3	Stage 3 Consulta	ition	18
4.0	Releva	Int Policies, Progran	imes and Planning Principles	19
	4.1	State Policy		19
	4.2	Local Policy		21
	4.3	Planning Principi		21
	4.4	Network Design		22
	4.5	Pedestrian Plann	ing Principles	23
		4.5.1 Differer	it pedestrian user types	23
		4.5.2 Walking	g user groups	23
		4.5.3 Principl	eintent	24
		4.5.4 Approa	ch	25
	4.6	Bike Planning Pr	nciples	26
		4.6.1 Bicycle	user categories	26
		4.6.2 The bic	ycle network	27
5.0	Netwo	rk Plans		29
	5.1	Network Constra	ints and Opportunities	29
	5.2	Network Master I	Plan	29
	5.3	Catchments		31
		5.3.1 Pedest	rian catchments	31
		5.3.2 Cyclist	catchments	35
		5.3.3 End of	trip facilities	35
		5.3.4 Networ	k hierarchy and design standards	35
6.0	Route	Priority Strategy and	Implementation Plan	36
	6.1	Route Prioritisation	on	36
		6.1.1 Route of	connectivity	36
		6.1.2 Route of	continuity	36
		6.1.3 Proximi	ty to schools and aged care	36
		6.1.4 Road s	afety	36
		6.1.5 Cost of	routes	37
	6.2	Implementation F	Plan	37
		6.2.1 Braidwo	ood proposed works plan	37
		6.2.2 Cost ra	tes	37
		6.2.3 Path pr	ogram	39
		6.2.4 Mixed u	use roads	41

P:\CBR\60544563\8. Issued Docs\8.1 Reports\Active Travel\Braidwood - PAMP&Bike Plan FINAL 22 June 2020.docx Revision 5 – 22-Jun-2020 Prepared for – Queanbeyan-Palerang Regional Council – ABN: 95 933 070 982

7.0 Pla 7.2 8.0 Re Appendix A	6.2.5 6.2.6 6.2.7 an Implemen 1 Imple 2 Monit eferences	Street crossing progra Kerb ramp replaceme Off-network program tation and Monitoring mentation oring	am Int program	41 42 42 44 44 44 45
List of Figu	ires			
Figure 1: Pro Figure 2: Pro Figure 3: Ke Figure 3: Ke Figure 5: Bro Figure 5: Bro Figure 6: 20 Figure 7: Bro Figure 7: Bro Figure 8: Tra Figure 9: Bro Figure 10: B Figure 10: B Figure 12: B Figure 12: B Figure 13: S Figure 14: In Figure 15: C Figure 16: S Figure 17: P Figure 18: S Figure 19: S Figure 20: S Figure 21: P	roposed walki roposed work ey tasks for cl raidwood stud raidwood ped 016 Census jo raidwood road affic counts in raidwood exis Braidwood exis Braidwood Stu Braidwood stu	ng and cycling network m s plan for Braidwood with reating a pedestrian and k ly area estrian and bicycle key ge purney to work mode use d hierarchy n the region ting walking and cycling n rava heat map – riding rava heat map – running destrian crash severities a and network outcomes Global Gateway Cities or behavioural change approach king and cycling network in g catchment g catchment king catchments ks plan for Braidwood wit	aster plan for Braidw priorities vike plan enerators and attracto in Braidwood network and locations master plan for Braidy	ood iv v 3 4 0rs 6 8 10 12 13 14 15 19 20 22 25 wood 30 32 33 34 38

List of Tables

5
22
24
37
40
40
41
41

Executive Summary

AECOM has prepared an integrated bicycle and pedestrian facilities plan for Braidwood; there are other similar reports for Queanbeyan and Bungendore 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 Braidwood appear to be:

