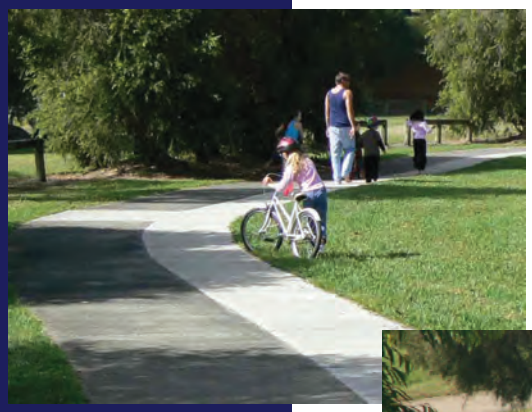
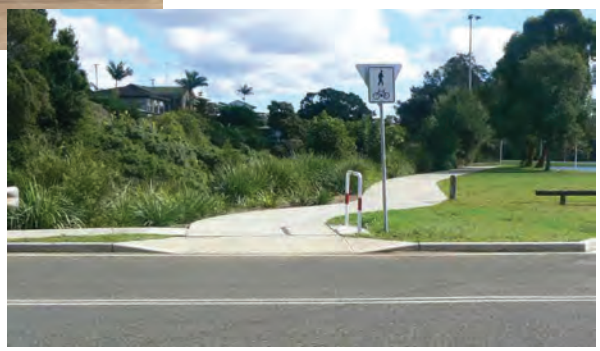
Lismore City Council



Cycleway Plan



lismore city council

This report was reviewed in 2011 by:

Lismore City Council
PO Box 23A
LISMORE NSW 2480
The 2011 Cycleway Plan was adopted by Councillors at the
Lismore City Council meeting held on 11 October 2011

This report was originally produced in 2007 for Lismore City Council by:

Local Government Engineering Services Pty Limited
69 Lord Street, Port Macquarie. NSW 2444
Ph 02 6584 3888
email: rob@legs.com.au
www.legs.com.au

1. EXECUTIVE SUMMARY 5

2. INTRODUCTION 6

2.1 Aims and Objectives of the Plan 7

2.2 Study Methodology 7

2.3 Consultation 10

3. CHARACTERISTICS OF LISMORE 11

3.1 Physical Conditions 11

3.2 Profile of Cycling in Lismore 12

4. CONSULTATION 15

4.1 Consultation with Council and staff 15

4.2 Public Consultation 15

4.3 Consultation with Schools 17

4.4 Questionnaires 17

5. ENGINEERING STRATEGY 20

5.1 Plan Development 20

5.2 Considerations 21

5.3 The Cycleway Plan 22

5.4 Engineering Actions 23

6. BEHAVIOURAL STRATEGY 28

6.1 Promotional & Encouragement Strategy 28

6.2 Education Strategy 28

6.3 Estimated cost of Promotional and Education Strategies 29

6.4 Evaluation 30

7. OUTCOMES 30

7.1 Development of the Cycleway Plan 30

7.2 Priority program 30

7.3 Road Crossings 31

7.4 Parking Facilities 31

7.5 Maps 31

7.6 Other Options and Recommendations 31

8. IMPLEMENTATION 32

8.1 External Funding Sources 32

APPENDICES 34

Appendix A: Completed Cycleways 2007 - 2011 34

Appendix B: Cycleway Plan 2011 Works Program 36

Appendix C: Existing and Proposed Cycleway Network (maps): 42
- **Lismore Central Business District and surrounds** 42
- **Whole Urban Area** 43
- **Lismore and Lismore Heights** 45
- **South Lismore** 46
- **East Lismore** 47
- **North Lismore** 49
- **Goonellabah** 51

Appendix D: Designated Recreational Routes (map) 53

Appendix E: Bike Parking Facilities (map) 55

Appendix F: Road Hierarchy (map) 57

Appendix G: Survey Raw Data: School Principal Surveys 59

Appendix H: Survey Raw Data: School Student Surveys 60

Appendix I: Public Meeting Letters and Feedback 62

Appendix J: Web links and electronic feedback 67

Appendix K: Cycleway pavement specifications and dimensions 71

Appendix L: Path Widths 72

Appendix M: Path Gradient 73

Appendix N: Bike Parking Facilities 74

Appendix O: Cycleway Signage 76

Appendix P: Refuge Islands and Intersection Treatments 83

Appendix Q: On-road Bicycle Lanes 84

Appendix R: On-road Cycle lanes at Roundabouts 85

Appendix S: Method for determining Expected Usage 87

Appendix T: Scoring Criteria for prioritising Cycleway Works 88

Appendix U: Cycleway Plan Works Program Prioritised Scoring Criteria 89

1. EXECUTIVE SUMMARY

In 2007 Local Government Engineering Services Pty Ltd was engaged to prepare a bicycle strategy for the City of Lismore, including a study of existing cycling facilities and a prioritised plan for the development of cycleways to meet the needs of both commuting and recreational cyclists throughout the city.

The study involved extensive consultation with Councillors and staff at Lismore City Council, schools and school children, Police and other Government Departments, community interest groups, cycling organisations and the general public.

The report also included recommendations for an education and promotional strategy, and suggestions for sources of external funding for the work.

Outputs from the study included a map of Lismore showing the proposed network of new off-road and on-road cycleways, and a prioritised program of works.

Following the development of this report, the following works have been undertaken:

Constructed off-road cycleway		4.3 km
Constructed on-road cycleway		0.7
Existing paths widened to meet standards		4.9 km
Total length constructed since 2007	=	9.9 km

A review of this Plan was undertaken in 2011 by Lismore City Council with the aim of providing an updated listing of the current and proposed cycleways within the Lismore area as well as an assessment of the method used to create the prioritised works program. The review did not seek to re-develop the Plan, providing updated information only where necessary. The written component of the Plan remains consistent with the original 2007 Cycleway Strategy Plan, having been simplified for ease of use.

The primary objective of the review was to provide a single prioritised program of works outlining new cycleways to be constructed, giving clearer direction to Council works staff on where funds would be best allocated. This program consists of 71 separate sections of cycleway at a total length of 37 km which will cost an estimated $6.4 million to construct, much of which is the same as that of the 2007 Plan.

Under the review, the *Cycleway Strategy Plan* has been re-named the *Cycleway Plan* and as such will be referred to in this way for the remainder of this document.

2. INTRODUCTION

Within any community there is a need for an accessible, equitable, safe and efficient transport system. Whilst cycling may only make up a very small part of the overall system it is nonetheless very important. It not only provides an alternate method of transport, but also an effective means for exercise, recreation and competitive cycling.

An effective Cycleway Plan will help and encourage many non-cyclists and even existing cyclists to engage in more cycling. This in turn will help promote greater health within and throughout the community, and can present a safer more economical and environmentally friendly way to travel.

An effective Cycleway Plan needs to consider all of the different aspects of cycling, from localised cycling to schools and shopping centres to recreational and competitive cycling.

Lismore is a regional centre for the far north coast of NSW known as the *'Rainbow Region'*; this label reflects the region's diversity and penchant for natural living and the environment. As a result Lismore has developed as an area with a high level of environmental awareness, and hence cycling will play an important part in keeping with the tradition of the area.

Topographically, Lismore is a very diverse area. Lismore's western half (CBD, North Lismore, East Lismore and South Lismore), set around the Wilsons River is a low lying flood prone area. Whilst the eastern half (Lismore Heights and Goonellabah), rises dramatically over quite a short distance away from the flood prone western half.

Other noticeable features of Lismore are the rivers and railway lines in the lower flood prone areas and the resulting squeeze points created by rail and river crossings. The outer areas of Lismore have very generous road corridors, whilst some of the road corridors closer to the centre of the city have limited width to accommodate traffic and pedestrians as well as cyclists. The city also has many parks/fields and open spaces for possible use by cyclists.

2.1 Aims and Objectives of the Plan

This Cycleway Plan aims to fulfil the following objectives:

- Provide an effective and adequate cycle network for the cycling community within the urban areas of Lismore.
- Provide safer and more efficient routes to cycle attractors in the Lismore area.
- Improve cycling conditions so they are suited to all types of cyclists (i.e. both commuters and recreational cyclists).
- Encourage the use of bicycles in order to improve community health in general.
- Identify the need for cycling facilities, such as bike racks and other parking facilities.
- Use alternate routes (where possible) to the Bruxner Highway, the CBD and other noted problem areas such as those where high levels of traffic congestion is present.
- Follow the guidelines and standards set down by the Roads and Traffic Authority (RTA) for cycleways.
- Attract the maximum amount of funding possible from external sources.
- Develop an effective cost benefit strategy for the construction of cycleways by Council.

2.2 Study Methodology

The reviewed Cycleway Plan is based largely on the 2007 Cycleway Strategy Plan and therefore maintains the same content which contemplates engineering factors, community feedback and economic viability to produce a cycleway network that is relevant to meet both the current and future needs of the cycling community.

Engineering Planning Approach
When planning a project of this type it is necessary to identify all of the engineering components, both new and existing, that will play a role in the Cycleway Plan. These components are as follows:

- ***Existing cycleway infrastructure:*** Where feasible, existing paths and cycleways should be utilised and/or upgraded to avoid unnecessary expense and ensure the method is cost effective.
- ***Cycleway design, position and maintenance:*** When constructing a cycleway the parent road and surrounding area must be considered. It is important to apply the most suitable cycleway to an area in question. Existing cycleways may require upgrading work to bring them up to standards or they may require removal depending on their relevance and importance.

An existing off-road shared footpath along Walker Street in East Lismore

- ***Cycleway types:*** There are three main types of cycleway we can apply to this study. These being:
  - on-road
  - off-road, and
  - shared path

  This plan will recommend the appropriate cycleway type depending on location, characteristics of the surrounding area, economic viability and safety.

- ***Commuter and Recreational Cyclists:*** There are two main classes of cyclist in any community. They are commuters and recreational cyclists.

  Commuting cyclists are those cycling to a specific destination, such as school or work. Commuters prefer direct routes and fast travel times.

  Recreational cyclists ride for fun or exercise. They value interesting routes and outlooks, preferably off-road, and they like the convenience of looped paths.

- ***Cycle Attractors:*** The identification of cycle attractors (i.e. destinations which attract cyclists) in the Lismore area is a key component of this study. These attractors form the basis of the Cycleway Plan, as these are the desired destinations for both commuters and recreational cyclists. We also need to consider the warrant for safe bike storage areas at these locations.

- ***Main roads:*** Although they provide direct access to many of Lismore's cycle attractors they usually have high volumes of traffic and can be dangerous for all cyclists. On-road cycleways are best avoided, where possible, on these roads. An appropriate treatment is off-road cycleways or the use of an alternate route.

- ***Traffic management devices:*** Traffic management devices include such things as traffic lights, roundabouts, pedestrian crossings, pedestrian activated lights, and warning and regulatory signs. Warning signs include appropriate signage along cycleways.

- ***Physical, Social & Environmental Constraints:*** Physical constraints include the river, the railway line, and the topography of Lismore. Social constraints may include the demographics of the Lismore population, the cycling habits and desires of the community and their interaction with other road users including the aged and disabled. In this study, community consultation and questionnaires were used to gauge social constraints. Environmental issues influencing the planning of cycleways include the identification of sensitive environmental areas.

Pedestrian activated lights at the intersection of Diadem Street and Ballina Road

- ***Commuter & Recreational Networks:*** This study aims to connect the key cycling attractors in Lismore, which will automatically benefit commuting cyclists. Some cycleways are proposed specifically for recreational use. But where possible, cycleway locations are provided for both commuters and recreational cyclists in order to provide better value. For example, it is proposed to provide loops in the network where possible, especially in residential areas.

2.3 Consultation

The development of the original Cycleway Plan involved extensive consultation with the community and relevant authorities. Contact was made with members of the cycling community, local bicycle shops, all public and private schools in the area, the NSW Police Force – Richmond Local Area Command Police Traffic Officer and relevant council representatives. These individuals and groups were contacted and informed of the development of this plan.

The consultation process included:

- Two concept presentation meetings (one public and one addressed to Lismore City Council Councillors),
- Contact was made and several meetings were held with the Principals or Deputy Principals of local Lismore schools,
- Survey (by way of questionnaire) with school aged cyclists in the Lismore area,
- Consultation and survey (by way of questionnaire) with the Northern Rivers Peddlers Cycle Group,
- Correspondence with meeting attendees after the presentation of the concept plan,
- Additional surveys were delivered to community members by the Lismore Climate Action Group,
- Several meetings with held with Council staff,
- A review of the preliminary report was conducted by Council staff, and
- Two meetings were held (one public and one addressed to Lismore City Council Councillors) to present the final report.

3. CHARACTERISTICS OF LISMORE

3.1 Physical Conditions

Climate, topography and land use
Lismore has a population of approximately 46,000 people. Whilst the majority of the city is residential, the CBD area contains three major shopping centres and there are many open areas, parks and river side paths that could be effectively developed into successful cycleways.

Lismore has many defining features, both built and natural, which separate the urban areas. The Wilsons River separates North and South Lismore from the CBD area, whilst the rail line separates North and South Lismore. The hills towards the east of the city define Lismore Heights and East Lismore.

Lismore is essentially separated into two geographically different areas. The geographically lower area of Lismore, centred around the Wilsons River and Leycester Creek, encompasses Lismore's CBD area and a large portion of residential area. These areas are very prone to flooding. However, with the recent implementation of the new flood levee designed to protect this part of Lismore from 1 in 100 year floods, this area is now less susceptible to flooding. The geographically higher area of Lismore, Lismore Heights and Goonellabah, are not prone to flooding at all.

Current areas and destinations used by cyclists include schools, shops, parks, workplaces and recreational areas. A successful Cycleway Plan requires the linking of these destinations with safe cycleway routes.

Road Hierarchy
Road Hierarchy is a system used to rank roads by importance, according to their traffic volumes, size and position in the area.

The current road hierarchy plan for Lismore divides the roads into five main categories, these are: main arterial roads (state highways), distributor (sub-arterial) roads, collector roads, local roads and access roads.

A map demonstrating the Road Hierarchy for the Lismore Urban Area is shown in Appendix F.

Lismore's position around the Bruxner Highway / Ballina Road does not lend itself well to less experienced cyclists. Whilst arterial roads often represent the shortest and quickest paths to retail, commercial centres and other cycle attractors they are really only suited to the more experienced cyclists, due to their higher volumes of traffic. This presents a problem for cyclists wishing to commute to these destinations, as they are difficult to avoid unless the cyclists wish to take another slower route to the same destination.

This Cycleway Plan will take into account the aforementioned factors regarding road hierarchy.

Existing Cycleways
At the time of the Cycleway Plan review 2011, Lismore had a total of 27.8 km of cycleways constructed to acceptable standards, and a further 16km of footpaths which could be widened and signposted to bring them up to acceptable standards as cycleways.

Maps of the existing and proposed cycleway network are demonstrated in Appendix C.

3.2 Profile of Cycling in Lismore

Current Cycle Attractors
There are currently several major attractors for cyclists in the Lismore area. These include sporting grounds, shops, schools and workplaces.

Sporting Grounds
Most of the sporting grounds in Lismore are concentrated in and around the CBD area. Lismore Park has fourteen sporting venues. The majority of Lismore's sporting venues are all within relatively short cycling distance of each other. This concentration of sporting venues represents a major cycling attractor for Lismore's sporting community. There are also four sporting venues within Goonellabah which will require linking to the cycleway network.

Schools
Children make up a large proportion of cyclists in Lismore, and their lack of knowledge of road rules and general inexperience make them vulnerable as cyclists. For this reason all the local schools were subject to a cycling questionnaire, to extract information about school aged cyclists. Schools represent a major cycling attractor for Lismore's youth and it is important that the cycleway network developed for them is dedicated to safety and directness.

Shops and Workplaces
The Lismore CBD represents a major attractor to cyclists commuting for both work and recreational purposes. Cyclists are not encouraged to ride on the footpaths in the CBD due to the conflict this creates with pedestrians and it is proposed that cyclists park their bikes at facilities on the outskirts of the CBD and walk to their final destination. The number of parking facilities in this area needs to be increased to accommodate for this.

A map of existing Bike Parking Facilities in the Lismore Urban Area is demonstrated in Appendix F.

Lismore's working community is not limited to the CBD and cycling is an effective alternate means of transport for commuters who work outside the CBD area. Other places of work therefore need to be considered, such as the Lismore Base Hospital, Southern Cross University, St Vincent's Hospital and Lismore's industrial areas and other such places of work.

One issue revealed by the consultation process was that there are a number of cyclists from outlying areas who cycle into town for work or other purposes. Furthermore, strategies need to be investigated to ensure private businesses; particularly larger enterprises provide parking facilities to allow cyclists a safe place to store their bikes.

Other Cycling Attractors
Other cycling attractors include the Goonellabah Skate Park, the Goonellabah Sports and Aquatic Centre, the Lismore Showground, and local caravan parks.

Extent of Cycling
In the community of Lismore, and indeed the entire 'Rainbow Region' area, the overall extent of cycling is relatively large when compared to other areas of the state. Neighbouring towns, such as Ballina have managed to implement very effective cycleway networks, however these areas have a flatter topography than Lismore, and are therefore more suited to cycling.

Lismore needs an effective Cycleway Plan if it is to keep up with the region's environmentally friendly image and the changing global trends toward cleaner transportation methods.

Constraints
There are certain areas in Lismore which take the form of constraints for cyclists, namely the railway lines, river crossings and the CBD area. Such areas were given careful consideration when creating the Lismore Cycleway Plan.

- **Railway Lines**
  North and South Lismore are roughly separated by a rail line that is no longer in use. This presents a constraint for cyclists in the area of Lismore. Currently there are a number of rail crossings consisting of road crossings and underpasses. These crossings create squeeze points for cyclists wishing to cross the rail line as they are roadways with heavy volumes of traffic and include high levels of congestion.

- **Rivers**
  The rivers in lower Lismore place similar constraints on cyclists in the area. Bridges and crossings create squeeze points for cyclists attempting to cross the river at these locations. Whilst many crossings provide for vehicles and pedestrians they do not always cater for cyclists.

  In particular, Simes Bridge which leads to Richmond River High School, was the subject of numerous comments during the consultation and feedback process.

- **CBD Area Cycling**
  Cycling in the CBD is currently discouraged along the footpaths by Lismore City Council, with markings along all footpaths in the CBD area depicting that cycling (and the use of toy devices such as rollerblades and skateboards) are prohibited. Many of the roads within the CBD have angle parking on the edge and 90° parking within a centre island. Cyclists find it difficult to effectively use the roads, and are not encouraged to use the footpaths either. This creates a problem in that; this area is a major attractor to cyclists in Lismore, and yet it does not cater for them adequately.

  As part of the review of this Plan, a CBD Strategy has been developed whereby on-road routes have been identified which will link into the CBD to appropriate bike parking facilities. It is unsafe for the pathways in the CBD to be shared due to the large volume of pedestrians and it has therefore been determined that the best outcome is for cyclists to travel via on-road cycle lanes to appropriate points where bike parking facilities would be provided, and from there they could travel on foot around the CBD. These routes have been included in the prioritised works program for construction / installation.

CBD routes and parking facilities

4. CONSULTATION

4.1 Consultation with Council and staff

As part of the development of the initial Cycleway Plan, several meetings were held with staff to obtain essential information, confirm objectives of the study, and to ensure that the study was following the brief.

A meeting was held with Councillors to present the preliminary findings of the study.

A copy of the draft report was provided to staff for review, and some very useful feedback was gained as a result of this.

Other feedback included:-

- Correction of errors in the draft report
- Provision of realistic cost rates for footpath and cycleway construction
- A request for the inclusion of a strategy for the ranking of priorities
- Comments in relation to accessibility
- Suggestions for Wade Park
- Comments about environmental issues at Rotary Park, and
- Comments about grammar and spelling errors in the draft report.

A meeting was held with staff to review the feedback comments before the final report was produced.

4.2 Public Consultation

Public Meeting & Concept Plan Presentation
A Public Meeting to present the initial concept plan of the 2007 Cycleway Strategy Plan was held at the Lismore Council Chambers on 28 March 2007. The concept plan was presented to Council and members of the public as a series of power point slides.

Generally the concept plan was well received. Community and Council feedback has assisted in clarifying areas of uncertainty in the plan as well as providing ideas on alternative options for proposed routes.

The concept plan acted as a preliminary progress report to Council and the community. Feedback and criticism of the concept plan was taken on board in preparation of the final Cycleway Plan.

Letters and feedback from correspondence after the first public meeting in 2007 are attached in Appendix I.

In 2011 as part of the Cycleway Plan review the revised concept plan was presented to Community members and Councillors for feedback and comment. Changes were then made to the plan before going on Public Exhibition in July 2011 allowing all members of the community the opportunity to provide comment.

Issues and problems identified through the Community Consultation process
The consultation process was essential in identifying the key issues relating to cycling in Lismore which are of concern to the community. Some of these issues and problem areas are described below:

- The need to consider carefully the existing cycle infrastructure throughout Lismore, and to connect and utilise the most relevant existing cycleways.
- The need for a suitable and safe link between the lower CBD area and the higher residential area of Lismore Heights and beyond. Most cyclists responded that their preferred route is Rotary Drive, followed by Ballina Rd and then High Street.
- Many cyclists (especially commuters) favour the use of on-road cycle lanes, even though it is recognised that off-road cycleways are safer.
- The community would like to see more cycleways and in general most people understand the need for compromises between on-road and off-road cycleways due to available space and Council's budget.
- Footpaths and cycleways may need to cater for a variety of users including skateboards and scooters.
- Bicycle parking facilities are needed at key destinations particularly the CBD where the use of bikes is discouraged. Some locations for bike parking were suggested including the Post Office, the Library and Lismore Square.
- An educational program is required for both cyclists and drivers to increase awareness levels. For cyclists it is increasing their knowledge of road rules and for drivers it is increasing their awareness of the rights of cyclists on our roads.
- Dangerous intersections for cyclists were reported as being: all roundabouts, Ballina Rd, Dawson Street, and the major intersections of the CBD. However, it is noted that riding of bicycles is prohibited on pathways in the CBD precinct.

Pathways need to cater for a variety of users

Bike parking facilities are required in the CBD

Suggestions
Some specific suggestions made during the consultation process included:-

- Buses being able to carry bikes which may encourage further cycling within the community.
- Centre lines on bike paths, to assist with sight distance.
- Future developments and subdivisions should be designed with consideration to the Cycleway Plan.

4.3 Consultation with Schools

The consultation phase of the Cycleway Plan involved contacting all schools in the Lismore area.

School Principals were included in the questionnaire process, and asked to oversee the issuing of questionnaires to their students.

School aged cyclists make up a significant part of Lismore's cycling community. Due to their age they have less experience with road usage and road rules, and they are often less aware of the importance of safety on roads. For example, teenagers often attempt to take the shortest route possible, preferring to cross when they meet a road edge instead of making their way further along the road to a pedestrian crossing.

Of the 251 school students surveyed 103 were high school students.

4.4 Questionnaires

A questionnaire was distributed to all schools in the Lismore area, to members of the Northern Rivers Peddlers Cycling Group, and to members of the general public. The key results that emerged are as follows.

- **Bicycle Theft**
  About 18% of students surveyed said that their bike had been stolen. The majority of the victims of bicycle theft were high school students. Just over half (52%) of the bikes were stolen from the owner's home or from a house they were visiting. Only 17% were taken from shops and only 10% were taken from the CBD area.

  Students ranked the Lismore Square (47%) as the site that most needed secure bike parking, followed by Lismore's CBD (27%), parks and sporting fields (23%), schools (20%) and finally local shops (19%).

- **Bicycle Accidents**
  153 of the 251 students (63.5%) surveyed had been involved in an accident. Of the total number of cyclists involved in accidents around 33% said that their accident prevented them from riding further for a short time and 16% said that the accident was serious enough to stop further cycling and resulted in hospitalisation. The other accidents were not serious enough to prevent further cycling immediately.

Of the 50% of the accidents serious enough to prevent further cycling, it was found that 59% of these accidents occurred on roads; 15% occurred on footpaths/bike paths or parks and 25% occurred at home or were not specified.

Another trend which emerged from the survey was that the majority of reported accidents occurred in the CBD area, and these accidents mainly occurred at intersections. As expected, the majority of serious accidents appear to be occurring on roads, with only a small percentage of accidents occurring on designated paths.

- **Safety Equipment**
  Surveys showed that only 40% of students 'always' wear their helmet when cycling and about 16% never wear helmets. This non-compliance with the helmet law urgently needs to be addressed to help prevent future fatalities and serious injuries.

  72% of cyclists had reflectors on their bike. But only half of the students had bells installed on their bikes. It is noted that most new bikes come standard with a bell and reflectors.

- **Intention to cycle more or to take up cycling**
  91% of students surveyed said that they would cycle more if current safety conditions were improved.

