Pedestrian Access and Mobility Plan - Small Towns and Villages

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Wingecarribee Shire Council

Small Towns & Villages Pedestrian Access & Mobility Plan: Stage 2 Study – Bundanoon & Villages

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1 Introduction

1.1 Background

As with all local councils in NSW, Wingecarribee Shire Council has a responsibility to provide safe, convenient and connected pedestrian routes that will encourage people to walk rather than use their cars. It also has a responsibility to ensure that people who do not have access to cars – particularly the young – are able to reach needed facilities in their everyday activities, and that as far as possible, people with a physical disability do not have their access impaired because of that disability.

In 2001 Council engaged Geoplan Urban and Traffic Planning to prepare a pedestrian access and mobility plan (PAMP) for its three main towns: Bowral, Mittagong and Moss Vale. While this has been implemented since its adoption, there has been no similar planning document for the remaining towns and villages.

Council has now obtained a grant by the NSW Roads and Traffic Authority to prepare a PAMP for small rural towns and villages within the Wingecarribee Shire local government area. It has commissioned QED Pty Ltd to undertake this. A report has been prepared for the first of the settlements to be studied; Robertson. This report covers the township of Bundanoon (estimated population 2,065) and nineteen villages of the Wingecarribee Shire Council area, as follows (listed by population size).

Table 1: Village populations

Town/ village	Estimated population, 2006
Hill Top	1,707
Willow Vale, Braemar, Balaclava	1,307
Yerrinbool	1,094
Colo Vale	862
Welby	757
New Berrima	581
Exeter	426
Wingello, Penrose	376
Berrima	334
Burrawang	244
Aylmerton	161
Avoca, Sutton Forest, Medway, Fitzroy Falls, Balmoral Village	unknown (populations available are amalgamated over larger areas); small

Note that the study is examining the built-up areas of the towns and villages only. As would be expected by the population figures, in a number of cases the range of activities and services in these areas is very limited.

Council has also established a PAMP team to oversee the project, consisting of the following members:

- Jo Babb – Disability Aged Worker;
- Frank Perger – Traffic Engineer;
- James Shelton – Strategic Planner;
- Trevor Grant – Civil Design Officer (Project Manager); and
- Dominic Lucas – Design & Projects Manager.

This team met with the consultant team for an initial workshop and has reviewed documents produced as part of the project on an ongoing basis.

1.2 Objectives

The objectives of a PAMP cover environmental, social and economic considerations. Some of these are to:

- make the most effective use of council resources by providing those facilities that are most needed in the community and that are planned in accordance with expected future development;
- improved access for mobility-impaired groups in the community, including older persons;
- improve safety by minimizing pedestrian dangers from dealing with road traffic;
- promote the use of public transport by making walking to trains and buses easy and convenient; and
- ensure that the provision of pedestrian facilities is integrated with other plans for a local area, such as land use, bike plans, recreation plans etc.

1.3 How the plan has been prepared

The PAMP has been prepared with an extensive research process and with the involvement of Council's PAMP through review and comment

Research for this plan has had three phases, for which working reports were prepared and provided to the PAMP team:

- review of background information (Appendix A)
- community consultation (Appendix B)
- site survey (this extensively informs section 2 and has therefore not been included as a separate document).

The background information reviewed included literature provided by Council, traffic volume information for roads in the study areas and crash statistics in the study areas, especially those involving pedestrians and cyclists.

The community consultation questionnaire survey was sent to all households in the study areas. The questionnaire included maps on which respondents could indicate

common walking routes and problem locations. Over 400 responses were received and analysed, providing a rich source of information to aid planning.

A questionnaire survey of the schools in the study areas (all primary schools) was also undertaken. Six of the ten schools responded.

The information provided by the community and school surveys and review of background data were used to inform site surveys of Bundanoon and each village. During the site surveys, roads and streets within the study area were reviewed to:

- Develop a 'feel' for the local area.
- Review pedestrian and cyclist crash locations identified from RTA crash statistics on-site, to identify contributory factors.
- Review pedestrian (and cycling) facilities, well-used routes, nominated 'unsafe locations' and proposed routes from the household and schools questionnaires surveys for opportunities, constraints, issues and fitness for purpose.
- Identify common disability access issues.
- Undertake (limited) ground-truthing and site data collection
- Inform the development of concepts.

With so many towns and villages involved, the site surveys were not an exhaustive engineering survey of all roads in each town or village.

The main findings from this research are presented in Section 2 and have informed the development of the PAMP report, which comprised the following components:

- preparation of broad strategies and concepts;
- development and refining of strategies and concepts
- development of networks, assessment against a prioritisation system, preparation of an action plan.

As part of this process, the preliminary pedestrian network hierarchy, performance standards and works prioritisation system were provided to the PAMP team for review and comment.

1.4 Structure of report

This report has the following structure:

- a brief introduction to the settlements;
- an explanation of how the plan has been prepared;
- key findings from a site survey of Bundanoon and each village;
- key findings from community consultation that has been undertaken;
- a proposed network and performance criteria
- non-infrastructure recommendations; and
- an action plan.

2 An introduction to Bundanoon and the villages

2.1 Population overview

Although there is a general ageing of the population Australia-wide, this is not necessarily reflected in all of the towns and villages of Wingecarribee. Many also attract young families from Sydney, looking for a lifestyle change. The following assessment of demographics and growth is summarised from the Wingecarribee Open Space, Recreation, Cultural and Community Facilities Needs Study and Strategy (section 8), with the population as per Table 1.

Table 2: Population and demographic characteristics of the settlements

	2006 population	2021 population	Demographic notes, based on 2001 Census data
Aylmerton	161	207	Expected to age rapidly, few visitors
Balaclava, Braemar, Willow Vale	1,307	Strong growth in Mittagong generally	Older populations.
Berrima/ New Berrima	915	948	New Berrima: younger population. Berrima: strong tourism focus
Bundanoon	2,065	2,589	Also services surrounding areas
Burrawang	244	403	High proportion of young families
Colo Vale	862	1,150	High proportion of young families. Growth could be higher if Wensleydale is developed
Exeter	426	689	Growth in older age groups
Hill Top	1,707	2,421	Very high proportion of young people
Welby	757	Population has been decreasing, expected to reverse	Older populations.
Wingello, Penrose	376	652 (Wingello only)	Wingello: Relatively young population and families
Yerrinbool	1,094	1,506	Very high proportion of young families

2.2 The impact of highways and railways

The following summary of conditions in Bundanoon and the villages is largely taken from the site survey report.

Wingecarribee Shire Council is in the Southern Highlands south of Sydney, and has a population of about 43,000. The main towns are Mittagong, Bowral and Moss Vale, which together have a population of about 20,600. The remaining 22,000 are scattered about the shire, most in small settlements ranging from Bundanoon with a population of about 2,000 to small hamlets such as Fitzroy Falls.

The settlements of the shire grew alongside the major transport arterials: the Hume Highway, the Illawarra Highway and the railways: the Melbourne Sydney line, the Port

Kembla Moss Vale line and the Mittagong to Picton Loop Line. Of these, only the first now carries passengers. The Mittagong to Picton Loop Line is closed, except for occasional heritage trains run from Picton to Thirlmere/ Buxton, and commercial use of the line from Braemar to Mittagong. Between these points, the rail reserve and tracks remain, but would require significant upgrade to be made passable to trains along this length. The road network has also changed with the construction of a new alignment for the Hume Highway.

Traffic has continued to grow inexorably, and despite being by-passed by the main regional road, the towns that have grown along the (now) Old Hume Highway still face traffic problems of through traffic on what is sometimes their main street. This applies in particular to the northern village of **Aylmerton**, **Braemar** and **Balaclava** on the northern outskirts of Mittagong. (**Willow Val***e* is also served by the Old Hume Highway, but is by-passed.)

Most of the other settlements face a similar problem. Although traffic volumes are generally not as high as on the Old Hume Highway, through traffic still travels through the built up area.

The southern villages of **Exeter, Bundanoon, Penrose** and **Wingello** are strung out along the road linking each other and all of them Moss Vale. This road, which goes by various names along its route, eventually joins the Hume Highway north of Marulan. The more northern the town, the more traffic passes through. **Wingello** also is at the intersection of this road with another link to the Hume Highway at Paddys River.

Avoca and **Fitzroy Falls**, to the south east of the shire, are built alongside the road from Moss Vale to Nowra.

Sutton Forest is on the Illawarra Highway.

Hill Top and **Balmoral Village** in the north have grown along the road linking Mittagong with Thirlmere and Picton (called Wilson Drive at this point). **Colo Vale** is also served by Wilson Drive, but it does not pass through the town.

Welby straddles the Old Hume Highway, but is mainly located to its north.

Yerrinbool and **Berrima** also straddle the Old Hume Highway, but traffic levels are relatively low at the point it passes through these villages.

The railways have an impact on pedestrian and cycling movement for a number of settlements, by creating barriers that require detours, and by funnelling traffic (including pedestrians and cyclists) through a few – often narrow – crossing points. Settlements to suffer in this way are **Wingello, Penrose, Bundanoon** and **Exeter** in the south, and **Balaclava, Aylmerton** and **Yerrinbool** in the north. We have noted that the Mittagong to Picton loop line has been closed, but the remaining infrastructure and vegetation in the rail reserve can still be a barrier for pedestrians in **Colo Vale, Hill Top** and **Balmoral Village**, particularly if they have a disability or are using strollers etc.

2.3 General conditions

From the review of background information, traffic volumes on local streets and even main streets tend to be moderate, with the exception of the Hume Highway, Old Hume Highway and Illawarra Highway. This does not necessarily match with comments from the household questionnaire about the difficulty in crossing some streets, which may be due to

- characteristics of crossing locations (e.g. sight distance)
- the variation of traffic volumes during the day (e.g. volumes at peak walking times versus other times)
- traffic speeds
- growth in traffic since the traffic volume data was collected.

With relatively low volumes and settlement populations, there are no major crash types or hazardous locations for pedestrians – although the two fatalities that occurred in the period examined both occurred in 100 km/h speed zones. Interestingly, the four pedestrian crashes did not involve passenger vehicles (cars) but light or heavy vehicles.

Other literature reviewed generally indicates a lack of walking facilities, amongst other things.

From the household questionnaire, the walking occurring in the settlements is mainly undertaken for exercise and recreation, with enjoyment being a major contributory factor. Walking is not just a way to get from A to B.

Nonetheless, local services (shops, ovals, schools, public transport stops) are major destinations for walking, where such services exist. Walking to local services is one way of taking exercise and the services also provide a turn-around point in a walking loop. Local bush tracks are another major destination, pointing to enthusiastic recreational walkers.

Most walking is undertaken on quiet back streets, either using verges or roads. Problems arise when:

- there are no usable verges and walking on road is hazardous due to traffic volume, traffic speed and/ or lack of road width
- verges or roads are rough and unpleasant to walk on, or difficult to push a stroller or wheelchair along. For verges, this also includes trees forcing pedestrians onto roads and overgrown grass in the verge, which becomes wet when it rains, hides trip hazards and potentially harbours snakes in summer
- crossings of rail lines and major streets are unavoidable. For main streets, traffic volumes and/ or speeds can be high. For rail lines, crossing locations can funnel both pedestrians and traffic into squeeze points, with a lack of footpaths for pedestrians.

Unrestrained dogs can also be a hazard in some places.

An appreciation for the characteristics of the settlements that respondents most liked can be gained by the common words that featured:

- "country" (country feel, country lanes, county living, etc. even "country roads, no footpaths");
- "bush" (including bush tracks, bush trails);
- "village atmosphere";
- various mentions of traffic, categorised as "low traffic volumes";
- "natural", "peaceful", "quiet", "rural", "trees" "unspoilt".

The proximity of bush with walking trails was also a popular theme.

The value was also expressed in negative terms: "not suburb" and "away from built up towns". This preference for a non-urban lifestyle can include appreciation that the location does not have features that many people would find desirable in more urban environments – for example, the lack of concrete footpaths, and kerb and guttering. There was also an appreciation of the wide verges that could be used for walking. These comments were fairly consistent across the settlements. On the other hand, there was also praise of the new shared use path to Jordan's Crossing in Bundanoon and calls to extend the shared use path that runs from Mittagong to Willow Vale, indicating that such infrastructure is also valued.

From the site survey, there are several common features in the pedestrian conditions applying to the towns and villages:

- Formed footpaths are relatively rare.
- Verges are often difficult if not impossible to use for walking because of shrubs and trees, wet, high grass, or rough terrain.
- Most (but not all) streets will have very low traffic volumes, enabling people to walk on the road with relative safety. However these may also be rough and difficult for people with disabilities, pushing strollers or with mobility impairment. With little traffic to create congestion, speeds may also be high.
- With few facilities to walk to, most walking will be recreational, or children walking to visit friends.
- There will often be bushland nearby providing good recreational walking for those without physical disabilities, pushing prams, etc.
- Practically all new developments are designed as culs-de-sac, with no footpath facilities.

2.4 Public transport

For the settlements that have an operating train service (Bundanoon, Exeter, Penrose, Wingello and Yerrinbool), all but Yerrinbool are serviced by the same train service. This runs five times a day to Sydney (and similarly for return services). Bundanoon also has a daily service to Melbourne and two services a day to Canberra.

Yerrinbool has one service an hour to Sydney (and similarly for return services).

Bus services to the settlements vary, but are generally not extensive. These comprise:

- stops on CountryLink/ CityLink services connecting from Wollongong to Moss Vale and then by rail to Melbourne or Canberra (three a day from Wollongong, four a day to Wollongong)

- Murrays Coaches services from Wollongong to Canberra (one a day each way)
- Berrima Buslines services from Robertson to Moss Vale and Bowral, connecting at Bowral to rail services to Sydney (two a day each way, plus one a day to/ from Moss Vale only). These services run on school days only.

In addition there are several school services designed to bring children from outlying districts to the primary schools, and from the settlements to the high schools in Mittagong and Moss Vale. Notably, this does not include Colo Vale Public School.

2.5 A introduction to each settlement

What follows is a brief portrait of each town or village. This section is structured by geography:

- the outlying northern villages of Balmoral Village, Hill Top, Colo Vale and Yerrinbool
- the "inner" villages of Welby, Aylmerton, Braemar, Willow Vale and Balaclava, which can be regarded as on the northern outskirts of Mittagong
- the western villages of Berrima and New Berrima, between the Old Hume Highway and Bowral/ Moss Vale, as well as Medway, to the west of the highway
- the southern villages of Sutton Forest, Exeter, Penrose and Wingello and the town of Bundanoon
- the scattered south eastern villages of Avoca, Fitzroy Falls and Burrawang.

The information contained in this section is largely taken from the site survey report.

2.5.1 The outer northern villages

Balmoral Village, Hill Top and Colo Vale were established alongside the Picton to Mittagong Loop Line. Although the railway is now closed at this point, the line still exists and at times provides a barrier to movement, as well as funnelling both motor vehicle traffic and pedestrians through a few crossing points. Wilson Drive is the main road connecting the towns, running roughly parallel to the railway line and to its west. Yerrinbool is separated from the others by the Hume Highway.

Yerrinbool is located along the Main Southern Railway, which is very much in use, and separated from the other northern villages by both the Old Hume Highway and the Hume Highway – as well as the Bargo River and several kilometres of bushland.

Facilities are limited in all four settlements.

Balmoral Village is bisected by Wilson Drive, which has an 80 km/h limit south of Elms Place and a 100km/h limit south of the railway crossing. Most houses are to the east, and across the railway line, so do not directly front onto Wilson Drive. There is one level crossing of the railway line, otherwise no formal crossings. Settlement is very low density, with houses in a bushland setting.

There are no pedestrian attractors to speak of. Without a shop or school, Balmoral Village could best be described as a hamlet. Tennis courts, a community hall, a telephone booth and post box are the only community facilities likely to attract pedestrians. Bus stops on Wilson Drive will attract public transport users.

There are no footpaths and in most cases scrub that extends to the edge of the road prohibits the use of the verge. The roadways themselves are generally unformed and difficult to use by small wheel vehicles or by frail pedestrians. Apart from Wilson Drive, the only sealed roads are Railway Parade, Hall Street and Elms Place. The low population and the rough road surface for most other roads means that traffic is sparse and slow.

What appears to be a service road or fire trail exists either side of the railway line and is used for walking and cycling, although there are no easy crossings of the railway line apart from the level crossing.

Hill Top is the largest of the settlements and has a demographic biased toward young families with children. It is relatively evenly settled either side of Wilson Drive, although the more major facilities are on the western side of the road. These facilities and the housing on this side are separated from Wilson Drive by the railway line, which has two vehicular crossings and several informal pedestrian crossings. Much of the housing is quite new and suburban in character, particularly on the eastern side. Housing on the western side is less closely settled.

Hill Top has a primary school of about 240 students, most of who are driven in from elsewhere as there is no school bus service to this school. Other pedestrian attractors are shops and a community centre, which are centrally located on the western side of Wilson Drive. Boronia Park, sports facilities and a memorial hall are located on the eastern side of Wilson Drive.

Apart from just around the shops and the school there are no formed footpaths and few kerbs. Once again, sparse settlement and road conditions mean that most roadways can be used for walking, although verges exist in most cases. There are one or two streets where a combination of a bitumen surface (enabling relatively high vehicle speeds) and shrubs extending to the roadway make walking hazardous (e.g. West Parade). Wilson Drive is a road to be crossed rather than walked along, as the surface allows traffic to travel quickly (although the speed limit is 60km/h south of the Cave Creek walking track) and there is at times no verge and poor sight distances. These make it difficult to access the Cave Creek walking track at the northern end of the village. A number of roads have closures (or their extremities remain undeveloped) with unformed access points that pedestrians can use. These improve the permeability of the street network, but can be rough and muddy when wet.

There are indications of walking and cycling on the western side of the railway line. At the southern end (just south of Ligar Street and Melaleuca Street), a dirt road passing underneath a bridge along the line and provides an apparent crossing point. However, a track provides a better pedestrian crossing point further north, more in line with Ligar and Melaleuca Streets.

Both the railway line and Wilson Drive run adjacent to **Colo Vale** rather than through it, so do not pose the same problems as they do for the two more northern settlements. Colo Vale has a smaller population than Hill Top, and only one shop, but its primary school is of a similar size to Hill Top's.

There is a shared use path extending along Wattle Street from Railway Avenue to the school. Apart from that there are no pedestrian facilities. However walking conditions are reasonable by the standards of the villages, as traffic levels are low and well

maintained verges exist in most cases. As for Hill Top, some streets have road closures with pedestrian access possible through these, via unformed tracks.

South of Wattle Street/ Church Avenue, the railway line enters a cutting and runs beneath a bridge (now closed) and commences a figure S on the approach to Braemar, around the outskirts of Colo Vale. As such, there is little apparent walking along the line in this area, but indications of walking and cycling extend north of the disused station on the other side of Wattle Street/ Church Avenue.

The Old Hume Highway runs beside **Yerrinbool**, separating the village from the railway line that also serves it. The Hume Highway runs along the western edge of the village, with some development divided from the rest of Yerrinbool by it. There is a single bridge across the Hume Highway.

The railway station bus stop and general store are located close together, either side of the Old Hume Highway. These are on the eastern side of the town. Another popular facility is the Baha'i Conference Centre which is across the Sierra Street bridge on the western side of the Hume Highway. The sports ground is on the southern boundary of the settlement.

There is a small length of footpath on the southern side of Everest Street west of Sunrise Street, extending for a short distance around the corner along the Old Hume Highway. Apart from that, pedestrians rely on the verges or the roadway itself. Verges are often difficult to use because of drainage swales and because landowners have extended their gardens into them.

2.5.2 The inner northern villages

Aylmerton, Balaclava, Willow Vale and Braemar all lie alongside the Old Hume Highway as forms the access road linking the main Southern Highlands towns with the Hume Highway and Sydney.

Welby is further to the west, but also on the outskirts of Mittagong.

There are no local primary schools in these villages, and few other facilities.

Aylmerton is a hamlet adjacent to both the Hume Highway and the Old Hume Highway. It is separated from Balaclava and Braemar by an industrial are on the western side of the Old Hume Highway, as well as by the Old Hume Highway itself, which at this point has six lanes and carries in excess of 15,000 vehicles a day. The hamlet itself is located some 200 metres from the Old Hume Highway.

Aylmerton has no through traffic. Combined with the small population, this means that traffic volumes are extremely low. The streets themselves are also short, keeping speed down.

There are no facilities to walk to, although there is a clear desire line at the end of Knowles Road up a steep embankment onto Chalkerville Road. There is a bus stop at Station Road/ Chalkerville Road.

Braemar, **Balaclava** and **Willow Vale** can be regarded as a more or less continuous extension of Mittagong. However Balaclava is separated from the other two by the Old Hume Highway, which at this point links Mittagong, Bowral and Moss

Vale with the Old Hume Highway. Traffic volumes are as for nearby Aylmerton Braemar and Willow Vale are located along the Picton to Mittagong Loop Line, which is in use at this point, servicing a concrete sleeper plant in the industrial estate on the northern side of Braemar. Train volumes are low.

There is a service station/ convenience store on the eastern (Balaclava) side of the Old Hume Highway. Other retail development on the highway is designed to attract passing traffic:

- a real estate agent, nursery and motel on the Balaclava side;
- Braemar Lodge and a model railway on the Braemar side.

(It is understood that there is a proposal to develop the nursery site for residential purposes.)

There is also a school bus route on Orient Street, with a bus stop near the corner with Badgery Street. There is another bus stop at the western end of Inkerman Road in Balaclava and a pre-school in Elsworth Avenue.

Apart from these attractors, most walking would be recreational. The railway reserve is used as a recreational walking route south of Braemar Avenue, with at least one walking track running the length of it through Willow Vale and Braemar. Residents of Balaclava do not have the same opportunity, but they do have a walking track that heads east from the Inkerman Road railway bridge, linking the ends of Campbell, Cardigan, Wilson and Claireville Streets.

There are no walking facilities in any of the hamlets, apart from a short section of footpath in front of the commercial development along the Old Hume Highway on the Balaclava side, and a shared use path that runs along the Loop Line to link the southern end of Willow Vale with Mittagong.

Verges are reasonably maintained, though unpleasant if the grass is wet. Long grass can also hide trip hazards and, in summer, snakes. Pedestrians also walk on roadways, which are generally quiet. The exceptions would be Orient Street and Braemar Avenue during morning and afternoon peaks. Braemar Avenue also links the industrial area with the Old Hume Highway, and so carries a significant number of heavy vehicles.

As noted above, there are some opportunities for recreational bush walking.

Welby is functionally a suburb on the north western edge of Mittagong. It is separated from Mittagong by the Greater Mountain Alexander Reserve, which also provides the northern edge of the settlement. The western border of the majority of the settlement is formed by the Hume Highway and the southern border by the Old Hume Highway, but there is a small amount of development on the southern side of the Old Hume Highway.

At this point the Old Hume Highway provides a link between Mittagong and the freeway for traffic heading south, and carries in excess of 15,000 vehicles a day. However the street network of Welby itself is relatively quiet and serves only local traffic. There is a motor registry office and nursery on Bendooley Street which would attract traffic off the Old Hume Highway into the southern end of the settlement.

Welby has been built on the side of a hill and there are significant gradients on most streets, but particularly on Meranie Street as it rises to "Welby Heights".

Apart from access to the bus route on the Old Hume Highway on the southern edge and to the sports grounds on the northern edge, most walking will be recreational. The street network is also used to access the bush tracks of the Greater Mount Alexandria Reserve.

There is a shared use path on the southern boundary of the settlement, along the Old Hume Highway. Council has recently resolved to continue this to Mittagong. There is also a bush track running parallel with Bowral and Joadja Streets south of Meranie Street, and an easement between these two streets north of Meranie Street. Apart from these, pedestrians must use either the roadways or the verge. In some cases there is no verge, as the neighbouring bush extends to the roadway, or householders have extended their gardens to cover the verge.

The street network is a grid, providing alternative walking routes between any two points, so there are no clearly popular routes within the settlement.

2.5.3 The western villages

The historic village of **Berrima** was established at the point that the (now) Old Hume Highway crosses the Wingecarribee River. At this point the road has relatively little through traffic, with a traffic volume of under 3,000 vehicles a day. Other streets are aligned either north-south or east-west, though there are so few of them that they could be hardly said to form a grid.