- The town is a small size to enable walking and cycling, with almost all residents within a kilometre of the town centre. Kings Highway passes through the centre of the town, forming the main street (Wallace Street) and Lascelles Street. There is a ninety degree right turn from Lascelles Street into Wallace Street.
- Within the precincts of Braidwood, traffic speeds are relatively moderate. All of Braidwood roads are posted at 50 km/h.
- Traffic volumes are generally light (fewer than 1,000 vehicles per day), with the highest volume (Kings Highway/ Wallace Street/ Lascelles Street) having 6,000 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 vary, but on the some of the most important streets there is nose-in 60° angle parking. There are indented parking bays at key destinations: Central Braidwood, schools, the hospital and the supermarket.
- At most intersections, the intersecting streets do so 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 Braidwood, 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 Braidwood:

- Coronation Avenue: Missing footpath on northern side from Ryrie Street to ex- serviceman club.
- Council needs to consider disabled access compliance particular for heritage buildings to better define "deemed to comply" in the building requirements.
- Post Office in Braidwood has no disabled access.

- Include paths on Coronation Avenue and Wilson Street.
- Include ramps at Archers Bridge.
- More paths and tracks to Mount Gillamatong.
- Kerb ramps have lips and bad angles that make it difficult for the wheel chair to get up.
- There needs to be more crossings and paths going to schools.
- There is no safe pedestrian or cyclist crossing over Monkittee Creek.
- Monkittee Creek Bridge access and crossing is in a very bad condition. Safety is a concern as children, bikes and prams cross this bridge. This bridge needs to be brought to a better condition.
- The 80 km/h speed limit along Kings Highway is working well. However, it might be a good idea to add rumble strips.
- Comment that footpath next to guard rail at corner of Ryrie Street and Lascelles Street needs gravel. This footpath can get very muddy when it rains.
- There is no pram crossing near Braidwood Park (near toilets) until near the pub.
- There needs to be lighting in the park.
- IGA supermarket needs a metal ramp for access and also a pram crossing.
- There is no path on Wilson Street, south side or Coronation Avenue.
- The Council Chambers and Office have doors at the top of the ramp with no flat section. It is difficult to open the doors while staying on the ramp.
- There needs to be a path along Park Lane South to provide a safer route for school children.
- There needs to be a path along Elrington Street adjacent to St Bedes school, especially between Wilson Street and Duncan Street.
- Concern regarding the stability of footbridge at southern end of Garvey Street.
- A safer footpath on the bridge across Monkittee Creek is a high priority action.
- A pedestrian refuge on Lascelles Street just west of Elrington Street.
- Safety of elderly residents and young school children walking along Duncan Street east of Wallace Street.

The proposed walk and cycle network master plan for Braidwood endeavours to address these and other identified issues where appropriate and is shown in Figure 1. The red and blue dotted lines on Duncan Street and Monkittee 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.
- 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 Braidwood 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). Within these works there may be some constraints due to heritage.

The estimated cost of these works for Braidwood is \$1,097,500, with \$520,500 of works considered high priority (to be built in next 4 years). The priority works includes:

- 2,230 m of new footpaths
- 3,780 m of new shared paths
- Five new pedestrian refuges.

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

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 Braidwood

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Figure 2: Proposed works plan for Braidwood with priorities

1.0 Introduction

1.1 Background

Queanbeyan-Palerang Regional Council (QPRC) has commissioned AECOM Pty Ltd (AECOM) to prepare an Integrated Transport Strategy (ITS) in order to respond to the current 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 Braidwood; there are other similar reports for Queanbeyan and Bungendore.

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 Braidwood. 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 Braidwood was visited in June and December 2017.
 - c. Community Consultation Residents of Braidwood 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 and implementation plan.

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

Figure 3 shows the key tasks undertaken for completing the bike and pedestrian plan.

1.4 Study Area

The study area for Braidwood 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 details the pedestrian and bicycle network.
- Section 6 discusses bicycle and pedestrian route priority strategy and implementation plan.
- Section 7 outlines the implementation and monitoring of the action plan.