  39% of students said they would cycle more to school, 60% said they would cycle more to shops or facilities, and 76% said they would engage in more recreational cycling. Students were asked to identify the main reasons currently preventing them from cycling. These were identified as follows:

  - High volumes of traffic
  - Unsafe Crossings
  - Poor quality of road surface
  - Lack of safe bicycle storage areas
  - High volume of large vehicles/trucks
  - Narrowness of roads

Students were then asked to identify any streets or intersections they thought were particularly dangerous or unsuitable for cycling due to the reasons listed above. Those areas most frequently identified as dangerous include:

- All roundabouts in the Lismore area
- Ballina Road
- Cynthia Wilson Drive
- Wyrallah Road
- Dalley Street
- Dawson Street
- Magellan Street
- Diadem Street
- Molesworth Street

Finally, students were asked to identify the improvements they thought were most important. Those improvements were identified as follows:

- Marked bike lanes on roads
- Off road bike paths through open spaces/parks
- Secure bike parking especially in the CBD area
- Sealed road edges for cyclists
- Educating motorists and cyclists about their rights on the road

The survey results provide a clear indication of support for an expanded network of safe cycleways throughout the City of Lismore.

Raw data from Questionnaires / Surveys can be found in Appendix G and Appendix H.

5. ENGINEERING STRATEGY

5.1 Plan Development

Concept Plan
A concept plan was created to show the most effective (shortest) cycle network possible to link Lismore's current cycleway infrastructure with identified cycling attractors. For the purposes of the preliminary concept plan, all proposed cycleways were assumed to be off-road dedicated cycleways.

The concept plan was presented to the Councillors and the public in two separate meetings, one a closed meeting to Councillors and Policy Advisory Group (PAG) members and the other an open public meeting. The feedback received from the presentation of the concept plan played a major role in the decisions and recommendations of this report and resulting Cycleway Plan.

Letters, feedback and responses relating to the concept plan presentation can be found in Appendices I and J.

Cycleway Plan Review – Draft 2011
The 2011 review of the Cycleway Plan coincided with the development of Lismore City Councils *Sport and Recreation Plan* and the review of the *Pedestrian Access and Mobility Plan*, both of which have links with the Cycleway Plan. Consultation with relevant Council staff has taken place throughout the review process to ensure continuity between the three documents. Further consultation has included:

- Meetings with Council Management and Engineering staff to ensure the requirements of the review are met, with a concentration on the works plan.
- Presentations to the Infrastructure and Assets, Sport and Recreation and the Sustainable Environment Policy Advisory Groups.
- Presentations to Lismore City Councillors.
- Key stakeholders being advised in writing of the Public Exhibition of the reviewed Cycleway Plan.
- Public Exhibition of the reviewed Cycleway Plan to provide further opportunity for community feedback.

Final Cycleway Plan 2011
Following submissions received during the Public Exhibition period, amendments were made to the Cycleway Plan to simplify the written component and incorporate feedback received from community members and Council staff. The final report will be presented to Councillors for proposed adoption at its meeting in October 2011.

5.2 Considerations

Existing Cycling Environment
Lismore's existing cycleway network is a mix of single stretches of shared cycleway and substandard cycleway lanes along road shoulders. Though improvements have been made since the adoption of the 2007 Cycleway Strategy Plan, many of the single stretches of cycleway begin and finish within a small area. This results in an incomplete arrangement of cycleways with no apparent connection between them. The aim of having a Cycleway Plan is to have a strategy to link these stretches of cycleway and create a cohesive network that allows cyclists to travel easily from one place to another.

Relevant Acts and Australian Standards
Reference has been made to the following standards and guidelines for cycleway design:-

- AS 1428 Design for access and mobility
- AS 1742 Traffic Control Devices Part 9 Bicycles
- AS 2890.3 Bicycle Parking Facilities
- AUSTROADS Guide to Road Design Part 3 Geometric Design 2009
- AUSTROADS Guide to Road Design Part 6A. Pedestrian and Cyclist Paths
- AUSTROADS Guide to Road Design Part 4. Intersections and Crossings
- AUSTROADS Guide to Road Design Part 4B. Roundabouts

Crime Prevention Through Environmental Design (CPTED)
Crime Prevention through Environmental Design (CPTED) is a crime prevention strategy based around the design, structure and planning of cities and neighbourhoods. The strategy calls for designs that naturally encourage surveillance from the public, reduce opportunities for crime and increase the general feeling of safety for members of the public who use the area.

CPTED in this Cycleway Plan
Elements of CPTED can be incorporated into the detailed design of cycleways in Lismore. This can be as simple as maintaining tree and shrub heights adjacent to cycleways, and making sure that no sections of the network are concealed from view. Keeping in mind that unconscious or natural surveillance is the key, most members of the public will be completely unaware that they are taking part. CPTED methods can also be incorporated into the design of designated bike parking areas. As long as these areas are placed in public view, it will be much more difficult for thieves to steal bikes without being noticed. New developments adjacent to the cycleways should also be encouraged to implement CPTED in their design. This will ensure that new developments do not compromise the existing CPTED in the area.

Lismore City Council Sport and Recreation Plan
The review of the Cycleway Plan has coincided with the development of Council's Sport and Recreation Plan. Whilst the Plans have been created in conjunction and feature the same nominated recreational shared use routes, the priorities these routes are given may differ due to the different focus of each Plan. The focus of the Cycleway Plan is to accommodate for both commuter and recreational cyclists and provide linkages to the existing network, whilst the Sport and Recreation Plan is focussed solely on creating facilities for exercise and recreation.

Consideration of the Cycleway Plan in Planning Documents
It is important that the Cycleway Plan be considered by Council's planners when working with new developments to ensure that there is provision made to link up to the existing network.

5.3 The Cycleway Plan

Commuter Cycle Routes
A key step in the process of planning cycleways is to identify cycling attractors. These are the destinations commuter cyclists travel to such as school, work or recreational areas. The key attractors for cycling in Lismore are discussed in Section 3.2 of the Cycleway Plan.

Equally important is the identification of the existing cycle network infrastructure. An effective network requires the effective linking of cycle attractors whilst utilising as much of the existing cycleway infrastructure as possible and finally using the shortest or most convenient routes while not compromising safety.

Recreational Cycle Routes
Recreational cycle routes encompass those routes through open spaces or scenic backgrounds and are used by cyclists purely for leisure. Recreational cycling routes often forego convenience and directness, and are usually intended for cyclists of all ages and levels of experience. Recreational routes present an attractive and healthy way for the cycling community to spend its recreation time.

Designated Recreational Routes are demonstrated in Appendix D.

Dual purpose routes
Dual purpose commuting / recreational routes can be created by providing loops in the network as well as linking attractors. This can provide for the needs of both commuters and recreational riders and provide better value for money in construction costs.

Shared Footpaths and Cycleways
Most of the current cycleways in Lismore are ‘shared’ paths (i.e. paths for both pedestrians and cyclists). Whilst this may seem practical, many of these shared paths are too narrow in width for cyclists and present a hazard for both pedestrians and cyclists. Many cyclists prefer to avoid these paths and use the road instead.

On-Road & Off-Road Cycleways
On-road cycleways consist of a marked lane along the edge of a road for cyclists, usually on both sides of the road. Often the installation of an on-road cycleway will require the widening of an existing road. On-road cycle lanes are the preferred option in commercial precincts as the volume of pedestrian traffic entering and exiting businesses is in direct conflict with passing cyclists should they be on the pathway. Therefore, on-road lanes are the preferred option along routes leading into the CBD, and in other commercial areas such as along Wyrallah Road and Bridge Street.

Off-road cycleways are located clear of the road carriageway and are generally preferred for safety reasons. However it is not always possible to construct off-road cycleways due to limited space within the road reserve, or limited budget as off-road cycleways usually cost a lot more to construct than on-road cycleways.

When asked at the public meeting, the majority said that they would like to see a combination of both on and off-road cycleways, accepting that compromises needed to be made in some circumstances.

Missing Links
As part of the 2011 review of the Cycleway Plan, a number of 'missing links' have been identified. These 'missing links' are small sections of cycleway within the network that require construction whereby the remainder of the route is already in place. Examples of this can be found along Ballina Road near Kellas Street, and High Street near Lismore Heights Public School. These locations have been identified within the Works Program and may be given priority over other works to ensure completion of entire sections of the network which will therefore increase usability.

5.4 Engineering Actions

Cycleway Standards – Required Space and Cycleway Envelopes
Guidelines are provided for the implementation of on-road and off-road cycleways in the Austroads manual – "Guide to Road Design – Part 6A Pedestrian and Cyclist Paths".

Extracts from the Austroads manual are provided in Appendices K, L and M.

In this Plan, the majority of off road cycleways nominated for construction are to be shared pathways, providing economic benefits and enabling use of the pathway by a broader range of community members. Previous standards recommended a minimum width of 2.0m for the construction of shared pathways which is what paths have been constructed to thus far where possible.

Revised recommendations state that the minimum width should be no less than 2.5m and therefore any shared pathways constructed in the future would aim to meet this recommendation. Whilst guidelines proposed by Austroads are adhered to where possible, this is not always achievable and in some instances shared paths may be less than the recommended 2.5m width. Any paths constructed to the outdated standard of 1.8m have been included in the revised Works Program to be widened to 2.5m. In addition, any routes deemed as purely recreational would be constructed to a minimum width of 3m and have been costed accordingly.

A typical off-road cycleway

Bike Parking Facilities
An effective Cycleway Plan requires strategically placed parking facilities for users. These facilities may vary from simple bike racks to secure lockable bike stations.

It has been identified that there is a need for secure bike parking in the CBD as it is a key attractor for commuter cyclists. As previously discussed cycling is not permitted on the footpaths in the CBD and cycling on the roads is difficult, due to high volumes of traffic and limited space. Many cyclists therefore cycle to the CBD but dismount on arrival, preferring to proceed to their destination on foot. This represents a need for strategically placed bike parking around the edges of the CBD to provide these commuters with suitable parking facilities.

In areas of the CBD where space for bike racks is an issue, single car spaces in parking lots could be converted to cater for bike parking by adding a bike rack at either end of the original parking space.

Normal 'toaster' style bike racks can damage the spokes of the more expensive bikes. And owners are reluctant to leave their expensive bikes in these racks. Alternatively, lockable bike stations (possibly coin operated) could be provided at strategic locations such as the CBD.

Other areas, such as the Heritage Park Skate Park and other public parks need bike racks to accommodate for cyclists.

Additional locations for bike parking facilities have been nominated as part of the review of the Cycleway Plan with consideration of major cyclist attractors. Within the CBD, it is important that the location of bike parking facilities are signposted alongside car parking facility signs where appropriate and that on-road cycle lanes continue through car parks to lead cyclists to the parking facility.

The locations of existing and proposed bike parking facilities are demonstrated in Appendix E.

Bike lockers have been installed in the Browns Creek Carpark at the rear of Woodlark Street as part of the CBD Strategy since the inception of the initial 2007 Cycleway Strategy Plan. This is a secure location monitored by CCTV security cameras, for cyclists to leave their bikes whilst in the CBD.

Attempts are made to include the installation of bike parking facilities as part of other capital works programs where feasible. Private businesses and schools are responsible for providing their own bike parking facilities and new developments should include the installation of facilities for bikes as part of their approvals where appropriate.

Further details on the types of bike parking facilities available are provided in Appendix N.

The bike lockers located at Browns Creek Carpark

Route and General Signage
Cycleways should be signposted in accordance with the Austroads manual. Standard signs include cycleway symbol signs to indicate the start and end of cycleways and at appropriate intervals as required.

Other signs include 'Give Way' signs at intersection crossing points; warning signs indicating cyclists may be in the area for motorists entering Lismore; and signs encouraging motorists to watch for cyclists at certain crossing points in Lismore.

Signs indicating destinations and their corresponding distances could also be installed to assist cyclists in reaching their destination.

For information on Cycleway signage relevant to this section see Appendix O.

Intersection & Crossing Point Treatment Traffic Management
Intersections and roundabouts have been identified as problem areas for cyclists. The detailed design of crossing points for the cycleway network may include such devices as refuge islands or marked pedestrian crossings.

Roundabouts
Roundabouts in particular are an issue for both cyclists and pedestrians. Roundabouts are excellent traffic control devices for managing large volumes traffic at intersections. However, they do not usually cope well with bicycles, and careful design is required.

Further investigation is required into the safe negotiation of roundabouts for cyclists using on-road cycle lanes. Several of the on-road lanes proposed in the Cycleway Plan traverse at least one roundabout, many of which do not have sufficient width to cater for the vehicle lanes and an additional cycle lane which means that cyclists are left to fend for themselves once they approach the roundabout. Community feedback has been strong in suggesting residents are not happy, nor do they feel that this arrangement is safe and therefore this issue deters them from using the on-road cycle lanes altogether. Therefore an alternative solution is required.

Options include:

- Continuing the on-road cycle lanes through and around the roundabout – in some instances this may be possible with amendments to the kerbing surrounding a roundabout,
- Providing *"Watch for Bicycles"* signage at each approach to a roundabout to encourage motorists to consider cyclists, particularly in that area,
- Having cyclists exit on-road cycle lanes onto off-road pathways to cross intersections before returning to on-road cycle lanes, and
- Altering roundabouts to accommodate for both vehicle and cycle travel lanes.

Further information on these options is provided in Appendix R.

Specific areas of Concern

Simes Bridge Intersection

Simes Bridge, located at the intersection between Molesworth Street and Orion Street, is a narrow bridge spanning the Wilsons River. It provides the main access to Richmond River High School (RRHS) for children who walk, cycle or are dropped off at the Trinity bus exchange. To compensate for the narrowness of the bridge Council has constructed a fenced walkway along the western side of Simes Bridge. This fence extends south along Molesworth Street to the southern side of Orion Street, and this creates an issue for students approaching on the northern side of Orion Street, as they must detour back along Molesworth Street to utilise the protected walkway. Many students take a short-cut by crossing on the side of the bridge which is unprotected against the oncoming traffic, usually during peak traffic times. The same issues above are true for cyclists and have been raised numerous times, as a hazard for cyclists and school children alike.

A shared pathway has been constructed along Orion Street from Dawson to Molesworth Street, improving access to Simes Bridge, however additional fencing is required to ensure cyclists and pedestrians are directed along the pathway and onto the protected section of the bridge and this will be addressed through Council's Pedestrian Access and Mobility Plan.

Route from Lismore to Lismore Heights / Goonellabah

One of the major challenges in developing the Cycleway Plan has been selecting a suitable route for cyclists linking the low lying area of Lismore with the elevated areas of Lismore Heights and Goonellabah.

Five obvious alternatives were investigated and include:-

- High Street
- New Ballina Road
- Rotary Drive
- Ballina Road / Bruxner Highway
- Cynthia Wilson Drive

Cynthia Wilson Drive is totally unsuitable for cyclists because it is too steep, and New Ballina Road is far too narrow.

Cynthia Wilson Drive is too steep for cyclists

New Ballina Road is too steep and narrow for cyclists

Ballina Road has very heavy traffic but sufficient width for on-road Cycle Lanes

High Street has less traffic but is a longer, indirect route for commuting cyclists

Ballina Road (Bruxner Highway) has very heavy traffic volumes but has sufficient width for the painting of on-road cycleway lanes on both sides of the existing bitumen carriageway.
To cater for different types of cyclists in different areas, three of the five routes have been nominated in this plan. The pathway along Rotary Drive has been widened and extended from Ballina Road to Uralba Street, providing a route from Lismore Heights into the CBD. It is the most direct route however is quite steep and therefore not feasible for all cyclists to use. A wire rope safety barrier has been erected between the path and the traffic, however a barrier is still required to protect cyclists from potentially dropping off the steep decline on the southern side of Rotary Drive and this has been included in the reviewed Works Program. Several lengths along the High Street route have been constructed and much of the existing paths along Ballina Road in Goonellabah and Lismore Heights have been widened to meet existing shared path standards.

The Rotary Drive route constructed with Brifen safety fencing separating cyclists and pedestrians from the traffic lanes

6. BEHAVIOURAL STRATEGY

6.1 Promotional & Encouragement Strategy

As the programmed construction of cycleways proceeds, Council could begin to promote the benefits of the Cycleway Plan and the community benefits of cycling in general. Effective encouragement, justified by the new cycleway network will help to increase the amount of bike users in the Lismore area.

Launch of the Cycleway Plan
Upon completion and acceptance of this report, Council could exhibit the plans showcasing the final design and important elements of the Cycleway Plan. This could be combined with the staged construction program presented in this report to increase community awareness.

Signage
Route signage and facility location maps may also assist with encouragement. Destinations could be signposted for users travelling on the cycleways. Appropriate signage will also allow unfamiliar users to find their way around.

Promotional Scheme
Council should endeavour to promote each stretch of new cycleway when it is ready for public use. This will help to keep the public informed and promote further use of the cycle network. In combination with this, Council should then announce the next stretch scheduled for construction and the expected timeframe. By doing this Council can easily and effectively promote each new stretch of cycleway prior to and upon completion. Community consultation is also important prior to the construction of each section of cycleway to ensure residents and business owners are informed and made aware that cyclists will be utilising the route, and any foreseeable issues are overcome prior to construction to ensure effective use of the cycleway network.

An interactive, easy to use mapping system is planned for implementation on the Lismore City Council website to assist residents and visitors in viewing the Cycleway network. These maps will be regularly updated to indicate where new sections of shared pathways have been constructed.

Any promotional programs for cycling could be administered by Council in conjunction with relevant community groups, other councils, government agencies or corporate organisations.

Current and potential cyclists should be reminded of the benefits of cycling, and encouragement should be made to promote cycling to shops, schools and for recreation.

Council intends to conduct surveys as part of its education and promotion programs to determine the usage of particular cycleways and facilities.

6.2 Education Strategy

It is recommended that an education strategy be implemented by Council. This could take the form of a workshop or function during ‘bike week’, or an advertising campaign. The issues which require addressing include:

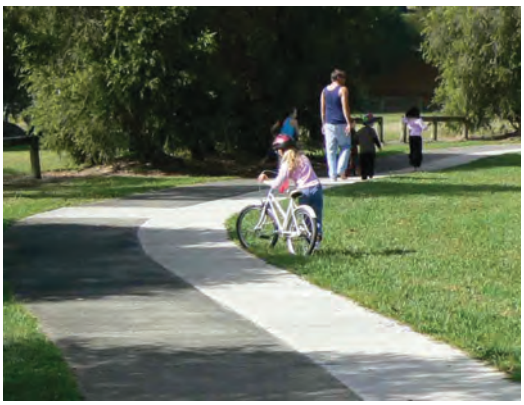
- Road rights for all road users
- The aspects of safety involved in cycling such as safety equipment and safe cycleway use,

- A number of the schools in Lismore have dedicated 'bike days' where students will be encouraged to cycle to places such as Wade Park and/or be lectured on all aspects of cycling.

- Council to continue involvement in educational programs with community members to continue to promote cycling.

It is important to keep motorists informed about the installation of on-road cycleways, and what they can expect to see in the near future. Motorists need to be aware of such developments in order to improve the safety of the cyclists using on-road cycleways.

Cyclist Education Facilities
Wade Park in East Lismore has an existing road safety playground for young children. The park features concrete paths with signs along the paths and at intersections. The park is designed to help children learn about road rules and safe bicycle riding. The signs along the paths are the ones most commonly encountered in everyday road usage such as stop signs and give way signs. There are also signs encouraging the use of helmets and other safety equipment.



Wade Park Road Safety Playground

Whilst the benefits of running promotional and educational campaigns would be undoubtedly beneficial to the community, Council does not currently have the staff or dedicated resources to implement a comprehensive Cycling Education Strategy and it is recommended that provision for this be investigated in the future.

The review of the Cycleway Plan has emphasised the need for increased education for both cyclists and drivers on their rights and responsibilities as well as the importance of promoting the cycleways that have been completed as it seems the community are unaware of areas that they can ride currently. One solution to increase community awareness is the proposed implementation of an interactive mapping system on the Lismore City Council website.

6.3 Estimated cost of Promotional and Education Strategies

The estimated cost of the promotional and education strategies (dependant on funding) is as follows:-

Launch of the Cycleway Plan	$1,000
Signage	$5,000 to $10,000 per annum
Promotional Scheme	$500 to $1,000 per annum
Educational workshops	$2,000 to $5,000 per annum

6.4 Evaluation

It is important to evaluate the success of this Plan to determine areas that could be improved upon or altered in the future. The success of the Cycleway Plan lies ultimately with the usage rates of all of the routes, and the ease of use for cyclists of all ages and abilities. This evaluation can be done by way of surveys, bike-ability checklists, and counters, to determine usage rates. It is also important to determine the usage of bike storage facilities and the preference of users, and the preference of on-road versus off-road cycleways, which can also be determined through user surveys. It is recommended that the routes constructed as part of the 2007 Cycleway Strategy Plan be evaluated in this way.

7. OUTCOMES

7.1 Development of the Cycleway Plan

The development of the proposed cycleway network shown in the maps (pages 41 – 51) was carried out with consideration of the following issues:-

- Linking of existing cycleways with established cycling attractors for commuting cyclists
- Providing loops in the network for recreational cyclists
- Where possible avoiding roads with high volumes of traffic and congestion
- Questionnaires and public meetings which provided important feedback

7.2 Priority program

As part of the review of the Cycleway Plan and subsequent Prioritised Works Program, the method used in prioritising the works has been amended. Council works staff have determined that the *"work packages"* format used in the 2007 Cycleway Strategy Plan was impractical due to the way in which funding for the construction of each section of pathway is acquired, and therefore it was important to develop a single prioritised listing which would provide Council with a clear guideline as to what needs to be achieved and the best way to do so.

The revised prioritised Works Program uses a modified method from that of the original Cycleway Strategy Plan in determining the expected usage of each section of pathway as opposed to the "*guestimate*" used in the original Plan. A formula has been devised which accounts for the type and number of attractors within the vicinity of the cycleway, with greater emphasis placed on sections of cycleway that link to schools, commercial precincts or recreational facilities. Additional points were granted should the cycleway provide a link to major infrastructure such as an underpass, which increases safety. These points were correlated to a range of the expected number of daily users of the path.

Therefore the overall formula used for each work section is as follows:

1. Value for money on a length per dollar basis (length / cost x 50)

2. Expected Usage: the expected usage was determined as follows -
Major attractor + number of attractors linked + infrastructure link = expected number of users.
(maximum 2.5 points)

3. The number of attractors linked by the section of cycleway (maximum 3.5 points)

4. Extra points where the cycleway section will benefit both commuters and recreational cyclists (maximum 2 points)

5. Safety – whether the cycleway is to be constructed off-road or on-road (maximum 1 point)

Each item within the Works Program has been put through this formula to give it an overall weighting and prioritised as such against all other sections within the Program.

Using this method, 73 separate work sections were listed and costed which includes 2 items relating to safety barrier or fencing. The total lengths of proposed cycleways are:-

Proposed off-road cycleways	14.5 km
Proposed on-road cycleways	6.5 km
Existing paths to be widened	16 km
Safety railing and fencing	1.3 km
Total length =	37.1 km

The total cost of the work is estimated at $6.4 million in addition to the $1,090,000 of Cycleways that have been constructed since 2007. It is recommended that the Works Program component of the Cycleway Plan be reviewed on an annual basis to ensure consideration of other capital works programs and the inclusion of new developments into the Plan.

7.3 Road Crossings

Road crossings have been suggested where appropriate and included in cost estimates for each cycleway section.

7.4 Parking Facilities

The location of bike racks and suggested secure bike parking stations are shown in the map in Appendix E.

7.5 Maps

Maps have been developed to demonstrate the following:

- Existing and proposed Cycleway Network of the Lismore Urban Area
- Nominated recreational routes
- Existing and proposed bike parking facilities

7.6 Other Options and Recommendations

Detailed below are other options available to council:

Safety Issues
It is recommended that ‘Watch for Bicycles” signs are placed at the advances to intersections where on-road cycle lanes are installed, particularly roundabouts. This represents a low-cost and effective way to alert all motorists entering Lismore to the possibility of cyclists, thus reducing the possibility of accidents involving cyclists and motorists. Similar signage is recommended along routes known to be popular amongst cyclists such as along Numulgi, Gundurimba and Donnans Roads.

Increased Education and Promotion
As discussed previously, education and promotion of cycling is an integral component of this plan and should not be overlooked. Signage, promotion of newly constructed sections and driver and cyclist education will ensure the harmonious use of the cycleway network.

Annual Review
This plan and the items within its Works Program should be reviewed on an annual basis by the Infrastructure and Assets Policy Advisory Group in conjunction with Council's Capital Works Program and Sport and Recreation Plan, to ensure works within those programs that overlap with the Cycleway Plan are considered and resources best allocated in terms of construction each year. This may mean that items listed within the Works Program could "jump the queue" if they work in with either of these other programs.

