Blue Mountains Bike Plan 2020

An Infrastructure and Operational Plan

Towards a more Sustainable City

blue mountains City Council

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The Vision

To create safe and accessible pathways of travel that improves our connections with our destinations and each other and encourages people of all ages to use their bicycles for everyday transportation and enjoyment.

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Executive Summary

This *Draft Blue Mountains Bike Plan 2020* has been developed to identify priorities and infrastructure needs to enable the Blue Mountains to realise its 25 year Vision. This vision was developed and adopted by Council in a document titled *"Towards a More Sustainable Blue Mountains - A Map for Action 2000-2025"* following extensive community consultation. The *"Map"* sets out the vision, principles and outcomes that are critical to the Blue Mountains.

The Plan is structured along seven key components, which is analogous to "seven integral spokes". The seven spokes are integrated through a common implementation strategy, represented by the hub of the wheel. Like the spokes of a bicycle wheel, all seven spokes must work together to achieve the two primary goals of doubling the number of bicycle trips made in the City of the Blue Mountains, as a percentage of total trips, by 2020 and reducing the number of bicycle crashes and casualties and; to realise the vision of the City of the Blue Mountains.

Each spoke is based on a guiding principal, which describes the overall importance of this component to the whole plan. Each principal is supported by a set of objectives to measure success and individual actions have been identified from each of these objectives.

The completion of this will lead to the creation of safe and accessible pathways of travel that improve our connections with our destinations with each other and encourage people of all ages to usage their bicycles for everyday transport and enjoyment. A summary of the objectives and actions is included in the front of the plan.

The Plan also sets out a financial strategy to implement the infrastructure 'spokes' of the Plan. The development of three separate delivery programs has been structured in line with Community and Corporate priorities and aligned to current funding sources and commitments.

The unique nature of the Blue Mountains in terms of its World Heritage environment, rugged terrain, physical shape and scale and regional context have been key criteria in the development of the *Blue Mountains Bike Plan 2020.*

Background

The Blue Mountains Bike Plan 2020 (BMBP) revises the *"Blue Mountains Bikeways Plan 1996"*. It will guide the City in the development of new programs and facilities to encourage people to cycle, and to reduce their dependence on the car. It is a strategy based on extensive community consultation and is designed to be flexible, evolving over its lifetime.

The Bike Plan has been prepared in response to the community-endorsed 25-year vision for the Blue Mountains *"A Map for Action 2000-2025; Towards a More Sustainable Blue Mountains".* The vision expresses outcomes sought by the community. Out of the 15 outcomes, there are 10 for which an effective cycleway network is important:

1. The Blue Mountains natural environment is protected and conserved and the impact of existing and new development on the environment is reduced
2. Blue Mountains people live sustainably in harmony with the environment
3. The health and well being of Blue Mountains people are improved
4. Services and facilities are accessible and fairly distributed

5. Well managed infrastructure supports sustainable living
6. The liveability and vibrancy of our towns and villages are strengthened
7. Safe environmentally friendly transport choices promote healthy lifestyles
8. The main Transport Corridor is a safe and beautiful space that adds to our local amenity and World Heritage identity
9. The ability of people to connect with each other and access services is improved
10. Blue Mountains communities are safe, caring and inclusive

The community's desire for a quality Bike Plan and a quality cycling network is therefore clear.

This Bike Plan also responds to Council's Management Plan 2008-2009 "Towards a More Sustainable Blue Mountains". The Management Plan has 2 principal activities which relate directly to this plan, Looking after People and Moving Around. This strategy contributes strongly to the key strategic objectives listed in the management plan.

The Blue Mountains Regional Tourism Plan 2004-2007 *(Reviewed end of 2007 – ongoing implementation)* identifies 'Nature Based Experiences' as a key area of market appeal. The vision for tourism in the Blue Mountains is:

> The Blue Mountains region will become Australia's premier nature based recreational destination and an internationally recognised leader in sustainable tourism practices.

Cycling has been identified as a key activity as part of this plan.

The Nature Based Recreation Strategy 2005-2015 identifies mountain biking as growing in popularity as an individual and competitive sport. The need to provide appropriate and adequate trails, education and consultation with riders and management agencies has been identified for consideration.

The New South Wales Government's commitment to improving facilities for cyclists and making cycling safer is outlined in *"Action for Bikes – BikePlan 2010".* Action for Bikes is a four point plan describing the wider range of actions that could be taken to achieve these goals. This 4 point plan for bikes is:

1. Improving the bike network;
2. Making it safer to cycle;
3. Improving personal and environmental health; and
4. Raising community awareness

The NSW State Government through the then Department of Infrastructure, Planning and Natural Resources (now known as the Department of Planning) recognized the importance of walking and cycling in the creation of sustainable neighborhoods and cities. The prepared *"Planning guidelines for walking and cycling"* in December 2004, aimed to assist land use planners and related professionals to improve consideration of walking and cycling in their works. This focus is drawn to the NSW Government's *Integrated Land Use & Transport Planning Policy Package.* They are also designed to provide a planning complement to the Roads and Traffic Authority's facilitations – focused policies and actions.

Bicycling in the Blue Mountains

As told by Rod McDonald

On arrival in Leura/Katoomba in June 1958, the year after the big fires which decimated Leura, I was astounded to see bicyclists holding onto the hand rail at the rear entrance of the old canvas covered Bedford busses, as they travelled up both Megalong and Lovell streets. Luckily for me, I "never had the nerve" which, I suspect, has put me in a position where I am able to put my thoughts onto paper all these years later. Many years later after meeting with the Bicycle group in Vienna Austria, and seeing the complete bicycling infrastructure they, and a 'Green' local government, had been able to institute over a ten year period, my wife Lida suggested to me that we here in the Blue Mountains should have a similar body and that we should work towards the same ends. i.e. a bicycling infrastructure within the city of the Blue Mountains. I replied something to the effect that "well, you should start one". So, from these early beginnings, developed the Blue Mountains Bicycle User Group, still in existence and still totally involved in advocacy and riding bicycles in the city of the Blue Mountains.

Soon after the groups beginning and an article in the local paper about it, I was approached by the now deceased long term local Laurie Clark who 'berated' me for, as he understood the article, not crediting the riders of the past. "Why Rod, we used to ride down to Penrith and back, after work, on 'cane rims' when I was young", said Laurie and went on to chat about riders, clubs and events of the past.

Bicycles of course have been a part of the Blue Mountains for over a century. The amazing photograph taken "about 1900" on page 188 of Jim Fitzpatrick's 'The Bicycle and the Bush' (Oxford University Press 1980), shows a large group of bicyclists gathered in front of the Caves Village. As Jim says "The attraction of the Jenolan Caves for cyclists is evident…".

It is interesting indeed to wonder who was the first to cross the Blue Mountains on a bicycle! I suppose we will never know, however, bicycles have been a part of the exploration of Australia since the first bicycles were brought here and we can assume that the Blue Mountains was an early, if not the first, destination of our very first bicycle tourist/adventurer.

It is with interest then that we wonder of the difficulties and adventures they had in those pre- motorised vehicular days. There were no bituminised roads, no bicycle paths, and no bicycle lanes. In fact, the pneumatic tyre was not even invented until 1888 (p.p. 16 Jim Fitzpatrick's Bicycle and the Bush). This then leaves us to wonder

of the extreme difficulties encountered in those early years. Obviously, bicycles were very definitely being used in the Blue Mountains as we can note from an extract out of Jim Smiths wonderful little volume 'The Blue Mountains a Guide for Bicyclists' (Panacea Press 1980) where he quotes from a 1903 publication about "two happy go lucky characters" who casually attempt to see if they can ride their bicycles from "Blackheath to Jenolan Caves" pretty much in a straight line. This extract describes vividly the extreme difficulties they encountered and it is, without doubt, similar to the difficulties encountered by all those hardy early Blue Mountains bicyclists.