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

Figure 3: Key tasks for creating a pedestrian and bike plan



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Figure 4: Braidwood study area



2.0 Characteristics of the Study Area

2.1 Land Use

2.1.1 Braidwood population

Braidwood is located about 73 km east of Queanbeyan and is more reliant on local employment than Bungendore. It is a popular tourist area located on the Kings Highway with some of the town having heritage protection. Table 1 presents a summary of population trends from recent census data. It shows quite strong growth (about 2.1% per annum).

Table 1: Braidwood population statistics

	2011		2016	
Age Oloup	Number	%	Number	%
0-14 years	301	20.1	315	19.0
15-24 years	127	8.5	142	8.6
25 - 64 years	734	49.0	792	47.8
65 and over	336	22.4	408	24.6
Total	1498	100%	1657	100%

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 Braidwood are shown in Figure 5. The major generators and attractors for Braidwood 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 which comprise predominately of commercial and retail activity throughout the area. The swimming pool, sports fields and open space areas are strong attractors particularly for youth. Community facilities such as the Civic Centre, community centres, bowls club and RSL club are significant attractors for seniors

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

Braidwood has two schools:

- St Bede's Red Hill Catholic School (kindergarten to year 6)
- Braidwood Central School (kindergarten to year 12; it also caters for a significant number of adult learners).

A pre-school is located in Wilson Street, between Elrington Street and Monkittee Street (there is a preschool crossing sign associated with this). A day care centre is located in Wallace Street, between Coghill Street and Cowper Street. There is also the Braidwood multi-purpose service located near the eastern edge of Braidwood on Wilson Street.



Figure 5: Braidwood pedestrian and bicycle key generators and attractors

2.1.3 Future land use changes

Braidwood is functionally divided into precincts with distinctive walking and cycling conditions. The divisions in Braidwood are relatively straight forward to define, in that there is one main residential area and two satellite areas with little development:

- The Braidwood built-up area can be broadly defined as being the area enclosed by the two creek lines, extending east to those properties that front Monkittee Street; but also including the houses located around Solus Street, on the north side of Monkittee Street. The western extent of the built-up area is mainly taken up by the golf course.
- South-western Braidwood (the area located around Saleyards and Monkittee Lane, west of the creek lines and Captains Flat Road) is sparsely settled, although this also hosts a small number of light industrial sites on the southern side of Monkittee Lane.
- North-western Braidwood (a possible development area accessed off Glenmore Road) is
 physically separated from the nearby Braidwood built-up area by Monkittee Creek and a buffer
 area about 100 metres wide. This area has larger lot sizes (similar to other development along
 Glenmore Road) and is mainly undeveloped. Aerial photography indicates the presence of a
 bridge over Monkittee Creek close to this area, but this is located on private land preventing it
 from being considered as part of the existing network.

Due to the heritage character of the township, there are limited opportunities for new development within the township. Areas on the southern edge of Braidwood represent a significant area for new development. This includes areas off Badgery Street and the extension of Elrington Street. There is an opportunity for Council's depot to be relocated to land outside the township boundary, or at least more distant from the main street area it currently occupies.

The most likely future expansion will be a 122 lot subdivision on the southern boundary (Cowper Street), known as Braidwood Heights. Houses in the development will be at least 1 km from the town centre. Given the existing demographics, and the likelihood that this would prove attractive to those who have previously been living on farms nearby, it is important that this development be well connected with Braidwood's footpath network, and in particular with Wallace Street.

There is further potential for subdivision in the Saleyards Lane/ Bombay Road area under the existing Local Environmental Plan (LEP); the nearest house of which would be about 800 metres from the Wallace Street/ Duncan Street intersection. However, existing levels of demand suggests that this development is some way into the future.

The existing Council depot is off Ryrie Street, between Duncan Street and Lascelles Street. Its location close to the Wallace Street has led to proposals that it be redeveloped as a major off-street car park. This would require an upgrade of the footpath on the southern side of Duncan Street, west of Wallace Street. There is also an opportunity to enhance and existing direct link to Wallace Street between the shops.