New Developments
It is integral that this Cycleway Plan be considered in the planning for new developments and subdivisions to ensure that any new areas link into this cycleway network.

Maintenance
Through consultation and observation it is noted that several of the constructed shared pathways are lacking in maintenance, mainly of vegetation that overhangs pathways or is overgrown and therefore limits the width of a pathway. This issue needs to be addressed as it acts as a deterrent to the community in using the shared pathways for cycling.

8. IMPLEMENTATION

8.1 External Funding Sources

Possible external funding sources are as follows:-

The Roads and Traffic Authority
Provided that the necessary steps are followed, the Roads and Traffic Authority can fund up to 50% of the required funding for an approved Cycleway Plan, and up to 100% on State roads.

Corporate Contribution of Sponsorship
Corporate sponsorship represents an excellent way for businesses to fund parts of the Cycleway Plan, while promoting a healthy image for their organisations. At the same time this will generate extra funds to support the construction of cycleways.

Section 94 Contributions / Planning Agreements
Section 94 of the Environmental Planning and Assessment act gives councils the right to raise contributions from developers for existing or planned infrastructure. Alternatively, depending on the complexity of the development, a planning agreement may be entered into which would incorporate funding for cycleways / pathways. Under these agreements the developer may undertake to construct the cycleway themselves, or come to an arrangement to provide funding to Council so that they can construct the cycleway.

Federal Funding
Federal funding becomes available on occasion through various grant schemes, and any assistance that can be obtained will be pursued by Council staff. In particular, this would be investigated for proposed recreational routes which are costly to construct and are not met by RTA funding.

It is recommended that further opportunities for funding to support the construction of cycleways within this Plan be investigated.

Other
Council will investigate all other possible funding sources available to contribute to the Cycleway Plan.

APPENDICES

Appendix A: Completed Cycleways 2007 - 2011

Street	From	To	Description	Length (m)	Cost
Rotary Dr	Uralba St	Dixon Pl	Proposed off road cycleway	720	115200
High St	Lismore Heights Public School	Barr Scott Dr	Proposed off road cycleway	415	71400
Ballina Rd	40m west of Gallagher Dr	Rous Rd	Path to be widened	1245	124500
Ballina Rd	Rotary Dr Ballina Rd roundabout	40m west of Gallagher Dr	Proposed off road cycleway	370	59200
Uralba St	Dibbs St	Rotary Dr	Proposed off road cycleway	85	18600
Ballina Rd	Rous Rd	Goonellabah Public School	Path to be widened	355	35500
Rotary Dr	Dixon Pl	Rotary Dr Ballina Rd roundabout	Path to be widened	65	6500
High St	Cooling St	Bellevue St	Path to be widened	375	37500
High St	Barr Scott Dr	Ballina Rd	Proposed off road cycleway	310	16200
Uralba St	Existing path	Dibbs St	Path to be widened	360	41000
Wyrallah Rd	Ballina St	Dalley St	On road cycle lane	700	14000
Orion St	Dawson St	Molesworth St	Path to be widened	195	29500
Dibbs St	Avondale Ave	Dalley St	Path to be widened	210	26000
Oliver Ave	Kadina St	East to existing path	Proposed off road cycleway	150	24000
Oliver Ave	Park	Waratah Way	Proposed off road cycleway	210	33600
Uralba St	Dawson St	Brewster	Path to be widened	340	34000
Brewster St	Magellan St	Uralba St	Proposed off road cycleway	350	56000
Wilson St	Casino St	Terania St	Proposed off road cycleway	660	110600
McDermott Ave leisure route	McDermott Ave	Reserve behind Darcy Dr	Proposed off road cycleway	325	57000
Kyogle St	Crown St	Wilson St	Proposed off road cycleway	315	60400
Winterton Pde	Existing Path	Lake St	Path to be widened	270	27000

Street	From	To	Description	Length (m)	Cost
Lake St	Richmond River High School	Winterton Pde	Path to be widened	180	18000
Wilson St	Elliot St	Casino St	Path to be widened	420	42000
Pitt St and Lake St	Corner Pitt and Bridge St	Richmond River High School	Path to be widened	235	28500
High St	20m West of Diadem	Diadem St	Path to be widened	55	5500
Diadem St	High St	Leycester St	Proposed off road cycleway	145	23200
Leycester St	Diadem St	Hindmarsh St	Path to be widened	240	29000
Orion St	Keen St	Molesworth St	Proposed off road cycleway	190	40400
Second Ave	Ballina St	Avondale Rd	Path to be widened	345	34500
			TOTAL:	9835	1218800

Appendix B: Cycleway Plan 2011 Works Program

Item	Street	From	To	Description	Side	Crossings required	Length (m)	Estimated Cost	Total Points	Comments
1	Ballina Rd	Nielson St	Second Ave	Proposed off road cycleway	South	1	530	124250	9.21	State
2	Dawson St	Magellan St	Uralba St	Path to be widened	East	0	260	31200	8.92	Under Construction
3	Dawson St	Uralba St	Orion St	Path to be widened	East	1	465	60800	8.88	Under Construction
4	Dawson St	Magellan St	Ballina St	Path to be widened	East	1	380	50600	8.88	Under Construction
5	Oliver Ave	Goonellabah S & A Centre	Rous Rd	Path to be widened	North	2	530	73600	8.86	
6	Rotary Dr	Dixon Pl	Uralba St	Safety railing on outside	South	0	720	180000	8.70	
7	Wyrallah Rd	Dalley St	Oliver St	Path to be widened	East	0	210	25200	8.42	
8	Ballina Rd	Kellas Ave	453 Ballina Rd	Path to be widened	South	0	112	13440	8.42	State Missing Link
9	Ballina St	Second Ave	Union St	Path to be widened	South	2	2165	269800	8.40	State
10	Wyrallah Rd	Dibbs St	Wyrallah Rd Public School	Path to be widened	East	1	675	86000	8.39	
11	Ballina Rd	Holland St	Oliver Ave East	Proposed off road cycleway	South	0	300	67500	8.22	State Missing Link
12	Casino St	Wilson St	Caniaba St	Proposed off road cycleway	North	1	430	101750	8.21	Missing Link
13	Lismore Park Leisure Link	Dawson and Brewster St	Magellan and Brewester St	Proposed off road cycleway	n/a	0	1520	410400	8.19	Recreational Route 1
14	Rous Rd	Ballina Rd	Jubilee Ave	Path to be widened	East to Pleasant, West to Jubilee	1	1000	125000	7.90	

Item	Street	From	To	Description	Side	Crossings required	Length (m)	Estimated Cost	Total Points	Comments
15	Brunswick Street	Dawson	Carolina Rd	Proposed off road cycleway	South to Donnans, then North	2	935	220375	7.71	State
16	High St	Bellevue St	Lismore Heights Public School	Proposed off road cycleway	East	1	420	99500	7.71	Missing Link
17	Wilson Ck	Market St	Orion St	Proposed off road cycleway	West	0	1125	303750	7.69	Recreational Route 2
18	High St	Beardow St West	Diadem St	On road cycleway - ped railing on outside, kerbing on inside, paint lane marking	South	0	300	90000	7.67	
19	Conway St	Ballina Rd	Molesworth St	Proposed on road cycleway	Both	0	825	41250	7.50	On-Road
20	Keen St	Conway St	Ballina Rd	Proposed on road cycleway	Both	0	230	11500	7.50	On-Road
21	Keen St	Orion St	Browns Creek Carpark	Proposed on road cycleway	Both	0	450	22500	7.50	On-Road
22	Market St	River	Molesworth St	Proposed on road cycleway	Both	0	170	8500	7.50	On-Road
23	Molesworth St	Market St	Conway St	Proposed on road cycleway	Both	0	80	4000	7.50	On-Road
24	Carrington St	Conway St	John Crowther Carpark	Proposed on road cycleway	Both	0	170	8500	7.50	On-Road
25	Ballina Rd	Nielson St	Rotary Dr Ballina Rd roundabout	Proposed on road cycleway	South	0	1100	55000	7.50	On-Road
26	Ross St	end of Ross	Ballina / Kellas rd roundabout	Path to be widened	South	0	647	67400	7.48	

Item	Street	From	To	Description	Side	Crossings required	Length (m)	Estimated Cost	Total Points	Comments
27	Hindmarsh St	Leycester St	Brunswick St	Path to be widened	West	0	205	24600	7.42	
28	Keen St and Gundurimba Rd	John St	Albert Park School	Path to be widened	n/a	0	645	77400	7.42	
29	Keen St	Ballina St	James St	Path to be widened		0	245	29400	7.42	
30	Reserve St	Rous Rd	Existing Path at Sportsfields	Path to be widened	West	0	45	5400	7.42	
31	Dalley St	Dibbs St	Military Rd	Path to be widened	North	1	760	96200	7.40	
32	Simeoni Dr	Gordon Blair Dve	Oliver Ave	Path to be widened	West	1	655	83600	7.39	
33	Dalley St	Wyrallah Rd	Dibbs St	Path to be widened	South	1	500	65000	7.38	
34	Elizabeth St	Wyrallah Rd	Nielson St	Proposed off road cycleway	South	0	70	15750	7.22	
35	Dudley Dve	Oliver Ave	Clare St	Proposed off road cycleway	West	0	1005	226125	7.22	
36	Kadina St	Kadina High	Oliver Ave	Proposed off road cycleway	East then West	1	480	113000	7.21	
37	Union St	Kyogle St	Opposite end of existing path	Proposed off road cycleway	East	1	380	90500	7.21	
38	Elliot Rd	Union St	Crown St	Proposed off road cycleway	South	1	260	63500	7.20	
39	Keen St	James St	John St	Proposed off road cycleway	East	0	255	57375	6.72	
40	Oliver Ave	East of Waratah Way	Hepburn Park	Proposed off road cycleway	South	0	360	81000	6.72	Missing Link

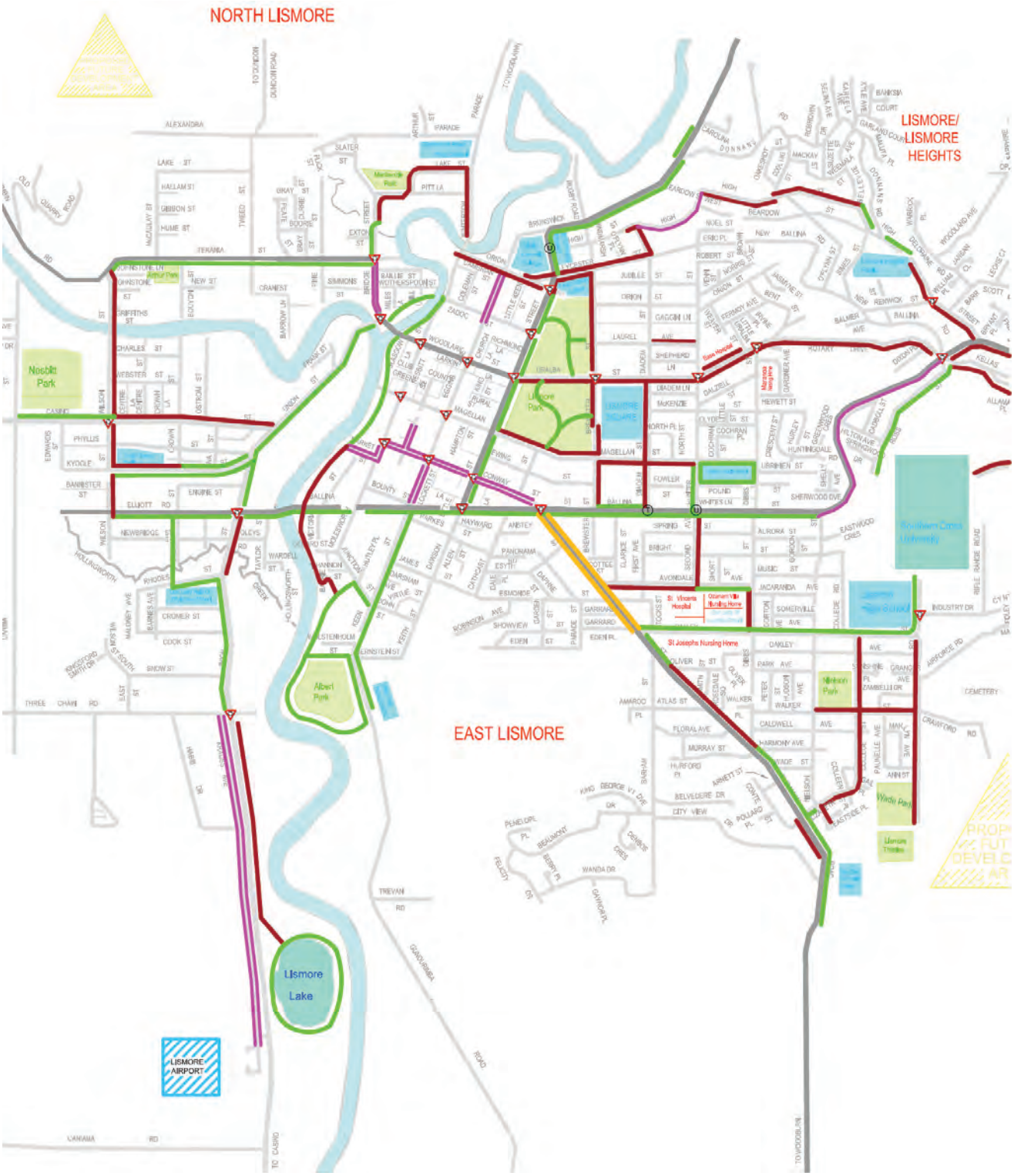
Item	Street	From	To	Description	Side	Crossings required	Length (m)	Estimated Cost	Total Points	Comments
41	Oliver Ave	South West corner of Hepburn Park	South East corner of Hepburn Park	Proposed off road cycleway	North	1	290	70250	6.71	Refuge island required when joining path from south to north
42	High St	Diadem St	Cooling St	Proposed on road cycleway	Both	0	1595	79750	6.50	Missing Link
43	Jubilee Ave	McDermott Ave	Ballina Rd	Path to be widened	West	0	495	59400	6.42	
44	Avondale Ave	Second Ave	Dibbs St	Path to be widened	North	0	250	30000	6.42	
45	Military Rd	Dalley St	Sth Cross Uni	Path to be widened	West	0	255	30600	6.42	
46	Union St	Hollingworth Ck	Three Chain Rd	Path to be widened	West	1	805	101600	6.40	State Recreational Route 4
47	Bridge St	Existing path	Pitt St	Path to be widened	West then East	1	305	41600	6.37	
48	Albert park fields loop	Follows Bernstein St, Gundurimba Rd and the River		Proposed off road cycleway	Loop	0	1260	340200	6.19	Recreational Route 3
49	River bank	John St	Bernstein St	Proposed off road cycleway	West	0	285	76950	6.19	Recreational Route 3

Item	Street	From	To	Description	Side	Crossings required	Length (m)	Estimated Cost	Total Points	Comments
50	John St	Keen St	River	Proposed off road cycleway	South	0	195	52650	6.19	Recreational Route 3
51	Bruxner Hwy	Path around Lismore Lake		Proposed off road cycleway	East	0	985	265950	6.19	State Recreational Route 4
52	Krauss Ave	Three Chain Rd	Lismore Airport	Proposed on road cycleway	Both	0	1600	80000	6	
53	Crown St	Elliot St	Rhodes St	Path to be widened	West	0	300	36000	5.92	
54	Bruxner Hwy	Existing path	Caravan Park past lake	Path to be widened	East	1	720	91400	5.89	State
55	Holland St	South East corner of Hepburn Park	Ballina Rd	Proposed off road cycleway	West	0	1160	185600	5.81	
56	Wilson Ck	Skate Park	Ballina St	Proposed off road cycleway	West	0	260	58500	5.72	
57	McDermott Ave and Allingham Pl	Jubilee Ave	Gordon Blair Dr	Proposed off road cycleway	South	1	665	154625	5.72	
58	Union St	Union St Bridge	Frank St	Proposed off road cycleway	West	1	285	69125	5.71	
59	Union St	Elliot St	Phyliss St	Path to be widened	East	0	260	31200	4.92	
60	Dibbs St	Pound St	Magellan St	Path to be widened	West	0	90	10800	4.92	
61	Union St	Foleys Rd	Hollingworth Ck	Path to be widened	East	0	60	7200	4.92	State Recreational Route 4
62	Union St Bridge Crossing	Western end of Union St Bridge	Existing Path on Bridge St	Path to be widened	West	0	1250	150000	4.92	

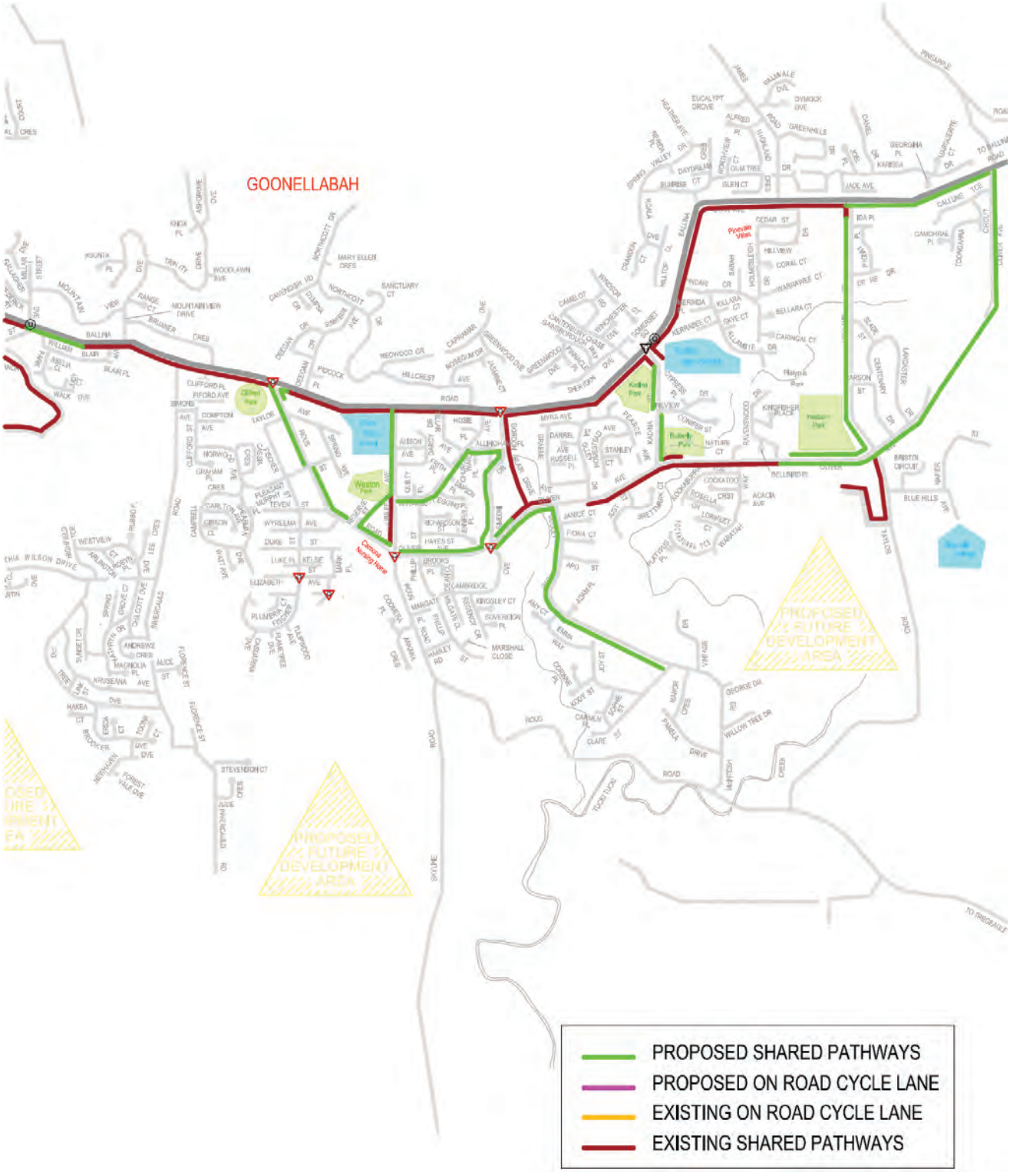
Item	Street	From	To	Description	Side	Crossings required	Length (m)	Estimated Cost	Total Points	Comments
63	Pound St	Hunter St	Dibbs St	Path to be widened	North	0	240	28800	4.92	
64	Magellan St	Hunter St	Dibbs St	Path to be widened	South	0	240	28800	4.92	
65	Hunter St	Ballina St	Magellan St	Path to be widened	West	0	205	24600	4.92	
66	Rhodes St	Union St	Crown St	Path to be widened	South	0	200	24000	4.92	
67	Ballina Rd	Brewster St	Diadem St	Proposed off road cycleway	North	0	220	35200	4.81	State
68	Victoria St	Ballina St	Past Gerard St joining Existing Path	Proposed off road cycleway	East	0	265	42400	4.81	
69	Kyogle St	Union	Crown St	Proposed off road cycleway	North	1	350	56000	4.81	
70	Wilson St	Bridge	Terania St	install brifen safety fencing between road and path	East	0	240	48000	4.75	
71	River bank	Bridge St	Zadoc St	Proposed off road cycleway	n/a	55m Bridge	290	400,000	4.54	State Recreational Route 4
72	Terania St	Bridge St	Tweed St	Path to be widened	South	0	530	63600	4.42	
73	Elliot St	Crown St	Wilson St	Path to be widened	South	1	295	40400	4.37	
						Total:	**37529**	**$6.4 million**		

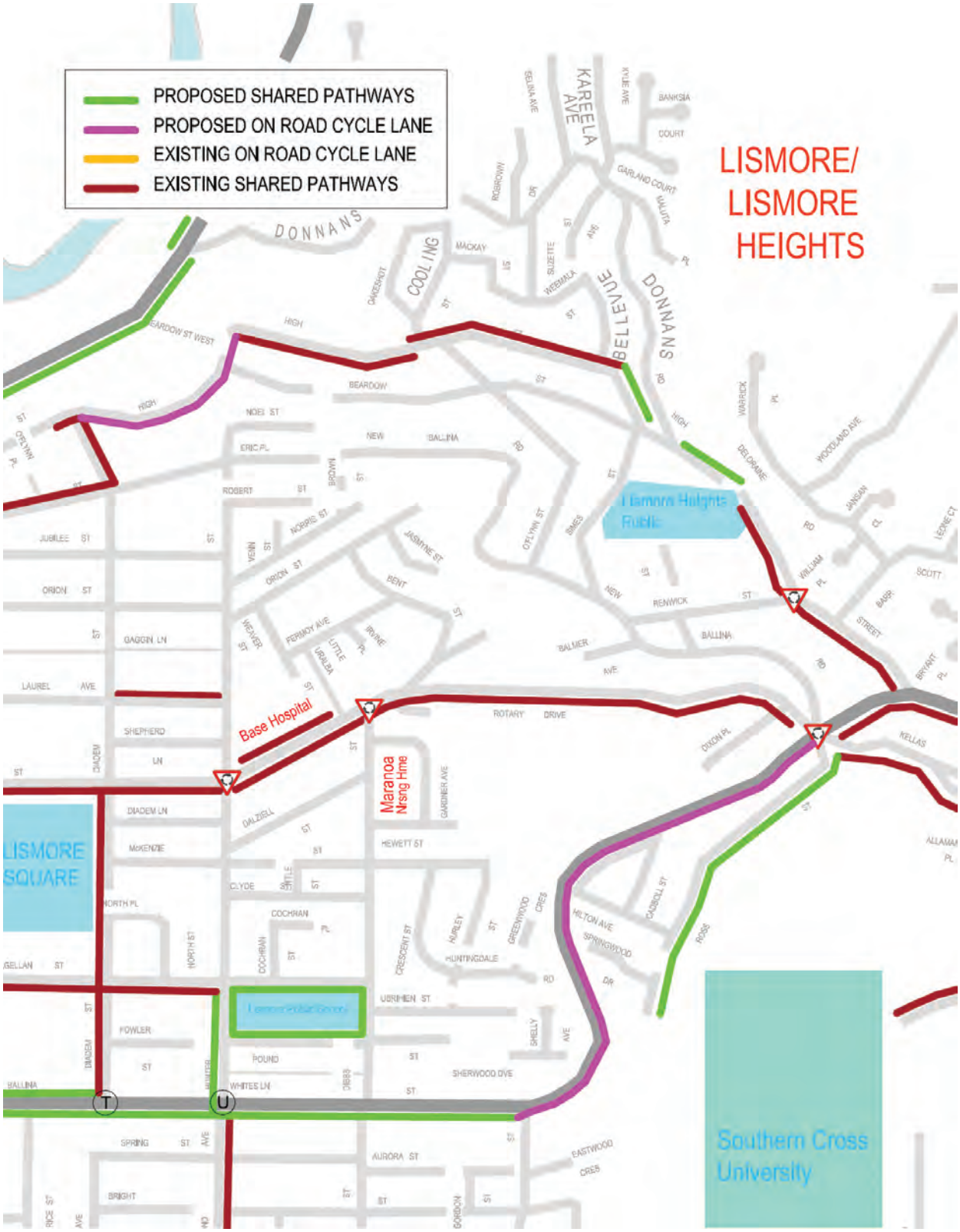
Appendix C: Existing and Proposed Cycleway Network (maps):