Every township had a bicycle dealer and I remember clearly the Bicycle shop in Leura with a sparkling new Malvern Starr bicycle in the window back in 1958. Even the garage owned by the late Vic Butcher at the top of the Mall, carried bicycle spares into the late 1960s. Bicycles were a part of our lives. As a youngster, in 1960, I recall lending my bicycle to Johnny Gehle whose own bicycle was broken and how he used mine to deliver telegrams from Wentworth Falls over night.

So, the Bicycle has been with us in the Blue Mountains since soon after its first arrival in Melbourne in 1875. What amazing changes in riding conditions has occurred over the intervening period. Highways with bicycle lanes, and ripple strips to define them, bicycle paths such as can be found from Springwood to Winmalee, even bicycle paths in Katoomba with little Bicycles painted into them to define them. Our local Council has, with the provision of a 'Road Safety Officer', Glen Sherlock, even produced a plan for a Bicycling Infrastructure, or Bicycle Plan. Wonderful.

The Blue Mountains caters for Bicyclists of every variety and we have racing clubs and 'stars', a very progressive B.M.X. Club who have over the years built their own track at Lawson, a Mountain Bike circuit in the lower Mountains and a club who encourage people of all ages to participate. Local bicycle rides and paths are written up in books, appear on the Internet and can be accessed by people worldwide.

In conclusion, it is evident that bicycles have been, and remain an important ingredient in the Blue Mountains transport structure, and, as Katoomba is Australia's Premier Tourist location, must be considered in a positive manner with every decision, which affects this region. Tourism is the backbone of Mountain industry and the numbers of bicyclists visiting this area increases yearly.

Yours in Bicycling

Rod McDonald

Summary of Recommendations for Blue Mountains Bike Plan 2020

SPOKE 1: Bicycle Friendly Streets

	Recommendation	Responsible	Page
1.1.1	That the City of Blue Mountains develops traffic volume thresholds for roads requiring: a. marked on – road cycle lanes b. wide kerbs/shoulders	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator	18
1.1.2	That the City of Blue Mountains seeks to enhance safety and maintains cycling access through traffic calming projects.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator	19
1.1.3	That during road resurfacing or reconstruction projects on classified roadways; the City in partnership with the RTA seek to provide wide kerb/shoulder lanes and minium 2m wide Shared Off Road Paths on Classified Roadways wherever feasible.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator	19
1.1.4	That the City in cooperation with the RTA and Rail Corp seek to incorporate bicycle friendly features in bridge and underpass projects as part of any new infrastructure and into the annual capital works program for existing structures.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator Strategic Planning	20
1.2.1	That the City develops a pavement repair reporting system designed specifically to incorporate reports from cyclists.	Customer Services BM City Services	21
1.2.2	That the City undertakes a review of street cleaning practices using the outcomes to acknowledge and respond to the needs of cyclists.	BM City Services RTA	21
1.2.3	That the City specifies the replacement of appropriate drainage grates in all maintenance replacement and construction projects and develops a monitoring program for the network and other popular cycling streets.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator BM City Services	21
1.3.1	That the City ensures that, wherever possible, cyclists are accommodated during road construction activities. This should include, but not be limited to: • Construction notices posted on Council's and RTA web sites; • Advance signage for construction activities; • Temporary conditions that are compatible with bicycles such as non-slip surfaces, ramped utility cuts and timber decking placed at right angles to direction of travel; • Bicycle specific detours where appropriate; and • Appropriate signage advising motorist of cyclist using car lanes.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator City Planning BM City Services	22

SPOKE 2: Bikeway Network

	Recommendation	Responsible	Page
2.1.1	The City of Blue Mountains implement a network consisting of: 1. Local On Road – In Traffic Lane (Route signage only) 2. Local On Road – Bicycle Lane (Shoulder/Kerb) 3. Local Off Road – Shared Path 4. Recreation On Road – In Traffic Lane (Route signage only) 5. Recreation On Road – Bicycle Lane (Shoulder/Kerb) 6. Recreation Off Road – Shared Path 7. Regional On Road – Shoulder/Kerb Lane 8. Regional Off Road – Shared Path	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator	26
2.1.2	That the City research designs and demonstrates innovative measures to enhance the cycleway network.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator	26
2.1.3	Footpaths to be audited as part of a rolling program as to their suitability as shared paths and if applicable converted with appropriate signage and other identified treatments.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator SLA	26
2.1.4	That the City investigates opportunities for developing a GIS based mapping system for the bikeway network that is routinely updated. Other information could include, signage, information boards, use of the City's Web Site, Blue Mountains Bike Group and other identified sites.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator IT	26
2.2.1	That the City maintains the cycleway network throughout the year to the best of its abilities, including: • Ongoing inspection and remediation of pavement surfaces, bikeway signs and amenities • Quick restoration of cycleways after adverse event.	SLA Civil Asset Engineer BM City Services	28
2.2.2	Wherever possible during pavement reconstruction: • Place cut line in an area that will not interfere with bicycle travel. • Back fill cuts flush with the surface (humps will not get packed down by bicycle traffic) • Ensure that cuts parallel to bicycle traffic don't leave a ridge or groove in the bicycle wheel track. • Back fill cuts in the footpath with concrete, flush with the footpath grade.	Traffic & Investigations Engineer SLA BM City Services	28

	Recommendation	Responsible	Page
2.2.3	That the City establishes a mechanism for identifying high cycling crash and casualty locations in the cycle network, review such locations on an annual basis and implement appropriate measures.	Road Safety & Mobility Co ordinator Traffic & Investigations Engineer	28
2.3.1	That the City continues to works with neighbouring Councils and RTA to create seamless bikeway connections across the LGA boundaries.	Road Safety & Mobility Co ordinator Strategic Planning	30

SPOKE 3: Safety and Education

3.1.1	That the City establishes a broad based City of Blue Mountains Bicycle Safety Partnership to develop and implement bicycle safety programming.	Road Safety & Mobility Co ordinator	31
3.1.2	That the City maintains its current commitment to bicycle safety programs by: • Providing a stable level of core funding in the annual operating budget • Supporting an entrepreneurial approach to generating revenue for the expansion and sustainability of programs • Investigating new innovative programs to make bicycling safety information and training more accessible to specific target audiences	Manager Assets Program Leader Transport & Infrastructure Road Safety & Mobility Co ordinator	32
3.2.1	That the City continues to run the Back On Your Bike Program and develop this course to meet changing techniques and best practices.	Road Safety & Mobility Co ordinator	33
3.2.2	That the City investigates the opportunities in partnership with the RTA and other agencies to develop a motor vehicle driver education program.	Road Safety & Mobility Co ordinator	33
3.3.1	That the City investigates opportunities to work with the NSW Police to, prevent bicycle related crashes.	Road Safety & Mobility Co ordinator	33
3.4.1	That the Blue Mountains Police are requested to continue their active role in bicycle safety by: • Bicycle patrol officers • Working with City staff to establish enforcement priorities based on crash data • Cycling Skills Course participation • Highway Patrol with a focus on cycle safety • Develop materials to prevent cyclist involved in crashes	Road Safety & Mobility Co ordinator NSW Police	34