Berrima provides the most convenient access from the northern part of Bowral (excluding Burradoo) to the Hume Highway for those heading south. The other major towns have more convenient access routes to the highway.

As the town was built on the banks of the Wingecarribee River, the topography is undulating. Access to the river at some points is quite steep and difficult. Most development is on the northern side of the river, but there is a network of roads with sparse settlement on the southern and western sides.

Although there are numerous shops, all of these are oriented to tourism. Even the general store has only a limited range and provides only limited convenience shopping. The primary school is located on Oxley Street, as is the camping grounds.

Footpaths are relatively plentiful, especially along the Old Hume Highway past the shops and extending into some of the side streets. There is also a footpath along the frontage of the primary school. There are two built recreational walks: the Stone Quarry Walk off Argyle Street and the Lambies Well River Walk. Nevertheless there are numerous "goat tracks" and even the kerb to property line path in front of the shops is not always adequate.

A great deal of walking of the walking in Berrima is done by tourists on weekends and public holidays. Recreational walking by residents is likely to be on the roadways of back streets, which have low traffic volumes and speeds.

New Berrima is located one kilometre south of Berrima, although the distance is almost two kilometres by road, using the Old Hume Highway and Taylors Avenue.

There is a large cement works on the other side of Taylors Avenue from the Old Hume Highway, and this and the Berrima Colliery generate significant heavy vehicle movements. This road forms the southern boundary of New Berrima.

Taylors Avenue intersects the Old Hume Highway close to Medway Road and the distance between the two settlements is less than 6km; but as there is very little in Medway, there is no strategic value to New Berrima residents in linking the two. For Medway residents, more services would be available in nearby Berrima than New Berrima.

A general store/ post office is located on Argyle Street, in the south eastern corner of the town. There is a bus stop on Ennis Avenue and Taylors Avenue. The community hall is located near the intersection of Ennis Avenue and Sydney Street and hosts pre-school activities. The sports ground is located to the east, along Taylors Avenue. There is no primary school, with most children attending Berrima Public School. Students of Berrima Public School mainly catch public transport or are driven; a high proportion of these probably originate in New Berrima.

The topography is flat and the streets are laid out in a small grid, providing alternative walking routes. There are no footpaths, but there is little traffic. The quality of verges varies with many well-mown but long grass and encroaching vegetation making others unusable at some points. Residents walk along fire trails between Berrima and New Berrima, both to access Berrima and for recreation.

Taylors Avenue forms the southern boundary of the village, which is laid out as a grid, with six north south roads and three east west roads, including Taylors Avenue.

The Blue Circle cement works is just to the south of Taylors Avenue. This is also served by a spur line off the Great Southern Railway. Wingecarribee Shire Council is currently planning the development of an “inland port” to the east of New Berrima to take advantage of the location on the Great Southern and Port Kembla railway lines, as well as the Hume Highway. This could be expected to greatly increase the traffic on Taylors Avenue at the point that is passes New Berrima, with heavy vehicles making a large proportion of this traffic. This is because Taylors Avenue and the Old Hume Highway would be the major link between the new estate and the Hume Highway.

Medway is a relatively isolated community at the end of the Medway Road, which is the village’s only transport link. It is a hamlet built to house the workers at the nearby Berrima Colliery and is otherwise surrounded by bushland. Apart from that associated with the colliery, there is very little traffic. Although laid out on both sides of Medway Road, what little development exists there is practically all on the northern side.

Apart from a hall and the colliery, there are no facilities to walk to. There is a polo-cross club on Medway Road, but this probably wouldn’t attract many pedestrians.

The topography is reasonably flat, streets are very quiet. However apart from Medway Road they are not sealed and in generally poor condition.

2.5.4 Bundanoon and the southern villages

Berrima Buslines provides a service linking all of these towns with Moss Vale, four times a day.

Sutton Forest is spread out at several points on the Illawarra Highway as well as the road to Exeter and Bundanoon, but has two concentrated areas of development. The most northern is at the intersection of the Illawarra Highway and Golden Vale Road, where an earlier straightening of a bend on the highway has left the old alignment as a local service road. The next area is about 600 metres further along the Illawarra Highway, at the intersection between the highway and the road to Exeter and Bundanoon. There is also some sparse settlement of roads off the Exeter Road, at the south-eastern end of Sutton Forest. The Illawarra Highway therefore dominates the locality, with traffic volumes of over 5,000 vehicles a day in this area.

The primary school is located between the two centres, on the Illawarra Highway. There is no local convenience store. There is a church and bus stop at the intersection with Golden Vale Road and an inn, public hall and gallery near the intersection with Exeter Road.

Walking opportunities are limited, with the only significant routes along roads with fast traffic and no walking facilities. The northern area has some quiet streets and good verges, but these are very short and provide no recreational opportunities. The sparsely settled area off Exeter Road has several quiet unpaved roads, although the only circular route of more than a few hundred metres would require using Exeter Road, which has no verges or footpaths.

Exeter is a more compact settlement than Sutton Forest. It is a traffic node in that the road from the Illawarra Highway to Bundanoon (called Exeter Road to the north and Bundanoon Road to the south) intersects with Badgery's Way (a short link to Werai Road, which provides a more easterly connection with Moss Vale and the Illawarra Highway and is called Ringwood Road south of the intersection), and Middle Road (which connects to Sallys Corner Road and the Hume Highway). The Main Southern Railway also passes through the village, running west of Werai Road/ Ringwood Road and east of Exeter Road/ Bundanoon Road.

Badgery's Way and Exeter Road form the southern edges of the town's sports field, 200m north east of the centre of the town. The southern end of Ringwood Road is over two kilometres south, where a bridge is used to pass over the railway to join the main road. There is no road crossing between these two points.

The houses are relatively evenly divided on both sides of the roads and railway, although the shops and most of the facilities are on the north western side.

The post office/ general store, railway station and sporting facilities are all located close to each other at the intersection of Middle Road, Bundanoon Road and Badgery's Way. The primary school is at the end of School Lane, on the eastern side of Werai Road. Bus stops are located on Werai Road and the intersection with School Lane.

The bulk of the houses are within a radius of 400m of the main intersection and general store. However there is a new housing estate of 800m to the north west,

consisting of about twenty allotments served by two culs-de-sac and accessed from Exeter Road via Yarwood Drive.

There are a number of quiet routes that provide recreational walking opportunities. On the other hand there are no footpaths, even on the route between the railway station and the school, and the condition of the verges often renders them unusable for pedestrians. The outer roads are unsealed and muddy in wet weather. The new subdivision of Yarwood Drive is a cul-de-sac with rollover guttering and no footpaths or defined verge. Traffic levels are low, but with little traffic to cause congestion, can pass through the village at a relatively high speed.

Bundanoon is by far the biggest of the settlements and is one of the small towns of Wingecarribee, with a population of over 2,000. By road it is seven kilometres south of Exeter. Like Exeter, It is bisected by the Main Southern Railway, with a street running along both sides: Railway Avenue/ Anzac Parade/ Penrose Road on the southern side and Erith Street/ Bromhall Road on the northern side. The population is reasonably evenly divided between the two sides, with most of the shops on the southern side and most of the sports facilities on the northern side.

Once again the main road is on the southern side of the railway, with the northern road terminating at a bridge 1.6km north east of the centre of the town. However it has a second bridge crossing only 300 metres south west of the centre, and from there the road continues west, diverging from the railway, to serve new housing estates.

Being a larger settlement, Bundanoon has a more complex road network than the other towns and villages, and more shops and services.

In addition to the main roads of Railway Avenue and Erith Street, Ellsmore Road acts as a collector road. It runs due north from the railway, and its intersection with Erith Street is the centre of the town and. It has nine local access roads plus the Old Wingello Road running off it. It does not have a railway crossing, although its junction at Erith Street is virtually at the railway station and pedestrian crossing of the railway line.

Church Street is a continuation of Ellsmore Road on the southern side of the railway. It extends to the Morton National Park, which is one kilometre south of the railway. It has nine local access roads in addition to Railway Avenue/ Anzac Parade.

The town has a reasonably significant tourist industry largely based around Morton National Park, a large retirement village and a special care hostel. Bundanoon has been earmarked for growth, and there is new housing on the northern, southern and eastern boundaries. Cul-de-sac street forms predominate in these areas. Apart from that at the south eastern end, these have no pedestrian facilities. (It is however noted that Development Control Plan 52, prepared for Bundanoon and effective May 2003 includes provisions to discourage cul-de-sac development with disconnected street patterns.) There is a primary school on the southern side of Bundanoon and pre-school on the northern side.

The shops are clustered on the southern side of the railway station. The hotel is also next to the railway station, but on the northern side. A YHA is located on Railway Avenue about a kilometre east of the railway station. The primary school and churches are just to the south of the shops, as is the main bus stop. The sports facilities are located on Erith Road, about 500 metres from the railway station. The lookouts of

Morton National Park can be access by paths off The Gullies Road, which runs south from the railway station.

Bundanoon was a very popular resort town when the railways were the most common means of transport to holiday destinations. A number of footpaths and benches date from this period, for example on parts of Railway Avenue, Erith Avenue, Penrose Road, Ellsmore Road, Anzac Parade and The Gullies Road.

Bundanoon also has a popular and new one kilometre long shared use path from Bundanoon Park on Erith Avenue to a point on Ellsmore Road, about 500 metres north of Erith Avenue. Bromhall Road, which the collector road of a new estate at the south eastern end of the town, also has a footpath on one side. There is a footpath on the frontage of the primary school at the corner of Church and Philip Streets. A short length of footpath has been built on Penrose Road to serve a new housing development on Tooth Street.

Despite these, much of Bundanoon is typical of the other villages in the study, with walking either on the verge or on the roadway. There are many points where the verge cannot be used, for a variety of reasons: high wet grass, encroaching bush or gardens or simply an uneven surface. There are no pedestrian crossings, except a pedestrian boom gate at the railway line and kerb ramps in the area around the shops.

Penrose and **Wingello** are both south of Bundanoon. Penrose is on the edge of the Penrose State Forest and Wingello is about 1.5km from the Wingello State Forest, with about 6km between the two villages.

While both are on the road linking Bundanoon with the Hume Highway, traffic levels are quite low at this point. The road parallels the railway, which bisects both towns. The only road crossing of the railway at Penrose is one kilometre south east of the general store, although pedestrians can cross at the railway station opposite the store. Wingello is more conveniently served, in that there is a level crossing in the centre of the village. This leads to Murrimba Road, which is the main access road to the Hume Highway.

Both villages have a general store. Penrose also has a hardware store. In both cases the primary school is distant from the village centre: kilometre north-east of the general store along Penrose Road in the case of Penrose, and 700 metres north-west of the store along Murrimba Road in the case of Wingello. There is a bus stop at the train station, opposite the general store, in both villages.

Penrose has a footpath in front of the primary school extending to Koolilabah Lane, but none linking the school with the rest of the village. The verge is also generally unusable. There are no constructed footpaths in the village itself. The Penrose bridge has a footpath, but no connection to any other facility. All roads apart from Penrose Road and part of Kareela Road are unsealed. These have very low traffic volumes. Kareela Road does not have a usable verge for much of its length.

Conditions in Wingello are similar, although it does have a footpath extending almost from the railway to the school – a distance of 600 metres – and a footpath along Railway Parade, from the shop to Bumballa Road. There is a new housing development being sold on the Penrose Road, near Camden Road, with no pedestrian facilities linking it with the village.

2.5.5 The south eastern villages

Avoca is little more than the primary school, which is located on a crest of Sheepwash Road at its intersection with Bresnahans Lane. There is no street network or town centre to speak of. Sheepwash Road links Bowral with Kangaroo Valley and Nowra, crossing the Illawarra Highway in doing so. It curves at Bresnahans Lane, with poor sight distance in either direction as a result.

The primary school appears to be the sole attractor, although very few students would live within walking distance. Students apparently mainly come from East Bowral.

Walking conditions could only be described as poor, as the only significant road is Sheepwash Road, which is high speed and has no pedestrian facilities and generally no verge. Avoca is also hilly. A footpath runs along the front of the school on Sheepwash Road.

Fitzroy Falls is a popular tourist destination, on Nowra Road below Sheepwash Road. Myra Vale Road intersects with Nowra Road south of the settlement, providing alternative access to the Illawarra Highway. The locality itself is sparsely settled. The visitor centre for Fitzroy Falls (part of Morton National Park) is located between two main areas of settlement.

There is a service station/ general store with telephone box outside, south of the visitor centre. The visitor centre has tourist facilities, including a coffee shop, which are freely available to pedestrians. (There is a fee for parking.) There is also a tourist-oriented shop next to the service station, and a berry farm in the settlement area north of the visitor centre.

Nowra Road has no pedestrian facilities apart from footpaths on the bridge crossing Yarrunga Creek. There is a verge on Nowra Road to the north of the Gwen Road, especially on the western side; this does not extend to the south, where the Morton Nation Park is on both sides of the road and the bush extends almost to the road pavement. Local bush tracks provide bypasses of the worst squeeze points on Nowra Road but are not well formed or maintained.

Burrawang is not located on any major road, and so traffic is largely local. Traffic levels are very low. The village is built on the side of a hill. Most streets have a reasonable gradient but none are steep.

There is a primary school on corner of Hoddle Street and Church Street, as well a hotel and pre-school centre on Hoddle Street. There is also an Arts Centre, which hosts some cultural events. Sports facilities are 500 metres down Church Street from Hoddle Street. However most walking is recreational, particularly as the primary school draws on a catchment well beyond the village.

The verges are well maintained and generally provide good walking conditions. However there are some points where the verge has been planted with trees that make the verge unusable for foot traffic. With very low traffic levels, most walking is on the roadway. There is a dirt footpath on Hoddle Street in front of the primary school and what appears to be remnants of a gravel footpath on the opposite side of Hoddle Street, in front of disused shops (these have now been converted to residences). A school crossing has been marked here in the past but is now so faded that it is barely visible.

3 The pedestrian network

The term "pedestrian network" is used regarding the proposed pedestrian facilities for Bundanoon and the villages, although this clearly represents a series of networks for the different settlements.

The approach to the pedestrian facilities proposed is extensively based on the Stage 1 Robertson PAMP, because of the similarity of issues:

- pedestrian facilities that are fragmented and generally very limited
- residents value the village feel and would not necessarily appreciate extensive provision of footpaths similar to those of established suburbs
- most streets have low traffic levels (fewer than 1,000 vehicles per day), allowing pedestrians to walk along the edge of a road relatively safely.

A consistent approach across all of Wingecarribee's small towns and villages is also desirable and would enable Council to use the same principles in its other villages.

Overall, pedestrian routes are proposed to target those routes where formal pedestrian facilities would be most beneficial and would fill gaps in a functional walking (and cycling) network, without leading to an over-provision of infrastructure not in keeping with the village character. The cost of providing facilities, including the opportunity cost of where these funds could alternatively be spent, is also relevant for facilities that, for the hamlets in particular, may service only small populations. For the smallest hamlets, this approach may not form a pedestrian network as such, in terms of a series of inter-connected pedestrian routes, but it is intended that they will improve access conditions on the most important routes, servicing the most people.

The identified routes therefore address:

- streets that have vehicular and pedestrian levels that make sharing of the road reserve unsuitable without a formal footpath;
- where pedestrian levels are high and provision of facilities would improve the convenience and ease of the existing walking activity;
- where particular land uses are used by vulnerable road users, such as children using schools, justifying a higher level of safety or accessibility requirement; and
- where there are clear pedestrian desire lines that are not part of the existing street network

The last factor is to some extent a proxy for the preceding factors, allowing a margin of error in the knowledge, understanding and local characteristics of walking: there can be local barriers and attractions that produce walking activity for reasons that are not immediately obvious, but identifiable by the desire lines created by use.

Overall, this approach is a hierarchy approach. This is detailed in the following section.

3.1 The pedestrian hierarchy

A hierarchy forms a set of policy guidelines to tell planners what types of infrastructure should exist for each street, and how traffic should be managed. The use of a hierarchy is a common management tool in traffic planning. A road hierarchy is a structured approach to defining a road's uses. When the purpose and role of a road is understood, decisions with regard to its width, provision of on-street parking, speed limits, priority at intersections, type of traffic control devices, maintenance, asset management, etc, can be more easily and consistently made.

The concept of a hierarchy can also be applied to pedestrian and cycling planning, although different considerations may apply. A hierarchy that is suitable for motor traffic might not be suitable for pedestrians and cyclists. And a hierarchy that is suitable for pedestrians might not be suitable for cyclists.

The proposed pedestrian network comprises primary, secondary and local access routes and essentially reflects a functional hierarchy approach, with the note that walking for utility and recreation overlap strongly within the settlements and generally have not been differentiated in the network. Crossing facilities will be required along routes and are additional to the network, in terms of a simple hierarchy. Locations for these have been as part of the network.

Design requirements for these routes have then been developed. The application of these is slightly different from the Stage 1 PAMP in that the design criteria for routes is differentiated depending on whether the road adjacent is an arterial road or road with high heavy vehicle use, and other roads. This will generally give the same result as the Stage 1 PAMP, but has more flexibility in being applied across a number of settlements.

It is recommended that the proposed network be adopted as the basis for providing walking facilities in the settlements, with appropriate design standards as discussed in this section. A diagram of the proposed network, consisting of the routes in each settlement, is shown in diagrams in Appendix C. The base maps for the pedestrian network have been supplied by Craigie's Maps & Guides.

A description of the walking route hierarchy follows.

3.1.1 Primary zones

These are areas with the highest levels of walking activity and a likelihood of at least children cycling on footpaths. These designate the highest pedestrian interaction areas, which may not exist in all settlements.

Primary zones are gathering places rather than routes along which trips occur, although travel will also occur in them. Standard footpath design criteria focus on travel along routes, but at major destinations, the mix of pedestrian types and activities produces an intensity of use that is not catered for by such designs.

For example, where shops are located in the villages, they often also form a major bus stop (and provide seating for this), may display goods outside or provide some form of outdoor dining, have a public telephone box and mail box nearby, etc. They are also

high visitation locations for adults and children, who may arrive by foot, bicycle, car or bus. This level of interaction is not catered for through the provision of a standard 1.2 metre wide footpath.

The design standard is relatively high, aiming to create a convenience and ease of access suited to the walking that occurs along these routes. Amenity considerations such as weather protection and streetscaping are most focused on these zones.

The provision of these routes is strategic, to limit both the cost of these high quality facilities and their impact on the village atmosphere. Generally, only a short length of primary zone is required close in activity nodes to cater for the high pedestrian activity in the area. Over distances of up to 50 metres, travel quickly differentiates between walking and cycling modes (cyclists can alter their speeds to pass pedestrians and pedestrians and cyclists therefore become strung out along a path, rather than coincident), while route and destination activities also quickly separate.

While this designation in the hierarchy does not create routes for travel to the land use as such, it is reiterated that these recognise disparate activities occurring within the highest pedestrian activity areas only. They are not intended to be provided in isolation, but with other routes providing the main walking facilities and supporting visitation to these zones.

Where sections of primary zones are separated by only small gaps, they may be connected to provide a continuous facility. However, this is rarely the case.

3.1.2 Secondary routes

These provide for general access from the residential areas of the settlements to primary zones (and vice versa).

These are mainly provided mainly for utility walking, but may also capitalise on the primary zones to provide loops that can be used for recreation. While amenity is a consideration, this is mainly in the form of minimising the visual impact of routes on the existing streetscapes, and providing complementary infrastructure such as seating and tree plantings.

3.1.3 Local access routes

These are short routes providing local linking opportunities to increase pedestrian permeability.

These are mainly focused on areas that do not (nor should have) vehicular access, particularly where the grid pattern has been compromised in some way. They have also been identified where facilities are required past squeeze points or locations with safety issues. They tend to be locally very important to promote convenience and reduce lengthy detours, but do not necessarily service a large proportion of the settlement.

3.1.4 Recreation routes

These are routes that take advantage of local facilities to provide recreational opportunities. These include the trails defined in the Stage 1 PAMP, but will have different profiles depending on local conditions.

It is noted that for many settlements, there is a significant trail network on the edge of the settlement that is known and used by locals but not otherwise acknowledged. It is beyond the scope of this plan to identify and document all of these, although those identified have been noted. The Wingecarribee Open Space, Recreation, Cultural and Community Facilities Needs Study and Strategy has recommended the development of a Natural Areas Walkways Strategy, to be coordinated with other agencies, and the activity of identifying and documenting these trails should be part of this study.

3.1.5 A Loop Line shared use path

The largely disused Picton to Mittagong Loop Line (the Loop Line) presents an obvious opportunity to develop a walking and cycling track.

This has been raised in other reports, including the Wingecarribee Bicycle Plan and Open Space, Recreation, Cultural and Community Facilities Needs Study and Strategy, as well as through public consultation. From the site surveys, walking and cycling are currently occurring along the Loop Line reserve at least within the settlements that exist alongside it. This is true both within Wingecarribee Shire Council and in neighbouring Wollondilly Shire Council, as far as Thirlmere.

The opportunity presented is far outside the scope of this current study, but an overview is presented here because the benefits would accrue to village residents amongst others, and as a feasibility study is proposed as one of the actions of this study. The necessity and justification for this need should be understood to give weight to this action.

Opportunity - space

The opportunity presented is basically that the Loop Line forms a continuous link between Picton and Mittagong, albeit disrupted in some locations, such as by the Thirlmere Railway Museum in Thirlmere (which is obviously situated on the line itself.)

The reason that the Loop Line presents an opportunity is in part related to why it also forms a barrier for communities through which it runs.

Firstly is the line itself, i.e. tracks on a railway formation. The distance between the tracks is 1.45 metres; these lie on a wider formation. The line is basically level, but passes through cuttings and over bridges in order to maintain its grade. This means it is sometimes at a different level to streets when it passes through villages.

Surrounding the line is an undeveloped area that now contains bush, which can be pleasant but also difficult to walk through easily. The land tenure of this has not been investigated, but is likely to have three components:

A rail reserve is assumed to exist. It is unknown how wide this is, how far it extends from the formation, and whether it exists on one or both sides

A gas pipeline easement can be seen in some locations (e.g. Braemar), possibly running through the rail reserve. Generally, it is possible to place a path over a gas pipeline, as the path formation does not reach to the depth of the pipeline.

Where the rail line passes beside a road, e.g. Wilson Drive, a road easement exists, although the extent of this could vary. This easement could provide additional space to the rail reserve.

Opportunity – use

There are several levels of use. These are described below, starting at the most local level.

- At its most local, a Loop Line shared use path would serve local villages by providing an intra-village route for both pedestrians and cyclists (and possibly even horse riders), with linkages into the remaining village walking network and designated crossing points. It is in this context that the proposal is of most relevance to this study. However, the cost of a path running through a village is quite high, which can be difficult to justify for the small village populations. This is particularly the case for Balmoral Village.
  The population of Colo Vale is only 862, although Hill Top has a population of 1,707. Balmoral Village's population is not known, but is unlikely to exceed 200, so building sections of path in these villages would benefit a maximum of about 2,750 people – including babies, small children and others.
  Also, a facility that only runs through (or alongside) a village does not in itself form a recreational loop and so has limited use for this purpose.
- The utility function of a Loop Line shared use path would increase if it links at least some villages. This also provides access to the path for the outlying rural communities, where these are located along the path or have connections to the path. Some people from nearby areas may also travel to their nearest village to use the path, which would now be of a length that it forms a reasonable exercise route. Assuming that all of the rural population of Colo Vale and Hill Top were able to use a path between Colo Vale and Balmoral Village would increase the number of people who could use the path by about 1,870 people, bringing the maximum population total usable to about 4,600.
  However, building a path between villages increases the cost considerably, with an only marginal increase in the population using the path.
- The local catchment to a Loop Line shared use path is increased if it also links to a town. As a path already runs alongside the Loop Line from Willow Vale to Mittagong, extension of this path through Braemar to at least Colo Vale would start to fulfil this function.
  Assuming that Mittagong, Willow Vale, Braemar and Balaclava populations now have access to this path, this adds a further 7,000 to the number of people who could use the path between Mittagong and at least Colo Vale.
  However, at this point the facility would be starting to generate regional demand. People from Aylmerton, Yerrinbool and Welby – a further 2,000 people.
  If the path extends as far as Balmoral Village, though, the regional attraction would be greater: people from Bowral and as far north as Thirlmere would consider it to be a regional facility and could be added to the catchment.