Lismore Central Business District and surrounds

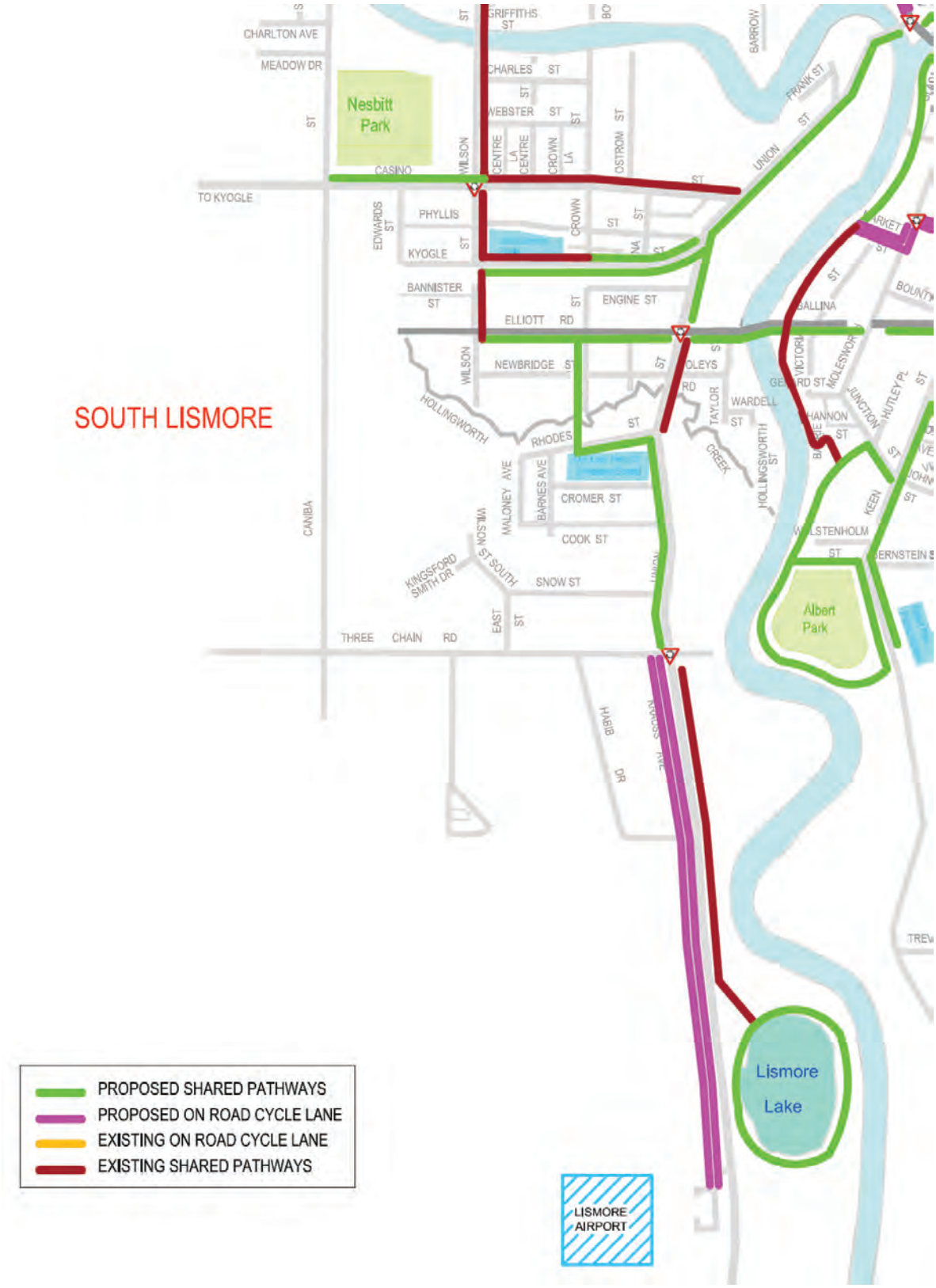


Whole Urban Area

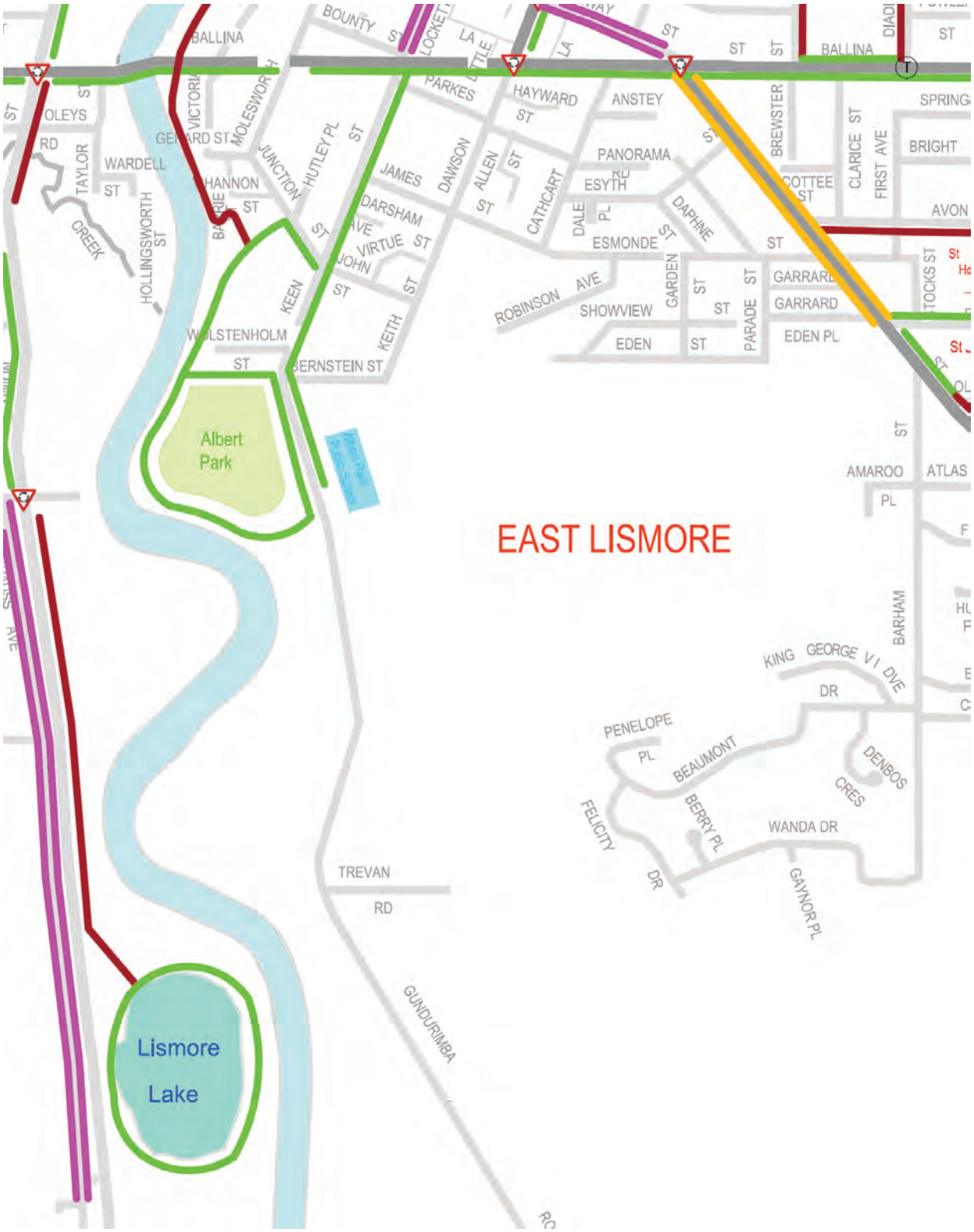

GOONELLABAH
PROPOSED FUTURE DEVELOPMENT AREA
PROPOSED FUTURE DEVELOPMENT AREA
PROPOSED SHARED PATHWAYS
PROPOSED ON ROAD CYCLE LANE
EXISTING ON ROAD CYCLE LANE
EXISTING SHARED PATHWAYS



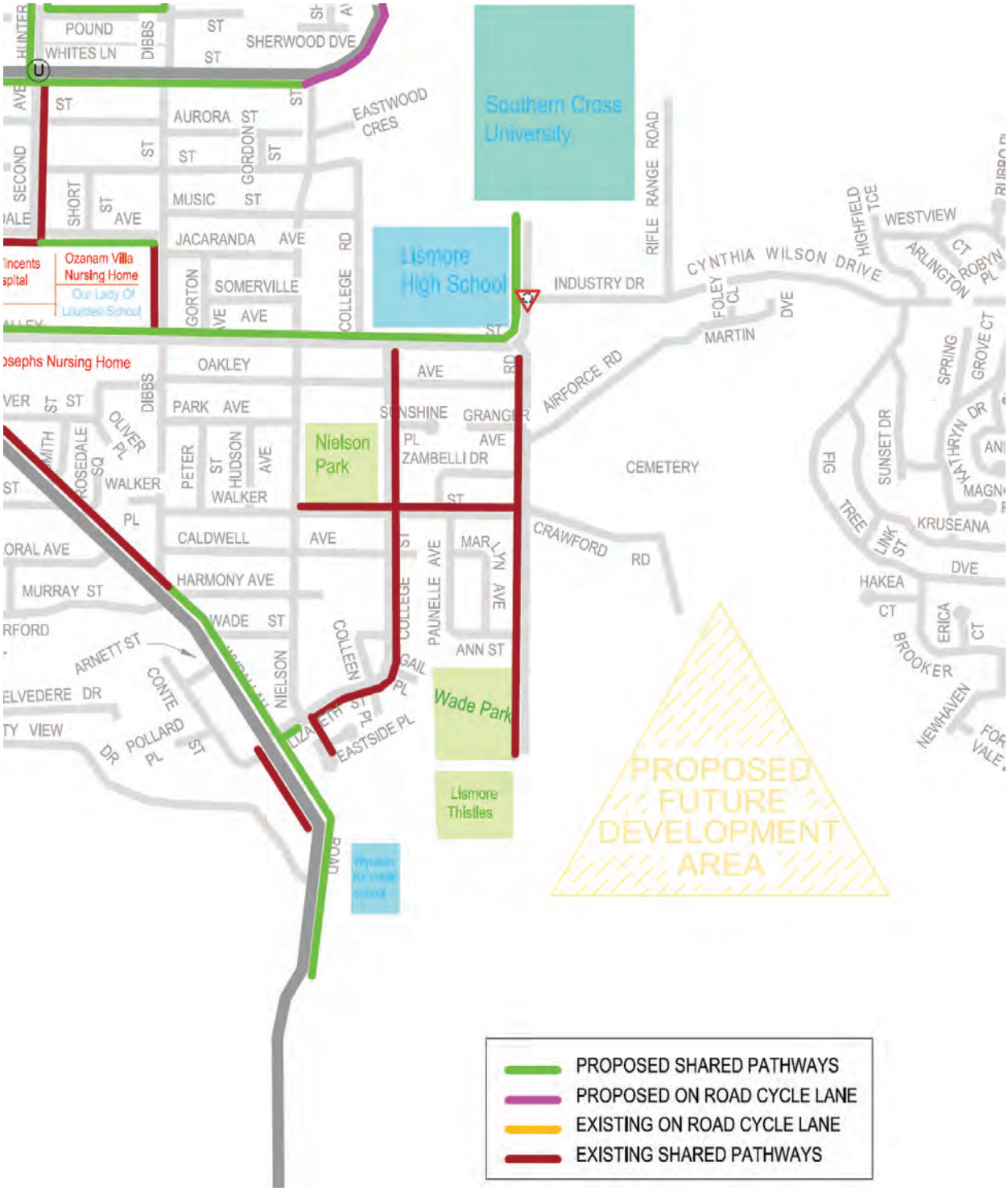
Lismore and Lismore Heights

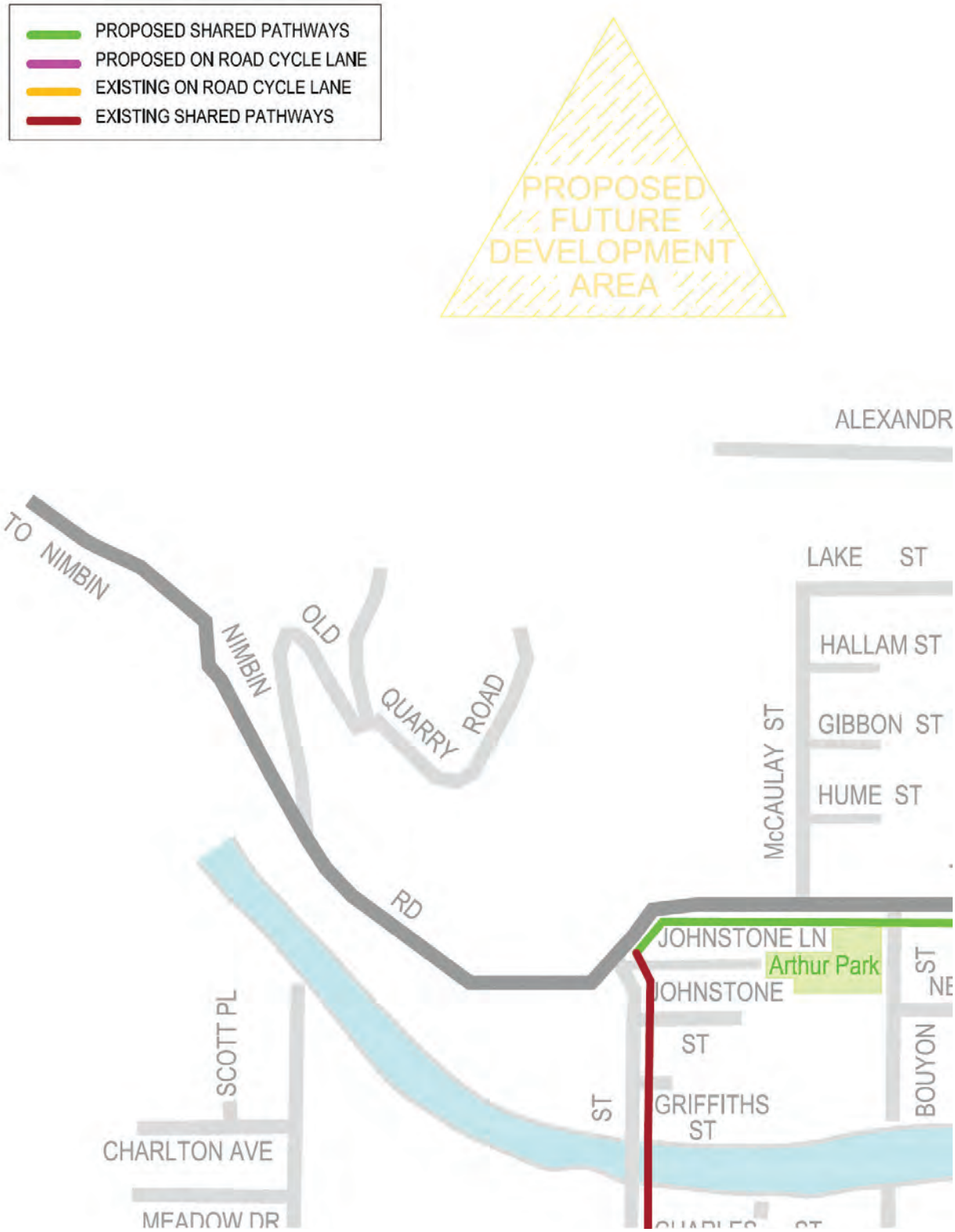


South Lismore



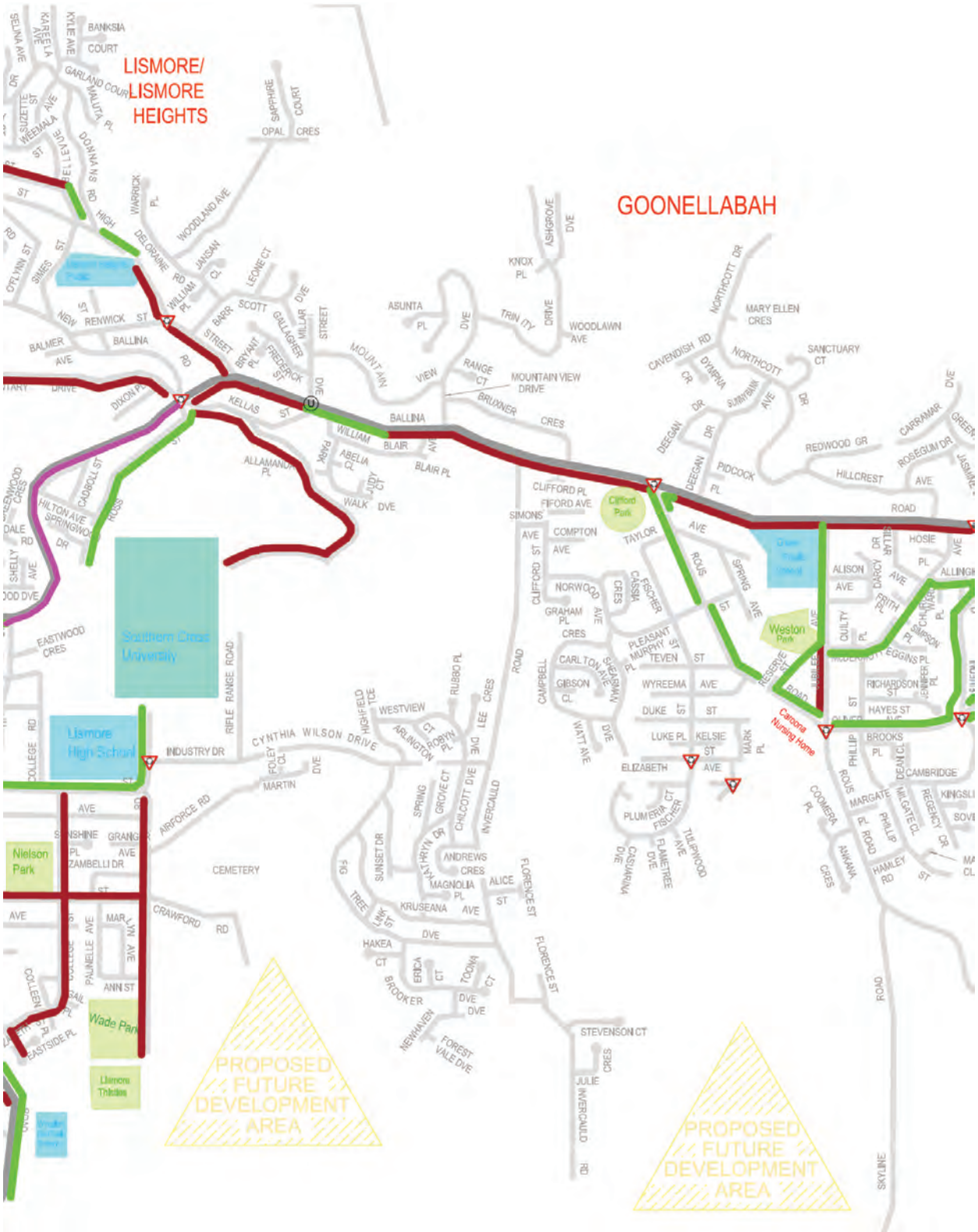
East Lismore


Southern Cross University
Lismore High School
Ozanam Villa Nursing Home
Our Lady Of Lourdes School
Nielson Park
Wade Park
Lismore Thistles
CEMETERY
PROPOSED FUTURE DEVELOPMENT AREA
PROPOSED SHARED PATHWAYS
PROPOSED ON ROAD CYCLE LANE
EXISTING ON ROAD CYCLE LANE
EXISTING SHARED PATHWAYS