The demand for aged accommodation is likely to increase given the ageing population of both Braidwood and the surrounding rural areas. However no preferred location has been identified for such development.

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 Braidwood. It shows that use of public transport is negligible and that car is the main mode of transport to work.

Of particular relevance to this study is that approximately 20% of the population walked to work in Braidwood and cycling was less than 4%. While there is a high rate of walking, given the relatively small distances between residential and commercial areas (approx. 95% less than 1.5km) there is opportunity to improve the cycling to this region as well.



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

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.

Figure 7: Braidwood road hierarchy



The main north-south street running through the centre of the town is Wallace Street, which also represents the north-south alignment of the Kings Highway as it passes through town. North of the town, about 100 metres after it crosses Monkittee Creek, the Kings Highway turns west; 200 metres west of this point, it turns to the north-west at an intersection with Glenmore Road. A further 230 metres past this point, Nerriga Road branches off the Kings Highway.

Streets extending to the periphery of the town do not continue and in general are not linked. A number of street alignments (but no formed road) exist — notably Monkittee Street to McKellar Street and Lascelles Street to Gawey Street.

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 Braidwood, people using the highway to access the South Coast (notably Batemans Bay) and Braidwood, plus visitors to Braidwood 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 Braidwood do not decrease on weekends. In fact 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.

2.2.2.1 Road environment

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

- The town is a small size to enable walking and cycling, with almost all residents within a kilometre of the town centre. Kings Highway passes through the centre of the town, forming the main street (Wallace Street) and Lascelles Street. There is a ninety degree right turn from Lascelles Street into Wallace Street.
- Within the precincts of Braidwood, traffic speeds are relatively moderate. Streets in eastern, western and southern Braidwood are posted at 50 km/h, apart from 60 km/h on Lascelles Street west of Arulen Street. (Note that at this point Lascelles Street separates much of Braidwood from its oval and other sporting facilities.)
- Traffic volumes are generally light (fewer than 1,000 vehicles per day), with the highest volume (Kings Highway/ Wallace Street/ Lascelles Street) having 6,000 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 vary, but on the some of the most important streets there is nose-in 60 degree angle parking. There are indented parking bays at key destinations: Central Braidwood, schools, the hospital and the supermarket.
- At most intersections, the intersecting streets do so 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.



2.2.2.2 Wallace Street

Wallace Street warrants being considered separately to the rest of Braidwood, as it has a number of features that together make walking and cycling conditions quite distinct. These are:

- Commercial land uses (with Lascelles Street)
- 2.8 metre wide footpaths from McKellar Street to just south of Lascelles Street verandas over footpaths
- Kerb buildouts at zebra crossings
- Front-in angle parking, which can pose a danger to cyclists from reversing vehicles, particularly if the cyclists are travelling at speed on the hilly road
- Well-utilised on-street car parking
- Heavy vehicles using Kings Highway
- Schools either side, as well as community facilities (Ryrie Park, Library)
- A crest that limits sight distances, particularly approaching the Park Lane pedestrian crossing from the north
- The main tourist area, creating a lot of walking and demand for parking lots fronting Wallace Street often have narrow frontages and driveways to rear parking (where parking exists)
- Deep gutters.

2.2.3 Public transport

Coaches and buses

A number of school bus services operate, including feeder buses, to high schools in the ACT. Apart from these, there is no bus service to Braidwood.

Coaches passing through Braidwood to other locations will stop at Braidwood, 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.

Rixons Coaches runs a regular mini-coach service between the Eurobodalla Coast and Canberra via Braidwood. This offers flexible destinations and door-to-door transport on request, and a shuttle service to Canberra airport.

Murrays Coaches have morning coach services from Canberra to Batemans Bay via Braidwood with afternoon return, with an additional service on Thursdays and Fridays.