SPOKE 4: Promotion

	Recommendation	Responsible	Page
4.1.1	That the City continues to develop Bike Week and ensure that events are available in various locations across the City.	Road Safety & Mobility Co ordinator	35
4.1.2	That the City works with Schools and other agencies to continue the Bike – to - School Program, which will identify safer routes to schools and provide secure bicycle parking, and bike training and incentive programs for students and their parents.	Road Safety & Mobility Co ordinator Schools	37
4.2.1	That the City works with relevant stakeholders to develop and produce up to date and relevant Cycleway maps. These stakeholders include: • Tourism; • NPWS; • Neighbouring Local Government Areas; • Department of Lands; and • Health	Road Safety & Mobility Co ordinator	38
4.2.2	That the City works with other groups and agencies to promote cycling facilities, programs and events through a variety of media, including: • An annual cycling guide of activities and events • The City's website • Special cycling events throughout the year • Tourism • NPWS • Neighbouring LGA's • Department of Lands • Health	Road Safety & Mobility Co ordinator Media Officer	38
4.3.1	That the City takes a leadership role in encouraging and supporting cycling as a mode of transportation for City staff, including: • Consideration be given to providing high quality bicycle parking and shower/change facilities at all civic work places during refurbishments projects • Offering bike training courses to all City employees through the regular employee training and development programs • Providing a pool of bicycles for City employees to use in conducting City business	Properties & Facilities TBA TBA	39
4.3.2	That the City continues to encourage other employers in the Blue Mountains to promote and support bicycle commuting including: • Providing information and technical advice on the provisions of bicycle parking facilities; • Developing a plan for establishing Bicycle User Groups; and • Develop an annual Bicycle Friendly Business Awards Program	Road Safety & Mobility Co ordinator	40

SPOKE 5: Cycling and Public Transport

	Recommendation	Responsible	Page
5.1.1	That the City in partnership with Blue Mountains Bus Company investigates the feasibility of undertaking a pilot program of bike racks on buses.	Road Safety & Mobility Co ordinator BM Bus Company	42
5.2.1	That the City of Blue Mountains in partnership with City Rail undertakes a comprehensive review of bicycle access to all transit stations in the City and implement improvements wherever possible.	City Planning City Rail	43
5.3.1	That the City of Blue Mountains, RTA, State Rail and Blue Mountains Bus Company investigate the feasibility of developing a coordinated Bike - and - Ride program, together with promotion strategies and related initiatives.	Road Safety & Mobility Co ordinator	44

SPOKE 6: Bicycle Parking

	Recommendation	Responsible	Page
6.2.1	That the City's Asset branch investigate the feasibility of developing and implementing a comprehensive city wide bicycle parking program, which will: Install bicycle parking at: • civic centres; • Council depots; • recreation facilities; • libraries; • public transport stations, and • other civic buildings.	Road Safety & Mobility Co ordinator Properties & Facilities City Planning	47
6.3.1	That the City evaluates the existing zoning regulations and develops new requirements for bicycle parking and shower/change room facilities that would apply to all appropriate use in the City.	City Planning	47
6.4.1	That the City investigate the opportunities of developing and implementing a strategy for reducing bicycle theft, in cooperation with the NSW Police, bicycle retailers and insurance industry, research and develop.	NSW Police	48

SPOKE 7: Tourism

	Recommendation	Responsible	Page
7.1.1	That the City work with Blue Mountains Tourism to explore opportunities with other interest groups, agencies and government to promote bicycle tourism in the Blue Mountains.	BM Tourism	49
7.1.2	That the City in partnerships with Blue Mountains Tourism and other tourism operators develop a list of experienced based attractors to enable effective linkages to be identified.	BM Tourism	50
7.2.1	That the City establishes and maintains a data base of businesses with a focus towards cycling tourism, providing them with relevant and useful information.	BM Tourism	50

Implementation and Evaluation

	Recommendation	Responsible	Page
4.1	That the City commits in principal funding of $50,000 per annum for the next 13 years to enable the delivery of the priority programme, establishing the foundation upon which the seven components of the Plan can be delivered.	Group Manager Community & Corporate Manager Assets Program Leader Transport & Infrastructure	56
4.2	That the City of Blue Mountains explores alternative funding sources and opportunities, including the state and federal governments and private sectors to assist in the implementation of the Plan.	Road Safety & Mobility Co ordinator City Planning	56
4.3	That the City prepares annual progress reports to Council, in consultation with the Bike Plan Coordinating Committee (BPCC) documenting the progress of the Plan and presenting implementation priorities and funding requirements for the following year; the first reports to be presented in 2008 outlining Bike Plan projects implemented in 2008/09.	GMC&C BPCC	58
4.4	That the cycleway routes proposed in the Bike Plan continue to be subject to the existing approval process (detailed analysis, design and public consultation) before being considered by the City Council for implementation.	Traffic & Investigations Engineer Road Safety & Mobility Co ordinator	58

1. PURPOSE

Purpose

The Blue Mountains Bike Plan 2020 (the 'Plan') is a thirteen year plan. It complements other planning efforts in the City with particular reference to Council's Sustainable Asset Management (SAM) Plans.

The Plan establishes a vision for cycling. It sets integrated principles, objectives and recommendations regarding safety, education and promotional programs as well as cycling related infrastructure, including a comprehensive cycleway network.

The challenge therefore is to foster support for these items so that they can turn into actions that can achieve change. The Plan is an important step in gaining significant environmental, economical, social equity and health benefits to individuals and to the City as a whole.

The development of this Plan has drawn on the experiences of Bike Plans and Strategies developed worldwide, particularly the *City of Toronto Bike Plan – Shifting Gears.*

> "In the Blue Mountains setting of outstanding scenic beauty and fresh mountain air, sound investment in cycleways promises huge rewards for the community"

1.1 Bicycle Ownership

- In 2000 Sydney's households owned a total of 1.15 million bicycles, up by more than 40% since 1991 (1).
- In the Blue Mountains Cycle Survey 2005 of respondents households 23% had 4 bicycles, 20% had 2 bicycles and 20% had 3 bicycles.
- 5% of households had 10 or more bicycles.
- The proportion of Sydney households with a bicycle has risen from 32% in 1991 to 36% in 2000 (1).
- In the Blue Mountains Cycle Survey 2005 the most commonly owned bicycle was a mountain bike at 49%, Road bike at 34% and a BMX at 17%.
- 1.0% of Sydney's residents cycle each day (1).
- In the WSROC region in 2002 there was on average each weekday 35,925 trips (3)
- 0.6% of trips to work are by bicycle in Sydney (2).
- Most bicycle trips are for social/recreational travel (1).
- In the Blue Mountains there are on average 149 bicycle trips for journey to work purposes on an average weekday.(3)

Reference:
1. Cycling in Sydney – Bicycle ownership and use; Transport NSW March 2003.
2. Transport and Population Data Centre; Department of Infrastructure, Planning and Natural Resources, Journey To Work 2001
3. Transport and Population Data Centre; Department of Infrastructure, Planning and Natural Resources Household Travel Survey 2002

1.2 The Benefits of Cycling

Australians brought more bicycles than motor vehicles in 2007. The industry-backed Cycling Promotion Fund said 1.47 million, new bikes were sold during 2007, significantly ahead of the 1.05 million new cars and trucks bought. This is the 8th consecutive year bikes have outsold motor vehicles.

Transport use has an enormous impact on the quality of the air quality. As the amount of traffic on our roads increases, the quality of the air we breathe decreases. Many mistakenly believe the introduction of unleaded petrol and tighter car emission controls will solve the problem of air quality, but the sheer number of cars far outweighs any benefit to be gained. In the Blue Mountains, the private motor vehicle is the primary mode of transport. The dependence on the car is high, despite the statistics that show 73% of working residents live within two kilometres of a railway station.

Anecdotally the Blue Mountains LGA is thought not to suffer from significant air pollution and photochemical smog. This is due to the elevation of the city, providing a physical barrier from the Sydney basin and high winds to flush the city's air. The National Park also provides a buffer from the Sydney Basin. The effects of air pollution in the City occur mainly at the local level and are often increased by low level temperature inversions in the winter months, whilst motor vehicle emissions are of particular concern in the city, given that Sydney's major western transport corridor (Great Western Highway) passes through our City.

That's where bikes come in. Bicycles are an environmentally friendly and economical mode of transport, and make an important contribution to integrated transport plans for our City.