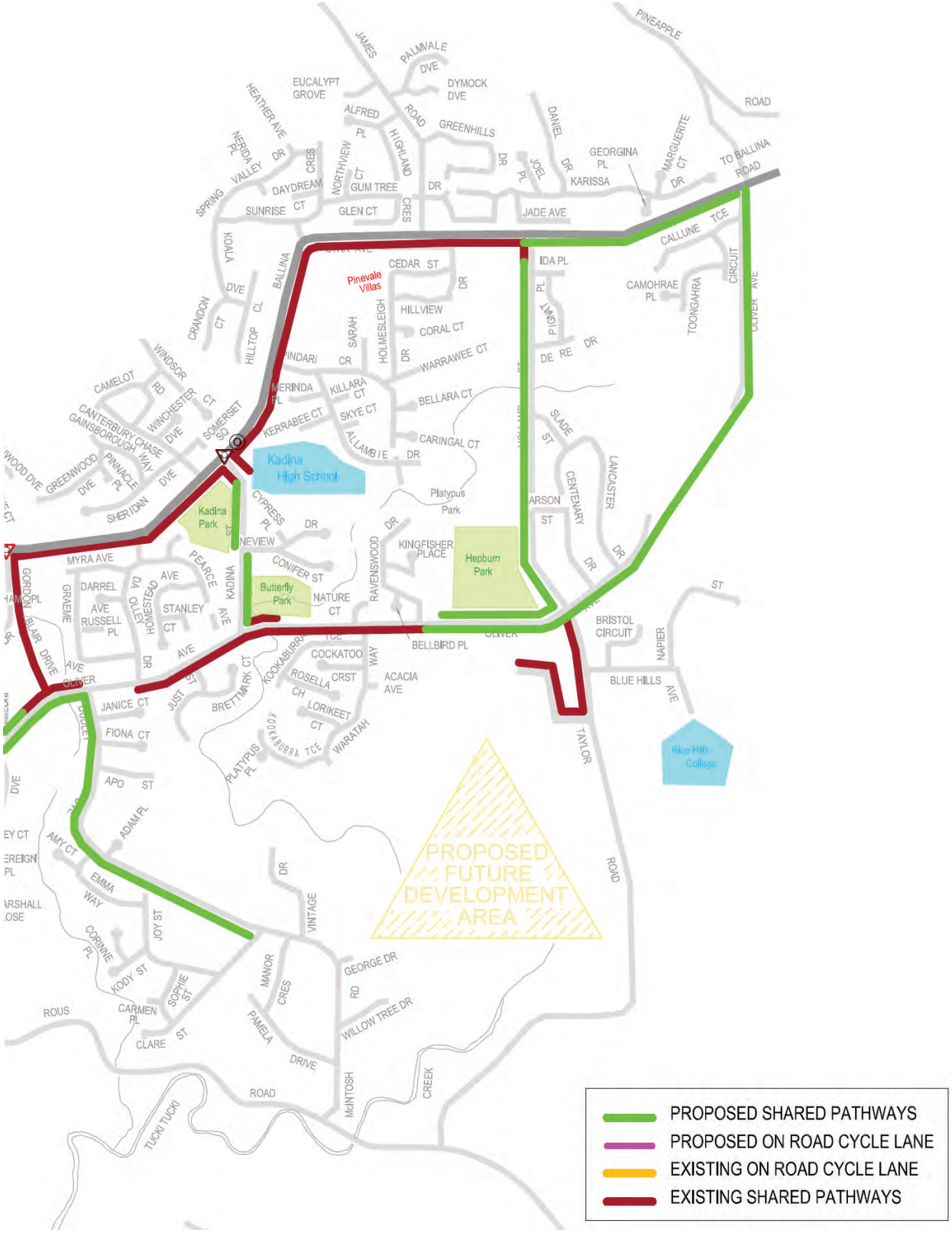


North Lismore

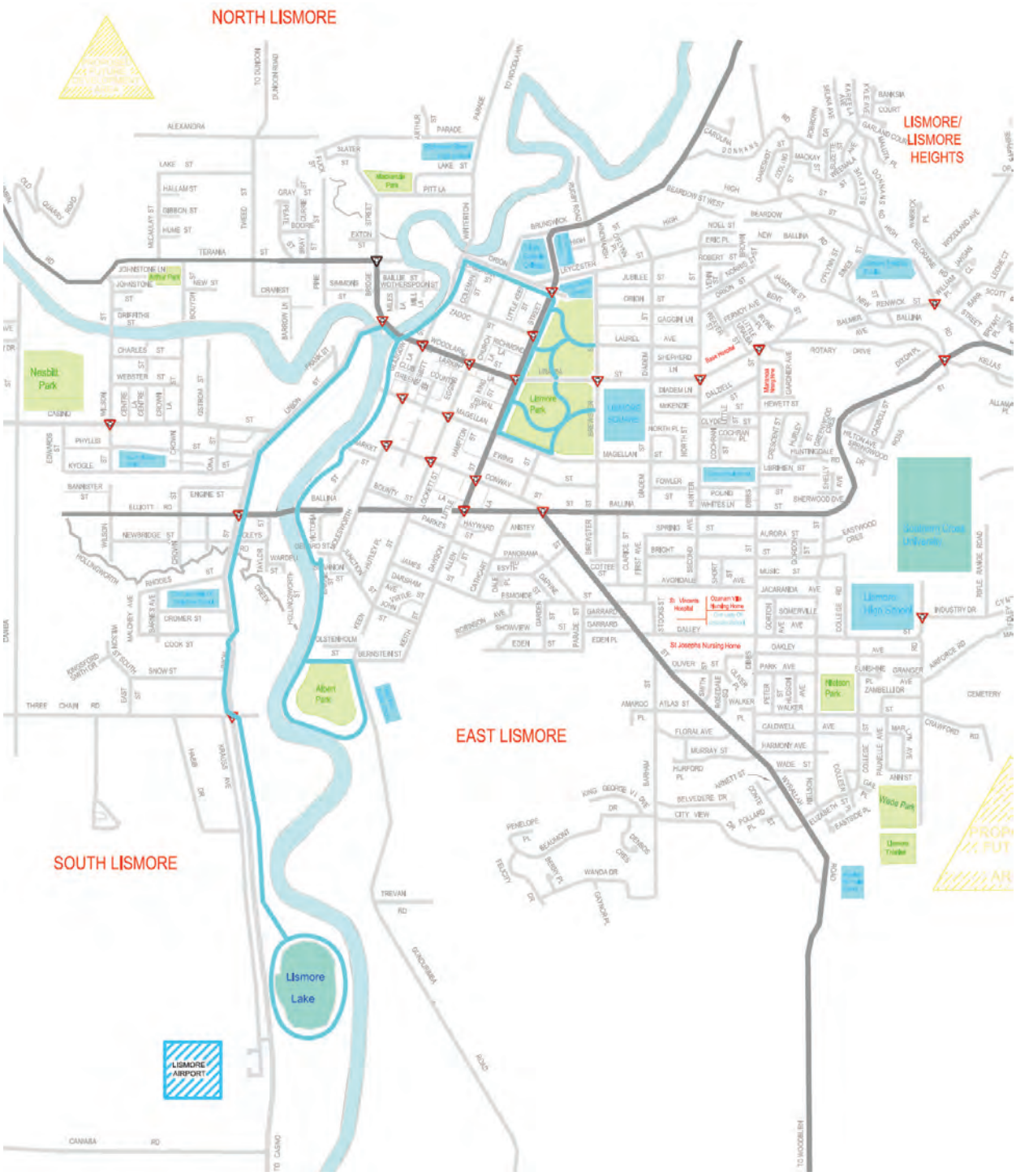
NORTH LISMORE

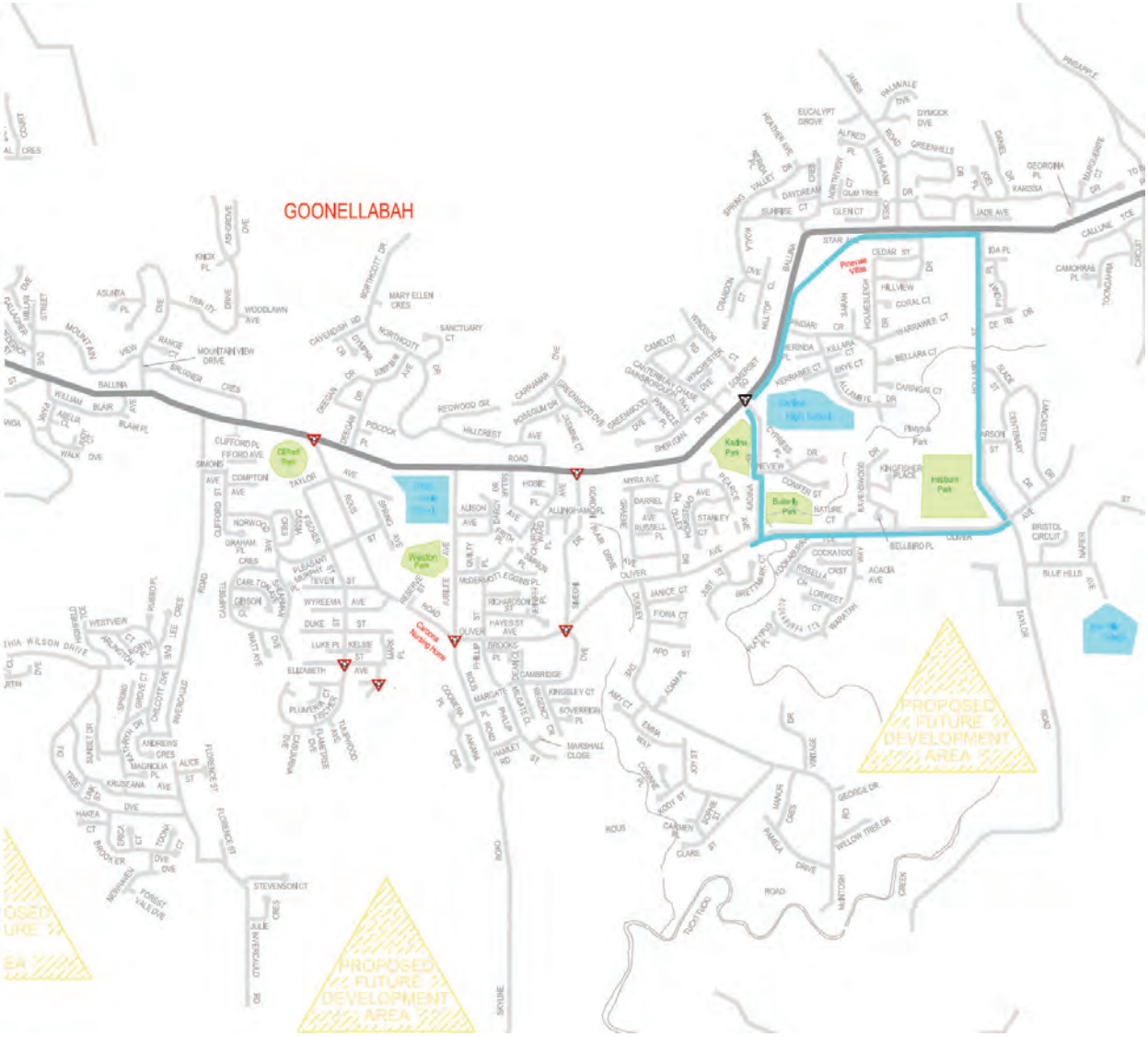


Goonellabah

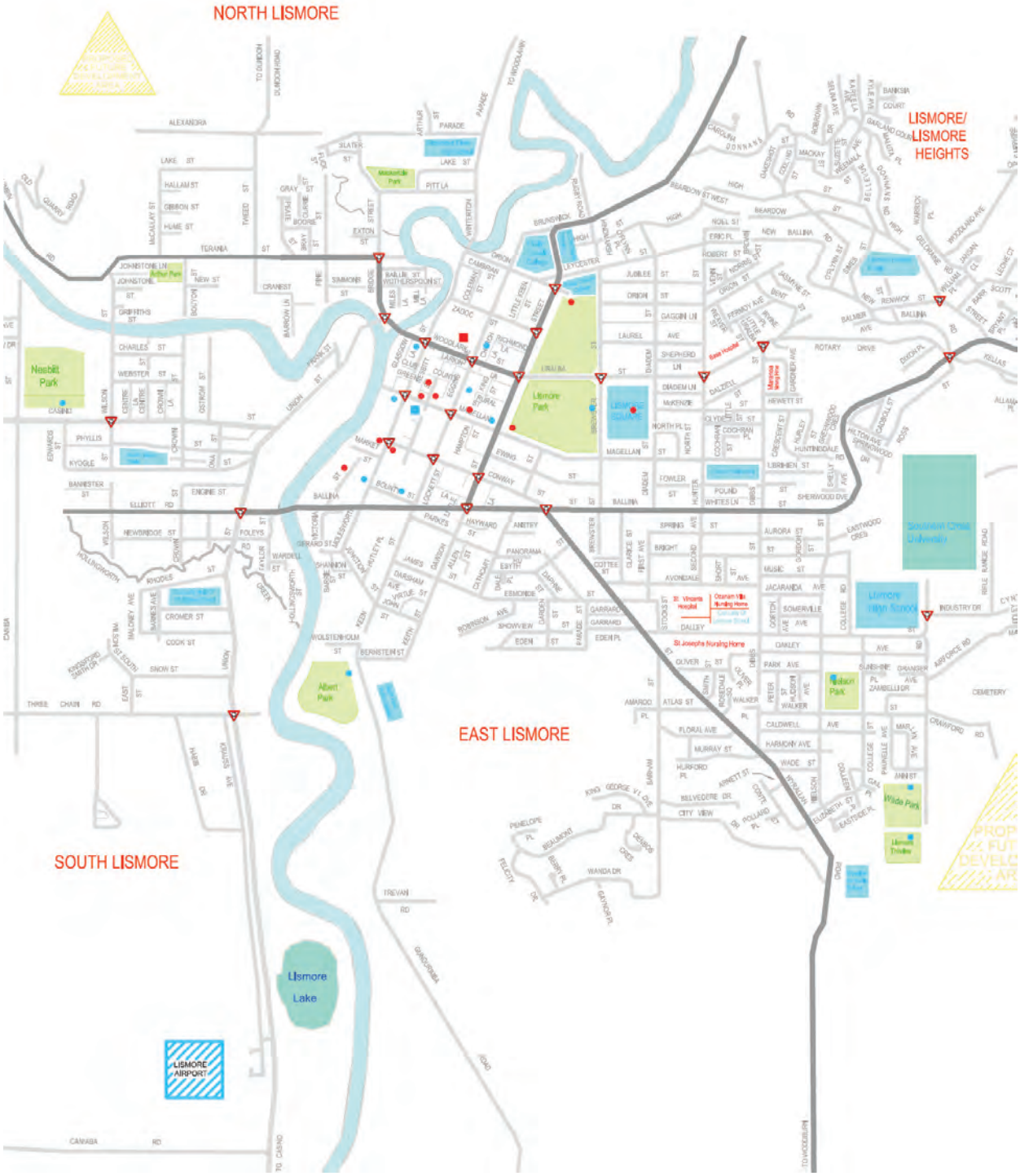

PROPOSED FUTURE DEVELOPMENT AREA
Kadina High School
Kadina Park
Butterfly Park
Hepburn Park
Platypus Park
Pinevale Villas
Blue Hills College
PROPOSED SHARED PATHWAYS
PROPOSED ON ROAD CYCLE LANE
EXISTING ON ROAD CYCLE LANE
EXISTING SHARED PATHWAYS

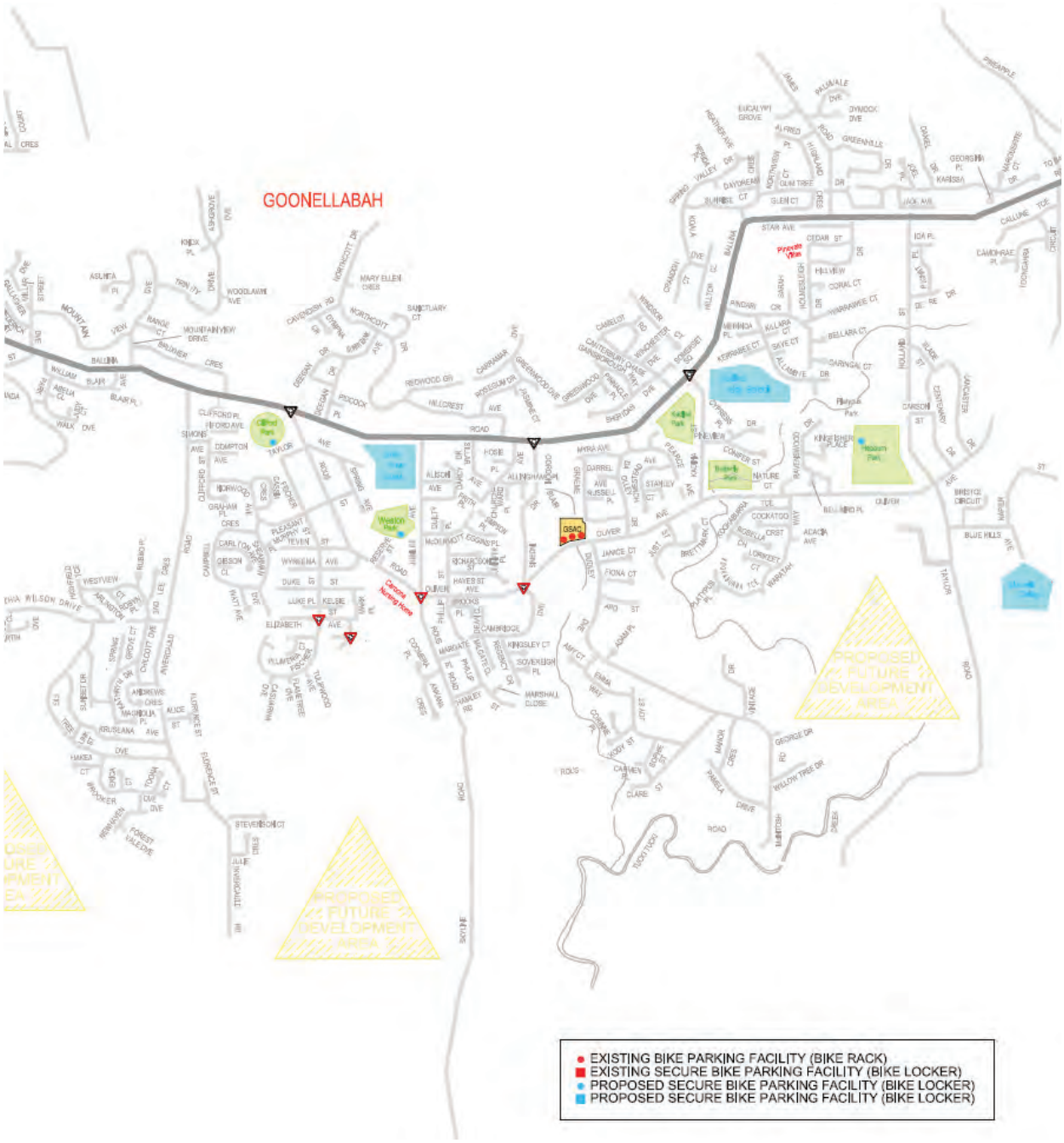
Appendix D: Designated Recreational Routes (map)



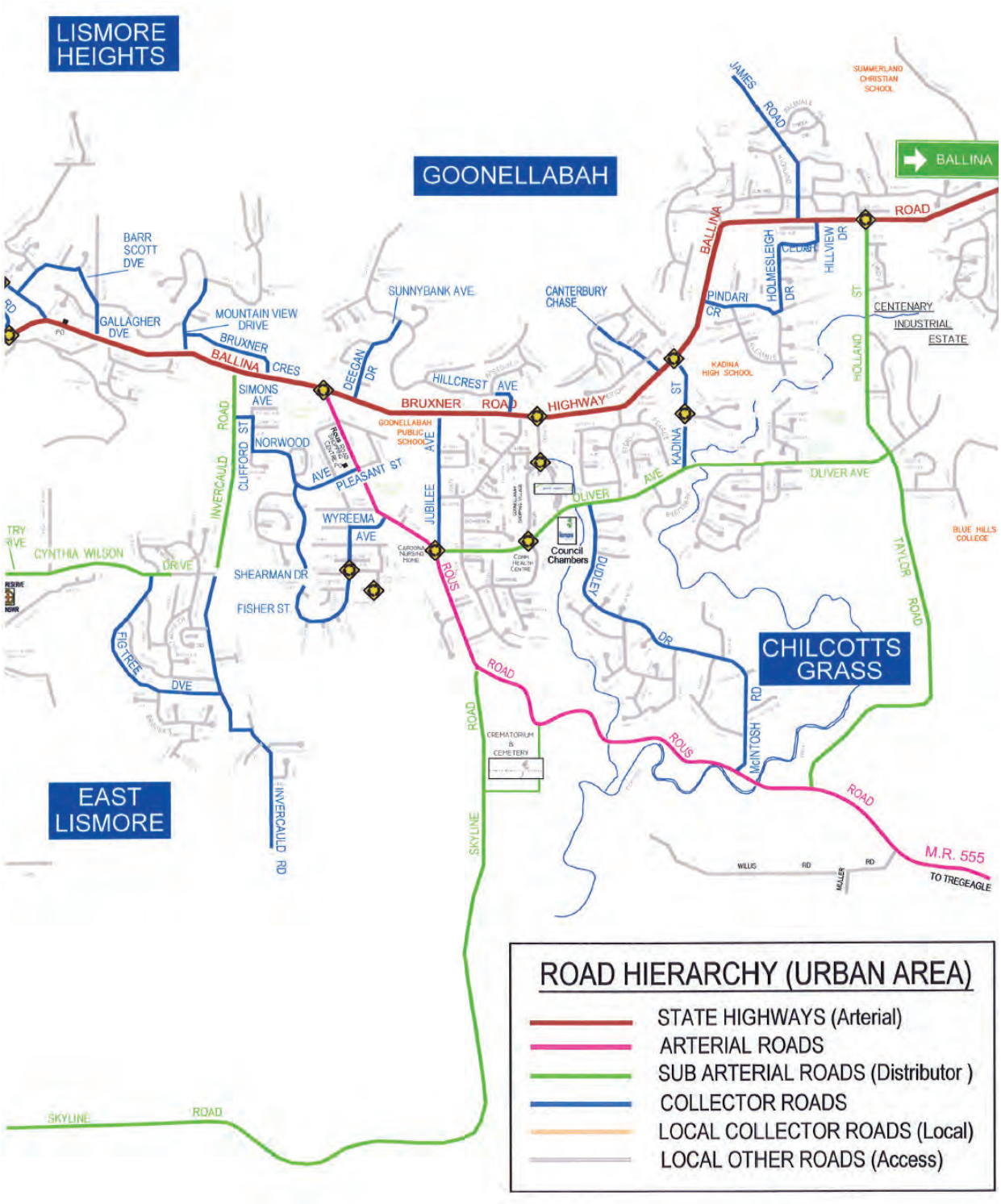

GOONELLABAH
PROPOSED FUTURE DEVELOPMENT AREA
PROPOSED FUTURE DEVELOPMENT AREA

Appendix E: Bike Parking Facilities (map)




GOONELLABAH
PROPOSED FUTURE DEVELOPMENT AREA
PROPOSED FUTURE DEVELOPMENT AREA
EXISTING BIKE PARKING FACILITY (BIKE RACK)
EXISTING SECURE BIKE PARKING FACILITY (BIKE LOCKER)
PROPOSED SECURE BIKE PARKING FACILITY (BIKE LOCKER)
PROPOSED SECURE BIKE PARKING FACILITY (BIKE LOCKER)

Appendix F: Road Hierarchy (map)


LISMORE HEIGHTS
GOONELLABAH
CHILCOTTS GRASS
EAST LISMORE
BALLINA
BARR SCOTT DVE
GALLAGHER DVE
MOUNTAIN VIEW DRIVE
BRUXNER
BALLINA CRES
SUNNYBANK AVE
DEEGAN DR
SIMONS AVE
BRUXNER ROAD
HIGHWAY
HILLCREST AVE
CANTERBURY CHASE
PINDARI CR
HOLMESLEIGH DR
HILLVIEW DR
CEDAR
JAMES ROAD
SUMMERLAND CHRISTIAN SCHOOL
KADINA HIGH SCHOOL
CENTENARY INDUSTRIAL ESTATE
HOLLAND ST
KADINA ST
OLIVER AVE
DUDLEY DR
TAYLOR ROAD
BLUE HILLS COLLEGE
Council Chambers
GOONELLABAH PUBLIC SCHOOL
JUBILEE AVE
ROUS ROAD
McINTOSH RD
CREMATORIUM & CEMETERY
SKYLINE ROAD
M.R. 555
TO TREGEAGLE
WILLIS RD
MILLER RD
NORWOOD AVE
CLIFFORD ST
PLEASANT ST
WYREEMA AVE
SHEARMAN DR
FISHER ST
INVERCAULD ROAD
INVERCAULD RD
CYNTHIA WILSON DRIVE
FIG TREE DVE
ROAD
ROAD HIERARCHY (URBAN AREA)
STATE HIGHWAYS (Arterial)
ARTERIAL ROADS
SUB ARTERIAL ROADS (Distributor)
COLLECTOR ROADS
LOCAL COLLECTOR ROADS (Local)
LOCAL OTHER ROADS (Access)

Appendix G: Survey Raw Data: School Principal Surveys

Primary School Principal's Survey Results

Of the 8 schools to which this survey was given, only two School Principal surveys were returned. These were from Lismore Public School and Wyrallah Rd Public School.

Lismore Public School	
# of students:	300
# of students who ride:	< 20
Parking provisions:	Bike rack in designated area
Road safety programs:	PDHPE/part of syllabus
Actions to encourage safe cycling:	Bike safety day each year
Improvements:	Expanded cycleways and cycle lanes on roads

Wyrallah Rd Public	
# of students:	535
# of students who ride:	uncertain
Parking provisions:	Secure locked below school building
Road safety programs:	PDHPE road safety unit
Actions to encourage safe cycling:	lectures demos, police bike talks bike afternoon @ wade park
Improvements:	better cycleways

Appendix H: Survey Raw Data: School Student Surveys

Surveys were distributed to all schools in the Lismore city area. Three schools responded by returning questionnaires. These were:

Richmond River High (56 surveyed)
Kadina High School (47 surveyed)
Wyrallah Rd Public School (146 surveyed)

This equates to a total of 251 surveyed students. This presents us with an even spread of students of primary and high schools ages.

The results were compiled together and are as follows:

How often do you cycle to the following places?

	Almost everyday	About once/week	About once/month	Less than once/month	Almost never
The shops	29	44	17	23	118
Your School	21	9	4	10	190
Friends house or recreational	39	58	39	26	73

Has your bike been stolen in the last 3 years?

# of yes answers: 46
% of stolen bikes: 18.3%

If so, from where was your bike stolen?

Area	count	% of each
Home	24	52.2%
at shops	8	17.4%
In town	5	10.9%
school	2	4.3%
other	6	13.0%

Which areas of Lismore require secure bike parking?

# of students surveyed: 251

Area Noted	# of times	% of each
Lismore Square	119	47.4%
Lismore CBD	67	26.7%
School	50	19.9%
Parks/Sporting fields	57	22.7%
other shops	47	18.7%

The majority of bikes stolen were stolen from the high school students (33 of the 46 bikes stolen belonged to high school students). This could mean that it is mostly students of this age who are stealing the bikes.

It is also worth noting that by far the most likely place to have your bike stolen from is your home. 52% of bikes stolen were from the owner's home or from a home they were visiting. This is a noticeable change from the previous survey where the majority of bikes (62%) were stolen from around shopping

centres. The number of bike thefts from shopping centres has dramatically decreased over the last 12 years to only 17%.

The most requested area to have secure bike parking was Lismore Shopping Square at 47%, followed by the CBD even though cycling is discouraged within this area.

Appendix I: Public Meeting Letters and Feedback

Below are the letters received following the first public meeting and the presentation of the concept plan. They are listed in no particular order and are as follows:

Letter 1

Cycleway

Re the public meeting on cycleways in Lismore……I think your presentation was excellent, plus the feedback. The challenge will be to appease both recreational cyclists and those wishing to access the CBD; many of the former would prefer avoiding the CBD when out just for an enjoyable ride.

The plans you presented were a good compromise and I was particularly pleased with the effort being made to link the elevated areas (Goonellabah and Lismore Heights) with the flatter country with a cycleway. I'm in favour of having a cycleway separate as much as is practically possible from established roadways but realise some compromise here is unavoidable. Going on what I've seen in other areas (Toowoomba and in London), would you consider an unbroken dividing line down the centre of the cycleway? That will keep all traffic (pedal and foot) to the left hand side.

In my opinion we (the cyclists) should try not to hinder this project any longer which would be the case by suggesting/demanding heaps of modifications to what really is quite an acceptable plan the way it is. We have been waiting since 1995 for something like this, so let's have no more delays and do all we can to help you put a final draft before Lismore Council ASAP.