- The catchment is increased further if the facility reaches Thirlmere, through Buxton and Couridjah – adding another 5,000 to the catchment – and would be maximised if it reached Picton and its 3,600 residents.
  However, the actual "draw" from the facility at this point would be far in excess of the 25,000 or so who would now live within 10km of some part of the path and consider it as a local facility. At this point, it would be a significant regional facility for Wingecarribee and Wollondilly Shire Councils and a regional tourist attraction.

The potential of a 20 kilometre long shared use path passing through National Parks and linking two major towns in the Southern Highlands visitor area could be enormous. The Riesling Trail in South Australia's Clare Valley is 130km from Adelaide, which has a population of about 1 million people, and is 27km long. It has been estimated to inject over $1 million to the local economy each year[1]. Both Picton and Mittagong are much closer to Sydney's 5 million residents, as well as larger distributed populations outside the Sydney metropolitan area. Sydney is also a much stronger tourist destination than Adelaide, having the highest visitation of any city in Australia.

Opportunity – cultural conditions

There are a number of trends supporting increased walking and cycling levels:

- Since 1996, cycling levels in Australia have been increasing. No single cause for this has been identified, but it appears to be part of a worldwide trend.
- There has been a trend away from organised sport towards passive recreation. This includes both walking and cycling.
- Walking has always had one of the highest participation rates.
- There is increasing recognition of the risks of climate change. Walking and cycling are environmentally-friendly modes of transport that can replace short vehicle trips.
- Nature-based tourism and experiential tourism – including walking, cycle tourism, adventure tourism, food-based tourism, etc – are increasing in popularity. While each of these is a niche market, they are growing niches.
- With increasing world instability, petrol costs and other cultural change, the Sydney tourist market has seen a change in trip patterns away from fewer overseas and interstate trips towards more frequent trips to closer destinations. The self-drive market remains strong within this market.
- The baby boomer population is starting to enter retirement. As well as giving rise to a leisured class, this class has a greater focus than the previous generation of retirees in maintaining active lifestyles, to maintain quality of life over longer lifespans.

Feasibility – preliminary observations

There are a number of issues related to development of a Loop Line shared use path, but none of these seem intractable.

[1] Trails Research Project by Market Equity, prepared for the Office of Sport & Recreation with funding partners Planning SA, Tourism SA and the SA Tourism Commission, 2004.

Use of the rail line is opposed by some who wish to see heritage trains run along the rail line in the future. Currently, such trains are run from Thirlmere to Buxton and the city to Picton. The track beyond Buxton would need rehabilitation to run such services.

- Firstly, the question of best use of the track could be posed, in that a shared use path would be used on a daily basis, whereas running heritage trains is an occasional use planned for an indefinite point in the future. However, this issue is something of a furphy.
  Design solutions have not been investigated, but an approach to the shared use path that retained the rails but built over these is possible. The cost of removing this treatment and providing a shared use path adjacent to the rail in the event that rail rehabilitation proceeds is likely to be moderate compared to the cost of rehabilitating the train line sufficiently to run heritage trains.
  Of more relevance, a shared use path does not have to use the actual rail line but could be provided in the reserve (rail, gas or road). This would have to be the case between the Braemar industrial area and Willow Vale and between Buxton and Thirlmere/ Picton, where the line is in use. It is the case for the existing section between Willow Vale and Mittagong. This has been the approach taken for the Oberon Tarana Pioneer Rail Trail, in Oberon Council, NSW.
- It is understood that there are some issues related to bridges and cuttings (notably, the deepest railway cutting in NSW can be found along this line.) Again, there are methods that would address these issues reasonably easily – such as placing a new footbridge on existing abutments, rather than trying to rehabilitate bridges – but providing a path adjacent to the rail line should enable at least most of these locations to be bypassed. This would also provide the greatest benefit to many people who live adjacent to the Loop Line and Wilson Drive. The site visit demonstrated that south of Thirlmere, bus stops are provided along Wilson Drive. A Loop Line shared use path that runs at road level would better service these than one that uses the rail line, which could be higher or lower than the stop. Being at the same level as Wilson Drive also provides passive surveillance, although it is noted that rail trails in Victoria run through cuttings and on high embankments at some locations, without apparent trouble.
- Wingecarribee Shire Council has apparently received advice that use of the Loop Line would not be supported by the rail authority. However, this may be because of the bridge/ cutting issue raised above, and mooted future use of the line. The NSW Bicycle Guidelines notes that NSW Government policy supports the development of rail trails where space and opportunities occur. The NSW government and Australian Rail Track Corporation entered into a lease agreement with Oberon Council to achieve the Oberon Tarana Pioneer Rail Trail, setting a precedent for others.
  If broad community support for the Loop Line shared use path were generated and demonstrated, preferably with support from agencies such as Tourism NSW and a design concept that satisfied stakeholders, it is considered that the project would be achievable – albeit that lobbying, etc, may be required. This is one reason to undertake a feasibility study.
- Existing rail use has been discussed, though not specifically raised as an impediment to feasibility. Similarly to road, the volume of train traffic should be recognised as a factor in the feasibility assessment. The number and frequency of current train traffic is low. Where the rail line is at a reasonable height difference to

the surrounding area, the steepness of the formation would in itself provide a safety barrier to users of an adjacent path. In other areas, fencing may be required, but an appropriate design should be considered rather than automatic use of the chain fence solution provided for urban commuter railway lines.

Perhaps the greatest demonstration of feasibility is that people are already walking alongside the track, and this is providing good off-road connectivity and a recreation route for the villages.

Cost

In itself, cost may be an impediment to Wingecarribee Shire Council developing a full Loop Line shared use path. However, compared to other areas, this is likely to be a relatively low cost facility.

- From a preliminary examination, most cuttings and bridges can be bypassed.
- Due to the location of road reserves adjacent to the Loop Line for much of its distance, general low intensity development in the area and local NSW regulations, the formation has not ceded to the care and control of adjacent landowners and land acquisition should not be required (or those areas in which in could be required can be bypassed).
- With a whole of government approach, a reasonable lease arrangement should be negotiable.
- The Loop Line passes through two Council areas, enabling costs to be shared.
- The Loop Line is located adjacent to reasonably built-up areas, and reasonably close to Sydney. Trails in more closely settled areas can better attract casual users and contribute to a wider tourism infrastructure, producing greater economic benefits. This should also translate to a higher likelihood that the Loop Line could be supported by and attract funding from state government.

Conclusion

Overall, the Loop Line shared use path has a tremendous potential. While this has been raised in different quarters, it has probably not been adequately stated and therefore not been investigated in the context of a regional facility with regional tourism opportunities. This should be done, through a feasibility study.

3.2 Route design concepts

The community attitude to new facilities has been discussed in the consultation report. Basically, there is a clear community preference that where possible the village “feel” should be retained. Against this is the requirement that the infrastructure created needs to be fit for purpose.

Wet-weather considerations are a particular issue to be covered when designing facilities such as footpaths. Most streets in the settlements do not have kerb and gutter and rely on green swales or similar to provide drainage. The provision of kerb and gutter in conjunction with paths is both costly and does not reflect the village feel.

The following design concepts represent a combination of level of service criteria and performance standards for footpaths, adapted to the proposed pedestrian network. Additional performance criteria are provided separately, to cater for conditions outside the scope of the design concepts. These apply to all design concepts, differentiated between arterial roads and roads with high vehicle volumes; other streets; and recreation routes.

The design concepts propose use of paved surfaces on primary zones and permeable paving on other routes, to minimise the visual impact of the infrastructure while providing routes that are adequate for their use.

The additional performance criteria specify setbacks, which should be constructed as unpaved shoulders graded to form a firm, level surface. These provide clearance to property lines, traffic and potential obstacles, to help ensure that the effective width is maintained for pedestrians; and can also be suitable for cyclists to use to pass pedestrians (or for pedestrians to use to allow other pedestrians, wheelchairs or stroller to pass). It is not intended that these be maintained as shoulders, but that grass be allowed to grow in this area as for the rest of the verge.

These design concepts do not include concepts for crossing facilities, such as kerb ramps. These should be provided in accordance with the relevant Australian Standards, guidelines and legislation, and RTA standards and guidelines.

(Note, however, that RTA guidelines specifically exclude use of tactile ground surface indicators in kerb ramps. Under the Disability Standards for Accessible Public Transport, this does not support providing a continuous accessible path of travel to public transport stops. As tactile ground surface indicators are required at public transport stops, this gives rise to a potential inconsistency of use. For people who would use tactile ground surface indicators for guidance, a consistent application is crucial to their utility.)

3.2.1 High quality routes

These are principally provided within and leading to primary zones, but also along strategic secondary routes. As the highest quality routes, these should be constructed as sealed facilities (concrete, bitumen or permeable pavement).

The design criteria for high quality routes are differentiated between whether such routes are constructed as footpaths or shared use paths.

Essentially, most roads in the small towns and villages provide safe cycling conditions on-street, with the exception of arterial roads and roads with a high proportion of heavy vehicles. In these locations, or where there is a lack of safe cycling facilities, shared use paths may be specified to cater for cyclists as well. This is most likely to be the case when the routes are reasonably long and strategic, in terms of linking facilities, so that they form practical routes for cyclists.

Footpath	Shared use path
2.0m pavement width	2.5m pavement width (minimum)

The reasonably high width for pedestrians is intended to facilitate:

- high pedestrian activity
- sharing of footpaths with cyclists – notably child cyclists who are legally entitled to ride on footpaths
- commercial and shopping environments, where objects are more likely to be placed in the footpath alignment
- a stroller to pass a wheelchair or a couple to pass another pedestrian
- people to gather.

All existing paths along high quality routes should be widened where they do not meet the above design concepts. Existing footpaths are more likely to be of 1.2 metres in width, being the general minimum width sufficient for most applications but not the uses listed previously. However, upgrading is considered to be a lower priority than construction of new paths, which is reflected in the works prioritisation. Also, any widening should be considered with respect to the local environment and could include measures such as retaining local 'squeeze points' past street trees, rather than proposing removal of such trees.

3.2.2 Medium quality routes

These essentially comprise secondary routes located adjacent to roads.

The design concept for footpaths is a balance between the needs of pedestrians and cyclists and minimising the impact of the path created on the streetscape.

Footpath	Shared use path
1.5m permeable pavement plus 0.6m shoulders either side	2.0m permeable pavement (minimum) plus 0.6m shoulders either side

The rationale underlying this design concept is that:

- The 1.5m provides sufficient width for a pedestrian or cyclist to use if there is no other traffic on the path; for two pedestrians to walk side-by-side to pass another pedestrian; for a pedestrian to pass another pedestrian, including a stroller or a wheelchair.
- The shoulders provide additional space for cyclists to pass pedestrians or other cyclists.

The unsealed shoulders are essentially a grading of the verge adjacent to the pavement at the time of construction. Grass growth in the shoulder is acceptable as this is trafficable by cyclists and prevents erosion of the shoulders, but grass should be mown and prevented from infiltrating the adjacent pavement. The shoulders are specified to provide:

- space for cyclists to pass pedestrians or other cyclists if required
- space for pedestrians to stand off the footpath to enable a wheelchair or stroller to pass if required

With the shoulders designed to form a sub-bed for paving if required, the paved section of the profile can be increased if pedestrian and cyclist volumes increase – and in line with community attitudes – up to the overall facility width, with little additional design work.

3.2.3 Basic quality routes

These include all local access routes and some secondary routes passing through areas with high environmental amenity: parks, reserves, etc.

The design concept is similar to medium profile routes, but the paved area is minimised to reduce the visual impact. The design is based around a standard 1.2 metre wide footpath, which is adequate for most purposes.

No basic level shared use path design is provided. At this basic level, this is equivalent to a medium quality footpath.

Design concepts for basic quality routes are differentiated between streets and open spaces, on the basis that setbacks applicable to streets (and contained in the additional performance criteria) apply in street situations are not included in open space situations.

An alternative design concept is also provided featuring an unsealed surface. Unsealed surfaces have a lower capital cost than pavements, but a higher maintenance cost and the whole of life cost is higher. Nonetheless, the unsealed option may be preferred by a local community and a solution that meets access requirements is outlined.

Street	Open space	Alternative
1.2m permeable pavement	1.2m permeable pavement with 0.6m wide shoulders on either side of the pavement	In level areas (a grade of 1 in 20 or less) with low cyclist use, the pavement can be replaced with a cement treated unsealed surface

The rationale underlying this design concept is that:

- 1.2m is sufficient width for a pedestrian, stroller or wheelchair to pass comfortably; for two pedestrians to walk side-by-side; or for a pedestrian to pass another pedestrian;
- the width is the same as standard footpaths, which is narrow for cyclist use (though wider than single-track) but acceptable for local linkages. The shoulders provide for less constrained cycling or to pass other pass users and clearance between the facility and the property line, where vegetation often overhangs into footpaths;
- where grades are moderate, an unsealed but stable pavement material is less likely to be subject to erosion and can provide a surface passable to wheelchairs, strollers and bicycles, as long as it is maintained to be smooth and firm.

Again, the paved section of the profile can be increased if pedestrian and cyclist volumes increase – and in line with community attitudes – up to the overall facility width.

3.2.4 Site specific routes

There are a few types of facilities and/ or streets for which a standard design concept does not respond adequately to the local conditions. This applies in particular to recreation routes and local access routes, but also to service roads. The following comments are intended to provide some guidance in lieu of design concepts.

Recreation routes

Typically, recreation routes will be unsealed. Comments regarding unsealed paths made regarding low-profile routes also apply to recreation routes.

Path widths will vary from trails appropriate for pedestrians walking in single-file to up to 3.0 metres for popular shared use routes. A width below 2.5 metres for shared use paths should be considered with care as these are not suitable for high speed cycling, which may occur if the path also provides a utility function, or high use, and will not attract RTA funding. Path widths down to 2.0 metres are only acceptable where paths experience very low use at all times and on all days, and/ or where path user flows are highly tidal in nature.

For routes to be passable by wheelchair and stroller, they should be constructed from a material with a reasonably small stone size that in a way that minimises loose material. So, a cement stabilised path with small stone size is preferable to a path provided with large sized stones forming a deep gravel bed. However, other considerations may also be applicable regarding path material. For example, Lambies Well walk in Berrima is largely constructed of stone slabs, reflecting the history of local settlement.

Service roads

In some settlements, service roads provide local access with very low vehicle volumes. These may be sealed or unsealed.

From a design viewpoint, unsealed service roads will generally require grading to achieve an adequately smooth surface for walking, but can otherwise be shared with traffic and separated footpaths are not necessary. From a maintenance viewpoint, it may be more cost-effective for Council to seal these service roads, or to provide an adjacent path, rather than to maintain them as unsealed roads but at a standard adequate for walking.

3.3 Additional performance criteria

While the preceding design concepts provide for general implementation, there are often additional elements provided in the public realm, such as bus stops, that will impinge on the design unless allowance is made for these.

The following additional performance criteria provide guidance for these and other common situations, additional to the design concepts for the different route types. This will assist in ensuring that the overall intent of the design concepts is not undermined.

It is noted that Australian Standards and guidelines such as the Austroads series *Guide to Traffic Engineering Practice* provide principles and technical details regarding the treatments. However, the interpretation of various aspects of these guidelines is often not well understood, which can result in poor overall results for a network and frustration for both those tasked with implementing the network and those trying to use the network.

This is particularly the case for pedestrian treatments, where guidelines tend to be a mix of broad, overarching concepts and detailed criteria regarding certain design elements. In addition, the methods and attention to detail required to achieve equitable access are relatively new and therefore poorly understood.

The performance criteria developed for Wingecarribee's small towns and villages, as additional to the application of minimum relevant standards and guidelines, are provided in the following table*:* Performance criteria, commencing overleaf. It should be noted that these are not intended for application to Wingecarribee's larger towns: although many of the criteria may be similar, these would require additional refinement to be applied in large town situations, such as additional criteria relating to collector and distributor roads.

Pavement notes

A few notes about path pavements:

- A permeable pavement is specified to enable water infiltration, with environmental but also drainage benefits, and to produce a more natural look than concrete. The cost of a permeable pavement should be lower than for concrete. However, few permeable pavements meet appropriate standards for use as footpaths. One proprietary make that apparently provides the same performance as bitumen is Terracote.
- Concrete can be provided with a more natural look than the standard white finish, using colorants and techniques such as brushing the surface to expose stones, but the cost increases rapidly.
- Bitumen may be considered to provide a more natural look than concrete and has a lower capital cost, but maintenance requirements are higher. A common issue for bitumen paths in low-maintenance area is grass infiltration of edges, leading to crumbling of the path: bitumen is a natural product and a fertiliser for vegetation. Another method would be to provide a concrete edge to bitumen, but this has a more obtrusive look.
- The unsealed shoulders are essentially a grading of the verge adjacent to the pavement at the time of construction. Grass growth in the shoulder is acceptable as this area as this is passable by cyclists and prevents erosion of the shoulders, but grass should be mown and prevented from infiltrating the adjacent pavement.
- Paths that are within a flood-prone area should be constructed from concrete.
- Unsealed paths are not suitable for regular vehicle use and should not be provided where the path is used for maintenance purposes or to access other paths. At widths of over 2.5 metres, these will need a terminal treatment (e.g. bollards) to prevent vehicles accessing the path. These should comply with Austroads Guide to Traffic Engineering Practice Part 14: Bicycles to prevent them from forming a hazard to path users.

Table 3: Additional performance criteria

	Arterial road/ road with high heavy vehicle use	Other street	Open space
Path requirements			
General	one side of street	one side of street	site specific (could be both sides of a railway line)
Consider additional connections to:	bus stops, through car parking areas, through road closures, across creeklines, across rail lines, across bridges		
Minimum widths and passing bay requirements, where constrained conditions exist (otherwise use widths specified in concept designs, plus set backs contained in this table)			
• desirable minimum	specified pavement width plus 0.3m shoulder either side	specified pavement width	depends on site
• absolute minimum	specified pavement width	specified pavement width	single-track width
• intervals at which to provide passing bays, if absolute minimum widths are used	• if pavement width is 1.5m or greater, 30m and at bus stops • 20m and at bus stops otherwise	• if pavement width is 1.5m or greater, 50m and at bus stops • 30m and at bus stops otherwise	at bus stops, if required
• minimum passing bay size (includes pavement width)	1.8m wide, 3.0m long	1.8m wide, 2.0m long	shared use: 2.0m wide, 5.0m long; pedestrian only: 1.8m wide, 3.0m long
Squeeze points, if necessary			
• minimum width	1.2m	0.9m	n/a
• maximum length	1.0m	1.5m	n/a
Desirable width at intersections and crossing points (otherwise pavement width)	2.1m	1.8m	shared use: 2.0m; pedestrian only: 1.8m (or depends on facility)
Setback of route from carriageway – allows for poles, car doors, and street furniture (desirable)	• 1.0m for shared use path • 0.6m for footpath	• if on-street parking is allowed, 0.6m for shared use and 0.3m for footpath • if on-street parking is not allowed, 1.0m for shared use and 0.3m for footpath	n/a 0.6m shoulders to be constructed on either side of the route
Setback of route from carriageway if street trees are provided (desirable)	1.5m, unless trees are provided in the carriageway/ build outs into the carriageway	1.0m, unless trees are provided in the carriageway/ build outs into the carriageway	
Setback of route from other obstacles (desirable)	0.3m to property line and bus shelters	0.3m to property line and bus shelters	0.6m to trees, single posts, fences; 1.2m to batters, creeks, property line, etc; minimum to these depends on site
Height clearance	2.4m	2.0-2.4m	2.0-2.4m
Visibility	If pavement width plus property side shoulder plus set back to property line is less than 2.0m, provide corner cut-offs of property boundaries.		
Pedestrian crossings/ refuges			
General requirement	to service bus stops; at intersections with high volume streets (>3,000 vpd); at intersection connections to primary zones	at intersections with high volume streets; at wide intersections or those with poor visibility;	at wide intersections or those with poor visibility

	Arterial road/ road with high heavy vehicle use	Other street	Open space
Path crossing of side street	build outs with kerb ramps	build outs desirable if footpath width less than 1.5m, kerb ramps	build outs with kerb ramps if not at the same grade
Public transport			
Weather protection at stops	bus shelter or building verandas	bus shelter	trees, shelters at train and bus stops
Seating	at all bus stops, capacity dependent on stop patronage and whether mainly used for boarding or alighting		n/a
Street furniture (locate outside the path of travel)			
Weather protection	building verandas, canopies, street trees	street trees; can use build outs to provide	assess on site
Street trees	at 6m, 9m, 12m or 15m spacings depending on local environment; use build outs or in parking lane where required		
Other landscaping	species that grow into large shrubs should not be planted as these will impede sight distance; low vegetation (grasses, etc) or tall trees are preferred		
Lighting	at intersections; light paths from back of street lighting	at intersections	
Seating (general)	require public access to outside dining; midway between bus stops otherwise; alongside high-use bus stops	as determined to be appropriate	midway between bus stops, at high amenity locations and as determined to be appropriate
Additional seating (desirable)	• between 125m and 500m of aged care, aged housing, disability or medical services: at 120m intervals • within 125m of aged care, aged housing, disability or medical services: at 60m intervals		
Public art	as determined to be appropriate		
Signage			
Directional (either standard street sign format, or larger route-specific signage)	• from higher order streets to paths, where these are not visible from the street • at either ends of cut-throughs, where the other side of the cut-through is not visible or does not have street signage within 25 metres of the cut-through, to identify the street at the end of the cut-through – provide street names • poles should be located with at least 0.3m clearance to the route		
Behavioural (e.g. shared use protocol)	• within 10 metres of the start of the route, with at least 0.3m clearance to the route		
Route name	• at the start of recreation routes and major thresholds to continuing routes such as a proposed Picton to Mittagong Loop Line shared use path		
Regulatory	• shared path signage and end shared path signage at ends of paths • shared path signs repeated at 500m intervals (maximum) • poles should be located with at least 0.3m clearance to the route		
Warning	• as required by standards • at road where off-road paths cross the road		

3.4 The routes

This section briefly describes the routes proposed in each settlement. These are shown in the pedestrian network mapping, presented in Appendix C, with the exceptions of Avoca and Medway. The small number of routes in Avoca and lack of routes in Medway are not considered to warrant mapping.

The base maps for the pedestrian routes have been supplied by Craigie's Maps & Guides.

In identifying these routes, the normal considerations of connectivity, convenience, etc have been taken into consideration.

In addition, the following principles more specific to the study areas have been applied:

- the path network is strategic rather than comprehensive, balanced against the likely use in terms of resident and visitor populations and anticipated future development
- safety is a key consideration
- responding to problems raised through consultation and the site visits
- creating links to maximise walking opportunities, including recreational loops and linking settlements where feasible
- including paths identified/ recommended from other reports
- recognising strategic/ regional opportunities
- matching future facilities to existing facilities, where appropriate
- providing mainly for utility trips, but also recreational trips
- recognising cyclist as well as pedestrian needs, but focusing on pedestrians.

A particular concept included in the networks is a shared use path connecting settlements, based around the largely disused Picton to Mittagong Loop Line. This is discussed in more detail the previous section, under site specific routes.

The feasibility and design concept for this needs to be investigated further, in an exercise outside the scope of this current study. This is referred to in this section as the Loop Line shared use path.

At a minimum, it is suggested that this comprise a 2.5 metre wide path with a firmly bound and free draining surface (but not necessarily sealed), connecting to the Willow Vale shared use path. It is also suggested that this be investigated jointly with Wollondilly Shire Council, rather than stopping at Balmoral Village.

3.4.1 Avoca

Primary zones

1. In front of the primary school, on Sheepwash Road.

A footpath already exists in this zone.

Secondary routes

2. Bresnahans Lane

This is a continuation of the footpath from Sheepwash Road into Bresnahans Lane, where school buses also stop.