Cycling continues to grow in the City. In the Blue Mountains Recreation and Sporting Strategy 2002 cycling was listed as one of the top 5 activities that people would like to do more of. Recreation participation for children, bike riding in the park/neighbourhood was the second highest activity recorded. Further evidence to support this trend is the annual participation of Bike Week Promotions over the past several years. On estimate, approximately 500 people attend this annual event. This is further supported by record numbers of membership at the Blue Mountain BMX Club, Penrith Panthers Cycling Club and the Western Sydney Mountain Bike Club.

Further evidence to support these claims is detailed in the responses to the Blue Mountains Cycling Survey 2005. It is known that for residents in the Blue Mountains:

- 91% have access to a bicycle
- 2/3 bicycles get ridden at least 54% of the time (monthly)
- 35% of bicycles get ridden several times each week
- Riding for recreation (21%), to the shops (20%) and to the park are the most common trips made.

1.2.1 Transportation Efficiency

- Transportation by bicycle is the most energy efficient mode of transportation, and generates no pollution, except in its manufacturing.
- Cycling is often the fastest mode of transportation from door to door for distances up to 10km in urban cores.

- Ten bicycles can be parked in the spaces required for one car.
- The cost of a typical car parking space in a parking structure can be up to $5,500 compared to $800 to manufacture and install a common 4 bike storage rack.
- The addition of a new traffic lane:
  - On an existing road can cost from $350,000 per kilometre to design and construct on Blue Mountains Roads.
  - This widening would increase capacity by 100 vehicles per hour.
  - By comparison, the cost associated with the addition of a single 2 metre wide shared path, which can accommodate 100 trips per hour, can cost from around $100,000 per km.
  - The widening of existing road by 1 metre over 1km to provide a 'bike lane' cost $150,000 per km.
  - These additions also provide better-cost efficiencies with lower life cycle cost.
  - On a bicycle you can travel four times faster than you can walk using the same amount of energy (1).
  - On a bicycle you can travel up to 1030 kilometres on the energy equivalent of one litre petrol (1).
  - More people ride a bike to work than go by taxi.

1.2.2 Environmental

- Short distance motor vehicle trips are the least fuel efficient and generate the most pollution per kilometre.
- These trips have the greatest potential for being replaced by cycling and walking.
- Reducing car trips will mitigate ozone depletion, the greenhouse effect, ground level air pollution, photochemical smog, acid rain and noise pollution.

1.2.3 Health & Fitness

- Cycling contributes to personal health by enhancing fitness and providing an enjoyable, convenient and affordable means of exercise and recreation.
- The most effective fitness routines are moderate in intensity, individualised and incorporated into our daily activities.
- Cycling and walking can both accomplish this and at the same time provide mobility.
- Nationally, the annual direct health cost attributed to physical inactivity is estimated at $377 million a year (5).
- Cycling benefits one's health regardless of the age at which one takes up cycling.
- Regular cyclists can expect to be as a fit as an average person 10 years younger (2).
- A moderate half-hour each way commute will burn 8 calories a minute, or the equivalent of 11kg of fat in a year (3).
- The promotion of physical activity has become a national health priority for Australia. The Strategic Inter-Government Forum on Physical Activity and Health (SIGPAH) has identified the area of active transport (including cycling) as a high priority setting to promote physical activity in Australia.

- A 30 minute cycle trip a day provides all the exercise you need to halve the chance of becoming obese or diabetic (7).
- The inclusion of physical activity as part of children's daily routine has been highlighted in the Australian Physical Activity Recommendations for 5-12 year olds (6).

References:
1. *Bicycling Science,* Whitt and Wilson, the MIT press,
2. *Cycling: Towards Health and Safety,* The British Medical Association, Oxford University Press
3. *Beer,* Bicycle Magazine
4. *Global Warming, Cool it,* Greenhouse Office
5. Stephenson J, Bauman A, Armstrong T, Smith B, *The Cost of Illness Attributed to Physical Inactivity in Australia: A Preliminary Study.* Canberra: The Commonwealth Department of Health and Welfare. Canberra: AIHW; 2000
6. NSW Department of Health: Sydney. Department of Health and Ageing, (2004) Australia's Physical Activity Recommendations for 5-12 year olds. Commonwealth of Australia: Canberra
7. WHO, 2000

1.2.4 Economic and Social

- Cycling 10 kilometres each way to work saves about $1,700 in transport costs (including all running costs and depreciation) and 1500 kilograms of greenhouse gas emissions each year (1)
- Cycling provides access and transportation to segments of the population who would not otherwise be able to travel independently. These segments include:
  - Those who cannot or choose not to own a car
  - Those who do not have access to a car for the required period; and/or
  - Those who cannot or choose not to use public transport.

References:
1 *Global Warming, Cool it,* Greenhouse Office

1.3 Crash Analysis

- Pedal Cyclist accounted for 8% of crashes in the Blue Mountains with the Sydney Region at 4% in 2003 (1).
- Casualties saw an increase of 100% from 2002-03 from 10 to 20 (1).
- Males accounted for 95% of all casualties (1).
- Males in the 17-20 & 30-39 age groups accounted for 50% of all casualties (1).
- The 5-year trend has seen an increase of 7.5% from 1999 –2003 (1).
- 39% of crashes occur on the road (2).
- 41% on fire trails (2).
- 14% on the footpath and; (2).
- 5% shared paths (2).
- Only 14 % of all crash are reported to Police (2).

Reference:
1. *Blue Mountains Road Safety Action Plan 2007/08*
2. *Blue Mountains Community Cycle Survey 2005*

1.4 Strategy Development: What has been done so far?

The City's first Bike Plan, *'Blue Mountains Bikeways Plan'* was developed and adopted by Council in March 1996. To date, this Bikeways Plan is approximately 95% completed. In 2004 the City's first edition Cycleways Map was produced to meet community demand for such a resource. The 2nd edition is currently in the planning phase and is due for completion by end 2006. This 2nd edition will have far greater focus on recreation and tourism.

The City Strategy acknowledged the need for a new bike plan to be developed. This required a Study Team to be formed that involved Council staff, Blue Mountains Bike Group, general cycling advocates from within the community and other identified government agencies such as the National Parks & Wildlife Service, Blue Mountains Tourism and Department of Lands. This study team then worked together to undertake each phase of the development.

1.5 Study approach

The study approach that lead to the development of the Blue Mountains Bike Plan was involved 4 phases, as follows:

Assessing Existing Conditions involved undertaking an extensive audit of existing bikeway facilities, existing and planned bikeways, attractors and destinations, then identifying real of perceived barriers to cycling. This phase also included the review of existing plans, reports, town master plans, Pedestrian Access and Mobility Plans and related studies and strategies.

Developing the Cycle Network Plan involved establishing a vision for the network, then identifying, evaluating, ground proofing and selecting bikeway routes and confirming facility type by route. The facility options include:

1. *Local - On road;*
2. *Local - Off road shared;*
3. *Recreational - On road;*
4. *Recreation - Off road shared*
5. *Regional - On road and;*
6. *Regional - Off road shared.*

Reviewing and Assessing Cycling Policies and Programs involved a comprehensive review of existing programs, policies and funding sources by Council staff and members of the study group. This lead to the development of the objectives and recommendations for each component of the Plan:

1 Safety and Education
2 Promotion
3 Cycling and Transit
4 Bicycle Parking
5 Bicycle Friendly Streets
6 Bikeway Network and;
7 Tourism.

Documenting the Plan and Associated Implementation Strategy involved synthesizing all the work that had been done as part of the study into a concise, informative and prescriptive '13 year plan of action' that will serve to guide the City in its efforts to improve the state of cycling in the Blue Mountains.

1.6 Public and Staff Consultation

Plan Development (2005-2008)

The Blue Mountains Bike Plan 2020 is the product of an extensive public consultation program. A significant amount of time and effort was invested both in public outreach, in terms of promotion of the study and various activities, as well as to obtain public input. The Blue Mountain Community Survey in 2005, lead this investigation of public attitudes and trends relating to cycling in the Blue Mountains, and served as a valuable source of information at the outset of the plan's development. Other input came in the form of both written and oral submissions through public workshops, emails, telephone calls and letters. All this information was recorded, reviewed and given due consideration in the development of this plan.