Kevin Elsley
44 High Street,
Lismore Heights.
(02) 66 24 6891

Letter 2
Richmond River High School
Parents and Citizens' Association
Submission to Lismore Cycleway Study – Simes Bridge Area – 02/04/07
This submission is in regard to the safety of Richmond River High School students walking or riding to and from school via Orion Street, Simes Bridge and Winterton Parade, either from residences in Lismore or after being dropped off at the Trinity bus exchange. This is the most direct pedestrian route from Trinity or the CBD to RRHS. It is also the direct vehicle route from Bangalow Rd, Lismore Heights and the CBD to North Lismore and points beyond.

We feel that there are three serious safety issues which our students face each day when walking or riding this route:
The lack of any formal pedestrian crossing across Keen Street at its intersection with Orion Street (at Xerox print shop). This intersection can be quite busy especially in the morning and has poor line of sight, especially for vehicles travelling east or west along Orion Street and turning right into Keen Street.
The lack of a suitable footpath or cycleway along Orion Street between Keen and Molesworth Streets. The section adjacent to the Catholic Education Office is an area of particular concern. The road carriageway here is only wide enough for two vehicles to pass and is on a crest with low cuttings on both sides. There is almost no verge or footpath between the roadway and the cuttings. The only way to traverse this section on foot is to walk along the edge of the actual traffic lane and interact with whatever traffic is passing at the time. The carriageway does not have an apron, so there is no room for vehicles to pass bicycles safely.
The approach to Simes Bridge. This is another busy intersection, especially in the morning and has poor line of sight for vehicles travelling north along Molesworth Street and west along Orion Street towards the intersection. The pedestrian safety fence alongside the bridge walkway is a very welcome addition to our students' safety. However it extends south along Molesworth Street to the south side of Orion Street. , creating an issue for students approaching on the northern side of Orion Street.
We have a large number of students, some as young as 12 years old, negotiating this route every school day morning and afternoon; and especially on Wednesday sports afternoon when students attend activities at the Police Citizens Youth Club and other venues. We feel that this is a dangerous area for an experienced adult to walk, let alone for teenagers, often in groups, who may not have developed the same level of road sense as an adult with driving experience.
The number of students walking this route has increased due to the development of the Trinity Bus exchange as a major drop-off point and the growth in the student population at Richmond River High School.
In addition, the number of vehicles using these sections of road can be expected to increase with the development of the ring road system (which includes Simes Bridge and Orion Street) as the preferred route for traffic bypassing the CBD. Traffic is already busy, especially during the morning peak period when the greatest number of students and vehicles are using the road system at the same time. The new major round-about at the corner of Orion and Brewster Streets is also likely to increase traffic flows down Orion Street.

In the absence of any defined pedestrian route along the lower part of Orion Street, our students have been observed doing the following:
Some students walk down the southern side of Orion Street along the edge of the carriageway or on the narrow grass verge between the carriageway and the cutting. This unfortunately places them in close proximity and with their backs to west-bound traffic with limited line of sight.
Some students avoid walking close to the traffic on the south side of Orion Street by cutting through the Catholic Education Office car park. They then walk down through the revegetated riverbank area on the northern side of Orion Street. Unfortunately, this then brings them to the wrong side of the intersection for accessing the Simes Bridge walkway.

Students choosing to walk down the northern (and safer) side of Orion Street are then faced with a dilemma at Simes Bridge as they are on the wrong side of the road to access the protected walkway across the Bridge. They have several options at this point:
They can cross Orion Street, then cross Molesworth Street and go around the end of the safety fence. To do this they have to negotiate traffic on both Orion and Molesworth Streets without any formal pedestrian crossings and with poor line of sight for approaching traffic on both carriageways.
This represents a fair amount of backtracking. So some students succumb to the temptation to walk straight across the southern end of Simes Bridge and jump the safely fence on to the walkway.
Some students have even been seen crossing Simes Bridge in the face of oncoming traffic on the east side where there is no walkway at all, in order to avoid having to negotiate the safety fence.
In the absence of a clearly defined and safe route, we cannot rely on our young people to always make sensible decisions. No amount of advice or education on the part of parents or school staff can guarantee the safety of our students negotiating a dangerous and confusing pedestrian route. The above safety issues in regard to narrow carriageways and poor lines of sight also apply to students riding through this intersection. Given the current situation, we are concerned that a serious incident is inevitable.

We offer the following suggestions, which we feel would provide a marked improvement in safety for our students and require very little cost outlay on the part of Council:
Construction of a formal pedestrian/cycle crossing or centre island refuge across Keen Street along the south side of Orion Street. (Item 1 above).
Widening of the road verge along the south side of Orion Street between Keen and Molesworth Streets to allow for a formed level footpath with kerbing and channelling (minimum) to separate pedestrians from vehicles, or construction of a shared zone for bicycles and pedestrians. (Item 2 above).
Construction of a formal pedestrian/cycle crossing or centre island refuge across Molesworth Street along the south side of Orion Street aligned with the new safety fence. (Item 3 above).
Placing a Give Way sign for vehicles approaching from the south along Molesworth Street, so that they are slowed before having to negotiate the pedestrian crossing and the intersection. A number of parents and school staff have reported that this is a dangerous intersection to negotiate in a vehicle from Orion Street, because there is poor line of sight back down Molesworth Street. Vehicles travelling up Molesworth Street from the south can appear suddenly out of deceptively low dip in the carriageway. And they are often travelling quite fast if they intent to proceed straight ahead over the bridge, as they currently have right of way. Placing a Give Way sign on Molesworth Street would seem to be consistent with prioritising Simes Bridge and Orion Street as part of the ring road system (Item 3 above).
We hope you are able to incorporate these suggestions into the final cycleway plan with a high priority for early attention.

Rob Fleetwood
for The Executive,
RRHS P & C Association
817 Boyle Rd. Coffee Camp, 2480.
Ph: 02 6689 9356
robnros@.mullum.com.au

Letter 3
2 April 2007 Heidi Chappelow and Lazuli Kubenk,

We are members of Lismore Climate Action Group, and its sub-committee Planet Safe Travel: creating environmentally sustainable transport options.
We attended the public meeting last Wednesday regarding Lismore Cycleways.

We would like to correspond with you regarding improvement of the cycle plan, and related consultation process

Firstly, thankyou for your friendly and professional presentation, the plan you presented was well thought out in some regards and highlights safety and convenience. It focussed on the difficult Goonellabah to town link, and access to cycle attractors (mainly recreational and educational).

We are concerned that the premise of surveying mainly school cyclists seems to have limited the vision. (School cyclists have minimal functional use for the CBD compared to a Uni Student who may also have no car but needs to do their shopping, get to work, pay their bills etc on their bike.)

The plan presented looked as if a lot of money and time would be tied up in 22km of “ideal vision” off-road cycleways, and limit progress toward making the city more practical for all cycle users.

The evening unfortunately seemed to be inadequately advertised, and was virtually inaccessible to cycle users being in Goonellabah at night.

We appreciated that you were open to new ideas, so here are ours:

-Urgent importance to go ahead with the improvements to the bridge used to access Richmond River High.

- We request that work on the final draft of the cycle plan be halted. To link the cycleways plan with the Urban Traffic Plan (UTP) and do further research, outlined below.

- Linking the Cycle plan for Lismore with the Urban Traffic Plan (also currently in development), to ensure the CBD can function appropriately for both bicycle and vehicle users.

Council needs to make arrangements so that you are given the power to work alongside and informing the Urban Traffic Plan, once this is in place, please use it to create a more holistic approach for both cyclists and other road users.

We have written a Letter to Stephen Yam, and have spoken to Salina Runge, regarding the linking of the UTP and the Cycleway plan. Salina has requested a meeting with Ruth Povall in the Economic Development Unit to explore this practical possibility further. We will ensure you are kept up to date of any progress.

- Linking the Cycle Plan and Urban Traffic Plan with the Cities for Sustainability Plan, to create a visionary Urban Traffic Plan heading toward necessary cultural and infrastructure change in line with Council's Carbon Emissions Targets. We will be addressing counsellors, to assist with this.

-Increasing the scope of the survey undertaken by LEGS, to include other interest groups i.e. tertiary students, rural commuters, people without cars and the driving public, who may take to cycling if the road conditions were improved.
This would bring attention to more comprehensive list of cycle attractors. We have members able to distribute surveys amongst tertiary students.

-Improved public consultation process: widely advertised, accessible venue for cyclists, specifically targeting the newly surveyed groups, and accessible for school aged cyclists. We note that your survey did not pick up, the skate park as a cycle attractor. This indicates insufficient research even amongst the surveyed target group.

-Timeline and budget approach that first creates maximum impact for minimum dollars, i.e. marking cycleways on all roads or sections graded wide enough, and signage to alert drivers to the presence of cyclists.

-Staged approach as your plan suggests, toward cycle-path network of excellence.

Which includes
- Ample, safe and progressive access for bicycles and other non-car transportation within and around the CBD.

-Increasing opportunities and benefits for car-alternate options.

Examples include reducing on-road car parking to facilitate cycle ways, marking cycleways on all roads, on sections graded wide enough, including rural commuter corridors. Delegated shady car-parks for people carpooling, edge of town car-parking stations, community education, and signage, city-bike public access scheme – E.g.: Copenhagen's City Bike Program
http://members.aol.com/humorme81/citybike.htm

We would like to support you to achieve these aims. You may be surprised at the latent public and council support behind a progressive approach. We are in the process of contacting some councillors who may be able to support you to achieve these aims.

Please contact us if you would like to discuss anything relating to our concerns.

Heidi Chappelow, Lazuli Kubenk
Planet Safe Travel
lazulihappy@yahoo.com.au
1659 Dunoon Rd Dunoon

Ps: No doubt you are all well educated regarding urban planning and cycling issues, we have done some research on the Internet regarding bicycle cities around the world. Attached is a page of web-links you may find helpful.

Appendix J: Web links and electronic feedback

Email 1
Here is discover Amsterdam, city of bicycles, a bit about the City Council's push for cycle infrastructure history:
http://www.fietsen.123.nl/route%20ontdek%20amsterdam%20eng.htm

Here is Bicycle NSW Policy recommendations in lead up to 2007 state elections and beyond
http://www.bicyclensw.org.au/Assets/Downloads/bicyclensw_policyrecommendations.pdf
Especially note:
2. Climate Change: Support community interest in sustainable transport options
Climate change is very real. Any rational government is morally and ethically bound, to do all that it reasonably can, to reduce green house gas emissions and reach its targets for air quality. Riding a bicycle is an important action that individuals can take to contribute to a reduction in greenhouse gases.
Australian Greenhouse Office (AGO) data for every 1km cycled that normally would be travelled by private vehicle there is a saving of 0.00033 tonnes of greenhouse gas emissions. It therefore follows that shifting people from cars to bicycle transport will have a material impact on greenhouse gas emissions. Providing infrastructure and encouragement to ride to work (as detailed in Transport point) is one of the most important examples of this shift, ride to school is another.

3. Transport: Implement a coordinated approach to infrastructure provision and behaviour change.
The government has a responsibility to help make cycling a more viable travel solution, by improving facilities for cyclists and making it safer to cycle. There are more bicycles sold each year (approx. 1.2 million)

9. Treasury & the Economy: Support the key health and environment policies of the National Reform Agenda
The bicycle business is big business with more bikes than cars sold in Australia each year. For its part, the Federal government has already recognised the importance of cycling in its Sustainable Cities report of 2005. Cycling has a key role to play in the liveability and sustainability of our cities and communities, which are critical to maintaining Australia's economic performance. The latest round in the National Reform Agenda brings focus to the human capital and environmental outcomes as requirements for the future competitiveness of the Australian economy in a global context. At a time when the NSW economy lags behind the rest of the country, cycling is all the more relevant.
Corporate Social Responsibility is increasingly important for corporations, with greater focus on the triple bottom line of economic, social and environmental considerations. By introducing cycling programs, employers can encourage more staff to cycle to the place of employment and reap the benefits with healthier, happier employees. However, to facilitate an increase in the number of people cycling to their places of employment, along with the improvement of cycling infrastructure, the community needs some form of education (e.g. bicycle maintenance, cycling basics).
Bicycle NSW supports the findings of a Senate Committee Report 'Australia's future oil supply and alternative transport fuels', calling on changes to the tax system to remove the distortions that favour car use over public transport or cycling.
The RTA Bicycle Count data shows a 45% increase in bicycle traffic between 2002 and 2005 into Sydney CBD.

City of Sydney Draft Cycle Plan 2006 - 2016
http://www.cityofsydney.nsw.gov.au/Council/documents/OnExhibition/CycleStrategy/CyclingStrategyExhibitionDraft2006Part1.pdf

Executive Summary
Background

Research indicates a significant switch from cars to bicycles as a mode of transport can be achieved through the provision of appropriate bicycle facilities and programs. New bike planning in cities across North America is delivering significant gains in cycling participation.
Davis, California, for example has increased cycling as a mode of transport to 10% of total trips. European models including Deft in Holland or Copenhagen in Denmark have demonstrated that with the highest levels of commitment, very significant shifts towards cycling of up to 30% can be achieved. Surveys undertaken in Sydney in 1990 show that regular cycle trips could increase by 20% if the road system was made safer and more convenient. The City of Sydney Cycle Strategy and Master Plan (the Plan) is Council's commitment to improving cycling in the City. It provides the social and infrastructure directions and actions to achieve a greater level of cycling participation, and a safer and more comfortable cycling environment over the next 10 years. The Plan is part of the City's Integrated Transport Strategy currently being developed. It is based on a comprehensive analysis of cycling issues by consultants for the City, including input from the cycling community. The Plan is consistent with the City's Corporate Plan objectives, especially in the key focus area of transport and accessibility. Building on the former City of Sydney, South Sydney Council, and Leichhardt Bike Plans, the Plan identifies a range of network and infrastructure priorities and social initiatives and action plans to deliver these initiatives.

Bike-only lanes let cyclists shift into a new gear
http://www.smh.com.au/news/environment/bikeonly-lanes-let-cyclists-shift-into-a-new-gear/2007/03/23/1174597882715.html

Here is the web address for oybike, street hire system, UK
http://www.oybike.com/?gclid=COzsxefGoIsCFQvUlAod8GMQhg

Sharing the road with bikes: How does Copenhagen do it?
By PATRICIA CHASE. Special to the Journal
http://www.i-sustain.com/learningCenter/Publications/Creating%20a%20Bicycle%20Culture%20-%20DJC%20Article.htm

32% cycle to work
Currently 32 percent of workers bicycle to work. In surveys, 50 percent say they cycle to work because it is fast and easy. An equal number say they do it for exercise. Financial reasons play a part for some cyclists. Weather does have an impact on cycle use but not as much as one might expect. Sixty percent of cyclists normally cycle in rainy weather and 66 percent continue cycling in the winter in temperatures that hover around freezing. Still, these figures aren't good enough for the Department of Traffic Planning, which now has the goal of increasing bicycle commuters to 40 percent. With high levels of cycling, it would be natural to expect a high accident rate, but the paradox is that the more cyclists there are, the safer it is. This is because a critical mass has been achieved in which drivers have a heightened sense of awareness about bicyclists. How has Copenhagen achieved such a high level of bicycle use? First of all, bicycle planning has the same status as public transport in planning and funding. Bike paths and routes are either clearly marked or separated from vehicular traffic by curbs, bike lanes have their own traffic signals and bikes are prioritised over cars at places where they meet.

Steep taxes, little parking
Extensive marketing and public relations campaigns have been implemented to get people to leave their cars at home for in-city travel, even if they have a car for use on the weekends. In addition to good planning, the local and national governments use a big stick when it comes to trying to keep people from relying on cars. Fees and taxes for automobile purchase add 200 percent to the price of a new car. There are few parking spaces, and the ones that exist are very expensive. In order to insure that everyone has access to a bike, Copenhagen has a free bike program called City Bikes. Riders pay a refundable deposit of about $3 to have unlimited use of a bike within a specified area. The cost of the program is paid by sponsors, who pay about $280 per year for a minimum of 25 bikes.

In return for sponsorship, the bikes carry advertisements, which appear on the top tube panel and disk wheels. The bicycles used in the City Bikes program were designed with components that are incompatible with other bikes, preventing theft of parts. Since the launch of the program, bicycle theft in Copenhagen has decreased. The City Bikes program has become part of Copenhagen's downtown culture, and a visible sign that Copenhagen cares about being a liveable city.

Scandinavian sustainability
In March, a group of architects, engineers, developers and others from Washington and Oregon went to Sweden and Denmark to look at urban sustainability projects. The DJC is running a series of weekly articles on sustainability in Scandinavia, based on places visited by the tour group. The tour was organized by International Sustainable Solutions, a group with offices in Seattle and Aalborg, Denmark. The organization encourages the sharing of knowledge and the creation of market opportunities for sustainable products and practices.
For more information about International Sustainable Solutions, contact Patricia Chase at Patricia@i-sustain.com or visit www.i-sustain.com

Copenhagen's City Bike Program
http://members.aol.com/humorme81/citybike.htm

Evolution of a Bicycle Friendly Community - the Davis Model
http://www.bicyclefriendlycommunity.org/davis1.htm

Email 2
Hello Colin,

Thank you for your presentation last night.

Attached is a map of the area north west of Lismore indicating the catchment area for cyclists commuting to Lismore.

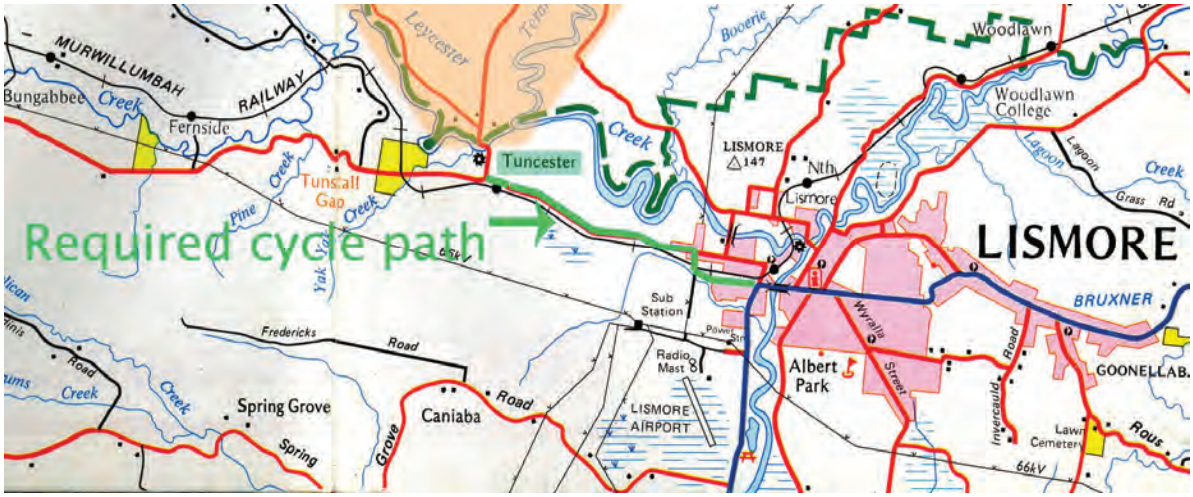
As you will see, this feeds into Tuncester but the road from Tuncester to Lismore has a narrow pavement and is busy. There is plenty of room to the side of the road and it might be feasible to construct a parallel cycle path - or widen the present road.

Other routes from the north - Dunoon Road, the Nimbin Road - as narrow, busy and very hilly which is a drawback for cycling.

Any questions, feel free to contact me.

Hugh Nicholson

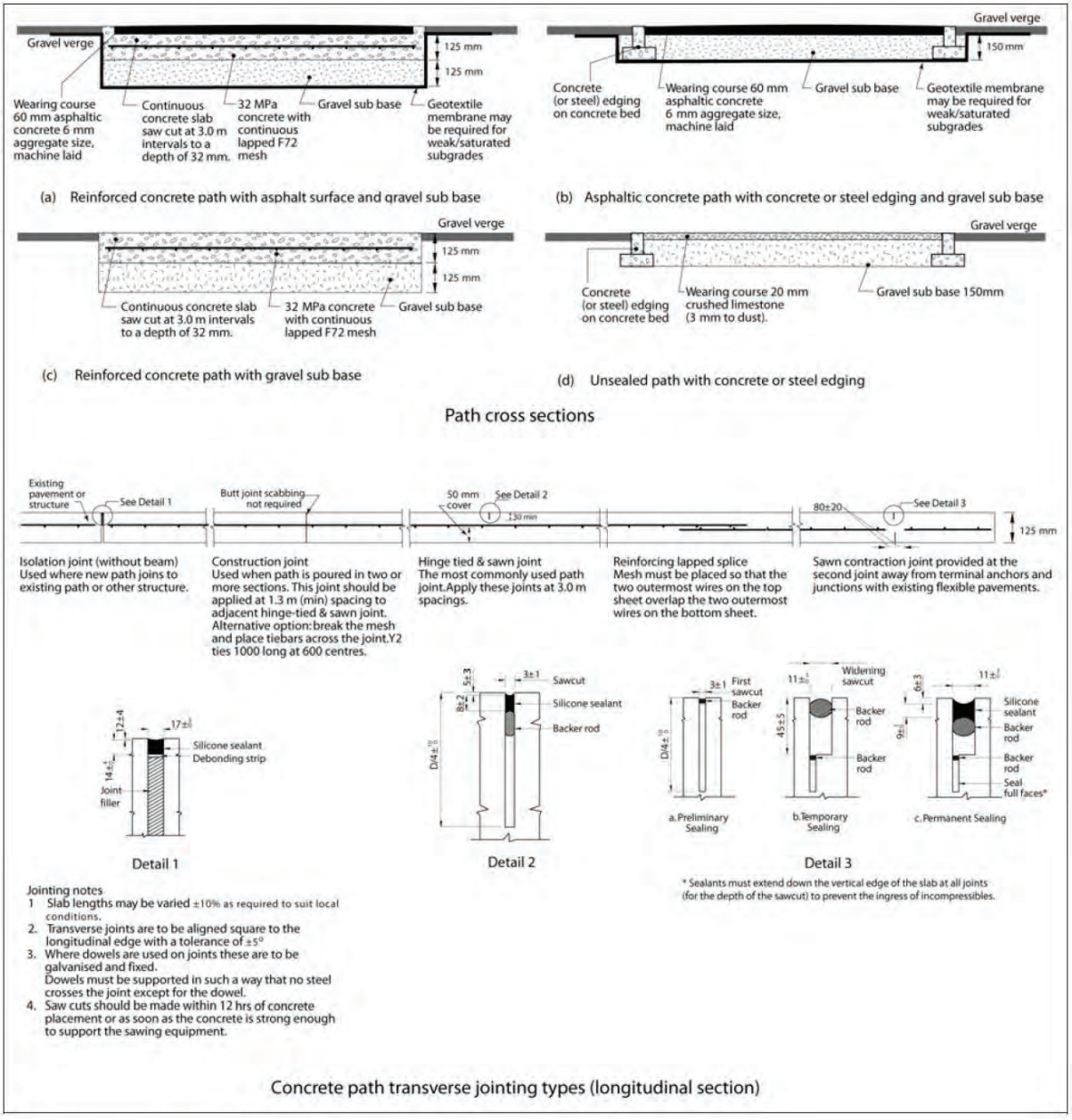
Ph: 02 6688 6204
Email: terania@activ8.net.au



Appendix K: Cycleway pavement specifications and dimensions
Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths

COMMENTARY 12

Some road authorities have detailed specifications for the construction of bicycle path and shared path pavements. Figure C12 1 shows an example from the RTA of New South Wales, including different pavement types and transverse joint types for concrete pavements.



Source: Adapted from RTA (2005).

Figure C12 1: Details of bicycle path pavements

Appendix L: Path Widths
Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths

7.5.2 *Bicycle Paths*

Table 7.3 shows desirable widths and acceptable ranges of width for bicycle paths (i.e. exclusive use). The upper limit of the acceptable range in the table should not discourage designers from providing a greater width where it is needed (e.g. very high demand that may also result in overtaking in both directions).

Table 7.3: Bicycle path widths

	Path width (m)	
	Local access path	Major path
Desirable minimum width	2.5	3.0
Minimum width – typical maximum	2.5[1] – 3.0[2]	2.5[1] – 4.0[2]

1. A lesser width should only to be adopted where cyclist volumes and operational speeds will remain low.
2. A greater width may be required where the number of cyclists is very high.

7.5.3 *Shared Paths*

Table 7.4 shows desirable widths and acceptable ranges of width for shared use paths. As for bicycle paths, the upper limit of the acceptable range in the table should not discourage designers from providing a greater width where it is needed (e.g. very high demand that may also result in overtaking in both directions).