The Braidwood Taxi Service services Braidwood and surrounding areas. Under the NSW Taxi Transport Subsidy Scheme (TTSS), residents of NSW with a qualifying severe and permanent disability can have taxi fares subsidised, allowing TTSS participants to travel by taxi at half fare.

Bensley Bus and Coach Service, based in Braidwood, run a school bus service from Braidwood to Bungendore and connect with the QCity Buslines service. Bensley also provides a charter service.

2.2.4 Pedestrian and cyclist facilities

A map of the existing pedestrian and cyclist facilities is provided in Figure 9.

There are no on-road bike lanes in Braidwood and no off-road cycle paths or shared-use paths. However, the verges are generally wide and capable of being ridden on by children. Also the low traffic volumes mean that cycling is reasonably safe on most streets.



Figure 9: Braidwood existing walking and cycling network

Note: Current as of December 2017

- Small intrusions off Wallace Street on Lascelles Street, Duncan Street, east of Wilson Street and Park Lane
- Monkittee Street (east side) from the hospital to about 40 m north of Duncan Street
- The Wilson Street frontage of Braidwood Central School
- The frontage of the Summerfield aged accommodation units
- Wilson Street (south side) between Ryrie Park and Erlington Street
- A short piece of footpath on the north side of Wilson Street, just east of Park Lane.

Ryrie Park is criss-crossed by gravel paths. While there is no formal footpath network, the verges are generally tidy and even. There are many worn tracks on the verges indicating pedestrian use.

The 2.8 metre wide footpaths on Wallace Street are wider than many shared use paths, but this is a high pedestrian area with lots of conflict and street furniture making it unsuitable for through cycle traffic.

With the exception of the Library there were no other observed facilities for parking bicycles in the commercial area.

2.2.4.1 Route 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 Braidwood and highlight routes that may benefit from cyclist and pedestrian network improvements. These are presented in Figure 10 (riding) and Figure 11 (running). 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.





Source: Strava Heat Maps (Accessed June 2018)

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Figure 11: Braidwood Strava heat map - running

Source: Strava Heat Maps (Accessed June 2018)

Bombay Road and Sandholes Road appear to be used for recreational running; there is very little data for other pedestrian links. Wallace Street appears to get reasonable bicycle patronage.

2.3 Crashes

A crash analysis of the study area indicated that there were two recorded crashes where injury occurred during the period between the 1st of January 2012 and the 31st of December 2016 that involved pedestrians. During this time there were no crashes involving cyclists.

Figure 12 indicates the location of the two pedestrian crashes that occurred during this time. Both of these were on Lascelles Street.



Figure 12: Braidwood pedestrian crash severities and locations

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 Braidwood, 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 to date 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 Braidwood during the week commencing 20 June 2017.
- 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@qprc.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 Braidwood:

- Coronation Avenue: Missing footpath on northern side from Ryrie Street to ex- serviceman club.
- Council needs to consider disabled access compliance particular for heritage buildings to better define "deemed to comply" in the building requirements.
- Post Office in Braidwood has no disabled access.
- Kerb ramps have lips and bad angles that make it difficult for the wheel chair to get up.
- There needs to be more crossings and paths going to schools.
- There is no safe pedestrian or cyclist crossing over Monkittee Street.
- Include ramps at Archers Bridge.
- Include paths on Coronation Avenue and Wilson Street.
- More paths and tracks to Mount Monkittee.
- Monkittee Creek Bridge access and crossing is in a very bad condition. Safety is a concern as children, bikes and prams cross this bridge. This bridge needs to be brought to a better condition and grade.

- The 80 km/hr speed limit along Kings Highway is working well. However, it might be a good idea to add rumble strips.
- Comment that footpath next to guard rail at corner of Ryrie Street and Lascelles Street needs gravel. This footpath can get very muddy when it rains.
- There is no pram crossing near Braidwood Park (near toilets) until near the pub.
- There needs to be lighting in the park.
- IGA supermarket needs a metal ramp for access and a pram crossing.
- There is no path on Wilson Street, south side or Coronation Avenue.
- The Council Chambers and Office have doors at the top of the ramp with no flat section. It is difficult to open the doors while staying on the ramp.