During the study of the draft cycleway network and other components of the plan it was reviewed with stakeholders, members of the community, staff representing key sections within Council and the Blue Mountains Cycling Committee. Steering Committee meetings were held with key staff to review the progress of the study and to provide feedback on the various phases of the strategy development.

The Blue Mountains Bike Plan, therefore, is a product of an extensive study and consultation process, which the City believes generally, reflects the interest of all Blue Mountains Residents, and at the same time is a direct response to many of the needs and wishes of Blue Mountains cyclists and its communities and the many visitors that come to the area each year.

2. PLAN OVERVIEW

The *Blue Mountains Bike Plan 2020* has been designed to be a living document that is flexible and capable of evolving over time. It will serve to manage and maintain existing programs and infrastructure, while guiding the development and implementation of new and or improved cycling programs and facilities. Implementation of the BMBP is expected to encourage people to leave their cars at home and cycle, especially for utilitarian reasons.

Based on previous City initiatives; Blue Mountains Bikeways Plan 1996, Cycleways Map 1st Edition 2004 other activities, plus the extensive consultation undertaken during the preparation of the BMBP, a clear direction has been captured in a Plan that the City is confident will enable it to meet its outcomes over the next 13 years.

2.1 Vision

The *Blue Mountains Bike Plan 2020* is more than a proposed network of bikeway facilities. It sets out a vision for cycling that is supported by a comprehensive set of principles, objectives and recommendations that address the need for education as well as the provision of facilities. This vision is:

> 'To create safe and accessible pathways of travel that improves our connections with our destinations and each other and encourages people of all ages to use their bicycles for everyday transportation and enjoyment'.

2.2 Goals

The goals of the Blue Mountains Bike Plan are:

- **To double the number of bicycle trips made in the City of the Blue Mountains, as a percentage of total trips, by 2020; and**
- **To reduce the number of bicycle crashes and casualties.**

The Plan is structured along seven key components, which is analogous to "seven integral spokes". The seven spokes are integrated through a common implementation strategy, represented by the hub of the wheel. Like the spokes of a bicycle wheel, all seven spokes must work together to achieve the two primary goals and realise the vision of the City of the Blue Mountains.

2.3 Principles and Objectives

The City's physical environment as well as the social and economic factors influences the ways people choose to get around. To achieve the vision of a more bicycle friendly City, the seven spokes detail a multi faceted strategy to build both physical and social infrastructure to support cycling. Each spoke is based on a guiding principal, which describes the overall importance of this component to the whole plan. Each principal is supported by a set of objectives to measure success.

The Seven Spokes are:

1. Bicycle Friendly Streets
2. Bikeway Network
3. Safety and Education
4. Promotion
5. Cycling and Transit
6. Bicycle Parking
7 Tourism

SPOKE 1: Bicycle Friendly Streets

Guiding Principles and Objectives

Bicycles are recognised as vehicles under the Australian Road Rules, and as such, should be afforded the same consideration as motor vehicles on the City's road system. In addition, characteristics that makes bicycles so environmentally friendly and practical for short trips, also makes cyclist more vulnerable to collisions and injuries, particularly when sharing the same road space with motor vehicles. The bicycle's small size requires very little space to operate or park. They are efficient because that are lightweight, and their narrow tires have very little contact with the road surface. As a result bicycles are more affected than most vehicles by pavement conditions, high winds, poor visibility, the speed of traffic and the width of the kerb line.

As part of the Blue Mountains Bike Plan, the City will be developing and implementing a cycleway network system, as out lined in Attachments 1 and 2. This network is comprised of facilities that are specifically designed to encourage cycling and enhance cyclist safety. While the network will go a long way towards improving the cycling environment in the Blue Mountains, the City's efforts will not be focused solely on the principals of cycling routes. Cyclists use all the roads in the Mountains including the Great Western Highway so every road and street needs to be made as safe and comfortable for cyclist as possible.

Therefore, the guiding principal for this component of the Blue Mountains Bike Plan is:

"Every Blue Mountains Street is a Cycling Street".

This effort to make streets more bicycles friendly is consistent with the Outcomes of the City's Management Plan and Local Road Link Strategy.

Over the past 12 years Council has made significant gains in the implementation of the Blue Mountains Bikeways Plan 1996 coupled with the determined direction to provide links between the villages, railway stations, schools, parks, pools and other major attractors.

To achieve the two primary goals of the plan, doubling bike trips and reducing cyclist crashes and causalities, the design and operation of all roads must be made as safe and comfortable for cyclist as possible.

The Bike Plan sets out a comprehensive approach to ensure that 'best practices' are both expanded and extended citywide, with the following objectives.

Objectives:

1. *Ensure that transportation polices, practices and regulations support increase bicycle safety and access for intersections, roadways, bridges and underpass;*
2. *Expand and improve road maintenance service level agreements and programs to enhance cyclist safety, access and comfort; and*
3. *Ensure that cyclist safety, access and comfort are maintained through or around construction zones (Great Western Highway Upgrade).*
4. *Monitor and publish the accessibility of households, communities and facilities in respect to each other through the cycleway network.*

SPOKE 2: Bikeway Network

Guiding Principles and Objectives

A guiding principal of the Plan to make every street "Bicycle Friendly". The cycleway network presented in this section takes one step further by establishing priority routes with a formal cycleway facility to provide a higher level of comfort for cyclist. The network routes should be highly visible through their design, pavement markings and signage, which will have an important role in encouraging cycling. Given the importance of cycleways in encouraging more bicycle trips, the guiding principal of this spoke is:

"All Blue Mountain residents will be with in 5 kilometres or a 10 minutes bicycle ride to the bikeway network"

The cycleway network will consist of 5 basic route types:

1. **Local - On road:** these links generally show local routes between villages, schools, shopping and sporting precincts, railway stations and other attractors.
2. **Local - Off road:** these shared paths general provide the same links as *Local - On Road* but are off road.
3. **Recreation - On road:** these routes are generally those, which provide links for tourism and recreation riding. These routes can also exist in National Parks, and Crown Land.
4. **Recreation - Off road:** these shared paths provide the same links as *Recreation - On Road,* but are off road.
5. **Regional – On road:** these run along the Great Western Highway corridor. It provides both marked bicycle lanes, kerb (break down) lanes for use by cyclist and in some locations markings, signs or kerb lanes.
6. **Regional – Off road:** these shared paths general provide the same links as *Regional - On Road,* but are off road.

Blue Mountains in 2007 had sign posted* approximately:

- 10.5 km of Regional – Off Road
- 13 km of Local – Off Road
- 7 km of Local – On Road
- 70 km of Regional (Great Western Highway – partially sign posted/pavement markings) – On Road

The network in 2007 also consisted of (non sign posted*) approximately:

- 84 km of Recreational – On Road
- 60 km of Local – On Road

The majority of these are on local roads, which, features a considerable variety of pavement surfaces, pavement widths, terrain, lengths and lighting. The cycleway network will include these existing facilities, upgrading the paths to current standards where feasible to ensure a comfortable cycle.

The network spoke of the Plan has the following 3 objectives.

Objectives:

1. *Complete the cycleway/shared path network in 13 years*
2. *Ensure the safe and comfortable year round operation of bikeways through design, signage, enforcement and maintenance, and*
3. *Connect the network to cycleways in adjacent Local Government Areas.*

SPOKE 3: Safety and Education

Guiding Principles and Objectives

Many people perceive cycling in the City as a high-risk activity. From the Blue Mountains Community Cycling Survey 2005 we know the majority of people feel most comfortable riding on cycle paths (17%), shared paths (12%) any road with a cycle lane (15%) and off road (16%). Respondents to the survey strongly agree that traffic volumes and traffic speeds impact on their decision not to ride. This fear of injury on the roads inhibits potential cyclist from riding as often as they might.