Table 7.4: Shared path widths

	Path width (m)		
	Local access path	Commuter path	Recreational path
Desirable minimum width	2.5	3.0	3.5
Minimum width – typical maximum	2.5[1] – 3.0[2]	2.5[1] – 4.0[2]	3.0[1] – 4.0[2]

1. A lesser width should only to be adopted where cyclist volumes and operational speeds will remain low.
2. A greater width may be required where the numbers of cyclists and pedestrians are very high or there is a high probability of conflict between users (e.g. people walking dogs, roller bladders and skaters etc.).

7.5.4 *Separated Paths*

Table 7.5 and Table 7.6 show desirable widths and acceptable ranges of width for two-way and one-way separated paths respectively. However, where it is appropriate (e.g. high traffic demand) designers may provide a greater width than the typical maximum shown in the tables.

Table 7.5: Separated two-way path widths

	Path width (m)		
	Bicycle path	Footpath	Total
Desirable minimum width	2.5	2.0	4.5
Minimum width – typical maximum	2.0 – 3.0	≥ 1.5	≥ 4.5

Table 7.6: Separated one-way path widths

	Path width (m)		
	Bicycle path	Footpath	Total
Desirable minimum width	1.5	1.5	3.0
Minimum width – typical maximum	1.2 – 2.0	≥ 1.2	≥ 3.4

Appendix M: Path Gradient
Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths

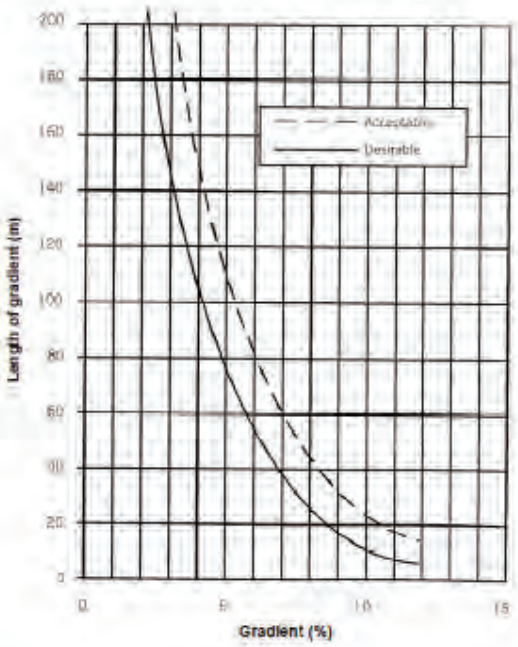
7.4.1 *Ease of Uphill Travel*

Figure 7.1 shows the maximum lengths of uphill gradient acceptable to cyclists. The figure is based on a review of the ease of uphill travel (Andrew O'Brien & Associates 1996).

In using the figure designers should understand that:

- Above 3% the acceptable length reduces rapidly and it is considered this is the desirable maximum gradient for use on paths. However, in practice there are cases where it is not feasible to achieve a 3% maximum and the designer has no choice but to adopt a steeper gradient.
- In cases where 3% cannot be achieved consideration should be given to limiting gradient to a maximum of about 5% and providing short flatter sections (say 20 m long) at regular intervals to give cyclists travelling both uphill and downhill some relief from the gradient.

It is sometimes difficult to achieve these gradients where a path follows a river and a connection between paths must be achieved in the vicinity of a steep escarpment. It should also be noted that a long, uphill grade preceded by a downgrade is more acceptable than one preceded by a flat or slightly rising grade.



Notes:

Gradients and the associated length would normally be based on the distance between the tangent points for an isolated steep section. However, where there are consecutive grades of varying steepness (all uphill) or large radius vertical curves, these should be calculated based on the intersection points of the respective vertical curves.

In general, the 'acceptable' line in the figure would be satisfactory for paths with a high proportion of regular or physically fit cyclists, which in most instances would include commuter and sporting cyclists. Otherwise, the 'desirable' line in the figure is recommended.

Source: Based on a review by Andrew O'Brien & Associates (1996).

Figure 7.1: Desirable uphill gradients for ease of cycling

Appendix N: Bike Parking Facilities
AS 2890.3-1993 Parking Facilities – Bicycle Parking Facilities

APPENDIX B

TYPICAL BICYCLE PARKING FACILITIES
(Informative)

B1 SCOPE This Appendix provides typical examples of bicycle parking facilities for Classes 1, 2 and 3.

B2 CLASS 1 PARKING FACILITIES These are fully enclosed individual bicycle lockers, accessible to one person only. Lockers are ideal for long-term parking in locations where there is minimal or non-existent direct surveillance, as they provide security and weather protection for the bicycle and all fittings. Helmet, wet weather gear and other equipment can also be safely stored.

Lockers should be considered at the design stage of new buildings and be located within 70 m of the access to the building. They can be sited back to back, or in quadrant or fan arrangements. Typical dimensions and arrangements are shown in Figure B1.

B3 CLASS 2 PARKING FACILITIES

B3.1 Lock-up cage This type of parking unit is suitable for staff parking at workplaces, commuter parking at public transport stations, and parking at other locations where continuous surveillance is not available. Door keys are rented from a responsible official and users must also lock bicycles to a rail or other fixture inside the unit. The entrance should have a self-closing, self-locking door.

A lock-up cage is roofed, whether outside or inside a building, and typically has a capacity for eight bicycles inside, with four wall rails provided outside for Class 3 parking for casual users as shown in Figure B2(a).

B3.2 No-go compound This type of parking unit is suitable for situations such as schools and factories where either a measure of full-time surveillance is available, or the compound is within an overall area substantially secured from general public access. Entry is prohibited to all except bicycle owners. Door keys can either be issued to all users or held by responsible officials or school teachers. Provision is required for locking bicycles individually inside the compound. The compound will generally be larger than a lock-up cage, and the one compound will usually be made large enough to provide for all the bicycle parking needs of the establishment. Entrances and exits should have self-closing, self-locking doors. A typical layout is illustrated in Figure B2(b).

Roofing of the compound will not always be needed. However, if there is likely to be a significant incidence of over-the-fence pipe theft from an unroofed compound, additional preventive security measures (e.g. surveillance) will be required before it can be classified as a Class 2 facility.

B4 CLASS 3 PARKING FACILITIES Class 3 facilities comprise either floor- or pavement-mounted rails, wall-mounted rails, or street furniture provided for other reasons which can also meet requirements for Class 3 bicycle parking, i.e. the ability to chain and lock the bicycle frame and wheels to the fixture.

The bicycle rail is the cheapest and easiest parking device to operate for bicycles. The steel rail supports the whole bicycle in a stable, upright position, and the frame and wheels can be secured by chain, cable or U-lock. This is illustrated in Figure B3(a).

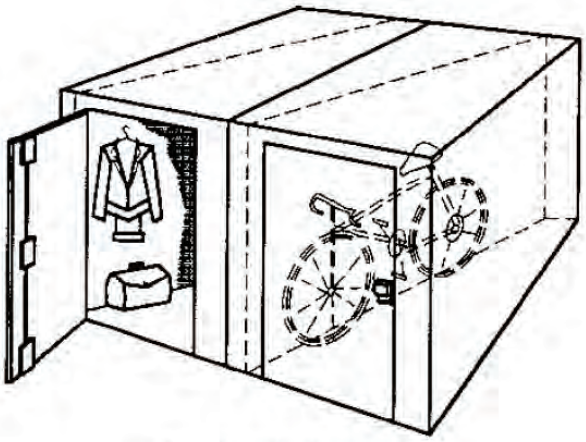
Another form of bicycle rail is the wall rail shown in Figure B3(b). This offers security and ability to support the bicycle, similar to that of the free-standing rail.

Existing street furniture such as poles, fences or handrails, modified as necessary by welding on suitable attachments, can be used provided that their ability to support the bicycle is at least as good as that of the free-standing rail.

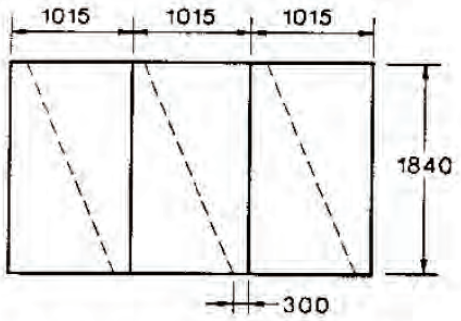
It should be possible to lock the frame and *both* wheels of a bicycle to the rail or fixture without removal of a wheel from the bicycle. Fixtures which do not meet this requirement cannot be considered as Class 3 facilities.

Car parking spaces may be readily converted to provide bicycle parking areas. The layouts illustrated in Figure B4 show the conversion of single and double spaces. The single space conversion is appropriate for both on-street and off-street parking areas. It is essential to ensure that in such cases, there is physical separation between bicycle and motor vehicle parking (see Clause 2.4).

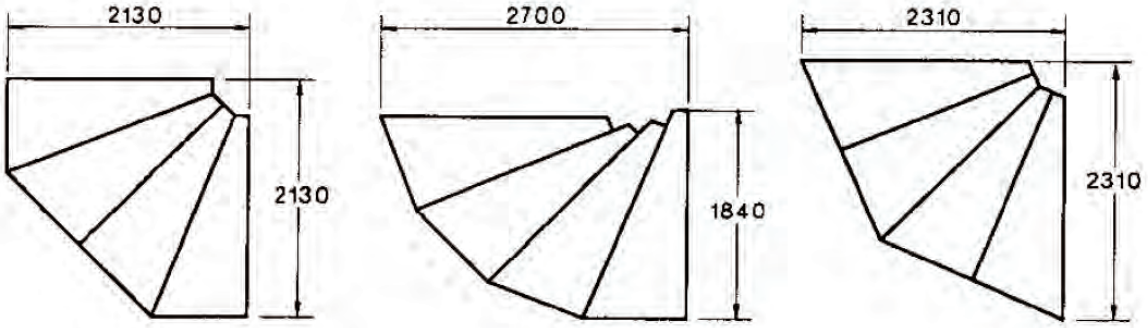
B5 WHEEL RACKS AND STANDS Racks and stands which allow only one wheel to be locked to the device, or which support the bicycle by one wheel only, do not provide either proper support or security for the bicycle as a whole. They do not meet the requirements of any of the classes of parking facility described in this Standard, and should not be used in new installations. It is recognized, however, that there are existing installations which do not meet these requirements. These should be replaced progressively, giving priority to installations where the security risk is greatest.



(a) Bicycle lockers



(b) Typical double-sided layouts



(c) Typical quadrant or fan layouts

DIMENSIONS IN MILLIMETRES

FIGURE B1 TYPICAL CLASS 1 PARKING FACILITIES WITH BICYCLE LOCKERS

Appendix O: Cycleway Signage
AS 1742.9-2000 Manual of Uniform Traffic Control Devices – Bicycle Facilities

2.2 SIGNS

Signs used to control bicycle usage on roads and to provide relevant warning of hazards are listed in Table 2.1 and are used as follows:

(a) *No bicycles (R6-10-3)*

R6-10-3

This sign shall be used at the beginning of any road along which the riding of bicycles is to be prohibited by use of a sign. The END supplementary plate (R7-4) (see Clause 3.2(c)) may be added to indicate the point at which the prohibition ends.

The no-bicycles pavement symbol may be used in lieu of this sign (see Clause 2.3(e)).

(b) *Bicycle lane (R7-1-4)*

R7-1-4

The Bicycle LANE sign shall be used to designate an exclusive bicycle lane as follows:

(i) At the beginning of a full-time or part-time exclusive bicycle lane and at additional locations such that the spacing does not exceed 500 m. The Times of Operation supplementary plate shall be added to the sign for part-time operation.

(ii) In conjunction with the END supplementary plate at the end of a full-time or part-time exclusive bicycle lane.

The Bicycle LANE sign may also be used in advance of the start of a full-time or part-time exclusive bicycle lane, in conjunction with the AHEAD supplementary plate in both cases and the Times of Operation supplementary plate for part-time operation.

(c) *Bicycle lane supplementary plates* Supplementary plates shall be used in conjunction with the Bicycle LANE (R7-1-4) sign as follows:

(i) AHEAD (R7-2) shall be used if advance notice of the start of a bicycle lane is required.

(ii) END (R7-4) shall be used to indicate the end of a bicycle lane.

(iii) Overhead Arrow (R7-5) shall be used if needed to indicate which lane is the bicycle lane by placing the sign assembly above the relevant lane.

(iv) Times of Operation (R9-1-1, R9-1-2) shall be used to indicate the times a part-time exclusive bicycle lane operates.

R7-2

R7-4

R7-5

R9-1-1

R9-1-2

(d) *Bicycles excepted (R9-3)*

R9-3

The BICYCLES EXCEPTED sign shall be used in conjunction with another regulatory sign where the regulatory requirement does not apply to bicycles, e.g. in conjunction with NO ENTRY, No Right (Left) Turn, NO THROUGH ROAD signs. Each potential use of this supplementary plate should be examined to ensure that bicycles will not be exposed to hazard, e.g. from unexpected conflict with motor vehicles.

(e) *Bicycle warning (W6-7)*

W6-7

This sign shall be used to warn motorists of the presence of bicycles on the road where cyclists are likely to come into conflict with motor traffic and are potentially at risk. The supplementary plates in Item (f) may be used with the sign where appropriate.

Where bicycle traffic may come into conflict with motor traffic at isolated locations, the sign specified in Item (g) shall be used in lieu.

(f) *Warning sign supplementary plates* The following supplementary plates may be used with the bicycle warning sign, W6-7:

NEXT x km (W8-17-1)

NEXT x m (W8-17-2)

W8-17-1

W8-17-2

(g) *Watch for bicycles (G9-57)*

G9-57

The WATCH FOR Bicycles sign shall be used at locations where it is necessary to warn motorists that bicycle traffic may come into conflict with motor traffic at a specific point due to a particular road feature or hazard. Such locations include the following:

(i) At the narrowing of a road or shoulder normally used by significant numbers of cyclists, e.g. at a bridge.

(ii) At intersection treatments where bicycle traffic may be squeezed for space.

(iii) Where traffic entering from a side street has to cross a bicycle lane.

(iv) On the approaches to multi-lane or large single lane roundabouts.

(v) On left turn slip lanes where left turning traffic is provided with a merge taper or auxiliary lane.

For the cases in Items (iii), (iv) and (v) the sign may be mounted below any appropriate STOP, GIVE WAY or Roundabout Regulatory sign.

(h) *Cyclists dismount (G9-58)*

G9-58

This sign should be used where necessary to remind cyclists that they are required to dismount before crossing a road on a pedestrian crossing, a children's crossing or a marked foot crossing at traffic signals. The sign may also be used to warn cyclists to dismount before reaching a particular place at or beyond which it would be hazardous to continue riding. A second sign indicating the reason for the warning should, where appropriate, be mounted below this sign.

Typical legends include the following:

(i) GAPS IN BRIDGE DECK

(ii) BROKEN SURFACE

(i) *All bicycles (G9-60)*

G9-60

This sign should be used at any point where it is required to direct all bicycles onto a particular route or path, e.g. from a bicycle lane onto a path.

SECTION 3 BICYCLE PATH AND FOOTPATH PROVISIONS

3.1 GENERAL

This Section deals with footpaths and off-road paths which cater for bicycles either exclusively or jointly with pedestrians.

Paths used jointly by pedestrians and bicycles may operate either as—

(a) footpaths where only certain classes of bicycle traffic may be permitted by law;

(b) shared paths on which pedestrians and any class of bicycle traffic share the same space and there may be separation of the two directions of travel by a longitudinal line or pavement markings, or both; or

(c) separated paths on which bicycle traffic is separated from pedestrians by a longitudinal line or raised separator, or by use of contrasting pavement.

3.2 SIGNS

Signs used to control traffic on bicycle paths and footpaths are listed in Table 3.1 and are used as follows.

(a) *Give way (R1-2)*

R1-2

This sign may need to be used on an exclusive bicycle path or joint-use path on the approach to a road crossing to reinforce the requirement that bicycle traffic must give way to road traffic. A give-way line (see Clause 3.3(f)) may be used in conjunction with this sign. A STOP sign may be needed in extreme circumstances not amenable to other treatments.

A special reduced size sign is specified for path use (see Table 3.1).

(b) *No bicycles (R6-10-3)*

R6-10-3

This sign shall be used wherever the riding of bicycles on a path or elsewhere is to be prohibited by use of a sign. The sign shall be placed at the beginning of the path and repeated at all access points where cyclists might wish to join the path. The END supplementary plate (R7-4) may be needed in conjunction with this sign to indicate the end of the prohibition.

The no-bicycles pavement symbol may be used in lieu of this sign (see Clause 3.3(g)).

(c) *End supplementary plate (R7-4)*

R7-4

This sign shall be used in conjunction with path designation signs R8-1, R8-2 and R8-3, and the No Bicycles sign (R6-10-3) where necessary to indicate the end of the facility or restriction. If a facility continues on but its designation changes, e.g., from a separated path to a shared path, the END supplementary plate shall not be used but the new path designation sign shall be used instead.

(e) *Shared path (R8-2)*

This sign shall be used to designate a path as a shared path for use by bicycles and pedestrians.

R8-2

(f) *Separated path (R8-3)* This sign shall be used to designate a separated path.

R8-3(L)

R8-3(R)

(g) *Pedestrian warning (W6-1), Bicycle warning (W6-7), Bicycle/pedestrian warning (W6-9), Crossing arrows (W8-23)*

The Bicycle and Bicycle/Pedestrian warning sign assemblies shall be used where any path is about to cross a path used by bicycles alone or bicycles and pedestrians, and poor sight distance, high bicycle speeds or other factors necessitate a warning for people about to cross the path. The signs are also appropriate for use where a bicycle path crosses a road.

The Pedestrian warning sign assembly may be required to warn cyclists about to cross a path used only by pedestrians.

W6-1

W8-23

W6-7

W8-23

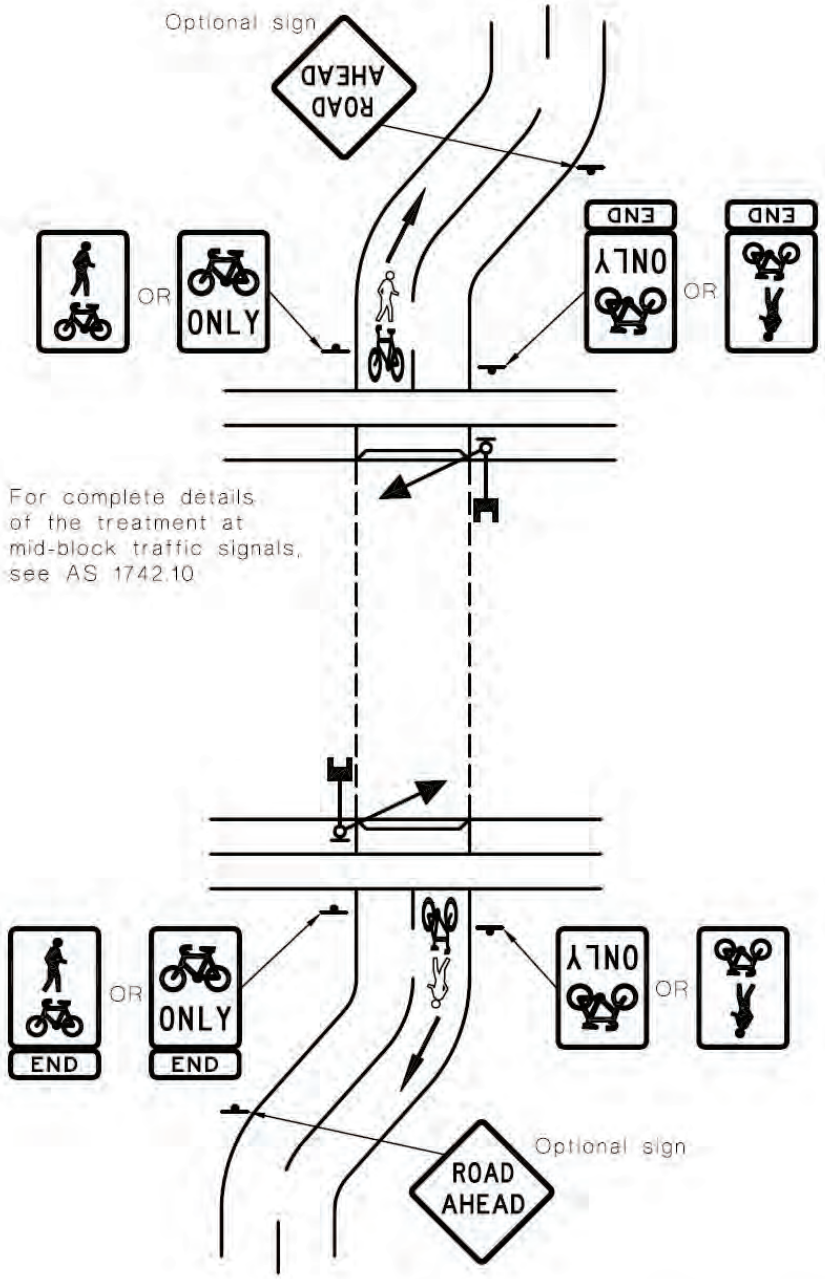
W6-9

W8-23

(h) *Road ahead (W6-8)*

This sign may be used to warn cyclists travelling along an off-road path that the path is about to cross or terminate at a roadway and the existence of the road crossing is not obvious. It shall not be placed in any position where the sign face is visible to motor traffic on a roadway.

W6-8



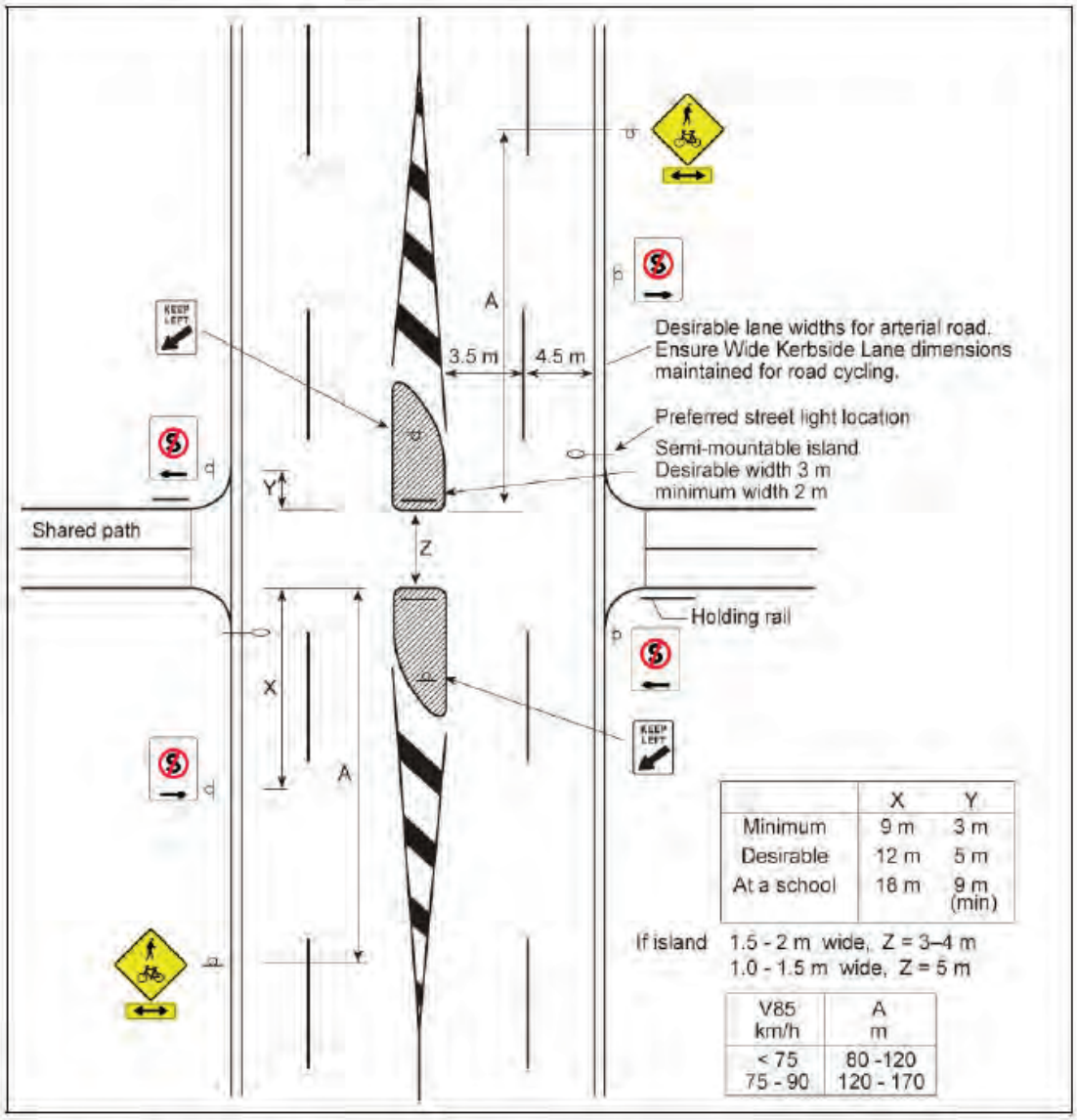
NOTE: CYCLISTS DISMOUNT signs (G9-58, see Clause 2.2(h)) may be required in conjunction with the END path signs if needed to remind cyclists that they are not permitted to ride across the crossing.