This should be provided to match the existing footpath.

Other

3. Edge line, Sheepwash Road

To support the pedestrian network, an edge line should be marked on Sheepwash Road from the start of the school zone.

This is proposed to reinforce to motorists the changed traffic environment.

School closure

This is not identified as an action, but listed as an observation.

There seems to be no real reason for a primary school to be located at Avoca. This school does not service local students – most students are apparently from East Bowral and travel by bus to reach Avoca (certainly, only one or two walk to school). Only 31 students attend the school in total. If student levels were to decrease, Avoca Public School might close and the remaining students be redirected to another primary school. This could result in an improvement in walking conditions for students overall, as long as the new school is adequately provided with footpaths and nearby facilities to access.

3.4.2 Aylmerton

Secondary routes

4. Along the Old Hume Highway from Braemar Avenue to Aylmerton Road.

A facility from Chalkerville Road, Aylmerton, to Braemar Avenue, Braemar, is proposed in the Wingecarribee Bicycle Plan. This has been supported by the Open Space, Recreation, Cultural and Community Facilities Needs Study and Strategy, as a means of linking Aylmerton to Braemar and hence Mittagong. A petition from 24 residents was also received during community consultation for this PAMP.

It is considered that a path to Mittagong would mainly service cyclists as the distance to Mittagong is long for walking trips.

However, with no safe crossing of the Old Hume Highway, a path that does not link past Braemar Avenue is not sufficient to fulfil the purpose of linking Aylmerton to Braemar and hence either Willow Vale or Mittagong. Instead, it is recommended that the facility link with facilities in Braemar and Balaclava. This would also enable people from Aylmerton to visit the shops in Balaclava for utility purposes, albeit that this is in itself a reasonably long pedestrian trip (about 3km one-way).

Conversely, the Old Hume Highway does not provide a high amenity route and a path would need to extend along Chalkerville Road, rather than stopping on the Old Hume Highway, to provide access into Aylmerton. Additionally, Aylmerton has a population of only about 160 people and the cost-effectiveness of constructing several kilometres of path to Aylmerton is questionable when such a path does not lead to convenient servicing opportunities for Aylmerton residents in any case.

Instead, Aylmerton Road/ Park Avenue provides a route with low volumes and high amenity that is arguably as acceptable to pedestrians as continuing a route along the Old Hume Highway and Chalkerville Road. The proposed route therefore ends at

Aylmerton Road. The acceptability of using Aylmerton Road/ Park Avenue should however be tested through community consultation. In any case, the proposed route could be extended to Chalkerville Road at a later date if considered preferable.

Given the low volume serviced by the route from Braemar Avenue, this is proposed as a medium quality shared use path.

See also Balaclava and Braemar.

Local access routes

5. Knowles Road to Chalkerville Road.

A pedestrian desire line exists at this point, being a cut-through presumably to access the bus stop on Chalkerville Road but possibly also to access the Old Hume Highway as a walking route.

3.4.3 Balaclava

Primary zone

6. Shop

A primary zone is designated at the shop on the Old Hume Highway. This is actually a service station and the first in a small group of commercial premises, but the only one servicing local residents. This is located on the southern corner of the Balaclava Street junction with the Old Hume Highway.

A footpath exists in front of the shop, and this area also forms part of the secondary route along the Old Hume Highway (see following). As the secondary route is a shared use path, this would cater for the activity in the primary zone and upgrade or separate provision is not proposed.

Should the secondary route not be constructed, the primary zone should be constructed as a high quality footpath for the 25 metres from Balaclava Street south-east.

There is also a pre-school in Elsworth Avenue, but due to the level of servicing of the local community – and the age of children attending the pre-school – this is not designated as a primary zone. There is a footpath provided to the pre-school already and no further infrastructure is proposed.

Secondary routes

7. Along the Old Hume Highway from where footpaths start on the approach to Mittagong, to Balaclava Street.

This services two bus stops along the Old Hume Highway and provides access to Mittagong. It is also part of a longer path to Aylmerton. As a strategic link, this should be provided as a high quality shared use path.

Extension of this route to Braemar Avenue is considered to be related to Braemar rather than Balaclava.

Local access routes

8. Elsworth Avenue to the Old Hume Highway via Nightingale Lane

This is an existing route used to reach the bus stop at Inkerman Street.

Recreational routes

9. Southern edge of Balaclava

A trail runs along the southern end of Balaclava, accessible from Campbell Street and Cardigan Street (amongst others). This should be investigated further as part of the Natural Areas Walkways Strategy recommended by the Wingecarribee Open Space, Recreation, Cultural and Community Facilities Needs Study and Strategy.

It is proposed to link this to eastern Mittagong via the Renwick development.

Other

The need to link across the Old Hume Highway is also being addressed through the Renwick development. This is also relevant to Braemar.

3.4.4 Balmoral Village

Secondary routes

10. Hall Street to railway level crossing

This links the village hall and tennis courts in Hall Street with the bus stop and railway crossing on Wilson Drive, and post box and public telephone on Railway Parade.

The route is proposed to run along the western side of Wilson Drive, which is less vegetated than the eastern side at this point.

A pedestrian refuge should be provided on Wilson Drive at the level crossing.

Given the small population, this route is proposed as a basic level footpath.

Local access routes

11. River Street

River Street is not shown as continuing to Wilson Drive, but a well-formed dirt road exists that crosses the Loop Line at River Street and continues to Wilson Drive. This local access route connects River Street to the southern end of a recreational loop (see following).

Recreational routes

12. Loop Line shared use path and loop

The Loop Line shared use path is proposed to run in the rail reserve, due to use of the Loop Line for heritage trains. From an examination of the rail reserve further north, it

appears possible for the shared use path to be located between Wilson Drive and the Loop Line, where it also services people using bus stops and has a degree of passive surveillance from Wilson Drive.

In Balmoral Village, a recreational loop is proposed, formed from the longer distance Loop Line shared use path on the eastern side of the Loop Line (between Wilson Drive and the Loop Line) and use of Railway Parade, which is a bitumen 50km/h speed limited street with a pleasant amenity, on the western side of the Loop Line. The two sides would be linked across the Loop Line at the level crossing and River Street.

A further crossing of the Loop Line exists further north, but is not proposed to be incorporated in the recreational loop, at least in the first instance.

3.4.5 Berrima

Primary zones

13. Eastern side of the Old Hume Highway, Argyle Street to Oxley Street, and Oxley Street to Berrima School

This services the main commercial area on the eastern side of the Old Hume Highway, secondary commercial area and Berrima Public School.

Footpaths already exist throughout most of this zone, however there is a small section in Oxley Street that needs to be constructed. This should be provided as a medium quality footpath in the first instance and be continued past the school entrance to Quarry Street. Longer term, this should be upgraded to a high quality footpath in front of the school, with a medium quality linkage between the Old Hume Highway and the school entrance and to Quarry Street.

Pedestrian refuges should be provided on the Old Hume Highway at two locations, servicing the school and providing a central crossing point in Berrima. (A third, southern pedestrian refuge is part of secondary routes.) This is considered appropriate given the high pedestrian volumes and that traffic is mainly destination traffic rather than through traffic.

14. Western side of the Old Hume Highway, Jellore Street to Argyle Street

This services the main commercial area on the western side of the Old Hume Highway and the park at Market Place.

Again, a footpath already exists in this zone. No major additions to infrastructure are proposed.

Secondary routes

15. Wingecarribee Street

This feeds in to the primary zone and has commercial frontages. It mainly links parking to the primary zone.

This mainly exists, but does not quite extend to Schotts Lane or parking adjacent to this.

This should be provided as a medium quality footpath

16. Jellore Street

This links parking and a few commercial premises to the primary zone. An unsealed footpath exists for most of this length, but is of variable standard.

This should be provided as a medium quality footpath.

17. Argyle Street

This links parking areas and historic destinations to the primary zone. A sealed footpath is provided to Wilshire Street. A new kerb ramp is required at Argyle Street and the path extended to Oxley Street.

This should be provided as a medium quality footpath.

18. Oxley Street

This path links the secondary route on Argyle Street to the primary zone at the proposed pedestrian refuge. This is proposed on the southern side of Oxley Street where the verge is wide and free of vegetation, with no driveways.

This should be provided as a basic quality footpath.

19. Old Hume Highway/ Oldbury Road/ Argyle Street

This is a strategic route linking Berrima to New Berrima, and also links the primary zone to the park at Market Place. A Section 94 allocation for a gravel pathway between Berrima and New Berrima already exists.

Berrima Road, which runs from Oldbury Road to New Berrima, has high traffic speeds and a narrow alignment with overgrown verges. It is not conducive to providing walking or cycling facilities. The alternative route to New Berrima is via the Old Hume Highway, which is a high speed road, and Taylors Avenue, which is used by heavy vehicles from the cement works at New Berrima.

Argyle Street runs from Oldbury Road into New Berrima, and indeed continues through New Berrima to the shop. It provides an alternative connection to Berrima Road or the Old Hume Highway/ Taylors Avenue, and also a shorter connection.

- The section from Argyle Street to Oldbury Road should be provided as a medium quality shared use path.
- A pedestrian refuge is proposed between Jellore Street and Market Place, at a location that maximises sight distance. This will enable the two sides of the park to be better linked. Currently, public toilets are only provided in the western park, although barbecue facilities are provided in the eastern park. Curves at either end of the parks limit sight distance and the safest crossing point is in the straight section between these curves.
- The Berrima Bridge already features footpaths on both sides.
- At Oldbury Road, the southern side provides the best opportunity to provide a path and also connects directly to Argyle Street.
- Argyle Street is essentially a fire trail between Oldbury Road and Australia Avenue in New Berrima. This should be regraded and provided with a firm unsealed surface to facilitate walking and cycling. However, works to improve pedestrian

conditions may encourage driving along Argyle Street. If this occurs, or is assessed as likely to occur, traffic calming should be undertaken, such as providing a one-way driveway link along its length. Alternatively, Argyle Street could be closed as there are two alternative high speed vehicular routes between Berrima and New Berrima, and the additional distance represented by using these routes is nominal for non-human powered transport.

Local access routes

20. Market Place/ Argyle Street

This services secondary commercial development in this area and connects to a recreational route. An unsealed footpath exists on the western end of Market Place, but has become eroded.

These should be provided as basic quality footpaths.

21. Schotts Lane

This is a local link from the school to Wingecarribee Street and is a narrow, pleasant laneway.

No special provision is proposed. Traffic volumes appear low, but traffic calming may need to be examined.

Recreational routes

22. Stone Quarry Walk

This is a walk from Argyle Street to the Wingecarribee River, provided as an unsealed route.

No upgrade of this is proposed, apart from directional signage at Old Hume Highway/ Argyle Street.

23. Lambies Well River Walk

This walk commences at the end of a street on the south side of the Old Berrima Gaol. The status of this street is not clear and there may be a need for a landowner agreement if this is a private access road to the two properties serviced by this road. The walk continues as far as the camping ground at the end of Oxley Street.

The route is mainly single-track, with a narrow unsealed path at the southern end that is badly eroded and not signposted. Signposting commences at Wilshire Street and the track has a stone flag surface, although this changes further north.

The southern end should be upgraded to a firm walking surface and the walk signposted at Argyle Street.

3.4.6 Braemar

Braemar is bounded on its west side by the Picton to Mittagong Loop Line.

Secondary routes

24. Old Hume Highway, Balaclava Street to Braemar Avenue

This is an extension of the Balaclava route into Braemar and as part of the route to Aylmerton.

This is considered as a strategic link, and one likely to service increased populations in the future, based on a development proposal to change the existing Garden World commercial development to a residential development. As such, this should be provided as a high quality shared use path. Should this be ruled out as occurring within 10 years, the route should be provided as a medium quality shared use path instead.

Recreational routes

25. Braemar Avenue to Willow Vale shared use path via Railway Parade

For those east of the Picton to Mittagong Loop Line, there is currently no access to Willow Vale or the rest of Braemar.

While local residents cross the rail line at Badgery Street, it is assumed that concerns over rail safety are such that it would not be possible to formalise this crossing point.

Instead, a length of recreational route running alongside the Loop Line – over a gas pipeline easement – is proposed. This would provide residents with a pleasant means of reaching either the level crossing at Braemar Avenue or the shared use path at Willow Vale, and – in conjunction with a similar facility in Willow Vale – create a recreational walking loop for Braemar and Willow Vale residents.

Further, the Loop Line is in use between Braemar industrial area and Mittagong. If the Willow Vale shared use path were continued on the western side of the Loop Line, it would have to cut across the loading area from the Braemar Industrial area to the Loop Line. This is not supportable and providing a recreational route on the eastern side of the Loop Line at this point establishes an alignment to be continued to Colo Vale.

Other

26. Loop Line crossing at Railway Terrace

Railway Terrace crosses the Picton to Mittagong Loop Line near the Old Hume Highway. The bridge at this location is narrow, with no pedestrian facilities. There are a number of options to improve the crossing of the Loop Line:

- The bridge is wooden and appears close to the end of its design life. Its replacement with a bridge that includes footpaths could be brought forward.
- The Loop Line passes through a cutting at a lower level at this point. The cutting is reasonably narrow and a pedestrian bridge could be provided over the cutting.

- The bridge is only 5.8 metres wide, which is narrow for two vehicles to use at once. It could be limited to a single lane width, either by making this section of Railway Terrace one-way or by requiring eastbound vehicles to give way to westbound vehicles, and demarcating (using a physical barrier) an area for pedestrian use. However, this is likely to be very unpopular with residents.

27. Old Hume Highway crossing

Crossing the Old Hume Highway is a local difficulty. This is being addressed at the southern end of Balaclava through the Renwick development.

A large culvert near Braemar Avenue may provide an opportunity to cross underneath the highway in the Braemar/ Aylmerton area, about 2km north-east along the Old Hume Highway from where the crossing at the Renwick development is proposed. It is unlikely that this could be used in itself, but warrants further investigation.

A head room of 2.0m is desirable and any path would have to be constructed to ensure that it does not flood during a one in 2 year average recurrence flow in the creek. The partitioning of the culvert by vertical walls does raise the possibility that a flood wall could be constructed to hold back water from a path provided on one side during minor flood events (in more major floods, water would overtop the wall and flood the path). The likelihood of flash flooding would also have to be taken into account.

The existence of the culvert also indicates sufficient height for an underpass to be constructed if desired and it might be possible to make use of the northern support wall of the culvert to provide a southern support wall for an underpass constructed adjacent to it. A new underpass would be a high-cost solution, but one that could be investigated further in the absence of any other acceptable solution.

3.4.7 Bundanoon

Primary zones

28. Shops, school and railway station

This is designated on both sides of Railway Avenue, from Osborne Street to Church Street, both sides of Church Street from Railway Avenue to The Gullies Road, and past the frontage of Bundanoon Primary School.

Footpaths already exist in most of this area but should be upgraded to a high quality footpath in the longer term, where they do not already meet this standard.

Crossing locations should be investigated, but these are not likely to be standard pedestrian refuges.

Secondary routes

29. Anzac Parade across southern railway bridge

This route connects the primary zone at Church Street across the railway line to Erith Street.

A footpath is provided for most of the distance along Anzac Parade, but ends about 30 metres from the bridge. The route should be provided to match to the existing footpath.

The bridge has a width of 7.0 metres, plus a 0.3m wide concrete kerb on the eastern side. This carriageway width could be narrowed to provide a footpath on the eastern side of the bridge.

(The Anzac Parade approach would benefit from some maintenance, including pruning of vegetation and sweeping.)

Alternatively, the bridge walls have a reasonable amount of cracking and the eastern wall has a reasonable lean. The bridge may be close to the end of its design life, in which case its replacement should include at least a footpath on the eastern side. While footpaths would be preferable on both sides, there is currently no onward route from the western side.

A pedestrian refuge is needed to cross Erith Street.

30. Southern side of Anzac Parade to Penrose Road.

This route connects the primary zone at Church Street to Penrose Road.

This route should be provided as a medium quality footpath.

31. Railway Avenue/ Erith Street

This serves residents on both sides of the railway line, the YHA, the Bundanoon Hotel, and a service station near Hill Street; connects to the railway station, Bundanoon Park (with its popular shared use path) and a footpath on Bromhall Road; and forms part of a recreational walking loop. The walking loop would be completed by the primary zone and Anzac Parade/ southern railway bridge secondary path.

The walking loop currently continues to the northern bridge over the railway line, but there is very little development north of Brigadoon Drive or Bundanoon Park, while signage along the railway line points to a pedestrian desire to cross the railway line. This was supported by responses from community consultation.

Close to Brigadoon Drive, the railway line passes through a cutting and a footbridge could be provided over the line at the same grade as an adjoining footpath. As well as being a cost-effective location, this is at the north-eastern edge of development and roughly half way between the pedestrian maze at the railway station and the northern bridge. This location is therefore a high utility location. (A preferable location would be closer to Rosenthal Avenue, but the cutting is not as deep at this location.) It is recommended that a footbridge be provided at this location.

A pedestrian refuge should be provided on Railway Avenue and Erith Street at this location (or conveniently close to the location) to reach the proposed footbridge.

A footpath is provided on Railway Avenue to Amos Lane, but this is badly cracked, has a higher crossfall than desirable (and specified by Australian Standards) and has poor kerb ramp detailing. This should be replaced. Some sealed shoulder is provided, that could be used by cyclists.

A footpath is also provided for a short section of Erith Street.

This route should be provided as a medium quality footpath.

32. Bromhall Road

This route services local residents, providing connection to the railway station and shops via the Railway Avenue/ Erith Street secondary route, and over the southern railway bridge to Penrose Road. It also forms part of a local recreational walking route that makes use of footpaths provided along Forwood Crescent and Penola Street.

Footpaths exist along Bromhall Road and no further provision is required.

33. Penrose Road

This route serves residents along Penrose Road and also connects to Grey Gum Lane, which appears to be a local recreational walking route (this in turn connects to Gullies Road).

There is a section of footpath close to Tooth Street.

This route should be provided as a medium quality footpath from Anzac Parade to the existing footpath at Tooth Street, and as a basic quality footpath from Tooth Street to Fidelis Street

A pedestrian refuge or other form of improved pedestrian crossing of Penrose Road (e.g. kerb extensions) should be provided at Anzac Parade, both to assist crossing movements and to calm traffic entering Penrose Road, as the alignment from the southern bridge and Anzac Parade is poor.

34. William Street/ Hawthorne Street/ Viewland Street/ Rosenthal Avenue

This provides additional connectivity for residents away from Railway Avenue and access to a local walking path to Glow-worm glen and into Morton National Park (this

also connects back to Riverview Road, as a larger recreational route, but it is unknown whether this is used in this way).

The route is provided on the south side of William Street to provide easy access to Hawthorne Street and because this side of the street has street lighting. For Hawthorne Street, Rosenthal Avenue and Viewland Street, either side of the street appears to be equally suitable and the path route is indicatively shown.

This route should be provided as a medium quality footpath.

35. Hill Street

This provides local access from the southern bridge and services the Linkside Gardens Retirement Village. Residents of this development have higher levels of leisure time than other members of the community and there is likely to be a higher level of recreational walking in this area than would be the case for other areas of Bundanoon with a similar development intensity.

This route should be provided as a medium quality footpath.

36. Old Wingello Road

This provides local east-west connectivity, between Hill Street and Ellsmore Road. It is also part of longer recreational walking routes.

This route should be provided as a medium quality footpath.

37. Ellsmore Road

This route provides the main north-south route on this side of the railway line. It also connects to the popular shared use path that runs around Bundanoon Park. Between Erith Street and Ebury Street, it is proposed that paths be constructed on either side of Ellsmore Road, to provide the greatest level of service to local pedestrians.

A footpath is provided for about half the distance between Erith Street and Ebury Street. A path is also provided from about Old Wingello Road past the Quest for Life centre, but the concrete slabs have risen in some points, creating trips hazards and an uneven surface. This requires maintenance in terms of grinding away the high points and sweeping.

This route should be provided as a medium quality footpath.

38. Burgess Street

There is a pre-school located on this short street section, on the northern side. A section of footpath is proposed for parents with strollers to be able to reach the pre-school.

This route should be provided as a basic quality footpath.

Local access routes

39. Amos Lane

This is a narrow laneway providing a high-amenity route connecting to the Viewland Street secondary route. This is highlighted to ensure that pedestrian needs are recognised in any proposed upgrade of the lane.

No change to infrastructure is proposed.

40. Northern railway bridge

This bridge is currently well-used by pedestrians despite a general lack of facilities. With the construction of a proposed footbridge at Brigadoon Street, it is likely that use of this bridge will decrease, however some people may continue to use it as part of a longer walking route or locally convenient walking route. A number of upgrades are recommended to improve the safety of such use, both from traffic and a simple lack of space – pedestrians currently climb a bank on the western side of the bridge and a number of injuries have been reported related to this.

- The bridge has a 6.4m sealed carriageway. There is an unsealed 1.5m verge between the bridge wall to the edge of the carriageway on the north-east side and a 1.3m verge on the south-west side. These verges should be sealed and the road realigned to enable a 1.2m footpath with 0.3m clearance to traffic (i.e. 1.5m total) to be provided on the south-western side of the bridge, with onward pedestrian links.
- Railway Avenue on the eastern side of the bridge is wide, with an alignment that enables vehicles turning left or right from the north and east to travel across the bridge with minimal reduction in speed. It should be possible to reduce the pavement width so that vehicles turning onto the bridge must do so more slowly. This would involve sharpening turn radii, which would also mean that vehicles are further away from the bridge when they turn, also improving sight distance.
- There is a retaining wall on the eastern side of the bridge. A small set of steps leads up to this, but is not immediately accessible from the bridge. A new set of steps should be provided to enable pedestrians to mount the bank from the proposed footpath over the bridge, or a footpath provided around the bank. The latter option may require some cutting back of the retaining wall, but would be more accessible for people with strollers or wheelchairs.
- On the western side of the bridge, the road pavement is rough and patched and requires resealing.
- There is a steep bank on the western side of the bridge that pedestrians mount to attain separation from traffic. This has a seat and fruit trees planted at the top, but is a steep climb and some people have suffered injuries in attempting this climb. The provision of a footpath separated from the roadway with kerbing should provide an alternative separation to traffic so that pedestrians do not have to mount this bank. This should be continued into Erith Street a short distance, finishing at a location with adequate verge width and sight distance. The seat provides a resting place with high amenity and access to this should be improved with the addition of steps at this point, but these should be compatible with the local area e.g. constructed of timber or stone.

41. Penola Street to Old Wingello Road

A concrete path is provided between the footpaths in Penola Street and the edge of Old Wingello Road, creating a walking loop along Forwood Crescent, Old Wingello Road, Hill Street and Bromhall Road (and longer walking loops as desired).

This route is mainly a recognition of the existing facility. A cut-through of the road bank needs to be created in Old Wingello Road to enable pedestrians to conveniently and

safely access this road, but will need to be constructed in such a way that sight lines to pedestrians using the cut-through are not impeded by the bank.

Signage of the access point in Penola Street and Old Wingello Road is desirable.

Recreational routes

42. Forwood Crescent/ Penola Street

Footpaths are provided along both sides of Forwood Crescent and along Penola Street. In conjunction with Bromhall Road and the pedestrian cut-through to Old Wingello Road, these provide a local recreational walking route.

The cut-through has been discussed previously. No other infrastructure is proposed.

43. Old Wingello Road

From Hill Street, use of this road is mainly recreational; however the road also narrows at this point. A route should be provided with trimming of vegetation to enable pedestrians to walk off Old Wingello Road, as far as the cemetery and Penola Street cut-through.

44. Cemetery path

There is apparently a route through the cemetery, but it is not widely known. This should be identified and signposted, as part of the Natural Areas Walkways Strategy.

45. Bundanoon Park shared use path

This is a popular facility from Erith Street to Ellsmore Road.

No further infrastructure is proposed.

46. Ellsmore Road link to Bundanoon shared use path

This route is sign posted, but otherwise no facility exists at this point.

This should be provided as a medium quality shared use path.

47. Blue Gum Road link

Blue Gum Road is a quiet street with high amenity, becoming a one-lane road towards its eastern end. However, there is some development in the area and its character may change.