The Bike Plan's two goals, **doubling bike trips and decreasing cycling crashes and causalities**, are intrinsically linked.

Encouraging more cycling depends on cyclists feeling safe on the street and in the parks. What does that mean? A completely safe road is one where no collision will ever take place. Given a myriad of environment conditions including that of the road itself and the mixture of road users, expecting a 'completely safe road' is not reasonable. However, we all have our own sense of personal safety. The perceived level of safety will be different for each cyclist even if the environment is the same. Improving driving and cycling skills, attitudes and behaviours through education is therefore an important part of the strategy to make streets as safe as possible. Therefore, the guiding principle for this spoke of the Plan is:

"Through education, create an environment where people can cycle on Blue Mountains streets without fear of injury"

There is broad public support for road safety education and skills programs. In the Cycle survey, when asked *'what other specialist facilities would you like to see'*, 33% respondents indicated the need for a training and education park. When asked *'What facilities are required as a bare minimum for you to consider letting your child ride to school?'* 9% indicated skills training and education.

Cyclist and motorist share common concerns about crashes. All of these point to the need for education programs to increase skill and foster cooperation among all road users. One of the major barriers to safe cycling is lack of knowledge on the part of motorist, cyclist and other road users about the rights and responsibilities to sharing the road.

To date, the City's commitment to cycle education is focused around bike week activities during the month of September. This event is designed to:

1. Encourage great use of the bicycle to reduce short trip motor vehicle journeys
2. Target the entire community
3. Helmet wearing
4. Knowledge and Skills training

The City needs to develop a wider education program that is flexible in addressing the new and emerging safety issues particularly around common issues of conflict between cyclist and motorist.

The safety and education spoke of the Plan has 4 objectives.

Objectives:

1. Develop innovative ways, such as public/private partnerships to fund and sustain safety education programs
2. Develop a Cycling Skills program, including developing a unit/component for drivers
3. Establish a protocol in response to cycling crashes; and
4. Work cooperatively with other agencies such as the RTA and Department of Health, to deliver messages about safe cycling in the Blue Mountains

SPOKE 4: Promotion

Guiding Principles and Background

Bicycle ownership results in the Blue Mountains survey shows that 23% of households have at least 4 working bicycles and that at least 2 of them get ridden at least 34% of the time each month.

Despite high bicycle ownership, many cyclists still do not think of cycling as a transportation option. Recreation cycling (21%) is popular with residents across all areas of the City, while the number of commuters (9%) or utilitarian cyclists is much lower and tends to be concentrated in particular areas such as the lower mountains.

Encouraging the occasional recreation cyclist to leave their cars at home more often and commute or use their bikes for other purposes has significant benefits for the health of individual users and the wider community. While the *Blue Mountains Bike Plan 2020* aims to encourage all types of cycling trips, one of the most important objectives is to encourage recreational cyclist to use their bikes more frequently for everyday transportation. The key to achieving this important objective is promotion, which is focused on changing attitudes and behaviour towards cycling.

Events, communication and programs can inspire and motivate existing cyclists and encourage them to make more bicycle trips, thereby stabilizing the cycling sector. Promotion and marketing are crucial to gain additional cyclist (i.e. to attract the non cyclist), encourage the recreational cyclist to commute and to change attitudes and behaviour towards cycling as everyday personal transportation. The guiding principal for promoting cycling is:

"Every bicycle trip improves the quality of life for all Blue Mountains Residents"

How does increased commuter and recreational cycling improve the quality of life for the community?

- Every car trip converted to bicycle contributes to an improvement in air quality and a reduction of greenhouse gas.
- Regular physical activity improves health and fitness and lowers health care cost.
- Fewer motorized trips means less traffic congestion and stress, and
- Cycling puts people in touch with their local community.

The City must combine new infrastructure amenities and education with policy developments and promotion so that all residents of the City are aware of the range of transport choices, including the cycling network. Promotion and marketing will change attitudes and behaviour towards cycling and personal transportation, and encouraging people to choose cycling as a convenient way to get around.

A few of the most successful promotional initiatives by Council have been the annual Bike Week activities and the Cycleway Map. The Road and Traffic Authority also run an annual Cycle Sydney and the Big RTA Bike Ride, which all contributes to the promotion of cycling.

Promoting cycling in the Blue Mountains has been an evolutionary process. Evaluating existing programs, building on their strengths and establishing new directions are necessary steps to achieving the BMBP goal of doubling the number of bicycle trips.

The promotion spoke of the Plan has the following 3 objectives.

Objectives:

1. *Encourage cycling for everyday transportation*
2. *Promote cycling to a wide audience via effective use of media and public outreach*
3. *Demonstrate leadership through innovative policies and facilities that encourage City employees to cycle*

SPOKE 5: Cycling and Public Transport

Guiding Principles and Background

Bicycling and public transport both provide transportation alternatives to the private car, but for many travellers, neither form of transport alone can compete with the car's range, flexibility and convenience. However, bikes and public transport working as a team make a formidable alternative to the car – just as flexible and convenient, more relaxing and often faster, but without the car's environmental impacts.

Given the goal of doubling the number of cycling trips in the Blue Mountains by 2020, the City needs to take better advantage of the cycling transit connection. The guiding principle for this spoke of the Plan is:

"Greater access and service opportunities for every day travel commuters"

Many cyclists identify distance and hilly terrain as one of the major reasons they don't ride their bicycles to travel to work, school or for other purposes. Accordingly, 42% of respondents to the Community Survey indicated that it was why they decided not to ride, encouragingly, however, 16% disagreed that this was a factor.

The combination of cycling and public transit – Bike and Ride – offers an excellent way to expand the practical trip distance and terrain for cyclists. Travellers can ride their bikes to the nearest train station or bus stop and continue their journey on transit, with or without their bicycle. This travel option is very popular in some major European cities, but has not yet been either readily available or adopted in the Blue Mountains.

It is worth noting that 19% of survey respondents thought better storage on trains was a minimum need for them to take up cycling as a regular transport option.

The number of bike and ride trips can be greatly increased, without significant infrastructure improvements, through sustained promotion and encouragement, and provide further support for the high potential of this transportation alternative. State Rail and Blue Mountains Bus Company are the main transit operators in the Blue Mountains. State Rail network consist of 18 stations running along the spine of the mountains. The location of these railway stations in most areas requires a bicycle ride of approximate 10 to 20 minutes to connect to the nearest station.

Blue Mountains Bus Company runs routes servicing both schools and general commuters. These routes, which primarily run during peak commuter times, provide readily access for cyclists to link with. The Cycleway Network over the next 13 years will complement this existing network, which will be integrated into the existing transit stations and routes.

While the Cycleway Network by itself will increase the number of bike and ride trips, the plan includes three objectives to further strengthen the cycling/transit connection:

The cycling and public transport spoke of the Plan has 3 objectives.

Objectives:

1. *Improve bicycle accommodation on public transport vehicles*
2. *Improve bicycle parking facilities and access at public transport destinations, and*
3. *Promote ride-train-ride, ride-bus-ride and other non vehicle means of commuting*

SPOKE 6: Bicycle Parking

Guiding Principles and Objectives

Cyclists who bike to work, to school or for other practical purposes need more than a network of safe and convenient routes to destinations. Equally important, a secure place to park their bicycle when they arrive, whether it is for 5 minutes or the whole day. Bicycle commuters also need convenient access to shower and change facilities. The essence of these supportive facilities is a deterrent to more widespread use of bicycles for everyday transportation in the Blue Mountains.

Given that secure bicycle parking is essential to most bicycle trips, the guiding principle for this spoke of the Blue Mountains Bike Plan is:

"Secure and convenient bicycle parking must be available at all cycling destinations to encourage and support cycling"

A comprehensive bicycle parking program must provide 2 levels of parking to match cyclist needs. Basic parking is typically a bike stand/rack on the footpath suitable for short term parking, ideally no more than 10-15 metres from the building entrance. Short term parking will accommodate customers, visitors, couriers and other cyclist who are parking for no more than one or two hours.