FIGURE 3.10 USE OF MID-BLOCK PEDESTRIAN/CYCLIST OPERATED TRAFFIC SIGNALS AT AN EXCLUSIVE BICYCLE OR JOINT-USE CROSSING

Appendix P: Refuge Islands and Intersection Treatments
Austroads Guide to Road Design Part 4: Intersections and Crossings

9.2.3 Refuges away from Intersections

Where an off-road path crosses a busy local street or an arterial road away from an intersection it may be necessary to provide facilities to aid the cyclists to make a safe crossing. These facilities may be in the form of controlled crossings as discussed previously, or physical refuges. Physical refuges in the centre of the road are recommended to enable a staged crossing where volumes are greater than 3000 vpd. A typical refuge is shown in Figure 9.2 for a shared path crossing a two-way, four-lane road. Separate areas may be provided within the refuge for cyclists and pedestrians if sufficient space can be made available.



Note: Where required tactile ground surface indicators should be provided on paths and ramps in accordance with AS 1428.4 and jurisdictional guidelines.
Source: Based on AS 1742.10.

Figure 9.2: Example of a cyclist and pedestrian refuge at a mid-block location

Appendix Q: On-road Bicycle Lanes
Austroads Guide to Road Design Part 3: Geometric Design 2010

Note: Green coloured surface treatments should only be used to increase driver and cyclist awareness of a bicycle lane, and to discourage drivers from encroaching into a bicycle lane. The treatment should be used sparingly to maintain its effectiveness.

Figure 4.24: Exclusive bicycle lane

Depending on the practice of the road authority and the site conditions, the channel may not be included as part of the bicycle lane width. This is due to potential safety concerns, including:

- edge drop off between the pavement and channel surfaces, particularly when open graded friction course (OGFC) is used
- hazards in and adjacent to the kerb and channel such as the surface condition of the channel and drainage pit entrances
- the likelihood of the bicycle pedals striking the kerb.

Table 4.17: Exclusive bicycle lane dimensions in urban areas

Speed limit (1) (km/h)	Lane width (2),(3) (m)		
	60	80	100
Desirable	1.5	2.0	2.5
Acceptable range	1.2 – 2.5	1.8 – 2.7	2.0 – 3.0

Notes:

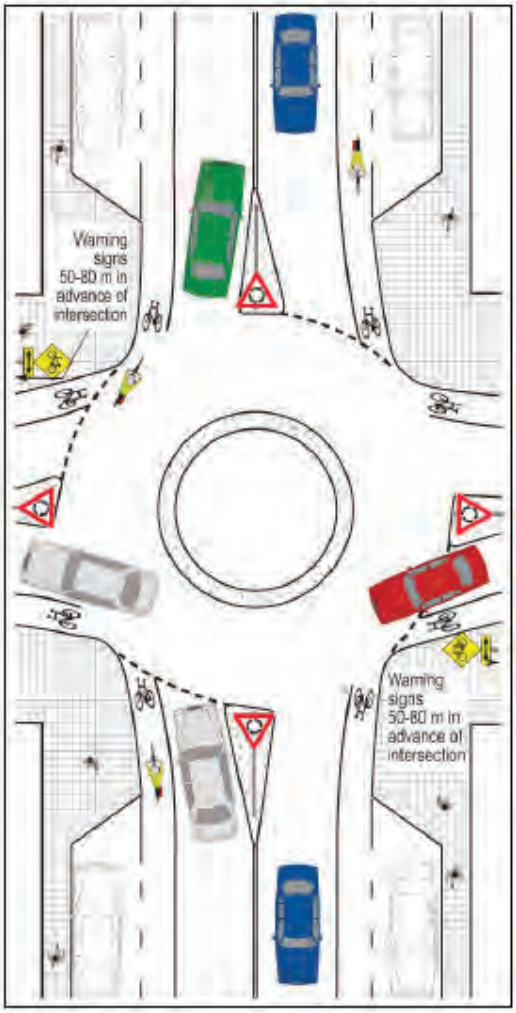
1. The posted or general speed limit is used, unless 85th percentile speed is known and is significantly higher.
2. Interpolation for different speed limits is acceptable.
3. The width of the lane is normally measured from the face of the adjacent left hand kerb. The width of road gutters/channels (comprising a different surface medium) should be less than 0.4 m where minimum dimensions are used. The figures in the table presume that surface conditions are to be of the highest standard. Where there are poor surface conditions (see the *Guide to Road Design – Part 6A: Pedestrian and Cyclist Paths* 2009e, Appendix B) over a section of road adjacent to the gutter, then the width of the exclusive bicycle lane should be measured from the outside edge of that section.

Appendix R: On-road Cycle lanes at Roundabouts
Austroads Guide to Road Design Part 4B 2009

5.3.3 *Bicycle Lanes at Single-lane Roundabouts*

Local street with bicycle lanes

Figure 5.2 shows a treatment that is suitable for bicycle routes at local street intersections that have low approach speeds and low volumes. It provides warning signs and bicycle lanes on the approaches but no special treatment within the circulating roadway. The bicycle lanes must extend to the holding lines so that a squeeze point for cyclists is not created. The low volume of heavy vehicles on this type of road means that the road can be shared with cyclists. Cyclists typically turn right with general traffic.



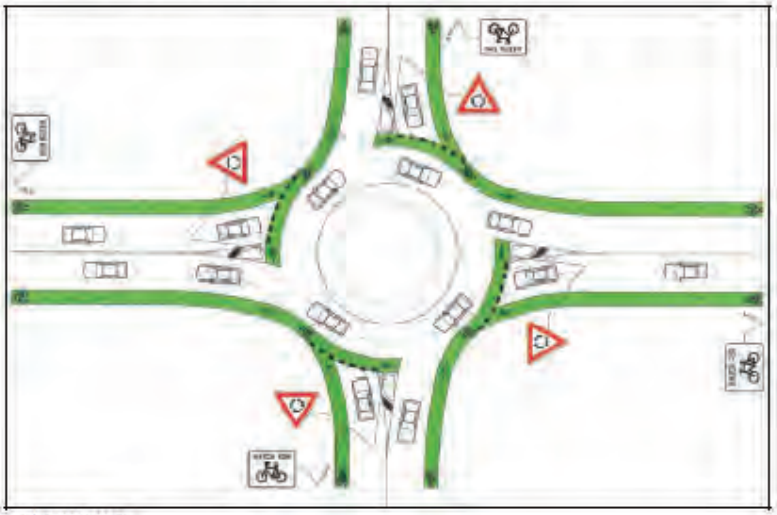
Source: Adapted from RTA (2005).

Figure 5.2: Bicycle lane at a small single-lane roundabout on local road (some jurisdictions may not favour this treatment – refer Section 5.3.1)

Collector road or arterial road with no physical separation of bicycle lanes

The treatment shown in Figure 5.4 has been adopted and implemented by some road authorities. It provides a bicycle lane on the roundabout approaches and departures without any physical separation. It is known that many motorists will cut across the bicycle lane on the entry and exit curves when no cyclists are present. For this reason, the maximum entry path radius criteria in Section 4.5.5 should be applied by assuming drivers will cut across the bicycle lane (i.e. Step 3 in Figure 4.6 will involve drawing a line 1.5m from the kerbed left edge of the bicycle lane).

There is some concern that this treatment may lead to conflict between heavy vehicles and bicycles where the route carries a relatively high volume of both freight vehicles and cyclists. It is therefore suggested that the entries of these treatments should be designed so that the swept paths of entering design vehicles do not have to encroach into the bicycle lane. However, where a site has low volumes of both trucks and bicycles encroachment may be allowed if necessary to achieve the maximum entry radius criteria in Section 4.5.5.



Source: Adapted from VicRoads (2005)

Figure 5.4: Two bicycle routes crossing at a single-lane roundabout with no physical separation of bicycle lanes (some jurisdictions may not favour this treatment – refer Section 5.3.1)

Appendix S: Method for determining Expected Usage

Criteria	Performance Conditions	Score
Number of Attractors Linked	1 Attractor	5
	2 Attractor	10
	3 Attractor	15
	>3 Attractors	20
Type of Attractor	Residential	5
	Recreational / Sport	10
	Commercial / Retail	12
	Schools / University	15
	Schools and Commercial	20
Links to major infrastructure	Over / Underpass	10
	Total Score:	
Estimated usage score	Estimated usage (range)	Points
	0-10	1pt
	11-20.	1.5pts
	21-40	2pts
	41-60	2.5pts

Appendix T: Scoring Criteria for prioritising Cycleway Works

		Points
Attractors linked	1 attractor	1
	2 attractors	2
	3 attractors	3
	>3 attractors	3.5
Caters for recreational and commuter use	One only	1
	Both	2
Other Benefits (Safety)	Off-road	1
	On-road	0
Estimated Usage	0-10	1
	11-20.	1.5
	21-40	2
	41-60	2.5

Appendix U: Cycleway Plan Works Program Prioritised Scoring Criteria

Item	Street	From	To	Description	Side	Crossings required	Length (m)	cost / m	Estimated Cost	Value m per $	(M per $x50)	Attractors usage score (20)	Attractor (20)	Link to major infrastructure (20)	Estimated users range	Estimated users Points (2.5)	Attractors linked Points (3.5)	Recreational/ Commuter route (2)	Safety (1)	Total Points	Comments
1	Ballina Rd	Nielson St	Second Ave	Proposed off road cycleway	South	1	530	225	124250	0.0043	0.21	15	20	20	41-60	2.5	3.5	2	1	9.21	State
2	Dawson St	Magellan St	Uralba St	Path to be widened	East	0	260	120	31200	0.0083	0.42	20	20	0	21-40	2	3.5	2	1	8.92	State
3	Dawson St	Uralba St	Orion St	Path to be widened	East	1	465	120	60800	0.0076	0.38	20	20	0	21-40	2	3.5	2	1	8.88	State
4	Dawson St	Magellan St	Ballina St	Path to be widened	East	1	380	120	50600	0.0075	0.38	20	20	0	21-40	2	3.5	2	1	8.88	State
5	Oliver Ave	Goonellabah S & A Centre	Rous Rd	Path to be widened	North	2	530	120	73600	0.0072	0.36	20	12	0	21-40	2	3.5	2	1	8.86	
6	Rotary Dr	Dixon Pl	Uralba St	Safety railing on outside	South	0	720	250	180000	0.0040	0.20	20	12	0	21-40	2	3.5	2	1	8.70	
7	Wyrallah Rd	Dalley St	Oliver St	Path to be widened	East	0	210	120	25200	0.0083	0.42	15	12	0	21-40	2	3	2	1	8.42	
8	Ballina Rd	Kellas Ave	453 Ballina Rd	Path to be widened	South	0	112	120	13440	0.0083	0.42	15	15	10	21-40	2	3	2	1	8.42	State Missing Link
9	Ballina St	Second Ave	Union St	Path to be widened	South	2	2165	120	269800	0.0080	0.40	20	20	20	41-60	2.5	3.5	1	1	8.40	State
10	Wyrallah Rd	Dibbs St	Wyrallah Rd Public School	Path to be widened	East	1	675	120	86000	0.0078	0.39	15	15	0	21-40	2	3	2	1	8.39	
11	Ballina Rd	Holland St	Oliver Ave East	Proposed off road cycleway	South	0	300	225	67500	0.0044	0.22	15	12	0	21-40	2	3	2	1	8.22	State Missing Link
12	Casino St	Wilson St	Caniaba St	Proposed off road cycleway	North	1	430	225	101750	0.0042	0.21	15	10	0	21-40	2	3	2	1	8.21	Missing Link
13	Lismore Park Leisure Link	Dawson and Brewster St	Magellan and Brewester St	Proposed off road cycleway	n/a	0	1520	270	410400	0.0037	0.19	15	20	0	21-40	2	3	2	1	8.19	Recreational Route 1
14	Rous Rd	Ballina Rd	Jubilee Ave	Path to be widened	East to Pleasant, West to Jubilee	1	1000	120	125000	0.0080	0.40	20	12	0	21-40	2	3.5	1	1	7.90	
15	Brunswick Street	Dawson	Carolina Rd	Proposed off road cycleway	South to Donnans, then North	2	935	225	220375	0.0042	0.21	10	15	20	41-60	2.5	2	2	1	7.71	State
16	High St	Bellevue St	Lismore Heights Public School	Proposed off road cycleway	East	1	420	225	99500	0.0042	0.21	20	15	0	21-40	2	3.5	1	1	7.71	Missing Link
17	Wilson Ck	Market St	Orion St	Proposed off road cycleway	West	0	1125	270	303750	0.0037	0.19	20	20	0	21-40	2	3.5	1	1	7.69	Recreational Route 2
18	High St	Beardow St West	Diadem St	On road cycleway - ped railing on outside, kerbing on inside, paint lane marking	South	0	300	300	90000	0.0033	0.17	20	15	0	21-40	2	3.5	1	1	7.67	
19	Conway St	Ballina Rd	Molesworth St	Proposed on road cycleway	Both	0	825	50	41250	0.0200	1.00	20	12	0	21-40	2	3.5	1	0	7.50	On-Road
20	Keen St	Conway St	Ballina Rd	Proposed on road cycleway	Both	0	230	50	11500	0.0200	1.00	20	12	0	21-40	2	3.5	1	0	7.50	On-Road
21	Keen St	Orion St	Browns Creek Carpark	Proposed on road cycleway	Both	0	450	50	22500	0.0200	1.00	20	12	0	21-40	2	3.5	1	0	7.50	On-Road

Item	Street	From	To	Description	Side	Crossings required	Length (m)	cost / m	Estimated Cost	Value m per $	(M per $x50)	Attractors usage score (20)	Attractor (20)	Link to major infrastructure (20)	Estimated users range	Estimated users Points (2.5)	Attractors linked Points (3.5)	Recreational/ Commuter route (2)	Safety (1)	Total Points	Comments
22	Market St	River	Molesworth St	Proposed on road cycleway	Both	0	170	50	8500	0.0200	1.00	20	12	0	21-40	2	3.5	1	0	7.50	On-Road
23	Molesworth St	Market St	Conway St	Proposed on road cycleway	Both	0	80	50	4000	0.0200	1.00	20	12	0	21-40	2	3.5	1	0	7.50	On-Road
24	Carrington St	Conway St	John Crowther Carpark	Proposed on road cycleway	Both	0	170	50	8500	0.0200	1.00	20	12	0	21-40	2	3.5	1	0	7.50	On-Road
25	Ballina Rd	Nielson St	Rotary Dr Ballina Rd roundabout	Proposed on road cycleway	South	0	1100	50	55000	0.0200	1.00	20	12	0	21-40	2	3.5	1	0	7.50	On-Road
26	Ross St	end of Ross	Ballina / Kellas rd roundabout	Path to be widened	South	0	647	120	67400	0.0096	0.48	10	15	0	21-40	2	2	2	1	7.48	
27	Hindmarsh St	Leycester St	Brunswick St	Path to be widened	West	0	205	120	24600	0.0083	0.42	15	15	0	21-40	2	2	2	1	7.42	
28	Keen St and Gundurimba Rd	John St	Albert Park School	Path to be widened	n/a	0	645	120	77400	0.0083	0.42	15	15	0	21-40	2	3	1	1	7.42	
29	Keen St	Ballina St	James St	Path to be widened		0	245	120	29400	0.0083	0.42	15	10	0	21-40	2	3	1	1	7.42	
30	Reserve St	Rous Rd	Existing Path at Sportsfields	Path to be widened	West	0	45	120	5400	0.0083	0.42	15	10	0	21-40	2	3	1	1	7.42	
31	Dalley St	Dibbs St	Military Rd	Path to be widened	North	1	760	120	96200	0.0079	0.40	15	15	0	21-40	2	3	1	1	7.40	
32	Simeoni Dr	Gordon Blair Dve	Oliver Ave	Path to be widened	West	1	655	120	83600	0.0078	0.39	15	12	0	21-40	2	2	2	1	7.39	
33	Dalley St	Wyrallah Rd	Dibbs St	Path to be widened	South	1	500	120	65000	0.0077	0.38	15	15	0	21-40	2	3	1	1	7.38	
34	Elizabeth St	Wyrallah Rd	Nielson St	Proposed off road cycleway	South	0	70	225	15750	0.0044	0.22	10	15	0	21-40	2	2	2	1	7.22	
35	Dudley Dve	Oliver Ave	Clare St	Proposed off road cycleway	West	0	1005	225	226125	0.0044	0.22	10	12	0	21-40	2	2	2	1	7.22	
36	Kadina St	Kadina High	Oliver Ave	Proposed off road cycleway	East then West	1	480	225	113000	0.0042	0.21	10	15	10	21-40	2	2	2	1	7.21	
37	Union St	Kyogle St	Opposite end of existing path	Proposed off road cycleway	East	1	380	225	90500	0.0042	0.21	10	12	0	21-40	2	2	2	1	7.21	
38	Elliot Rd	Union St	Crown St	Proposed off road cycleway	South	1	260	225	63500	0.0041	0.20	15	12	0	21-40	2	3	1	1	7.20	
39	Keen St	James St	John St	Proposed off road cycleway	East	0	255	225	57375	0.0044	0.22	15	5	0	11-20	1.5	3	1	1	6.72	
40	Oliver Ave	East of Waratah Way	Hepburn Park	Proposed off road cycleway	South	0	360	225	81000	0.0044	0.22	10	10	0	11-20	1.5	2	2	1	6.72	Missing Link
41	Oliver Ave	South West corner of Hepburn Park	South East corner of Hepburn Park	Proposed off road cycleway	North	1	290	225	70250	0.0041	0.21	10	10	0	11-20	1.5	2	2	1	6.71	Refuge island required when joining path from south to north
42	High St	Diadem St	Cooling St	Proposed on road cycleway	Both	0	1595	50	79750	0.0200	1.00	15	5	0	11-20	1.5	3	1	0	6.50	Missing Link
43	Jubilee Ave	McDermott Ave	Ballina Rd	Path to be widened	West	0	495	120	59400	0.0083	0.42	10	15	0	21-40	2	2	1	1	6.42	
44	Avondale Ave	Second Ave	Dibbs St	Path to be widened	North	0	250	120	30000	0.0083	0.42	10	15	0	21-40	2	2	1	1	6.42	

Item	Street	From	To	Description	Side	Crossings required	Length (m)	cost / m	Estimated Cost	Value m per $	(M per $x50)	Attractors usage score (20)	Attractor (20)	Link to major infrastructure (20)	Estimated users range	Estimated users Points (2.5)	Attractors linked Points (3.5)	Recreational/ Commuter route (2)	Safety (1)	Total Points	Comments
45	Military Rd	Dalley St	Sth Cross Uni	Path to be widened	West	0	255	120	30600	0.0083	0.42	10	15	0	21-40	2	2	1	1	6.42	
46	Union St	Hollingworth Ck	Three Chain Rd	Path to be widened	West	1	805	120	101600	0.0079	0.40	10	12	0	21-40	2	2	1	1	6.40	State Recreational Route 4
47	Bridge St	Existing path	Pitt St	Path to be widened	West then East	1	305	120	41600	0.0073	0.37	10	15	0	21-40	2	2	1	1	6.37	
48	Albert park fields loop	Follows Bernstein St, Gundurimba Rd and the River		Proposed off road cycleway	Loop	0	1260	270	340200	0.0037	0.19	10	20	0	21-40	2	2	1	1	6.19	Recreational Route 3
49	River bank	John St	Bernstein St	Proposed off road cycleway	West	0	285	270	76950	0.0037	0.19	10	20	0	21-40	2	2	1	1	6.19	Recreational Route 3
50	John St	Keen St	River	Proposed off road cycleway	South	0	195	270	52650	0.0037	0.19	10	20	0	21-40	2	2	1	1	6.19	Recreational Route 3
51	Bruxner Hwy	Path around Lismore Lake		Proposed off road cycleway	East	0	985	270	265950	0.0037	0.19	10	10	0	11-20	2	2	1	1	6.19	State Recreational Route 4
52	Krauss Ave	Three Chain Rd	Lismore Airport	Proposed on road cycleway	Both	0	1600	50	80000	0.02	1.00	10	12	0	21-40	2	2	1	0	6	
53	Crown St	Elliot St	Rhodes St	Path to be widened	West	0	300	120	36000	0.0083	0.42	5	15	0	11-20	1.5	1	2	1	5.92	
54	Bruxner Hwy	Existing path	Caravan Park past lake	Path to be widened	East	1	720	120	91400	0.0079	0.39	10	10	0	11-20	1.5	2	1	1	5.89	State
55	Holland St	South East corner of Hepburn Park	Ballina Rd	Proposed off road cycleway	West	0	1160	160	185600	0.0063	0.31	10	10	0	11-20	1.5	2	1	1	5.81	
56	Wilson Ck	Skate Park	Ballina St	Proposed off road cycleway	West	0	260	225	58500	0.0044	0.22	10	10	0	11-20	1.5	2	1	1	5.72	
57	McDermott Ave and Allingham Pl	Jubilee Ave	Gordon Blair Dr	Proposed off road cycleway	South	1	665	225	154625	0.0043	0.22	10	10	0	11-20	1.5	2	1	1	5.72	
58	Union St	Union St Bridge	Frank St	Proposed off road cycleway	West	1	285	225	69125	0.0041	0.21	5	12	0	11-20	1.5	1	2	1	5.71	
59	Union St	Elliot St	Phyliss St	Path to be widened	East	0	260	120	31200	0.0083	0.42	5	12	0	11-20	1.5	1	1	1	4.92	
60	Dibbs St	Pound St	Magellan St	Path to be widened	West	0	90	120	10800	0.0083	0.42	5	15	0	11-20	1.5	1	1	1	4.92	
61	Union St	Foleys Rd	Hollingworth Ck	Path to be widened	East	0	60	120	7200	0.0083	0.42	5	12	0	11-20	1.5	1	1	1	4.92	State Recreational Route 4
62	Union St Bridge Crossing	Western end of Union St Bridge	Existing Path on Bridge St	Path to be widened	West	0	1250	120	150000	0.0083	0.42	5	12	0	11-20	1.5	1	2	0	4.92	
63	Pound St	Hunter St	Dibbs St	Path to be widened	North	0	240	120	28800	0.0083	0.42	5	15	0	11-20	1.5	1	1	1	4.92	
64	Magellan St	Hunter St	Dibbs St	Path to be widened	South	0	240	120	28800	0.0083	0.42	5	15	0	11-20	1.5	1	1	1	4.92	
65	Hunter St	Ballina St	Magellan St	Path to be widened	West	0	205	120	24600	0.0083	0.42	5	15	0	11-20	1.5	1	1	1	4.92	

Item	Street	From	To	Description	Side	Crossings required	Length (m)	cost / m	Estimated Cost	Value m per $	(M per $x50)	Attractors usage score (20)	Attractor (20)	Link to major infrastructure (20)	Estimated users range	Estimated users Points (2.5)	Attractors linked Points (3.5)	Recreational/ Commuter route (2)	Safety (1)	Total Points	Comments
66	Rhodes St	Union St	Crown St	Path to be widened	South	0	200	120	24000	0.0083	0.42	5	15	0	11-20	1.5	1	1	1	4.92	
67	Ballina Rd	Brewster St	Diadem St	Proposed off road cycleway	North	0	220	160	35200	0.0063	0.31	5	10	0	11-20	1.5	1	1	1	4.81	State
68	Victoria St	Ballina St	Past Gerard St joining Existing Path	Proposed off road cycleway	East	0	265	160	42400	0.0063	0.31	5	10	0	11-20	1.5	1	1	1	4.81	
69	Kyogle St	Union	Crown St	Proposed off road cycleway	North	1	350	225	56000	0.0063	0.31	10	5	0	11-20	1.5	1	1	1	4.81	
70	Wilson St	Bridge	Terania St	install brifen safety fencing between road and path	East	0	240	200	48000	0.0050	0.25	5	10	0	11-20	1.5	1	1	1	4.75	
71	River bank	Bridge St	Zadoc St	Proposed off road cycleway	n/a	55m Bridge	290		400,000	0.0007	0.04	5	10	0	11-20	1.5	1	1	1	4.54	State Recreational Route 4
72	Terania St	Bridge St	Tweed St	Path to be widened	South	0	530	120	63600	0.0083	0.42	5	5	0	0-10	1	1	1	1	4.42	
73	Elliot St	Crown St	Wilson St	Path to be widened	South	1	295	120	40400	0.0073	0.37	5	5	0	0-10	1	1	1	1	4.37	