Currently, the road does not quite reach to Erith Street as a private property occupies land between the two streets. Nonetheless, there is a reasonable amount of use of this road and possibly access over the private lane.

This route is identified to encourage development of a connection between Erith Street and Blue Gum Road. A linkage is already included in Development Control Plan 52 for Bundanoon, but the need for pedestrian facilities as part of this is not well recognised. Similarly, further pedestrian linkages related to the precinct are required, notably to Erith Street at a temporary access site, to Ellsmore Road and between internal roadways.

48. Glow worm glen track

This is a walking track to a popular local destination, but also to other locations in Morton National Park. Signage to the track should be provided on Railway Avenue and, as there is a reasonable ascent from the track to William Street, seating at the end of William Street (seats are located along the track).

3.4.8 Burrawang

Primary zone

49. School

This zone is designated along the school frontage, between the tennis courts in Church Avenue to the Hoddle Street/ Crown Street intersection and servicing the public telephone box near the school. A dirt path currently exists over part of this length.

The route should be provided as a high quality footpath.

Secondary routes

50. Hoddle Street, south side

This route parallels the primary zone on the south side of Hoddle Street, extending to Crown Street. It provides connection to a bus stop. A dirt path currently exists over part of this length.

This route should be provided as a basic quality footpath.

51. Hoddle Street, to Region Street

The walking catchment to the school extends about as far as Region Street. This secondary route adds connectivity to the primary zone for this distance.

This route should be provided as a basic quality footpath.

Recreational routes

52. School to park

This route connects Hoddle Street and the school to Burrawang Park. It is located on the western side of Church Street to service houses on this side of the street and because it would be easier for path users to cross Church Street at Hoddle Street than further north in Church Street, where the speed limit increases.

The verges in this area are generally good for walking, but with narrow points caused by vegetation. It is proposed that this route be provided with maintenance and constructed where necessary as a gravel verge (i.e. a firm and level surface with drainage), and marked with an edge line to provide delineation, but that this not be sealed. The gravel verge width should be constructed at 2.0m to 2.5m, to provide separation to traffic and for the use of off-road bicycles. Raised retro-reflective pavement markers should be provided on the inside of curves.

53. Hoddle Street, to Burrawang Station Road

From consultation, walking activity along Hoddle Street continues to the intersection of Burrawang Station Road and McGraths Road, where walking demand splits.

The verges in this area are generally good for walking, but with narrow points caused by vegetation. It is proposed that this route be constructed as a gravel verge (i.e. a firm and level surface with drainage) with an edge line to provide delineation, but that this not be sealed. The gravel verge width should be constructed at 2.0m to 2.5m, to provide separation to traffic and for the use of off-road bicycles. Raised retro-reflective pavement markers should be provided on the inside of curves.

3.4.9 Colo Vale

The network proposed for Colo Vale does not include the possible Wensleydale development.

It is assumed that the Wensleydale development will at least be self-sufficient for its walking needs, but the scale of development is such that a more detailed examination of the design concept – if and when it is adopted – needs to be undertaken to ensure that sufficient connections from the existing Colo Vale are provided.

The current structure plan shows a lack of connectivity across Wilson Drive and to a proposed Loop Line shared use path. The location of commercial, recreational and community facilities is not apparent, but this is unlikely to affect walking patterns within the existing Colo Vale as such as walking activity will be more actively funnelled along Wattle Street into Wensleydale, with the proposed traffic signals at Wilson Drive facilitating this.

Primary zones

54. Shop

The shop, along with the school, is one of two main pedestrian generators in Colo Vale. As it is located on the intersection of three streets, the primary zone for this extends in four directions. Given a relatively high population in Colo Vale, this should extend for 50 metres in each of these directions.

This route should be provided as a high quality footpath.

55. School

A shared use path is already provided servicing the school, and there is a network of paths within the school, but there is virtually no footpath along its frontage.

The primary zone extends along Acacia Street to service Jurd Park and also as a connection to a bus bay provided in association with the school (this is used for excursions, as no school bus services Colo Vale Public School). Footpaths are already provided in this area.

This route should be provided as a high quality footpath.

Secondary routes

56. Wattle Street

This is the main east-west route through Colo Vale and also links the school, Jurd Park and the shop. It also extends west of the school, providing a link with Bignonia Street.

An existing shared use path is provided along this route as far as the school. This should be extended to Bignonia Street. Given the width of Wattle Street at Railway Avenue, build-outs are recommended to assist in crossing Wattle Street at this location.

This should be provided as a medium quality shared use path west of the school crossing point.

57. Railway Avenue

This feeds in to the primary zone to the shop and also services the community centre. However, as it is paralleled by the Loop Line shared use path, it is only provided as far as Daphne Street.

This should be provided as a medium quality footpath.

58. Lynwood Avenue

This feeds in to the primary zone to the shop from Ebony Place. This should be provided as a medium quality footpath from the primary zone to Jasmine Street, and as a basic quality footpath for the remainder of the route.

59. Elm Street

This feeds in to the primary zone to the shop from Ivy Street. As there is no direct continuing route at Ivy Street (the junction is a T-junction), this should be provided as a basic quality footpath.

60. Church Avenue

This route on the south side of Church Avenue services the church.

As demand is likely to having peak characteristics rather than distributed throughout the day, this should be provided as a medium quality footpath.

61. Future secondary routes

Should Wensleydale proceed at the envisaged scale, general walking activity in Colo Vale is likely to increase. Additional secondary routes will probably be required at:

- Azalea Street, from Lynwood Avenue to Acacia Street – basic level footpath)
- Ivy Street, from Wattle Street to Elm Street – basic quality footpath
- Beech Street, from Wattle Street to Telopea Street (assuming a connection across Wilson Drive is constructed near this point) – medium quality footpath.

Local access routes

These have been identified for:

62. Ivy Street to Wattle Street

63. Daphne Street, Orchid Street to Banksia Street

64. Beech Street to Wattle Street

Recreational routes

65. Loop Line shared use path

The recreational route alongside the Picton to Mittagong Loop Line is proposed to pass through Colo Vale. From past the Braemar industrial area, this could be provided along the (now disused) railway line itself, or in its rail reserve. The latter may be preferable due to issues regarding tunnels and cuttings along the line, although these do add interest to the route.

A link is proposed to the southern end of Wilson Drive, to provide additional functionality to the route by providing a short-cut, and an additional linkage point.

While trains are not run on the line into Colo Vale, this has been proposed with respect to the heritage trains run from Thirlmere. This would require a considerable amount of work, including replacing bridges, but is not impossible. The shared use path is proposed to run in the rail reserve, although a feasibility study of the entire route should be undertaken to confirm this proposal. If provided on this side, the shared use path would provide a functional replacement of footpaths along Railway Avenue, including local access links to Telopea Street and Flora Street.

Local access connections to this recreational route have not been shown as the Loop Line is located close to the road reserve in this area and such connections would be nominal.

Other

Although a bus bay is provided adjacent to the school, this is for excursions only – there is no school bus service to Colo Vale Public School. This results in high car travel to the school in peak hour. There is a limited role for Council in being able to effectively encourage a local school bus service servicing Colo Vale, but such a proposal should be supported.

3.4.10 Exeter

Primary zones

66. School

Exeter Public School is uncommon in not already possessing a footpath along at least its frontage. As this is both a student set down/ pick up area and a pedestrian route, there is a clear need for a set down/ route facility in this area.

The primary zone should be provided as a high quality footpath.

67. Shops and services

The Exeter General Store is also the post office, bus stop, book shop, café and has a public telephone box adjacent. There is a narrow section of footpath along its frontage to Middle Road, which hosts the telephone box; and a section of footpath beneath its veranda on its Exeter Road frontage, which hosts a seat and bus stop sign.

The store is located at the intersection of Exeter Road, Bundanoon Road, Middle Road and Badgers Way. Although this intersection is demarcated using line marking and Middle Road features a stop sign at Bundanoon Road, the alignment of roads still creates a large bitumen area that can be confusing or daunting to cross. Despite low traffic volumes in the area, two injury crashes and one property damage only crash have occurred at this intersection in the last five years.

The intersection could be improved by:

- providing kerb extensions in Middle Road (where there is kerb), extending along its frontage to Middle Road past the front of the General Store into Exeter Road, and similarly into Bundanoon Road. This would provide a clearer road edge around the corner from Exeter Road into Bundanoon Road, slow vehicles approaching from Middle Road, reduce crossing distances for pedestrians, discourage visitor parking in the intersection and provide a wider area for outdoor activity associated with the General Store.
- constructing islands in the chevroned areas either side of Badgers Way using kerb and gutter with paving (these would form islands rather than kerb extensions as there is no kerb on this side of the street). Again, this would provide a clearer road edge around the corner from Exeter Road into Bundanoon Road. The northern island should have kerb ramps aligned with the new footpath in front of the General Store and then direct pedestrians across Badgery's Way. The southern island is probably outside the direct pedestrian desire line but could be planted with low vegetation, to improve amenity.
- providing a pedestrian refuge in Middle Road. There is probably insufficient width for this to be provided in addition to kerb extensions in Middle Road and this is an alternative option.
- providing a pedestrian refuge in Bundanoon Road, located at least 20 metres south-west of the southern Badgery's Way island, so that it does not form a hazard for southbound motorists. The use of the islands to cross Badgery's Way and Exeter Road will service pedestrians from the railway station whose destination is the shop or along Exeter Road, but not destinations along Middle Road or Bundanoon Road. As the pedestrian maze provides access to the school and areas east of the railway line as well as the railway station itself, the pedestrian refuge is also warranted.
- providing additional street lighting of this intersection.

The primary zone should be provided as a high quality footpath extending along both Middle Road and Exeter Road.

Secondary routes

68. Exeter Road to Yarwood Drive

As well as servicing residents of the development at Yarwood Drive, this also forms part of a recreational route using Middle Road and Ellsmore Road.

This route should be provided as a basic quality footpath.

69. Middle Road

While traffic volumes on Middle Road are low, traffic speeds are unconstrained.

As well as servicing residents along Middle Road to Jensens Lane, this also forms part of a recreational route using Ellsmore Road and Yarwood Drive.

This route should be provided as a basic quality footpath.

70. School Lane

This route links the primary zone at Exeter Public School with the pedestrian maze crossing of the railway line, and access to the shops.

This route should be provided as a medium quality footpath.

Due to the poor sight distance at the intersection of School Land and Ringwood Road, it is proposed that a pedestrian refuge be constructed on Ringwood Road north of School Lane, within 10 metres of the intersection.

- At a distance further than 10 metres, it becomes increasingly likely that pedestrians will not detour to use the facility.
- The road width should be increased to accommodate the refuge by road widening on the western side of the road as much as possible, to maximise sight distance. Similarly, a kerb extension should be constructed on the eastern side of the road to bring facility users closer to the sight lines of northbound motorists.
- This should provide at least 40 metres of straight sight line from Ringwood Road, which should be increased as much as possible by discriminating vegetation clearance on the southern corner of School Lane/ Ringwood Road (i.e. removing low shrubs and branches, but not wholesale destruction of trees.)
- The bus shelter opposite Schools Lane may need to be relocated to accommodate a path from the refuge to the pedestrian maze on the western side of the road.

Local access routes

71. Norwood Street to School Lane

This is a local route servicing the school.

72. Buskers Avenue to Middle Road

This proceeds through a park at the end of Buskers Avenue and through a drainage easement between two houses to Middle Road.

73. Yarwood Drive to Ellsmore Road

This is a concrete drainage line that also forms a shared use path, but is not quite connected to either Ellsmore Road or Yarwood Drive. Nonetheless, it provides a valuable connection forming a recreational loop.

This is particularly valuable for the residents the development at Yarwood Drive, which has a cul-de-sac form with no connecting streets and so no other local walking circuits.

This route also requires signage to identify it to potential users. A seat at the Yarwood Drive end is also desirable.

Recreational routes

74. Middle Road

This forms part of a recreational route using Ellsmore Road and Yarwood Drive, but also services residents along Middle Road and to Buskers Avenue.

It is proposed that this route be provided with maintenance and constructed where necessary as a gravel verge (i.e. a firm and level surface with drainage), and marked with an edge line to provide delineation, but that this not be sealed. The gravel verge width should be constructed at 2.0m to 2.5m, to provide separation to traffic and for the use of off-road bicycles. Raised retro-reflective pavement markers should be provided on the inside of curves.

3.4.11 Fitzroy Falls

Recreational routes

75. Gwen Road to shops

This route services visitors to the Fitzroy Falls Visitors Centre as well as residents of Fitzroy Falls.

The path proposal is to upgrade dirt tracks already in existence. The section from the Visitors Centre to the shops features steps constructed by the National Parks and Wildlife Service, and an existing footpath over a bridge.

Upgrade works for the overall route would involve limited path widening, grading and signage. It is not clear whether the existing tracks fall within the road reserve for Nowra Road or Morton National Park. In either case, agency agreement with the National Parks and Wildlife Service and Tourism NSW should be sought for upgrade of the path and joint funding of this.

The track needs to be upgraded to a functional standard, but also reflect the amenity of the local environment. The design standard therefore needs to be determined in conjunction with stakeholders but will probably result in a narrow, unsealed path.

3.4.12 Hill Top

Primary zones

76. School and shops

A small network of primary zones is proposed around the school and shops. This comprises:

- West Parade, Fitzroy Street to Raglan Street – there is already a section of concrete footpath from Fitzroy Street to the adjacent shop
- West Parade, Linda Street to Vera Street – a footpath already exists along this section of West Parade
- Rosina Street, Madeleine Street to Cumberteen Street
- Linda Street, West Parade to Cumberteen Street – a bitumen footpath already exists on the eastern end but has extensive grass infiltration, and a concrete footpath exists on the western end.

These routes should be provided as high quality footpaths.

Secondary routes

77. Wilson Drive service roads

Service roads exist on the east side of Wilson Drive from just south of Harold Street to just north of the Memorial Hall and just south of Stanley Street to just south of the Chalker Parade intersection with Wilson Drive. A short section of dirt path is located in front of the Memorial Hall. These service roads service only very small numbers of houses and are used by Hill Top pedestrians.

This route extends and connects the service roads to provide access along Wilson Drive.

These routes will involve sharing the road space with vehicles using the service roads rather than provision as a separate path adjacent to the service roads. As such, the standard design concepts do not apply.

These routes should be provided with a firm, trafficable surface suitable for pedestrians at the same width as a basic quality footpath, and additional width trafficable by cyclists to the same width as a medium quality shared use path where required.

- For the service road south of Harold Street, the first 85 metres from Harold Street has previously been sealed and minor works only should be required to maintain this at a standard passable for pedestrians. For the remaining 110 metres, this is dirt with clear wheel ruts in some locations. It may be more cost-effective and therefore preferable to seal this section, rather than to maintain this as a dirt road in a condition to suit pedestrians. Alternatively, a width equivalent to a basic quality footpath could be provided along one wheel track only, constructed to also take traffic. Otherwise, there is limited width for addition of a pedestrian facility. A connection to Harold Street also needs to be constructed.

- For the section from the Harold Street service road over the dirt track in front of the Memorial Hall to the Bertha Street service road, this should be provided as a medium quality shared use path.
- For the Bertha Street service road, the road is of a sufficient quality to be used by pedestrians and cyclists, but a cut-through needs to be provided to Stanley Street. This cut-through should be provided as a medium quality shared use path.

Traffic speeds and sight distances are constrained along Wilson Drive, but if the road environment along Wilson Drive is changed through Hill Top, it may be possible to provide one or more pedestrian refuges along Wilson Drive. These would need to link in with crossing locations of the Loop Line to provide access.

From a strategic viewpoint, possible locations for refuges would be at:

- Harold Street – providing a northern location for a refuge to link with the Loop Line shared use path and Pearce Street, and an environmental cue to motorists close to the speed limit reduction to 50km/h
- near Memorial Hall – with pedestrian access either along the Fitzroy Street link with the level crossing, or more directly to the shops
- Stanley Street – with pedestrian access across the Loop Line to the shops and school
- Telopea Road – providing a southern location for a refuge to link with the Loop Line shared use path and Ligar Street, an environmental cue to motorists close to the speed limit reduction to 50km/h, access to a potential recreational route along the Melaleuca Street alignment, and possibly a link to a longer route to Yerrinbool via Telopea Road.

It should be noted that numerous unformed cut-throughs were observed during the site visit, both from service roads to Wilson Drive and from Wilson Drive and West Parade over the Loop Line (three were observed along the Boronia Street service road alone). This indicates the obvious desire to be able to undertake east-west movement, and that safety issues related to Wilson Drive are not of a sufficient order to prevent this activity happening at least regularly enough to create unformed tracks.

78. School and shop feeders

A number of secondary routes proposed to connect and add functionality to the primary zones. These are:

- Rosina Street, West Parade to Madeleine Street – this connects to a primary zone and should be provided as a medium quality footpath
- West Parade, Vera Street to Rosina Street, Fitzroy Street to James Street and Raglan to Linda Street – these connect to primary zones and should be provided as medium level footpaths
- Madeleine Street, Linda Street to Rosina Street (there is a kerb on the western side) – this is not the main route to the school and should be provided as a basic level footpath
- Vera Street, Madeleine Street to West Parade – this provides a short cut from some locations and should be provided as a basic level footpath.

79. Cumberteen Street

This is the main north-south route and the school backs onto this street.

This should be provided as a medium quality footpath between James Street and Sackville Street, and a basic level footpath over the remaining length designated.

80. Rosina Street

This is an extension of the primary zone west to Mylora Street, which is the next sealed north-south aligned street east of Cumberteen Street, and east to West Parade.

This route should be provided as a medium quality footpath between Cumberteen Street and Vaughan Street and a basic quality footpath between Vaughan Street and Mylora Street.

Local access routes

Hill Top has numerous cut-through locations, all of which require upgrade. Those identified as providing useful pedestrian permeability are (from north to south):

81. Namoi Street, Samuel Street to Jane Street

82. Jane Street, Cumberteen Street east

83. James Street, to West Parade

84. Fulvia Street to Chalker Parade, behind the bus shelter

85. King Street, to Wyong Street

86. Percy Street, to Mylora Street and to Wyong Street

87. Ligar Street, to Wyong Street

88. Charles Street, to Cumberteen Street and to Sackville Street

These should be provided as basic quality footpaths through squeeze points.

Recreational routes

89. Loop Line shared use path

For ease of access and to provide additional functionality to the pedestrian network, this should be provided west of the Loop Line through Hill Top.

The Loop Line's rail formation is often at a different height to surrounding streets through Hill Top. Good points of connection are at the level crossing and the end of Ligar Street.

From Ligar Street, there is also a local recreational possibility to form a loop through bushland using the Melaleuca Street alignment to Fulvia Street.

90. Fire Road P3

Fire road P3c extends from the end of Stanley Street to the outskirts of Yerrinbool. There is reputedly a track between Yerrinbool and Hill Top, which may be along this fire trail, although it appears that a creek crossing would also be required close to

Yerrinbool. Nonetheless, this may be an opportunity to link to Yerrinbool, which is otherwise relatively isolated from the other villages of Wingecarribee, and should be investigated further as part of a Natural Areas Walkways Strategy.

91. Bike track path

A dirt bike track (for BMX or mountain bike) has been formed at the sports ground at the end of Stanley Street. This route is a link between Boronia Avenue and the bike track, along an existing formation. This is essentially a local short cut, but with formalisation of the access along the service road between Boronia Avenue and Stanley Park, this would also form a local walking loop.

The route then extends through Boronia Park as far as Harold Street, but the track through this area is less well formed, probably indicating a lower demand for use.

No additional provision is proposed, apart from mapping and possibly signage. The route is identified for further investigation as part of a Natural Areas Walkways Strategy.

Other

92. Speed limit changes

As Wilson Drive is effectively quarantined from the rest of Hill Top's streets, motorists passing through Hill Top do not receive environmental cues that they are passing through a built up area – apart from a reduction in speed limit to 60km/h south of the Cave Creek walking track, extending to past Telopea Street.

It is proposed that a 50km/h speed limit be instituted between Harold Street and Telopea Road, using road marking that makes this more obvious than the previous change to 60km/h. An example is shown below.

The provision of a route alongside Wilson Drive would reinforce this message by providing an environmental cue to motorists, particularly with pedestrian refuges at the northern and southern limits and at least one intermediate location.

Vegetation on Wilson Drive where Fitzroy St/ level railway crossing joins Wilson Drive should be cut back to improve sight distance for motorists, and a holding line marked. More active maintenance of vegetation along Wilson Drive would in itself provide an environmental cue to motorists.

Cave Creek Walking Track is a popular local recreational walking destination, but the 60km/h speed limit applicable through Hill Top is located south of the walking track. It is proposed that this speed limit be relocated to a point north of the walking track, so that people using Wilson Drive to reach the walking track are within a 60km/ zone. This will benefit these path users in terms of both safety and amenity.

3.4.13 Medway

Recreational routes

Medway is located close to Belangalo State Forest and the Wingecarribee River, with potential for impressive views. No walking routes are known, but it is likely that these exist.

Other

Given the lack of population and services both within and nearby to Medway, no routes are proposed.

Most walking occurs on local roads, many of which are uneven and should be graded.

3.4.14 New Berrima

Primary zone

93. Shop

The primary zone around the shop is provided along Argyle Street from 50 metres north of the shop, to the intersection of Argyle Street and Taylors Avenue.

This should be provided as a high quality footpath.

Secondary routes

94. Argyle Street

This is a connection from the primary zone around the shop to Australia Avenue, connecting to Berrima as discussed with regard to Berrima.

This route should be provided as a medium quality footpath between the shop and Ennis Avenue, and a basic quality footpath between Ennis Avenue and Australia Avenue and along Australia Avenue to the continuation of Argyle Street.

95. Ennis Avenue

Ennis Avenue is the main spine of New Berrima, at least for pedestrians (it is traffic calmed using give way signs at each cross street). This route services bus stops and a community hall.

This route should be provided as a basic quality footpath.

96. Taylors Avenue

Taylors Avenue is the main vehicular street through New Berrima and has high heavy vehicle use, with heavy vehicles from the cement works east of the village accessing the Old Hume Highway to the west of the village. This route is therefore proposed to provide a facility along Taylors Avenue through New Berrima and links to a recreational route to the sports ground, also east of New Berrima.

This route should be provided as a medium quality footpath.

Recreational routes

97. Sports ground link

This route is proposed along Taylors Avenue, given its high heavy vehicle use, to link to the sports ground, and along the driveway off Taylors Avenue.

This route should be provided as a medium quality shared use path.

3.4.15 Penrose

Primary zones

98. School

Penrose Public School is located on the outskirts of the village and does not appear on the mapping. Nonetheless, a section of primary zone is notionally located along its frontage.

The school population at Penrose Public School is even smaller than at Avoca Public School (which is a similar level to Burrawang Public School). Should it close, students would attend either Wingello Public School, about 6.5km away, or Bundanoon Primary School, about 9km away. Neither would be within a convenient walking or even cycling distance for primary school aged children.

However, compared to Avoca Public School, the Penrose Public School services a local Penrose population, the population in the Wingello area – which includes Penrose – is predicted to grow fairly strongly, and the closest alternative primary school is further away. As such, its long-term viability might be more secure.

A footpath exists from the school to Koolilabah Lane, but does not extend fully along the school's frontage. Given the small school population, an extension to the primary zone should be provided as a medium quality footpath. Any upgrade of the full frontage to a high quality footpath could only be justified as a longer term action, triggered by school population growth.

99. Shops

The general store is located opposite the railway station, with the hardware store adjacent. The railway station also provides access between the two halves of Penrose, which are separated by the railway line. As well as serving locals, the general shop attracts passing visitors and the hardware store would probably also serve Wingello residents. Therefore, a primary zone has been designated, despite the low local population.

The primary zone extends 15 metres in both directions from the shop and over the shop frontages, with a connection over the railway line to Kareela Road. Most of the connection over the railway line already exists, as does paving along the frontage of the general store and a wide dirt area in front of the hardware store.

Again, given the small population, a high quality footpath cannot be justified for this primary zone and this should be provided as a medium quality footpath.