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 Braidwood 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
 - Install footpaths around school and popular walking routes to and from school.
 - Educate parents and children on pedestrian safety.
 - Consider the following documents to help inform the study:
 - Draft Future Transport Strategy 2056 Plan
 - Queanbeyan Palerang Tourism Plan 2017-2025.
- Concerns:
 - Concern about how large trucks will access roads where roundabouts have been proposed.
 - The footbridge on Garvey Street isn't stable and is unsafe for walking.

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, six survey responses were received in relation to Braidwood and one written response,

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

- Suggestions:
 - A safer footpath on the bridge across Monkittee Creek is a high priority action.
 - A pedestrian refuge on Lascelles Street just west of Elrington Street.
- Concerns:
 - Safety of elderly residents and young school children walking along Duncan Street east of Wallace 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 13. 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 13: 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 14 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 14: 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 15.

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 feat	ures
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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 Braidwood 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 Braidwood the impacts should be fairly minimal and a good balance achieved.

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 16.

Figure 16: 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.

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.

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.

4.6.1.1 Children 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

There is currently no marked bicycle network or on-road facilities within Braidwood.

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 Braidwood 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 Braidwood bicycle plan that as far as practicable, most of the settled urban area is within 250 m of a bicycle route.

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 pedestrian routes and upgraded when required.

Opportunities for improved walking and cycling facilities in Braidwood include:

- Connecting to new development areas to the south
- Existing road crossing facilities such as Zebra Crossings
- Parks and open space where cycle networks can be built to encourage recreation activities
- Low volume streets.

Constraints to improved walking and cycling facilities in Braidwood include:

- Creeks and water courses
- 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 Braidwood.

The lack of path links 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 Braidwood according to the approach and principles already described in this report. The proposed walk and cycle network master plan for Braidwood is shown in Figure 17. The red and blue dotted lines on Duncan Street and Monkittee 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. It identifies routes with an additional level of priority to that which could be desired on every street.
- Hierarchy definitions shown in the master plan figure 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. 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 impacts on walking and cycling needs, but not all land use changes that will occur can be predicted and incorporated into the networks.



Figure 17: Proposed walking and cycling network master plan for Braidwood

31

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.

Given the compact size of Braidwood the catchments for most users cover the whole of the town area. As a basis of analysis each of the areas has still been generated and a description of each follows.

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.

While walking is quite high compared to other areas the size of the township lends itself to walking with almost all of the town covered by the walking catchment. If increased walking (or cycling) is to be encouraged, then the planning method must be changed to be pro-active rather than reactive to existing behaviour.

5.3.1.1 Seniors and mobility impaired catchments

Figure 18 illustrates the 0.9 km walking radii around senior's attractors such as retail nodes and community centres. The aged housing is located in respect to these. While path link 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. In this case, within the walking catchment.

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 and 2 km radius for secondary schools. The catchment map for the combined primary/high school site is shown in Figure 19, based on a 1.6km catchment. This covers most of the town; a 2km catchment would extend slightly further.

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 20. The straight line 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. Braidwood town centre is a key attractor and it may be that people would be prepared to walk longer distances to the centre 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 20: Shopping walking catchments

5.3.2 Cyclist catchments

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

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 known level A bicycle parking or lockers within Braidwood.

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 Braidwood. 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 recreational facilities such as the pool or park. 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:

- Along Wallace Street
- Within the school grounds for students
- At the park and swimming pool.

5.3.4 Network hierarchy and design standards

The network planning for Braidwood 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 Braidwood is shown in Figure 17. This Chapter sets out the priorities and estimated costs for implementing the works.