An enhanced level of service is required for long term bike parking geared to employees, students, residents and others who will be parking for more then two hours. This parking will be provided in a secure, weather protected location on the building site. These facilities can include bicycle racks in a monitored area, a limited access room or garage and bicycle lockers.

The bicycle parking spoke of the Plan has 4 objectives.

Objectives:

1. *Expend the basic bicycle parking program to serve all public cycling destinations*
2. *Develop and provide enhanced bicycle's parking facilities which provide security from theft and protection from the elements*
3. *Require and encourage the private sector to provide bicycle parking at their buildings; and*
4. *Develop effectives strategies to prevent bicycle theft*

SPOKE 7: Tourism

Guiding Principles and Objectives

The concept of sustainable tourism is growing and is based on the combination of ecological, economic, ethical and social equality for local communities. Developing bicycle tourism can have significant benefits for both the economy and the environment.

The World Tourism Organisation reports that nature based tourism is the fastest growing sector in world tourism. The Blue Mountains Regional Tourism Plan 2004-2007 identifies Nature Based Experience's as a key area of market appeal. The vision for tourism in the Blue Mountains is:

> ***"The Blue Mountains region will become Australia's premier nature based recreational destination and an internationally recognised leader in sustainable tourism practices".***

Sustainable development is a guided process, which envisages globally managing resources so as to ensure their viability, thus enabling the City to preserve their natural and cultural capital, including protected areas. As a powerful instrument of development, the tourism industry can and will participate actively in the sustainable development strategy. A requirement of sound management of tourism is that the sustainability of the resources on which it depends must be guaranteed.

Given that tourism is continuing to grow as a sustainable industry, the guiding principle for this spoke of the Blue Mountains Bike Plan is:

"Provide the Greater Blue Mountains Region with sustainable recreational cycling opportunities in return for regional infrastructure funding and local business opportunities"

The tourism spoke of the Plan has 3 objectives.

1. *Develop recreational routes and facilities to accommodate cycling*
2. *Liaise with government agencies and related business to develop and link cycleways with those on Council lands*
3. *Provide businesses that develop sustainable cycling tourism with cycleway network and usage information*

Strategies for achieving these objectives for each of the spokes are outlined in detail in the following relevant seven sections.

3. "THE SEVEN SPOKES" PLAN

SPOKE 1: Bicycle Friendly Streets

Principle: Every Blue Mountains street is a Cycling Street.

Objectives: The City of the Blue Mountains will seek to:

1. Ensure that transportation polices, practices and regulations support an increase in bicycle safety and access for intersections, roadways, bridges and underpass;
2. Expand and improve road maintenance service level agreements and programs to enhance cyclist safety, access and comfort;
3. Ensure that cyclist safety, access and comfort are maintained through or around construction zones (Great Western Highway Upgrade); and
4. Monitor and publish the accessibility of households, communities and facilities in respect to each other through the cycleway network.

Objective 1: Transportation Polices, Practices and Regulations

Bicycle friendly polices and practices focus on enhancing safety for cyclist and maintaining or improving access for bicycles. The special characteristics of the bicycle must be considered to ensure that the cyclist is provided with the same level of service as drivers. Where appropriate, cyclist must also receive enhanced treatment not only on the roadway but also at intersections, roundabouts and especially on bridges and in underpasses.

Roadway Design and Operation

When dealing with the design and operation of a roadway section, there is no single solution for making them bicycle friendly. One issue that must be taken into consideration of the broader traffic, environmental and planning objectives for the roadway and how to integrate cycling objectives within these strategies and frameworks. The intended function of a roadway section also generally influences the measures that should be implemented.

Roads within the City are categorised into Unclassified (Local, Minor collector, Major collector), which are generally under the control of Council and Classified (Main, State, Highway), which are under the control of the Roads and Traffic Authority. Two of the primary criteria for the City's roadway classification systems are speed and volume of traffic, both of which have a direct impact on the comfort of cyclist.

Generally, the higher the speed or volume of motor vehicles on a roadway, the less comfortable it is for cyclists there. As traffic service levels increase on the higher order roadways, they should be matched with a focus on improving the environment for cyclists.

Unclassified Roads

Of approximately 971 kilometres of roads in the City, unclassified roads make up over 75 percent of the network. Local residential streets are generally very comfortable for cyclists and do not require any special bicycle treatments. Local roads have traffic volumes averaging less then 1000 vehicles per day and minor collector roads have traffic volumes averaging 1000-2000 vehicles per day, and are generally comfortable for most adult cyclists. Major collector roads have traffic volumes averaging 2000-5000 vehicles per day and are generally comfortable for more experienced cyclists. Bicycle facilities are generally not required on low volume local and collector roads, but may be desirable on some higher volume roads.

While slower traffic is intrinsically safer for pedestrians and cyclists, particularly for children and inexperienced cyclist, here is tremendous pressure from residents to lower traffic speeds in residential areas of the City. The posted speed limit on all unclassified local and collector roads is generally 50km/h. However there are in place some town precincts posted at 40km/h and 40km/h School Zones also apply across the network.

Ongoing efforts to reduce speeding and formalize consistent speed zones on higher posted speed limit roads and roads with identified speeding issues will make them more bicycle friendly.

Traffic Calming

Traffic calming measures are sometimes introduced to restore these unclassified streets to their intended function by reducing vehicle speeds, discouraging through traffic and generally improving the amenity of neighbourhood environments.

Traffic calming can be in the form of traffic prohibitions or physical changes to the road geometry such as speed humps, chicanes or raised mediums and speed cushions. The overall objective of traffic calming is to reduce the negative effects of motor vehicles while improving conditions for cyclist and pedestrians.

While traffic calming lends it self to slower speed environments, some measures are more bicycle friendly then others. Speed humps for example, are very easily managed by cyclist and appropriate for signed bicycle routes. Other measures, such as road narrowing and pinch points can create problems for cyclist. Care must be exercised in all traffic calming projects to ensure that alterations to the roadway have positive benefits for cyclists.

Recommendation 1.1.1

That the City of Blue Mountains develops traffic volume thresholds for roads requiring:

a. marked on – road cycle lanes

b. wide kerbs/shoulders

Recommendation 1.1.2

That the City of Blue Mountains seeks to enhance safety and maintains access through traffic calming projects.

Classified Roads (Main, State, Highway)

These roads account for 25 % of roadways in the City. Annual average daily traffic volumes on the Great Western Highway in the lower mountains is 39,595 cars and in the upper mountains 18,893. Speed limits range from 40km/h school zones, 50km/h, 60km/h, 70km/h, 80km/h, 90km/h and 100 kilometres per hour. As previously noted most cyclists do not feel comfortable cycling on classified roads without bike lanes due to the higher speeds and volumes of traffic. As the speed differential between a car and bike increases, so does the level of discomfort for cyclists. As part of the development of the cycleway network, classified roads were assessed for their compatibility for bike lanes within the existing roadway width. Many classified roads were found to be ideal candidates for both off road shared and on road bike lanes and have been included in the network.

Roadway reconstruction and rehabilitation projects provide good opportunities to improve the cycling environment on a roadway section. Depending on the available road width, minor widening would be possible to achieve wider curb lanes or potentially even bike lanes. Continual liaisons with the state authority (RTA) should be maintained to take any advantage of any such roadworks.

Recommendation 1.1.3

That during road resurfacing or reconstruction projects on classified roadways; the City in partnership with the RTA seek to provide wide kerb lanes and minimum 2 metre wide Off Road Shared paths on Classified Roadways, where ever feasible.