Secondary routes

100. School to Dunlops Lane

The footpath servicing Penrose Public School extends west and south to Koolilabah Lane, but not east and north towards Dunlop Lane. However, families whose children attend Penrose Public School are apparently distributed fairly evenly in either direction. This route therefore extends the pathway to Dunlop Lane.

This route should be provided as a basic quality footpath.

101. School to shop

This route links the main pedestrian generators, being the school, shops and railway station, and via the crossing of the railway line, the sports grounds and community hall. A post box and public telephone box are also located outside the shop.

A footpath exists between the school and Koolilabah Lane. The remaining route should be provided as a basic quality footpath.

102. Penrose Road to Newbury Drive

This is a short route providing access to the primary zone. It should be provided as a basic quality footpath.

Local access routes

103. Railway bridge

The railway is a barrier to walking. This route links the existing footpath on the bridge to Kareela Road and Penrose Road, improving local connections.

This route should be provided as a basic quality footpath.

Other

104. Speed zone change

The school is currently in an 80km/h speed zone, although school speed limits apply. The full-time speed limit of 60km/h for most of Penrose should be relocated so that the school is in a 60km/h speed zone.

3.4.16 Sutton Forest

Primary zones

105. School

This primary zone is designated along the school frontage. About 50 metres of footpath exists along the school's frontage, west of its entrance. This is not set back from the carriageway.

The existing footpath is considered to cater for immediate use. Upgrade to a medium quality footpath should be considered as a longer term action (and triggered by future development and/ or increases in the school population).

Secondary routes

106. School to Golden Vale Road

This route extends from the school's primary zone about 200 metres to the bus stop at Golden Vale Road.

This route should be provided as a basic quality footpath.

107. Illawarra Highway

Although two shops exist at the corner of Exeter Road and the Illawarra Highway, both shops mainly services visitors and do not draw significantly from the local area. Further, a wide footpath exists under the veranda of the "Little Piece of Scotland" shop along both Exeter Road and Illawarra Highway frontages. "The Everything Shop" also has a section of footpath under its veranda on the northern side of the Illawarra Highway, although this is narrower. As such, no primary zones have been designated servicing the shops.

Instead, a secondary route is proposed for the northern side of the Illawarra Highway. This extends from the community hall, which also hosts regular markets, east to the footpath at Sutton Forest Public School. It passes a small local park and Sutton Forest Inn as well as "The Everything Shop". The route also extends west to the community hall, which hosts regular markets.

For the occasional use of residents and use of visitors, a pedestrian refuge should be provided south-west of the Illawarra Highway/ Exeter Road intersection, to cross the Illawarra Highway. Sight distances are good at this location and there is a sealed shoulder along which parking is prohibited, that could provide road width for a refuge. The secondary route should then be continued to the "A Little Piece of Scotland" shop.

These routes should be provided as basic quality footpaths.

3.4.17 Welby

The proposed Gibbergunyah urban release area is located south-east of Welby and is unlikely to have a significant effect in terms of pedestrian facilities. It has not been taken into account in the pedestrian network.

Primary zones

Commercial development in Welby is not aimed at servicing local residents and no primary zone is designated.

Secondary routes

108. Welby to Mittagong shared use path

The shared use path is a strategic facility linking Welby to a neighbouring supermarket, near Roscoe Street. This is to be extended into Mittagong, increasing its priority as a strategic link.

Currently, the path ends in Welby at Currockbilly Street. The proposal is to extend this past the Welby shop to Jellore Street, which is the western limit of most of the Welby's development and has a cut-through to the verge of the Old Hume Highway, despite not continuing through as a road.

The route should be provided to match the existing facility, or as a medium quality shared use path.

109. Meranie Street

This is the central street providing access from the shared use path, at the southern boundary of Welby, to the north. At its steepest point, the western verge has the greatest amount of width and provides the flattest route. The route therefore runs along the western side of Meranie Street.

This should be provided as a medium quality footpath.

Local access routes

110. Jellore Street

This is a formalisation of the cut-through to the Old Hume Highway road reserve and the primary shared use path route.

111. Cliff Street

This is a formalisation of this connection between Bowral Street and Joadja Street, providing permeability through what would otherwise be a long block length.

Recreational routes

112. Shared use path to Box Vale Mine

Box Vale Mine presents a walking opportunity for nearby residents. A shared use path servicing this is already provided over the Hume Highway to Box Vale Road.

This route links the shared use path and Jellore Street cut-through to this additional walking opportunity. It should be provided to match the continuing shared use path, or as a medium quality shared use path.

Other

113. Old Hume Highway crossing

The Old Hume Highway causes severance of Welby, with no safe crossing point for pedestrians until well into Mittagong. As there is only a small proportion of Welby residents who live on the southern side of the Old Hume Highway, this does not represent a large number of people – but the extent of severance on these residents is high, as all services, including bus stops, are on the northern side of the Old Hume Highway.

As a major severance, people will attempt to cross the Old Hume Highway. While this is also the case in the Balaclava/ Braemar area, it would appear that such crossing is more unsafe in the vicinity of Welby, that people are more willing to attempt the crossing, or that people in the Welby area have been more unlucky than those in the Balaclava/ Braemar area. In crashes examined for the five years between December 2001 and December 3005, there was a pedestrian fatality on the Old Hume Highway, near Currockbilly Street, and cyclist injury near Bendooley Street.

The severance also extends beyond Welby to residents of south-east Mittagong, although those residents on the southern side of the Old Hume Highway at least have alternative routes into Mittagong.

With the extension of the existing shared use path on the northern side of the Old Hume Highway into Mittagong (including past a local supermarket), the strategic value of this route increases, both for utility trips and as a recreational resource. This would also include the future residents of a Gibbergunyah development area, should this be approved.

The Old Hume Highway passes over a culvert on the western edge of Welby, which could possibly provide a crossing point. This has been investigated by Council staff, but while the culvert itself is passable, there is a sewer main to one side that blocks access to the culvert. It might be possible, though expensive, to provide a ramped access over this sewer main. While this is difficult to justify on the basis of the Welby population alone, the acceptability of the cost could increase with extension of the shared use path from Welby into Mittagong and/ or development of the Gibbergunyah area.

Alternative means of achieving a safe crossing of the Old Hume Highway would be to:

- reduce the highway to one lane in each direction and provide a pedestrian refuge – not considered feasible, given the capacity constraints that would result
- install traffic signals on the Old Hume Highway – this would also affect traffic on the Old Hume Highway
- reduce the speed zone in this area – difficult to enforce, especially with a down-gradient
- provide a pedestrian overpass – likely to be a more expensive option.

Options should be investigated further, with extension of the shared use path from Welby to Mittagong.

3.4.18 Willow Vale

Secondary routes

114. Orient Street

This is the main street through the most populated part of Willow Vale. Kerb and gutter and lighting are provided on its western side, which also has fewer established trees, hence the route is provided on this side.

This route should be provided as a medium quality footpath.

115. Braemar Avenue

This provides access to the shared use paths on either side of the Loop Line and provides partial linkage to the industrial area.

This route should be provided as a basic quality footpath.

Local access routes

116. Willow Street, Badgery Street and Parkes Road

These routes provide connection from the Loop Line shared use path to Orient Street.

117. Cordeaux Street/ Gascoigne Street

This is a small local connection.

Recreational routes

118. Loop Line shared use path

There is an obvious pedestrian desire line alongside the Loop Line from the end of the Willow Vale shared use path to the end of Railway Terrace. As part of a longer recreational route following the Loop Line, the shared use path should be extended along this pedestrian desire line. At the northern end, this would follow Railway Terrace as the separation between Railway Terrace and the Loop Line decreases, while the route could then follow Federation Avenue to Braemar Avenue.

In keeping with the natural environment along the Loop Line, the route should be provided as a medium quality shared use path.

Other

119. Railway Terrace crossing near the Loop Line

The Willow Vale shared use path joins Railway Terrace just west of the Loop Line. To continue along the Loop Line reserve, path users must cross Railway Terrace at this point. However, this is just after a bend in the road and path users are not obvious.

A pedestrian crossing on a plateau would probably not meet a usage warrant, particularly in the absence of an onward route, but would be an effective means of

improving the conspicuity of the crossing point. This should be explored as part of an extension to the route.

Other means of improving designation of the crossing point would be to:

- seal the gravel shoulder between the path and road in a pavement contrasting to the road pavement
- provide an edge line and centre line marking in Railway Avenue between the Loop Line bridge and corner into Railway Terrace proper
- provide warning pedestrians crossing signs on the approach to the path
- move 50km/h signage to before the crossing, for motorists entering off the Old Hume Highway.

All of these are recommended as a more immediate treatment, as pedestrians use the onward route although it is not a formal facility at this point.

A pedestrian refuge could be considered, but is probably not feasible due to the need to bring vehicles together from either side of a refuge, to cross the narrow Loop Line bridge.

3.4.19 Wingello

Primary zones

120. Shop

The shop is located between Garrett Street and Forest Road, with the railway station opposite. The primary zone is designated for 25 metres in either direction from the shop along Railway Parade.

This should be provided as a high quality footpath.

121. School

This has been designated across the school frontage to Mundego Street. As the walking catchment is almost exclusively south-east from the school, the existing footpath serves this purpose and no additional infrastructure is proposed initially.

Widening of the footpath to that of a high quality footpath, to provide for pedestrian interaction along the frontage, is a longer term, lower priority, to be triggered by development.

Secondary routes

122. School to Shop

This links the two primary zones and also the railway station. A footpath exists for most of this distance, but needs to be extended to and across the level crossing and improved at Marulan Street.

The route design should be matched to the existing footpath, which is concrete. In the longer term, and with development, this should be upgraded to a medium quality

shared use path standard. (A doubling of the Wingello population to double the 2001 population, and/ or doubling in the 2001 school population are suggested as a suitable trigger, but the location of future development and resident walking paths is also relevant.)

123. Oval connection

This is a short connection servicing the railway station and Bill O'Reilly Oval, albeit that it is on the opposite side of Kareela Road to the oval.

This route should be provided as a medium quality footpath, to cater for children cycling on the footpath as well as walking demand...

124. Railway Station connection

This is a short connection providing a connection to other routes on the Penrose Road side of the railway station.

This route should be provided as a basic quality footpath.

125. Penrose Road/ Tallong Road

These routes provide connectivity to the primary zone servicing the shop.

These should be provided as medium quality footpaths from the shop to Forest Road and Garrett Street, except that a footpath already exists from the shop to Bumballa Road. Upgrade of the existing footpath to a medium quality footpath standard is not an immediate priority, but a short missing link needs to be provided in this section, at a standard to match the existing.

The sections from the Garret Street to Camden Street and Forest Road to Bumballa Road should be provided as a basic quality footpath. The Forest Road to Bumballa Road section already exists, except for a small missing link.

3.4.20 Yerrinbool

Primary zones

126. Shop and railway station

This is a route provided on either side of the shop, between Everest Street and Andes Street, along the Old Hume Highway.

This should be provided as a high quality footpath.

Secondary routes

127. Railway station

This is proposed between Andes Street and Everest Street, feeding in to the railway station. This should be provided as a medium quality footpath.

128. Sierra Street

This provides the main east-west access and continues over the freeway using footpaths on the bridge, also servicing the Baha'i school and conference centre.

This route should be provided as a medium quality footpath.

129. Old Hume Highway

This route is designated for the western side of the Old Hume Highway, north and south of the primary zone. It provides connectivity along the busiest road in the village.

This route should be provided as a medium quality footpath from Andes Street to Pine Street, and a basic quality footpath from Pine Street to Kent Street.

Depending on where additional development occurs, this route could be extended north to Kent Street and south to Hambridge Road. As use of these two ends of the route is likely to be lower than the main section through the village, these should be provided as basic level footpaths.

130. Government Road

This links the Old Hume Highway route to the sports ground and provides a local east-west route.

This route should be provided as a basic quality footpath.

131. Appenine Road/ Everest Street

This route provides additional permeability through the village and to the community centre.

This should be provided as a basic quality footpath.

Local access routes

132. Railway bridge squeeze points

The access adjacent to the Old Hume Highway under the railway bridges is poor, with squeeze points formed at these locations – which also have poor sight distance.

The road under the railway bridges should be widened to the bridge walls, on each side of the road. To maximise its benefits, this widening should also extend for at least 20 metres on either side of each bridge and be marked off from the travel lane with an edge line.

Recreational routes

133. Fire trail to Hill Top

There is an apparent possibility of linking Yerrinbool to Hill Top via fire trails. This should be investigated as part of a Natural Areas Walkways Strategy. This may require a footbridge crossing of the Bargo River.

Other

134. Maintenance

There are two pedestrian lights in Kiandra Crescent, near the community centre, that are not working. These may need bulbs replacing.

There are two tree stumps on the southern side of Kent Road. These are difficult to see in long grass and should be ground out.

4 Non-infrastructure measures

Pedestrian and cycling facilities are most cost-effectively provided when considered during planning, design and construction of new or existing infrastructure.

In conjunction with the provision of new facilities, education, promotion and encouragement activities can then:

- educate communities about the new facilities provided and opportunities these present;
- encourage the use of facilities; and
- create goodwill between the community and Council.

In addition to implementing a pedestrian network, non-infrastructure measures have been identified that are intended to assist Council in achieving its objectives in commissioning this Small Towns and Villages PAMP.

There are three recommended strategies to create a walking environment and culture in Wingecarribee Shire Council. These address planning and encouragement activities and are as follows. These have been numbered in order (but not necessarily priority) as NM1a, etc., with the designation of NM standing for non-infrastructure measures.

4.1 NM1: Amend the Development Control Plan

The purpose of this strategy is to ensure that pedestrian (and cyclist) permeability, amenity and modal needs are protected and enhanced in all future development. Initial actions to be implemented follow.

NM1a. Adopt the Small Towns and Villages PAMP as the basis for local structure planning in providing pedestrian facilities.

NM1b. Undertake training of planning staff in principles to encourage walking and cycling, and to develop an understanding of design elements that are (or should be) contained in Development Control Plans and the implications of these on walking and cycling. E.g. sight distance to footpaths from driveways; lack of permeability in cul-de-sac development; bicycle parking types and requirements.

NM1c. Amend the Development Control Plan to encourage walking and cycling. In particular:

- a performance criterion that any new street of more than 250 metres in length must have more than one public access point for pedestrians (to create high pedestrian permeability through new development)
- design requirements for internal access roads, where these roads also provide for pedestrian access. For example, in the absence of kerb and gutters, permeable paving (of a type that does not form a trip hazard) could be specified as a pavement material, to reduce run off; threshold treatments to reduce car speeds; planting of street trees to provide shade for

pedestrians; etc. Conversely, roll-over kerb does not provide access for people with disabilities

- require development adjacent to creek lines to provide access to these at convenient/ suitable intervals and for a linear reserve adjacent to creek lines to be established and either maintained as publicly accessible open space, or handed to Council as open space. As this would coincide with environmental requirements adjacent to creek lines, this should not represent a significant loss to developers. For any linear corridor requirement additional to minimum environmental widths adjacent to creek lines, the value of land given to Council would be offset by the cost of maintaining such land, rather than Council providing any remuneration to developers for the land (as would probably be argued by developers)
- develop incentive to develop medium and longer term secondary and local access routes over private land, as noted for the relevant routes and identified through other policies and plans.
- provide bicycle parking.

4.1.1 Relevant sources of information

PCAL resource

The New South Wales Premier's Council for Active Living (PCAL) has developed a web-based resource 'Designing Places for Active Living'. The resource has been developed with the current NSW planning context in mind and is applicable to urban places in metropolitan, regional and rural areas. It does not necessarily require additional resources for implementation, rather incorporation of the key design considerations at the planning, design and development stages of minor and major brownfield and Greenfield projects[2].

The resource is freely available from www.pcal.nsw.gov.au.

Other

The Western Australian document "Liveable Neighbourhoods" and its accompanying guidelines provide good guidance about measures that can be adopted in this regard.

[2] As described in the March 2007 edition of New Planner, the Planning Institute of Australasia's newsletter.

4.2 NM2: Undertaken encouragement activities

The purpose of this strategy is to inform residents of the development of routes and thus the network, and maximise use of the infrastructure being developed.

As some of the following actions are dependent on route creation, they can only occur following the completion of infrastructure. This is identified in the action plan. However, the commitment to such actions can be made immediately, so that appropriate planning for encouragement activities occurs alongside development of infrastructure.

It is not intended that all of the following actions are implemented; these are listed to provide a selection of actions that Council can undertake, with those chosen being ones assessed as most compatible with local communities and other activities. It is however recommended that a selection of these actions be undertaken over the lifetime of the PAMP. More information on initiatives and projects mentioned, as well as other relevant initiatives, is contained after the actions.

NM2a. Publicise the completion and adoption of the Small Towns and Villages PAMP, thanking residents for their contribution e.g. through Council's newsletter or an article in Council's regular column in the local newspaper.

NM2b. Prepare maps of the pedestrian and cyclist networks and make available on the Council website. Prepare new maps every 2 years, i.e. updating as routes are implemented. *And/ or*: assist other mapping agencies to include walking and shared use facilities on their maps, by providing updated information to these agencies when projects are completed:

NSW Dept of Lands (http://www.lands.nsw.gov.au/recreation) sources and maintains hundreds of kilometres of walking tracks throughout New South Wales and publishes a road directory for country NSW.

Cartodraft Australia Pty Ltd (http://www.cartodraft.com.au) publishes Craigie's Maps and Guides, including a Southern Highlands Towns and Villages map.

The cost of this action depends on the type of maps produced and funding through advertising, grants, etc., and whether hard copy maps will be produced by Council (e.g. for distribution to primary schools and community groups).

NM2c. Develop links with community groups, schools, etc, to form a network of walking stakeholders. Seek and disseminate information through this network.

NM2d. Support a Safety Around School program at all primary schools.

NM2e. Assess demand for adult bicycle training/ skills courses and conduct courses as appropriate.

NM2f. In conjunction with other Councils, support Walk/ Ride to Work Day and Walk Safely to School Day. (More information about these initiatives follows these actions.)

NM2g. Advertise route completions in the local newspaper and through stakeholder networks. Encourage local groups to publicise route completions to their stakeholders and to hold an event celebrating the opening of the new facility.

NM2h. Assess the support for a 'walking school bus' or 'bicycle train' program to primary schools, where these do not exist. Penrose Public School has a successful example of such a program. One variant of the walking school bus program trialled successfully in Adelaide was to map students' residential addresses in GIS and provide information to parents whose children live within walkable distance of the school that this is the case, plus advise (with parents' permission) the addresses of nearby children who could walk to school together.

NM2i. Support behavioural programs proposed by other organisations to support walking and cycling, if considered relevant to the local community.

4.2.1 Related program/ project information

Walk to Work Day

Walk to Work Day is an event to promote regular walking and physical activity. It is an annual, national event in which the community can become involved in a healthy and environmentally friendly activity.

The aims of Walk to Work Day are:

- To promote regular walking as a healthy activity (better physical, mental and social health)
- To reduce the reliance on the private motor vehicle (reduce car-dependency)
- To promote and improve the use of public transport (less traffic)
- To improve air quality by reducing unnecessary vehicle emissions (reduce global warming).

In addition to encouraging management and staff to participate in WTWD, Councils can support walking by improving footpaths and access to public transport and promoting local walking routes. Car-free days might be considered for certain towns. Councils could also provide special arrangements for car parks that link to public transport.

Councils can help promote the event locally by contacting state WTWD PR consultants. They have been specifically engaged to help promote the event through local newspapers, radio and TV and other networks. Councils can also consider rewarding participants with a healthy breakfast and displaying WTWD posters wherever appropriate.

Walk Safely to School Day

Walk Safely to School Day (WSTSD) is an annual, national event when all primary school children will be encouraged to walk and commute safely to school. It is a Community Event seeking to promote road safety, health, public transport and the environment.

The objectives of WSTSD are:

- To encourage parents and carers to walk to school with primary school age children and reinforce safe pedestrian behaviour.

- To promote the health benefits of walking and help create regular walking habits at an early age.
- To ensure that children up to 10 years old hold an adult's hand when crossing the road.
- To help children develop the vital road-crossing skills they will need as they become mature pedestrians.
- To reduce the car dependency habits that are being created at an early age and which will be difficult to change as children become adults.
- To promote the use of public transport.
- To reduce the level of air pollution created by motor vehicles.
- To reduce the level of traffic congestion.

A kit containing WSTSD stickers and posters was posted to every primary school in Australia in 2007 and sent to all Councils throughout Australia. It is likely that this will also occur in 2008.

School Road Safety

The RTA has two main programs addressing school road safety. These are the Safety Around Schools Program and the Road Safety Education Program.

The Safety Around Schools Program aims to improve the safety of school students through a program of engineering works of road safety facilities and other strategies around schools. It has the following main components:

- Funding for the installation of 40km/h School Zones on all roads with current school access points at schools throughout NSW;
- Funding for road safety facilities around schools on state roads and roads within the unincorporated area in the Western area of NSW;
- Funding of school crossing supervisors for infants and primary schools;
- The establishment of a safety around schools review panel providing independent advice to the Chief Executive of the Roads and Traffic Authority (RTA) where there is a concern raised by a school about the RTA's response to their road safety issue; and
- The provision of a practical guide for principals and parent groups on how to work with key agencies to address their school's road safety concerns.

The Road Safety Education Program aim is to ensure that children and adolescents receive road safety education. The program provides educational resources and professional development to teachers and child-care workers throughout NSW. The program is a partnership between the RTA and the following bodies: Association of Independent Schools (AIS); Catholic Education Commission (CEC); Department of Education and Training (DET) and the Early Childhood Road Safety Education Program (ECRSEP).

TravelSmart NSW

TravelSmart is about making smart travel choices to reduce greenhouse gas emissions by: catching public transport; cycling for transport and health; enjoying walking; building better communities. TravelSmart programs ask people to make voluntary changes in their travel choices, encouraging people to use other ways of getting about rather than driving alone in a car.

Individuals, households and businesses can make a difference by making small sustainable changes in their travel behaviour, such as:

- Thinking about and planning travel in advance;
- Walking, cycling or catching public transport where possible;
- Choosing shops and facilities in the local area and supporting the local community to reduce travel; and
- Increasing physical activity by incorporating walking or cycling into the travel routine.

In partnership with the Australian Government's Travel Demand Management Initiative 2005-2007, the NSW Government is delivering a School Travel Plan Project. The project will address the dramatic increase in car reliance for the journey to school by trialling a school travel plan approach. Secondary students through fifteen schools in the Inner Sydney area will be encouraged to choose more sustainable and physically active modes of travel (walking, cycling and public transport). The approach will engage students, parents and schools in identifying barriers and solutions; active travel to school days; and cycle proficiency training. It will fund minor infrastructure improvements; provide transport access guides and other information.

During 2003-2005 the NSW Government engaged with over 5,800 households and some schools, workplaces and community groups in Ermington and Woy Woy in trialling travel behaviour change approaches.

There is an opportunity to use the results of these projects to apply to Wingecarribee.

TravelSmart Australia has a number of useful 'Toolkits' for a range of organisations that generate frequent travel and how these organisations and the community can become TravelSmart. The toolkits available are: Bikeability, Employers, Special Events, Teachers, Training of TravelSmart Officers, Universities and Walking School Bus™. Primary school groups and classes can play and learn about smart ways to get to school by downloading and printing their own TravelSmart chatterboxes.

The Heart Foundation

Just Walk It is a free walking program which aims to increase participation in regular physical activity. Walking groups are led by volunteer leaders offering a local, enjoyable, social and supportive physical activity option for people who wish to walk in their local area or with colleagues either before work or at lunchtime.

Coordinators receive a kit with information and registration forms to help them set up their group(s). A coordinator may coordinate one or many walking groups. They support the local walk leaders and groups and act as the main contact point for their group(s). See http://www.heartfoundation.com.au.

Bicycle Education

Education is an important part of road safety for everyone using the roads. There are several centres across NSW where children can learn road rules and safe cycling in organised school groups.

RTA Cycle Funding

Approximately 90% of the roads in NSW are under the control of local councils. To assist councils in providing facilities for cyclists, the RTA provides dollar-for-dollar funding for cycle facilities. To assist cyclists travel around the community, the RTA and many councils have produced local cycling maps.