6.1 Route Prioritisation

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 to attractors and generators
- 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.

6.1.4 Road safety

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 Braidwood 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 Braidwood proposed works plan

The proposed works plan for bicycle and pedestrian facilities in Braidwood is shown in Figure 21. 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.

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

Table 4: Infrastructure cost rates

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 in the town centre have already received funding and are not costed as part of this plan.



Figure 21: Proposed works plan for Braidwood with priorities

The estimated cost of path improvements in Braidwood is given in Table 5 for footpaths and Table 6 for shared paths. The tables itemise 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 tables. 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:

- Development of east-west shared path on Duncan Street including compliant pram ramps
- Completion of path network around park and pool
- Provide footpath to Monkittee Creek bridge crossing including stabilising embankments
- 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 Braidwood 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.

The memorandum of understanding for Council Projects funded by the RMS 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: Braidwood proposed footpaths

ID	Priority	Link Description	Path Length (m)	Total Cost (\$)
F1	High	Kings Highway- between Mckellar Street and the Braidwood Colonial	250	\$45,000
F2	High	Wilson Street - Between Wallace Street and the Braidwood Multi-Purpose Service	360	\$65,000
F6	High	Wallace Street - Between Park Lane and Wilson Street	100	\$18,000
F7	High	Elrington Street - Between Wilson Street and Duncan Street	210	\$31,000
			Sub-total	\$159,000
F3	Medium	Laccelles Street - Between Wallace Street and Elrington Street	430	\$77,500
F4	Medium	Wallace Street - Lascelles Street and Coghill Street	220	\$39,500
F5	Medium	Wilson Street - Between Ryrie Street and Park Lane	280	\$42,000
F8	Medium	Elrington Street - Between Duncan Street and the Recreation Ground	380	\$56,500
			Cult total	¢045 500
			Sub-total	\$215,500

Note: All estimated costs rounded to nearest \$500

2. REFID is shown in Figure 21

Table 6: Braidwood proposed shared paths

ID	Priority	Link Description	Path Length (m)	Total Cost (\$)
S1	High	Shared path link across the recreation grounds	450	\$68,000
S2	High	Link between Wallace Street and the Services Club	660	\$98,500
S3	High	Duncan Street - between Wallace Street and Monkittee Street	420	\$62,500
S7	High	Monkittee Street- Between Wilson street and Duncan Street	220	\$32,500
			Sub-Total	\$261,500
S4	Medium	Monkittee Street - between Duncan Street and Cowper Street	440	\$66,500
S5	Medium	Ryrie Street and McKellar Street - Between Duncan Street and Kings Highway	630	\$95,000
S6	Medium	Link between Wallace Street along Coghill to Coronation Avenue	660	\$99,000
S8	Medium	Wallace street - Between Coghill Street and Cowper Street	300	\$44,500
			Sub-Total	\$305,000
			Total	\$566,500

Note: All estimated costs rounded to nearest \$500

2. REFID is shown in Figure 21

6.2.4 Mixed use roads

Garvey Street and Coghill Street are nominated as mixed use roads in the plan for Braidwood. The map reference and cost for these are given in Table 7.

Table 7: Braidwood proposed mixed use roads

REFID	Link Description	Priority	Path Length (m)	Total Cost
M1	Along Garvey Street - Between Flood Creek and Coronation Avenue	Medium	290	\$4,500
M2	Along Coghill Street - Between the Recreation Ground and Monkittee Street	Medium	130	\$2,000
1			Total	\$6,500

Note: All estimated costs rounded to nearest \$500

2. REFID is shown in Figure 21

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 through local government pedestrian facilities programs, 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 17 and described in Table 8.