NSW Bike Week will run from Saturday 22 September to Sunday 30 September 2007.

NSW Bike Week is a state-wide NSW Government initiative that raises the profile of cycling as a healthy, easy, low cost and environmentally friendly alternative to driving for short trips in your local community. NSW Bike Week provides an opportunity for the local community to participate in organised bicycle events in a safe and supported environment. Participation is aimed at all members of the community, with a particular emphasis on encouraging new cyclists.

National Ride to Work Day is Wednesday 17 October 2007, a free National Ride to Work Day promotional kit can be ordered online.

4.3 NM3: Provide leadership through Council processes

The purpose of this strategy is to use Council's position as the level of government closest to the community, and position within a network of local government organisations pursuing similar goals, to provide a lead role within the community in supporting and providing for walking and cycling.

NM3a. Undertake a complete review and update of the Wingecarribee Bicycle Plan. Access funding from RTA to support this action.

NM3b. Prepare a Natural Areas Walkways Strategy (as recommended by the Wingecarribee Open Space, Recreation, Cultural and Community Facilities Needs Study and Strategy), with community consultation to identify popular walkways.

NM3c. Develop and adopt an urban design strategy for the pedestrian and bicycle networks. Elements to be covered include signage – names, size, logos, locations, colours, etc. – particularly for wheelchair accessible routes and trails, and compatible with tourism marketing goals; lighting, taking into account local sensitivities; plants used in landscaping, where this is appropriate; public art; and street furniture.

The performance standards in this document should be referred to as a

starting point and can be used to provide a level of guidance in the absence of more comprehensive strategies. These should be brought to the attention of relevant Council staff.

NM3d. Undertake a feasibility study on the use of the Picton to Mittagong Loop Rail Line and surrounds (its reserve, the Wilson Drive road reserve, etc) to develop a shared use path from the existing shared use path in Willow Vale to Thirlmere. Seek to undertake this in partnership with Wollondilly Shire Council in the first instance. Consider extensions to link to Yerrinbool and Aylmerton as part of accessing a regional facility.

NM3e. Provide a walking/ cycling link on the Council website to promote these modes. Enable maintenance requests to be submitted and establish performance criteria for addressing these, or means of incorporating into a maintenance plan. Use as a platform for issues and complaints to be registered.

NM3f. Enable requests for plantings in verges to be made through the Council website and educate residents about the need to seek permission through newsletters, newspaper articles, etc. Education should include planting types (trees, shrubs, species), location, maintenance requirements (pruned heights, etc) and Council's response if it needs to initiate maintenance (how this will occur, timeframes and cost recovery mechanisms).

Investigate provision of low-cost plants to those who seek and receive such permission, as an incentive (e.g. with the support of local nurseries).

NM3g. Undertake training of depot staff regarding construction and maintenance requirements for walking and cycling. This should particularly focus on Disability Discrimination Act issues and requirements (including the Disability Standards for Accessible Public Transport), Australian Standards provisions (particularly the AS 1428 suite, Design for Access and Mobility), maintenance and design guidelines contained in the Austroads Guide to Traffic Engineering Practice series (particularly parts 13: Pedestrians and 14: Bicycles), and RTA and Council guidelines where these provide additional information.

NM3h. Liaise with service authorities and regular maintenance crews regarding maintenance and works requiring footpath reinstatement, to identify opportunities and to ensure that reinstatement works meet required standards.

NM3i. Monitor NSW and interstate experience – and report on Wingecarribee's experience – with walking and cycling encouragement programs to identify programs most likely to succeed in the local area and to access available funding opportunities.

NM3j. Undertake a review of Council PAMPs (Mittagong, Moss Vale, Bowral; and the Small Towns and Villages) within 7 years of their adoption. Access funding from RTA to support this action.

NM3k. Improve policing against DCP 50, regarding management of the location of objects on footpaths (including outdoor dining).

4.3.1 Possible funding sources

Australian Tourism Development Program (ATDP)

The Australian Tourism Development Program (ATDP) is a highly competitive merit-based grant program administered by the Department of Tourism, Industry and Resources.

It aims to assist in the development of a continuous tourism experience throughout Australia by supporting initiatives that will:

- promote tourism development in regional and rural Australia
- contribute to long term economic growth
- increase visitation and yield throughout Australia
- enhance visitor dispersal and tourism expenditure throughout Australia,
- increase Australia's competitiveness as a tourism destination.

Category 2 - Integrated Tourism Development Projects

Projects funded under this category should be large scale, multi-faceted activities that involve collaboration in the development or implementation of effective strategies for tourism market development.

Projects may be:

- in the developmental phase, developing partnership approaches across a number of regions to establish unified research, planning, image and/or marketing for an area; or
- in the implementation phase, which may involve the implementation of a number of elements, for example:
- a distinctive regional 'brand'
- a distinctive regional or inter-regional product
- provision of tourism support infrastructure
- regional and inter-regional planning and management processes and research
- targeted international and domestic marketing and promotion,
- product and/or market research specifically aimed at facilitating the development of niche sectors.

Category 2 grants of $100,000 to a maximum of $500,000 (GST exclusive) will be provided for approved projects:

- those in the developmental phase are expected to be in the order of $100,000 - $250,000,
- those in the implementation phase are expected to be in the order of $250,000 - $500,000.

Eligibility for Category 2

The following types of organisations from across Australia are eligible to apply for a Category 2 grant under the Australian Tourism Development Program:

- regional tourism or regional economic development organisations;
- peak or national tourism industry associations;
- local government agencies (only in circumstances where it can be demonstrated that the project is additional to activity that a local government agency would normally be expected to undertake);
- non-profit organisations; and
- initiatives from a combination of any of the above groups.

Category 2 projects must establish a project management committee with the lead customer carrying the overall responsibility for the project.

Financial Assistance Grants

The Federal Government provides annual Financial Assistance Grants direct to local government. Financial assistance grants are paid as general purpose grants under the provisions of the ***Commonwealth Local Government (Financial Assistance) Act, 1995***.

The grants consist of two components: a general purpose component and a local roads component. There are no conditions attached to the expenditure of these funds by councils. That is, councils can spend the funds according to their own locally determined priorities.

Both components are determined on the basis of principles developed in consultation with local government in NSW and are consistent with the national principles of the Act.

Features are that:

- each state receives a fixed share of the grant, the share being set out in legislation;
- each council's share of the grant is determined by the state's local government grants commission;
- the grants are untied (available to be used as the council determines); and
- the level of Financial Assistance Grants is increased annually to compensate for population growth and inflation.

It is likely that the funding allocation would already be allocated, but this may be one source of revenue that can be directed to actions emerging from the PAMP.

REPAIR Program

This is a State government funding program. The objective of the REPAIR (REPair And Improvement of Regional Roads) Program is to provide additional assistance to councils to undertake larger works of rehabilitation and development on Regional Roads to minimise the long term maintenance costs of these roads commensurate with their function and usage.

The program provides for a State Government contribution of 50% of the project cost with projects selected on a merit basis across each RTA Region by regionally based consultative committees of councils.

The program is aimed at works that contribute primarily to minimising future and ongoing expenditure needed to keep the road at a satisfactory standard, and provide overall benefits to the community that exceed the cost of the work.

The REPAIR Program targets the following types of work:

Rural areas

- Pavement rehabilitation
- Sealing shoulders/widening
- Bridge repairs and replacement
- Provision of initial seals that contribute to minimising long term maintenance costs

Urban areas

- Pavement rehabilitation of travel lanes
- Bridge repairs and replacement
- Development of travel lanes

The maximum grant offered to any council by the RTA is $250,000 regardless of the condition of the roads in its area. Only one quarter of metropolitan councils received the maximum allocation and one third received no funds at all.

Before offering a grant to a council, the RTA confirms pavement condition and roughness using its own systems. Projects are then prioritised annually on a State and Regional basis.

This program could be accessed to undertake shoulder widening, road sealing and repair where these works meet program criteria. However, competition for funds is likely to be significant. For 2006-07, the allocation was $24.1 million.

Regional Roads Timber Bridge Program

This program was delayed by the 2004 mini-budget, but re-commenced in 2005/06. It could be relevant in relation to the bridge at Railway Terrace, Willow Vale.

Bike Lockers

The Secure Bicycle Locker Program is a State Government initiative, managed by Bicycle NSW, for integrating bicycle and public transport travel. It aims to provide safe and secure bike storage to make it easier and more enjoyable to combine cycling with rail or ferry travel.

National Heart Foundation Kellogg Local Government Awards

These awards recognise and raise awareness of local governments working with their communities to encourage healthier lifestyles.

In 2004, $30,000 in awards was given nationally to assist councils to continue to work towards improving the heart health of their communities through their nominated project.

Categories include Recreation Infrastructure Facility (likely to be the most applicable to a Loop Line shared use path) amongst others.

Capital Assistance Program

This is a program of the Department of Tourism, Sport and Recreation that assists local government authorities and 'not for profit' sporting and recreational organisations to develop community oriented local sporting and recreational facilities throughout NSW. All projects must improve access for the general public to participate in sport, recreation and/or physical activities. The maximum grant will not exceed 50% of the net project cost.

Local government authorities (Councils) and 'not for profit' sporting and recreational organisations that have been incorporated are eligible for funding. Projects that will be considered for funding are:

- Projects that increase the availability of facilities for use by the community to participate in sport, recreation and/or physical activities.
- Projects that improve the safety for users and participants.
- Projects that improve opportunities for groups within the community that traditionally face difficulties in accessing facilities.

Current priorities are:

- Applications for the construction of new local sporting and recreational facilities, including fixtures and fittings (which will be depreciated as fixed assets) that will increase participation in sport, recreation and/or physical activities.
- Applications for the enhancement of existing local sporting and recreational facilities, e.g. watering systems, safety netting, lighting.
- Applications for the provision of ancillary and support facilities at established local sporting and recreational facilities, e.g. sun protections shelters, change rooms, shower and toilet amenities.
- Applications for the provision of outdoor courts and playing areas.
- Applications for floodlighting to outdoor venues (must be verified to comply with AS 4283)
- Applications for projects that will improve access for under-represented groups in the community.

$4,000,000 was available in the 2005-06 program, with the average grant being $10,000. At present, it is not certain whether a 2007-08 round will occur.

Regional Sports Facility Program

This is a program of the Department of Tourism, Sport and Recreation, to enhance the range, availability and quality of major sport and recreation facilities throughout NSW.

Local government authorities (Councils) and 'not for profit' sporting and recreational organisations that have been incorporated are eligible for funding.

The minimum grant under this scheme is $40,000, with the maximum set annually by the program. Grants cannot exceed 50% of the net project cost.

Seeds of Renewal Program

This is administered by ANZ bank in partnership with the Foundation for Rural and Regional Renewal (FRRR).

This small grants program aims to help rural communities grow through projects that contribute to the development of history and heritage, public tourism and environmental areas.

Not for profit organisations with an ABN are eligible to apply for projects with a charitable purpose, from communities that have a population of 15,000 people or fewer.

Preference will be given to applications that address the following:

- Children and Youth
- Developing Intergenerational Skills and Knowledge
- Revitalising Community Infrastructure

Funding of up to $10,000 is available.

5 Action plan

The action plan presented in two tables, following, based on the pedestrian network developed and the non-infrastructure actions suggested.

The first table presents a list of items in the same order as detailed in Section 0 – that is, with villages first ordered alphabetically and items then numbered hierarchically, as primary, secondary, local access, recreational or other items. This is further divided into route features – width, length, number of kerb ramps, number of refuges and other items – upon which the costings have been based.

It should be noted that this first table is un-prioritised. The development of the full pedestrian network will occur over a number of years and a prioritisation of these actions is required to enable Council to achieve the best outcome, in the most effective manner. This is the purpose of the second table.

5.1 Actions with costings

, at the end of this section, provides actions with indicative costs. Actions are identified as they appear in section 0, which is by hierarchy within an alphabetic listing of settlements.

The alternate shading of settlement names is intended to enable these to be easily differentiated between.

Although a sub-total amount has been provided for each settlement, this figure should be treated with caution due to the assumptions used in the costing (expanded upon in the following section), as recreational facilities – including the Loop Line shared use path – are not included in the costings, and as there are various funding options that could be accessed. Also, some items have been described as having a longer term priority, to be triggered by development or population increase. Nonetheless, the total value of all costed works is some $4,330,000. Over a ten year period, this is an average expenditure of $433,000 a year, or $24,650 for each of the twenty settlements (although clearly some settlements, such as the town of Bundanoon, will have a much higher allocation than others, such as Balmoral Village).

A number of notes/ provisos to the action plan exist and are detailed as follows.

5.1.1 Costings assumptions

Cost estimates are order of cost only, based on a material cost per square metre. They do not include allowances for earthworks, fencing, lighting, traffic management, design work, consultation, etc.

In particular, an accurate cost for the permeable paving/ unpaved shoulder concept has not been obtained. It has therefore been assumed that the cost would be similar to the cost for a bitumen footpath of the same area, on the basis that the underlying structure is similar and the lower amount of permeable paving compared to bituminous material would offset the likely cost differential between bitumen and the permeable paving.

The numbers of kerb ramps and refuges along each route have been highlighted as separate items for ease of reference, as the RTA will part-fund kerb ramps and refuges for projects within state controlled road corridors. Note, however, that not all kerb ramps or refuges highlighted are located within such road corridors.

There are some items for which the listed width does not indicate that a permeable pavement should be provided at this width. This is the case for all local access routes, for which appropriate design solutions will vary with the local area. The listed width has been applied to a permeable pavement cost rate to provide some order of cost in the absence of firm concept designs. Other locations where the indicated width does not indicate a use of permeable paving are shown in a lighter shading. They are:

- Item 23, Berrima: this is a gravel shoulder treatment
- Item 27, Berrima: a 1.2 metre wide pavement has used as the basis of developing a cost estimate, but is not the proposed design solution. The design solution should be compatible with the rest of Lambies Well walk
- Items 52 and 53, Burrawang: these are gravel shoulder treatments
- Item 74, Exeter: this is a gravel shoulder treatment
- Item 121, Wingello: the width of 0.5 metres is for upgrade of the existing footpath
- Item 122, Wingello: the 1.2 metre width has been costed in concrete, to match the existing footpath; the 0.5 metre width is for upgrade of the existing footpath.

Many of the non-infrastructure measure actions can be incorporated into existing Council staff activities, as long as this can be balanced against other competing demands. This includes such matters as review of the DCP.

A small number of comments are provided within the table, which has been provided electronically to Council for its use. These are intended to provide more information about the assumptions behind the costs, but are not comprehensive.

As discussed regarding this proposal, the Loop Line shared use path is considered to be a regional level facility that would attract funding from outside Council.

Where routes have different standards for different sections, the sections are listed under the same ID number.

The cost rates used in the costings are as follows.

Table 4: Cost rates used

kerb ramp (each)	$1,000
permeable paving (per square metre)	$65
concrete (per square metre)	$100
pedestrian refuge (simple)	$2,000
edge line, per linear metre (100mm wide)	$4
bicycle or pedestrian logo (each)	$50
shared use path sign (installed)	$200
speed sign (installed)	$200
raised retro-reflective pavement marker (each)	$10
loosen and re-compact shoulder (per square metre)	$10

Table 5: Actions with costings

	ID	type	width (m)	length (m)	# kerb ramps	# refuges (basic)	other (footbridges, etc)	subtotal	settlement subtotal	brief description
Avoca	1	secondary	2.0	20	0	0	0	$3,000		school footpath
	2	secondary	1.2	25	0	0	$0	$2,250		school footpath extension
	3	other	0.0	0	0	0	$1,400	$1,400		edgeline
									$6,650	
Aylmerton	4	secondary	2.0	950	2	0	$1,900	$146,400		SUP, Braemar Ave to Aylmerton Rd
	5	local access	1.2	10	4	0	$2,500	$7,400		allowance for path over bank
									$153,800	
Balaclava	6	primary zone	Part of secondary route				$3,000	$3,000		shop
	7	secondary	2.5	1750	6	0	$2,600	$336,725		SUP, Mittagong to Balaclava St
	8	local access	1.2	75	2	0	$0	$8,750		Inkerman Rd bus stop
	9	recreational	For Natural Areas Walkways Strategy to confirm							local trail
									$348,475	
Balmoral Village	10	secondary	1.2	350	2	1		$35,500		Hall St to level crossing
	11	local access	1.2	40	2			$5,600		River St across rail line
	12	recreational	For Loop Line shared use path feasibility study to confirm							Loop Line SUP
									$41,100	
Berrima	13	primary zone	1.5	50	2	2		$11,625		school to shops, east side
	14	primary zone	n/a - already constructed							shops, west side
	15	secondary	1.5	25				$2,813		Wingecarribee St
	16	secondary	1.5	150				$16,875		Jellore St
	17	secondary	1.5	100	2			$13,250		Argyle St
	18	secondary	1.2	120	2			$12,800		Oxley St
	19	secondary	2.0	920	6	1		$146,000		Berrima to New Berrima
			2.5	850				$21,250		Berrima to New Berrima (Argyle St)
	20	local access	1.2	400	2			$38,000		Around Market Pl
	21	local access	n/a - no infrastructure required							Schotts Ln
	22	recreational					$200	$200		Stone Quarry walk
	23	recreational	1.2	50	0		$200	$4,700		Lambies Well River Walk
									$267,513	
Braemar	24	secondary	2.5	1400	6		$1,900	$270,400		SUP, Balaclava St to Braemar Ave
	25	recreational	For Loop Line shared use path feasibility study to confirm							Loop Line SUP
	26	other	Investigate (moderate cost likely, depending on design/ solution)							Railway Tce crossing opportunities
	27	other	Investigate							Old Hume Highway underpass
									$270,400	

	ID	type	width (m)	length (m)	# kerb ramps	# refuges (basic)	other (footbridges, etc)	subtotal	settlement subtotal	brief description
Bundanoon	28	primary zone	2.0	200	4	3	$15,000	$55,000		main pedestrian area
	29	secondary	1.5	60		1	$5,000	$13,750		Anzac Pd and bridge
	30	secondary	1.5	200	2			$24,500		Anzac Pd to Penrose Rd
	31	secondary	1.5	2400	16	4	$50,000	$344,000		Railway Ave/ Erith St
	32	secondary	n/a - already constructed							Bromhall Rd
	33	secondary	1.5	470	4	1		$58,875		Penrose Rd, to Tooth St
			1.2	240	4			$25,600		Penrose Rd, Tooth St to Fidelis St
	34	secondary	1.5	120	6			$19,500		Viewland St et al
	35	secondary	1.5	330	2			$39,125		Hill St
	36	secondary	1.5	330	3			$40,125		Old Wingello Rd
	37	secondary	1.5	420	5		$6,000	$58,250		Ellsmore Rd
	38	secondary	1.2	100				$9,000		Burgess St
	39	local access	n/a - no infrastructure required							Amos Ln
	40	local access	1.5	50			$15,000	$20,625		northern bridge
	41	local access			2		$2,000	$4,000		Penola St to Old Wingello Rd
	42	recreational	n/a - no infrastructure required							Forwood Cr
	43	recreational	For Natural Areas Walkways Strategy to confirm							Old Wingello Rd
	44	recreational	For Natural Areas Walkways Strategy to confirm							Cemetery path
	45	recreational	n/a - already constructed							Bundanoon oval SUP
	46	recreational	2.0	350	1			$53,500		Ellsmore Rd to SUP
	47	recreational	For Natural Areas Walkways Strategy to confirm							Blue Gum Rd link
	48	recreational					$3,000	$3,000		Glow worm glen track
									$768,850	
Burrawang	49	primary zone	2.0	110				$16,500		school
	50	secondary	1.2	450				$40,500		Hoddle St, to Region St
	51	secondary	1.2	240	2			$23,600		Hoddle St, south side
	52	recreational	2.5	770			$6,080	$25,330		school to park
	53	recreational	2.5	470			$4,880	$16,630		Hoddle St, to Burrawang Station Rd
									$122,560	

	ID	type	width (m)	length (m)	# kerb ramps	# refuges (basic)	other (footbridges, etc)	subtotal	settlement subtotal	brief description
Colo Vale	54	primary zone	2.0	200	6			$36,000		shop
	55	primary zone	2.0	320	2			$50,000		school
	56	secondary	2.0	320			$5,000	$53,000		Wattle St
	57	secondary	1.5	340	2	1		$42,250		Railway Ave
	58	secondary	1.5	100				$11,250		Lynwood Ave, to Jasmine St
			1.2	100				$9,000		Lynwood Ave, to Ebony Pl
	59	secondary	1.5	330	2			$39,125		Church Ave
	60	secondary	1.2	210				$18,900		Elm St
	61	secondary	Subject to future development							Future routes
	62	local access	1.2	100				$9,000		Ivy St to Wattle St (under construction)
	63	local access	1.2	300				$27,000		Daphne St
	64	local access	1.2	100				$9,000		Beech St to Wattle St
	65	recreational	For Loop Line shared use path feasibility study to confirm							Loop Line SUP
									$304,525	
Exeter	66	primary zone	2.0	90				$13,500		school
	67	primary zone	2.0	100	2	2	$5,000	$26,000		shops and services
	68	secondary	1.2	430	1			$39,700		Exeter Rd
	69	secondary	1.2	400	2	1		$40,000		Middle Rd to Jensens Ln
	70	secondary	1.5	400	2		$10,000	$57,000		School Ln
	71	local access	1.2	130	1			$12,700		Norwood St
	72	local access	1.2	150	1			$14,500		Buskers Ave
	73	local access	1.2	10	2		$3,000	$5,900		Yarwood Dr
	74	recreational	2.5	620			$2,480	$17,980		Middle Rd to Ellsmore Rd
									$227,280	
Fitzroy Falls	75	recreational	To be negotiated with relevant agencies							Gwen Rd to shops

	ID	type	width (m)	length (m)	# kerb ramps	# refuges (basic)	other (footbridges, etc)	subtotal	settlement subtotal	brief description
Hill Top	76	primary zone	2.0	610	4	1		$97,500		school and shops
	77	secondary	1.5	250	2	3	$10,000	$46,125		Wilson Dr cut-thrus, new path
			1.2	200				$18,000		Wilson Dr dirt service roads
	78	secondary	1.5	660	4	0	$0	$78,250		school and shop feeders
			1.2	420	2	0	$0	$39,800		school and shop feeders
	79	secondary	1.5	570	4			$68,125		Cumberteen St
			1.2	620				$55,800		Cumberteen St
	80	secondary	1.5	90				$10,125		Rosina St, to Vaughan St
		secondary	1.2	180				$16,200		Rosina St, to Mylora St
	81	local access	1.2	75				$6,750		Namoi St
	82	local access	1.2	50				$4,500		Jane St
	83	local access	1.2	50				$4,500		James St
	84	local access	1.2	50				$4,500		Fulvia St
	85	local access	1.2	50				$4,500		King St
	86	local access	1.2	100				$9,000		Percy St
	87	local access	1.2	100				$9,000		Ligar St
	88	local access	1.2	100				$9,000		Charles St
	89	recreational	For Loop Line shared use path feasibility study to confirm							Loop Line SUP
	90	recreational	For Natural Areas Walkways Strategy to confirm							Fire trail to Yerrinbool
	91	recreational	For Natural Areas Walkways Strategy to confirm							bike track path
	92	other					$7,000	$7,000		speed limit changes
									$488,675	
New Berrima	93	primary zone	2.0	110				$16,500		shop
	94	secondary	1.5	110				$12,375		Argyle St - medium quality
			1.2	200				$18,000		Argyle St - basic quality
	95	secondary	1.2	520				$46,800		Ennis Ave
	96	secondary	1.5	560				$63,000		Taylors Ave footpath
	97	recreational	2.0	360				$54,000		sports ground link
									$210,675	
Penrose	98	primary zone	1.5	20				$2,250		school
	99	primary zone	1.5	30				$3,375		shops
	100	secondary	1.2	500				$45,000		school to Dunlop Ln
	101	secondary	1.2	460				$41,400		Koolibah Ln to shop
	102	secondary	1.2	130				$11,700		shop to Newbury Dr
	103	local access	1.2	50	2	2		$10,500		Penrose bridge
	104	other					$400	$400		speed limit changes
									$114,625	

	ID	type	width (m)	length (m)	# kerb ramps	# refuges (basic)	other (footbridges, etc)	subtotal	settlement subtotal	brief description
Sutton Forest	105	primary zone	1.5	50	2			$7,625		school
	106	secondary	1.2	200				$18,000		school to Golden Vale Rd
	107	secondary	1.2	420		1		$39,800		highway
									$65,425	
Welby	108	secondary	2.5	210				$39,375		SUP
	109	secondary	1.5	550	2			$63,875		Meranie St
	110	local access	1.2	50				$4,500		Jellore St
	111	local access	n/a - no infrastructure required				$1,000	$1,000		Cliff St
	112	recreational	2.0	250				$37,500		SUP link
	113	other	Investigate further with SUP extension							Old Hume Highway underpass
									$211,675	
Willow Vale	114	secondary	1.5	730	6			$88,125		Orient St
	115	secondary	1.2	350				$31,500		Braemar Ave
	116	local access	1.2	700				$63,000		Willow St, Badgery St, Parkes St
	117	local access	1.2	100				$9,000		Cordeaux St/ Gascoigne St
	118	recreational	For Loop Line shared use path feasibility study to confirm							Loop Line SUP
	119	other					$4,950	$4,950		Railway Tce crossing
									$196,575	
Wingello	120	primary zone	2.0	50	2			$9,500		shop
	121	primary zone	1.0	25				$1,875		school
	122	secondary	1.2	50	2	2		$12,000		school to shop - missing link
			0.5	600				$30,000		school to shop - upgrade
	123	secondary	1.5	360				$40,500		oval
	124	secondary	1.2	50				$4,500		railway station
	125	secondary	1.5	100				$11,250		Penrose Rd/ Tallong Rd - medium
			1.2	700				$63,000		Penrose Rd/ Tallong Rd - basic
									$172,625	
Yerrinbool	126	primary zone	2.0	50				$7,500		shop
	127	secondary	1.5	250				$28,125		railway station
	128	secondary	1.5	650				$73,125		Sierra St
	129	secondary	1.5	1100				$123,750		Old Hume Highway - medium quality
		secondary	1.2	290				$26,100		Old Hume Highway - basic quality
	130	secondary	1.2	310				$27,900		Government Rd
	131	secondary	1.2	600				$54,000		Appenine Rd/ Everest St
	132	local access	2.0	100				$15,000		Railway bridges
	133	recreational	For Natural Areas Walkways Strategy to confirm							Fire trail to Hill Top
	134	other					$1,000	$1,000		maintenance
									$356,500	

	ID	type	width (m)	length (m)	# kerb ramps	# refuges (basic)	other (footbridges, etc)	subtotal	settlement subtotal	brief description
Non-infrastructure measures	NM1							$10,000		staff training
	NM2							$10,000		education and encouragement
	NM3							$50,000		further work
									$70,000	

5.2 Prioritised actions

5.2.1 Priority scoring system

The following scoring system is largely based on that contained in the RTA guide "How to prepare a Pedestrian Access and Mobility Plan", but with some additions and amendments. This is the basis of the prioritisation assessment that has been applied to the actions.

Table 6: Priority scoring system

Category	Criteria	Performance Conditions	Score
Land use	Number of attractors/generators (locations)	more than 5 locations	10
		3-5 locations	8
		1-2 locations	5
		0 locations	0
	Land use type	school	10
		commercial/retail/ public transport	8
		residential	5
		recreational	3
		other	0
	Proximity to generators/ attractors (except residential)	less than 125 metres	10
		125-250 metres	8
		250-750 metres	5
		> 750 metres	0
	Future development with attractors/ generators	within 5 years	5
		5-10 years	3
		> 10 years	1
Safety	Road hierarchy	State road	15
		Regional road	10
		local road	8
		special use (service road, etc)	5
		other	0
	Identified hazardous area (from consultation and/ or site survey)	high	10
		medium	8
		low	5
		none	0
	Identified pedestrian crashes (reported to police) over 5 years	> 3 crashes	15
		3 crashes	10
		2 crashes	8
		1crashes	5
		0 crashes	0
	Identified vehicle injury crashes (reported to police) over 5 years	10-20 injury crashes, or >1 fatality	10
		5-10 injury crashes, or 1 fatality	8
		1-5 injury crashes, no fatalities	5
		0 reported crashes	0

Category	Criteria	Performance Conditions	Score
Resource efficiency	Funding from other agency/ agencies	100%	10
		50-100%	8
		1-50%	5
		none	0
	Degree to which contained in another, programmed, project	significantly	10
		moderately	8
		slightly	5
		not at all	0
	Degree of certainty in other funding	committed	5
		likely to be committed	3
		unknown	0
	Cost factor	< $10,000	10
		$10,000 - $25,000	8
		$25,000 - $75,000	5
		$75,000 - $125,000	3
		> $125,000	0
Continuity of routes	Addition to existing facility	link up footpath/ SUP	10
		extension of footpath/ SUP	8
		add path to devices	5
		other	0
		passable path already exists	-15
	Path usage	demonstrated	5
		not demonstrated	0
Priority	Pedestrian route hierarchy	primary zone	10
		secondary/ other	5
	Strategic planning (identified as part of other strategies/ plan)	Council	10
		State government	8
		community initiative	5
		other	0

Due to the lack of pedestrian and cyclist crash data, traffic crash data is also used as an indicator of safety.

It has been assumed that shared use path (SUP) treatments in any location would attract 50% funding from the RTA, while only kerb ramps and pedestrian refuges on RTA controlled roads would attract 50% funding from the RTA.

A Section 94 allocation for a gravel pathway between Berrima and New Berrima already exists.

There are a few possible sources for funding that might assist Council in implementing the action plan, in addition to Council budgets. Some of these have been noted in section 4, where non-infrastructure measures are listed.

5.2.2 Assessment of actions

Table 7 presents actions with their assessment against the prioritisation criteria. This only lists those actions for which a cost has been estimated in Table 5. Criteria related to future development, cost, funding arrangements and whether the facility is an extension of an existing path will tend to change over time and table 7 is considered a

'live' document, to be updated by Council staff as conditions change. For this reason, no program of works has been developed from the assessment of priority, and there are a number of criteria that currently have no score.

Instead, to guide implementation, a priority has been assigned based on the total score. This is a simple ranking of:

- very low (score of under 20)
- low (score of 20 to 39)
- medium (score of 40 to 59)
- high (score of 60 to 79)
- very high (score of 80 or more).

Table 7: Actions against priorities

	ID	brief description	cost	CRITERIA: Number of attractors/ generators (locations)	Land use type	Proximity to generators/ attractors	Future development with attractors/ generators	Road hierarchy	Identified hazardous area (from consultation and/ or site survey)	Identified pedestrian/ cycling crashes (reported to police) in 5 years	Identified injury crashes (reported to police) in 5 years	Funding from other agency/ agencies	Degree to which contained in another, programmed, project	Degree of certainty in other funding	Cost factor	Addition to existing facility	Path usage	Pedestrian route hierarchy	Strategic planning (identified as part of other strategies/ plan)	Total Score	Priority
Avoca	1	school footpath upgrade	$3,000	5	10	10	-15	10	0	0	0	0	0	0	10	-15	5	5	0	**25**	low
	2	school footpath extension	$2,250	5	10	10	-15	10	0	0	0	0	0	0	10	8	5	5	0	**48**	medium
	3	edgeline	$1,400	5	10	10	0	10	0	0	0	0	0	0	10	8	0	5	0	**58**	medium
Aylmerton	4	SUP, Braemar Ave to Aylmerton Rd	$146,400	5	5	0	5	15	8	0	3	8	0	3	0	8	5	5	10	**80**	very high
	5	allowance for path over bank	$7,400	5	5	10	0	8	5	0	0	0	0	0	10	10	5	0	0	**58**	medium
Balaclava	7	SUP, Mittagong to Balaclava St	$336,725	10	10	10	5	15	10	0	5	8	0	3	0	10	5	5	10	**106**	very high
	8	Inkerman Rd bus stop	$8,750	5	8	10	0	15	0	0	5	0	0	0	10	10	5	0	0	**68**	high
Balmoral Village																				**52**	medium
	10	Hall St to level crossing	$35,500	8	3	10	0	10	8	0	3				5			5			
	11	River St across rail line	$5,600	0	5	0	0	0	0	0	0	0	0	0	10	0	5	0	0	**20**	low
Berrima	13	school to shops, east side	$11,625	10	10	10	3	15	0	0	3	5	0	3	8	10	5	10	0	**92**	very high
	15	Wingecarribee St	$2,813	10	8	10	3	8	0	0	0	0	0	0	10	8	5	5	0	**67**	high
	16	Jellore St	$16,875	8	8	10	3	8	0	0	0	0	0	0	8	8	5	5	0	**63**	high
	17	Argyle St	$13,250	8	8	10	3	8	0	0	0	0	0	0	8	8	5	5	0	**63**	high
	18	Oxley St	$12,800	5	8	10	0	8	0	0	0	0	0	0	8	0	5	5	0	**49**	medium
	19	Berrima to New Berrima	$167,250	10	10	8	3	15	10	0	0	10	0	5	0	8	5	5	0	**89**	very high
	20	Around Market Pl	$38,000	8	8	10	3	8	0	0	0	0	0	0	5	8	5	0	0	**55**	medium
	22	Stone Quarry walk	$200	5	3	8	0	0	0	0	0	0	0	0	10	0	5	0	0	**31**	low
	23	Lambies Well River Walk	$4,700	8	3	8	0	0	3	0	0	0	0	0	10	10	5	0	0	**47**	medium
Braemar	24	SUP, Balaclava St to Braemar Ave	$270,400	8	8	10	5	15	10	0	8	8	0	3	0	8	5	10	10	**108**	very high

	ID	brief description	cost	CRITERIA															Total Score	Priority
				Number of attractors/ generators (locations)	Land use type	Proximity to generators/ attractors	Future development with attractors/ generators	Road hierarchy	Identified hazardous area (from consultation and/ or site survey)	Identified pedestrian/ cycling crashes (reported to police) in 5 years	Identified injury crashes (reported to police) in 5 years	Funding from other agency/ agencies	Degree to which contained in another, programmed, project	Degree of certainty in other funding	Cost factor	Addition to existing facility	Path usage	Pedestrian route hierarchy	Strategic planning (identified as part of other strategies/ plan)		
Bundanoon	28	main pedestrian area	$55,000	10	10	10	3	10	8	0	0	0	0	0	5	-15	5	10	0	**56**	medium
	29	Anzac Pd and bridge	$13,750	8	10	10	0	10	10	0	0	0	0	0	8	8	5	5	0	**74**	high
	30	Anzac Pd to Penrose Rd	$24,500	8	10	10	0	10	5	0	0	0	0	0	8	8	5	5	0	**69**	high
	32	Railway Ave/ Erith St	$344,000	10	8	8	3	15	8	0	0	0	0	0	0	0	5	5	0	**62**	high
	33	Penrose Rd	$84,475	5	5	10	0	10	3	0	3	0	0	0	3	8	0	5	0	**52**	medium
	34	Viewland St et al	$19,500	5	5	10	0	8	0	0	0	0	0	0	8	0	5	5	0	**46**	medium
	35	Hill St	$39,125	5	5	10	0	8	3	0	0	0	0	0	5	0	5	5	0	**46**	medium
	36	Old Wingello Rd	$40,125	5	5	8	0	8	3	0	0	0	0	0	5	0	5	5	0	**44**	medium
	37	Ellsmore Rd	$58,250	5	5	10	0	8	3	0	0	0	0	0	5	0	5	5	0	**46**	medium
	39	Burgess St	$9,000	5	5	10	0	8	0	0	0	0	0	0	10	0	0	5	0	**43**	medium
	40	northern bridge	$20,625	0	3	0	0	15	10	0	5	0	0	0	8	0	5	0	0	**46**	medium
	45	Penola St to Old Wingello Rd	$4,000	0	3	10	0	8	0	0	0	0	0	0	10	0	5	0	0	**36**	low
	47	Ellsmore Rd to SUP	$53,500	5	5	10	0	0	0	0	0	0	0	0	5	10	5	0	0	**40**	medium
	48	Glow worm glen track	$3,000	5	3	5	0	0	0	0	0	0	0	0	10	0	5	0	0	**28**	low
Burrawang	49	school	$16,500	5	10	10	0	8	0	0	0	0	0	0	8	0	5	10	0	**56**	medium
	50	Hoddle St, to Region St	$40,500	5	8	10	0	8	0	0	0	0	0	0	5	0	5	5	0	**46**	medium
	51	Hoddle St, south side	$23,600	5	8	10	0	8	0	0	0	0	0	0	8	0	5	5	0	**49**	medium
	52	school to park	$25,330	5	10	10	0	10	5	0	0	0	0	0	5	0	0	0	0	**45**	medium
	53	Hoddle St, to Burrawang Station Rd	$16,630	0	5	0	0	8	3	0	0	0	0	0	8	0	5	0	0	**29**	low

	ID	brief description	cost	CRITERIA: Number of attractors/ generators (locations)	Land use type	Proximity to generators/ attractors	Future development with attractors/ generators	Road hierarchy	Identified hazardous area (from consultation and/ or site survey)	Identified pedestrian/ cycling crashes (reported to police) in 5 years	Identified injury crashes (reported to police) in 5 years	Funding from other agency/ agencies	Degree to which contained in another, programmed, project	Degree of certainty in other funding	Cost factor	Addition to existing facility	Path usage	Pedestrian route hierarchy	Strategic planning (identified as part of other strategies/ plan)	**Total Score**	**Priority**
Colo Vale	54	shop	$36,000	5	8	10	3	8	3	0	3	0	0	0	5	5	5	10	0	**65**	high
	55	school	$50,000	5	10	10	3	8	0	0	0	0	0	0	5	5	0	10	0	**56**	medium
	56	Wattle St	$53,000	8	5	10	0	8	0	0	3	0	0	0	5	5	5	5	0	**54**	medium
	57	Railway Ave	$42,250	5	5	10	0	8	0	0	0	0	0	0	5	0	5	5	0	**43**	medium
	58	Lynwood Ave	$20,250	0	5	8	0	8	0	0	0	0	0	0	8	0	0	5	0	**34**	low
	59	Church Ave	$39,125	5	5	10	0	10	5	0	3	0	0	0	5	0	5	5	0	**53**	medium
	60	Elm St	$18,900	3	5	10	0	8	5	0	0	0	0	0	8	0	5	5	0	**49**	medium
	62	Ivy St to Wattle St (road being constructed)	$9,000	0	5	5	0	8	0	0	0	0	0	0	10	0	0	0	0	**28**	low
	63	Daphne St	$27,000	0	5	5	0	8	0	0	0	0	0	0	5	0	0	0	0	**23**	low
	64	Beech St to Wattle St	$9,000	0	5	10	0	8	0	0	0	0	0	0	10	0	0	0	0	**33**	low
Exeter	66	school	$13,500	5	10	10	0	8	8	0	0	0	0	0	8	0	5	10	0	**64**	high
	67	shops and services	$26,000	8	8	10	0	15	10	0	3	5	0	3	5	0	5	10	0	**82**	very high
	68	Exeter Rd	$39,700	5	8	8	0	15	5	0	3	5	0	3	5	0	5	5	0	**67**	high
	69	Middle Rd to Jensens Ln	$40,000	5	8	8	0	10	8	0	3	0	0	0	5	0	5	5	0	**57**	medium
	70	School Ln	$57,000	5	8	10	0	8	0	0	3	0	0	0	5	0	0	5	0	**44**	medium
	71	Norwood St	$12,700	0	5	10	0	8	0	0	0	0	0	0	8	0	0	0	0	**31**	low
	72	Buskers Ave	$14,500	0	5	5	0	8	0	0	0	0	0	0	8	0	0	0	0	**26**	low
	74	Yarwood Dr	$5,900	0	5	0	0	8	0	0	0	0	0	0	10	10	5	0	0	**38**	low
	75	Middle Rd to Ellsmore Rd	$17,980	0	3	0	0	10	8	0	0	0	0	0	8	0	5	0	0	**34**	low

	ID	brief description	cost	CRITERIA															Total Score	Priority
				Number of attractors/ generators (locations)	Land use type	Proximity to generators/ attractors	Future development with attractors/ generators	Road hierarchy	Identified hazardous area (from consultation and/ or site survey)	Identified pedestrian/ cycling crashes (reported to police) in 5 years	Identified injury crashes (reported to police) in 5 years	Funding from other agency/ agencies	Degree to which contained in another, programmed, project	Degree of certainty in other funding	Cost factor	Addition to existing facility	Path usage	Pedestrian route hierarchy	Strategic planning (identified as part of other strategies/ plan)		
Hill Top	76	school and shops	$97,500	8	10	10	0	8	0	5	3	0	0	0	3	10	5	10	0	**72**	high
	77	Wilson Dr	$64,125	5	5	8	0	5	8	5	3	0	0	0	5	10	5	5	0	**64**	high
	78	school and shop feeders	$118,050	8	10	10	0	8	5	5	5	0	0	0	3	10	5	5	0	**74**	high
	79	Cumberteen St	$123,925	5	10	8	0	8	0	0	0	0	0	0	3	8	5	5	0	**52**	medium
	80	Rosina St	$26,325	0	5	8	0	8	0	0	0	0	0	0	5	8	0	5	0	**39**	low
	81	Namoi St	$6,750	0	5	5	0	8	0	0	0	0	0	0	10	10	0	0	0	**38**	low
	82	Jane St	$4,500	0	5	5	0	8	0	0	0	0	0	0	10	10	0	0	0	**38**	low
	83	James St	$4,500	0	5	8	0	8	0	0	0	0	0	0	10	10	0	0	0	**41**	medium
	84	Fulvia St	$4,500	5	5	10	0	8	0	0	0	0	0	0	10	10	0	0	0	**48**	medium
	85	King St	$4,500	0	5	8	0	8	0	0	0	0	0	0	10	10	0	0	0	**41**	medium
	86	Percy St	$9,000	0	5	5	0	8	0	0	0	0	0	0	10	10	0	0	0	**38**	low
	87	Ligar St	$9,000	0	5	5	0	8	0	0	0	0	0	0	10	10	0	0	0	**38**	low
	88	Charles St	$9,000	0	5	5	0	8	0	0	0	0	0	0	10	10	0	0	0	**38**	low
	92	speed limit changes	$7,000	0	5	0	0	10	8	5	3	0	0	0	10	0	0	5	0	**46**	medium
New Berrima	93	shop	$16,500	5	8	10	0	8	0	0	3	0	0	0	8	0	5	10	0	**57**	medium
	94	Argyle St	$30,375	0	5	8	0	10	8	0	0	5	3	0	5	8	0	5	0	**57**	medium
	95	Ennis Ave	$46,800	5	5	8	0	8	0	0	0	0	0	0	5	0	0	5	0	**36**	low
	96	Taylors Ave footpath	$63,000	3	5	8	0	15	8	0	3	0	0	0	5	0	0	5	0	**52**	medium
	97	sports ground link	$54,000	3	3	8	0	15	8	0	3	5	0	3	5	0	0	0	0	**53**	medium
Penrose	98	school	$2,250	5	10	10	0	10	0	0	0	0	0	0	10	0	5	10	0	**60**	high
	99	shops	$3,375	5	8	10	0	10	3	0	0	0	0	0	10	0	5	10	0	**61**	high
	100	school to Dunlop Ln	$45,000	5	10	8	0	10	5	0	0	0	0	0	5	0	5	5	0	**53**	medium
	101	Koolibah Ln to shop	$41,400	5	10	8	0	10	5	0	0	0	0	0	5	10	5	5	0	**63**	high
	102	shop to Newbury Dr	$11,700	5	10	8	0	10	5	0	0	0	0	0	8	0	0	5	0	**51**	medium
	103	Penrose bridge	$10,500	0	3	0	0	8	5	0	3	0	0	0	8	8	0	0	0	**35**	low
	104	speed limit changes	$400	0	10	10	0	10	5	0	0	0	0	0	10	0	0	5	0	**50**	medium
Sutton Forest	105	school	$7,625	5	10	10	0	15	5	0	0	0	0	0	10	8	5	10	0	**78**	high
	106	school to Golden Vale Rd	$18,000	3	10	8	0	15	8	0	3	0	0	0	8	8	5	5	0	**73**	high
	107	highway	$39,800	8	8	10	0	15	8	0	0	5	0	3	3	10	5	5	0	**80**	very high

	ID	brief description	cost	CRITERIA: Number of attractors/ generators (locations)	Land use type	Proximity to generators/ attractors	Future development with attractors/ generators	Road hierarchy	Identified hazardous area (from consultation and/ or site survey)	Identified pedestrian/ cycling crashes (reported to police) in 5 years	Identified injury crashes (reported to police) in 5 years	Funding from other agency/ agencies	Degree to which contained in another, programmed, project	Degree of certainty in other funding	Cost factor	Addition to existing facility	Path usage	Pedestrian route hierarchy	Strategic planning (identified as part of other strategies/ plan)	Total Score	Priority
Welby	108	SUP	$39,375	5	8	8	0	15	3	0	0	5	0	3	5	8	0	10	0	**70**	high
	109	Meranie St	$63,875	5	5	0	0	8	3	0	3	0	0	0	5	8	5	5	0	**47**	medium
	110	Jellore St	$4,500	5	5	0	0	8	0	0	0	0	0	0	10	0	0	0	0	**28**	low
	111	Cliff St	$1,000	0	5	0	0	5	0	0	0	0	0	0	10	0	0	0	0	**20**	low
	112	SUP link	$37,500	5	3	0	0	15	3	0	0	5	0	3	5	8	0	0	0	**47**	medium
Willow Vale	114	Orient St	$88,125	5	5	0	0	8	5	0	0	0	0	0	3	0	5	5	0	**36**	low
	115	Braemar Ave	$31,500	0	0	0	0	8	3	0	0	0	0	0	5	0	0	5	0	**21**	low
	116	Willow St, Badgery St, Parkes St	$63,000	0	0	0	0	8	0	0	0	0	0	0	5	0	0	0	0	**13**	very low
	117	Cordeaux St/ Gascoigne St	$9,000	0	0	0	0	8	0	0	0	0	0	0	10	0	0	0	0	**18**	very low
	119	Railway Tce crossing	$4,950	0	3	0	0	8	8	0	0	5	0	0	10	8	5	5	0	**52**	medium
Wingello	120	shop	$9,500	5	8	10	0	10	0	0	0	0	0	0	10	8	5	10	0	**66**	high
	121	school	$1,875	5	10	10	0	8	0	0	0	0	0	0	10	-15	5	10	0	**43**	medium
	122	school to shop - missing link	$12,000	5	10	8	0	8	0	0	0	0	0	0	8	10	5	5	0	**59**	medium
	123	oval	$40,500	5	3	10	0	8	0	0	0	0	0	0	5	8	0	5	0	**44**	medium
	124	railway station	$4,500	5	8	10	0	10	3	0	0	0	0	0	10	8	5	5	0	**64**	high
	125	Penrose Rd	$74,250	0	5	10	0	10	0	0	0	0	0	0	5	9	0	5	0	**44**	medium
Yerrinbool	126	shop	$7,500	5	8	10	0	10	5	0	0	0	0	0	10	0	5	10	0	**63**	high
	127	railway station	$28,125	5	8	10	0	10	8	0	0	0	0	0	5	0	5	5	0	**56**	medium
	128	Sierra St	$73,125	5	5	8	0	8	0	0	0	0	0	0	5	0	0	5	0	**36**	low
	129	Old Hume Highway	$158,850	0	5	8	0	10	3	0	3	0	0	0	0	0	5	5	0	**39**	low
	130	Government Rd	$27,900	5	5	8	0	8	0	0	0	0	0	0	3	0	0	5	0	**34**	low
	131	Appenine Rd/ Everest St	$54,000	0	5	5	0	8	0	0	0	0	0	0	3	0	0	5	0	**26**	low
	132	Railway bridges	$15,000	0	5	2	0	10	10	0	3	0	0	0	8	0	0	0	0	**38**	low
	134	maintenance	$1,000	0	5	0	0	8	3	0	0	0	0	0	10	0	0	5	0	**31**	low