Table 8: Braidwood proposed street crossing facilities

Link Description	Priority	Items	Total Cost
Refuge Island – McKellar Street west of Wallace Street	High	1	\$25,000
Refuge Island – Wallace Street north of Duncan Street	High	1	\$25,000
Refuge Island – Wallace Street north of Lascelles Street	High	1	\$25,000
Refuge Island – Lascelles Street west of Wallace Street	High	1	\$25,000
Refuge Island – Lascelles Street west of Monkittee Street	Medium	1	\$25,000
Refuge Island – Lascelles Street west of Elrington Street	Medium	1	\$25,000
		Total	\$150,000

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 \$150 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 Braidwood. 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, 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 Braidwood. 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 pool.

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, undertaken by a person familiar with pedestrian and bicycle design issues and would involve a site visit along the specified route.

8.0 References

ABS (2011) Australian Bureau of Statistics, Census of Population and Housing 2011 ABS (2016) Australian Bureau of Statistics, Census of Population and Housing 2016 AECOM (2017a) Integrated Transport Strategy Stage 1 Consultation, July 2017 AECOM (2017b) Integrated Transport Strategy Stage 2 Consultation, for QPRC, February 2018 Hub (2009) Bike plan and pedestrian access mobility plan – Bungendore & Braidwood, for Palerang Council, February 2009 NSW Government (2017) Draft Future Transport Strategy 2056, October 2017 Queanbeyan City Council (2012a) Community Strategic Plan 2013-23 Queanbeyan City Council (2013a) Queanbeyan tomorrow community vision 2021, November 2013 RTA (2011) NSW Bicycle Guidelines, January 2011 RMS (2017) 2012-2016 road crash statistics data base, May 2017

Appendix A

Schedule of Works

Appendix A Schedule of Works

REFID	Link Description	Priority	Path Length (m)	Total Cost
F1	Kings Highway- between McKellar Street and the Braidwood Colonial	High	250	\$45,000
F2	Wilson Street - Between Wallace Street and the Braidwood Multi-Purpose Service	High	360	\$65,000
F6	Wallace Street - Between Park Lane and Wilson Street	High	100	\$18,000
F7	Elrington Street - Between Wilson Street and Duncan Street	High	210	\$31,000
S1	Shared path link across the recreation grounds	High	450	\$68,000
S2	Link between Wallace Street and the Services Club	High	660	\$98,500
S3	Duncan Street - between Wallace Street and Monkittee Street	High	420	\$62,500
S7	Monkittee Street- Between Wilson street and Duncan Street	High	220	\$32,500
R1	Refuge Island – McKellar Street west of Wallace Street	High	1 item	\$25,000
R2	Refuge Island – Wallace Street north of Duncan Street	High	1 item	\$25,000
R3	Refuge Island – Wallace Street north of Lascelles Street	High	1 item	\$25,000
R4	Refuge Island – Lascelles Street west of Wallace Street	High	1 item	\$25,000
R5	Refuge Island – Lascelles Street west of Monkittee Street	Medium	1 item	\$25,000
R6	Refuge Island – Lascelles Street west of Elrington Street	Medium	1 item	\$25,000
F3	Lascelles Street - Between Wallace Street and Elrington Street	Medium	430	\$77,500
F4	Wallace Street - Lascelles Street and Coghill Street	Medium	220	\$39,500
F5	Wilson Street - Between Ryrie Street and Park Lane	Medium	280	\$42,000
F8	Elrington Street - Between Duncan Street and the Recreation Ground	Medium	380	\$56,500
S4	Monkittee Street - between Duncan Street and Cowper Street	Medium	440	\$66,500
S5	Ryrie Street and McKellar Street - Between Duncan Street and Kings Highway	Medium	630	\$95,000
S6	Link between Wallace Street along Coghill to Coronation Avenue	Medium	660	\$99,000
S8	Wallace Street - Between Coghill Street and Cowper Street	Medium	300	\$44,500
M1	Along Garvey Street - Between Flood Creek and Coronation Avenue	Medium	290	\$4,500
M2	Along Coghill Street - Between the Recreation Ground and Monkittee Street	Medium	130	\$2,000

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 17 and Figure 21.