Bridges and Underpasses

Bridges and underpasses are an important focus of improvement for cyclists as these structures provide the crossing points of major barriers for cyclists such as railway corridor. By their nature and design these structures are less bicycle friendly than other typical roadway sections. Underpasses often have abutment walls in close proximity to the kerb area and higher crosswinds and traffic speeds are more prevalent on bridges. These conditions require more space in the kerb area then generally available on the average roadway for cyclist to feel comfortable. As a general principal, these structures should have bike lanes even if they are not part of the bikeway network. For many existing structures, providing a bicycle lane within the available width may be difficult or not even achievable. Where width is not available for a bicycle lane, resealing should be considered to gain as much additional space in the kerb lane as possible.

The construction and rehabilitation of all underpasses should also include the improvement of lighting and drainage. Existing lighting in underpasses can be very poor in the kerb areas where cyclists ride. Not only does the cyclist have difficultly seeing pavement irregularities in their path, but low lighting levels also makes it more difficult for drivers to see cyclists. Increasing the visibility for cyclists, especially if bike lanes or curb lanes cannot be achieved, will improve comfort for both cyclists and drivers. Drainage in underpasses is also an issue for cyclist's poor drainage can cause ponding in the kerb area, which may force cyclists to swerve to avoid these areas.

A detailed review of all bridges and underpasses is required to determine where bicycle friendly features can be implemented.

Recommendation 1.1.4

That the City in cooperation with the RTA and Rail Corp seek to incorporate bicycle friendly features in bridge and underpass projects as part of any new infrastructure and into the annual capital works program for existing structures.

Objective 2: Road Maintenance and Repair Programs

As noted previously, the characteristic of bicycles (lightweight, narrow tires) make them more susceptible to irregularities in roadway conditions than motor vehicles. Deterioration of the roadway surface, potholes and cracking or even debris in the kerb area also increases the potential for cyclist injury. Continued and improved maintenance of the roadway surface is therefore essential to ensuring a high level of comfort and safety for cyclist.

Pavement Repair and Management

The roadway edge is often the first part of the roadway that experiences pavement cracking or breaks up and is also the area most travelled by cyclist. Repairs of this nature cannot wait for a general resurfacing of the roadway.

The current practice for identifying these locations for repair mostly relies on request from the public. Pothole and pavement repair request can be reported through Councils Customers Service Hotline on 4780-5000, with the investigation and repair of the problem completed as expeditiously as possible.

The City is prepared to take advantage of cyclist's input to help identify pavement problems, but most cyclists do not know whom to call to report a problem. Examples of such reporting systems might include online and wallet card information. These and other means should be considered to both promote and improve pavement repair process.

Recommendation 1.2.1

That the City develops a pavement repair reporting system designed specifically to incorporate reports from cyclists.

Street Cleaning

The 'sweeping' action of passing motor vehicles tends to push the debris from the travel lanes to the edge of the pavement. Since this is the area utilised by cyclist, they are most likely to encounter and be affected by this debris.

The regional existing on road route along the Great Western Highway, which is under the control of the RTA, is highly susceptible to this problem brought about by volumes of traffic especially heavy vehicles.

Recommendation 1.2.2

That the City undertakes a review of street cleaning practices using the outcomes to acknowledge and respond to the needs of cyclist.

Bicycle Friendly Grated Kerb Inlets

The City still has older style grated kerb inlets at various locations across the City, which could trap a bicycle wheel. Most new roads and streets have the newer bicycle friendly style of grates. However, there is no accurate citywide inventory of roads that are still in need of conversion. Even though grates will continue to be replaced when roads are resurfaced or reconstructed there is a need to develop such an inventory so that this program can be coordinated across the City. In instances, higher volume cycling streets would then be addressed on a priority basis, beginning with roadways on the bikeway network.

Recommendation 1.2.3

That the City specifies the replacement of appropriate drainage grates in all maintenance replacement and construction projects and develops a monitoring program for the network and other popular cycling streets.

Objective 3: Accommodating Bicycles in Construction Zones

The City is currently undergoing major construction and reconstruction, at different locations along the Great Western Highway which is expected to continue for another 4 years. This presents a range of current and future considerations for cyclists.

During construction and rehabilitation of a roadway, the environment through the construction zone can feature rough pavement, narrow or restricted lanes and heavy machinery that can be particularly uncomfortable for a cyclist.

When reconstructing a roadway section, especially one that has high bicycle volumes, it is important to maintain a safe and convenient access for bicycles through the construction zone. As a general principal, if access is maintained for motor vehicles then access should also be maintained for bicycles. Ideally the contractor should provide a temporary facility for bikes if space is available within the road allowance. Where this is not possible, alternatives to accommodate cyclist should always be considered. If phasing of construction requires that access to the roadway is closed to vehicular and bicycle traffic at any time during construction, a well signed detour route should be provided for cyclist.

Temporary road conditions through the construction zone that are compatible with motor vehicles may not be compatible for cyclists. For example, steel plates and timber decking are typically used to cover holes into the roadway. Steel plates should be coated with a non slip surface and timber decking should be placed at right angles to prevent a bicycle wheel from falling in to the cracks.

Appropriate signage is also important in providing information to cyclist and drivers. A review of appropriate and consistent signage for construction projects across the City is required.

Recommendation 1.3.1

That the City specifies the replacement of appropriate drainage grates in all maintenance replacement and construction projects and develops a monitoring program for the network and other popular cycling streets.

- Construction notices posted on Council's and RTA web sites;
- Advance signage for construction activities;
- Temporary conditions that are compatible with bicycles such as non-slip surfaces, ramped utility cuts and timber decking placed at right angles to direction of travel;
- Bicycle specific detours where appropriate; and
- Appropriate signage advising motorist of cyclist using car lanes.

SPOKE 2: Bikeway Network

Principle: Blue Mountain residents will be within 5 kilometres or a 10 minute bicycle ride to the cycle network.

Objectives: The City of the Blue Mountains will seek to:

1. Complete the cycleway network in 13 years;
2. Ensure the safe and comfortable year round operation of bikeways through design, signage, enforcement and maintenance; and
3. Connect the Blue Mountains network to bikeways in adjacent Local Government Areas (Lithgow, Hawkesbury & Penrith).

The following sections will describe these objectives in detail and present specific recommendations.

Objective 1: Complete the priority components of the Cycleway Network in 13 years.

A key element of the BMBP is the completion of the network, shown in Attachment 1 & 2, by 2020 which will comprise approximately 306 kilometres of cycleway and shared path conditions of:

Physical cycleway types

1. On road in trafficable lane
2. On road shoulder/kerb lane
3. Off road shared path

Bike Route Type

1. Local
2. Recreational
3. Regional

The identification, assessment and selection of routes should include but not be limited to, the following criteria:

- **Coherence:**
  Does the route have continuity, connect with major destinations in the area, such as railway stations, shopping centres, and does it connect with other routes in the network, easy to follow.
- **Directness:**
  Does the route provide a fairly linear or direct way for cyclists to travel in a north-south or east west orientation.
- **Safety:**
  Does the route provide protected crossings, such as traffic signals, at arterial roads? Does the route avoid situations where cyclist may feel unsafe or uncomfortable, for example crossing the Great Western Highway or Railway Crossings, or does it provide a safe crossing of such barriers.

- **Roadway Characteristics and Operation:**
  If the route travels along an arterial or collector street, can the existing intersection accommodate bike lanes, taking into account pavement width, traffic volumes, parking demand and the number of traffic lanes, pavement surface.
- **Visibility:**
  Is the route visible to non-users so that they will be tempted to try it? A bike lane has the highest visibility, with its distinctive signs and pavement markings.

It should be clearly acknowledged that the Blue Mountains Cycling Committee and appropriate City Staff were consulted extensively in the development of the network.

Development of Network

The process allowed for:

- Individual, face to face consultation with identified staff and stakeholders.
- A search of relevant Council held documents, plans, data and reports at Council Headquarters.
- Compilation, summarising, critiquing and assessment of currency and suitability of this information.
- Identification, tabulation and prioritisation (High, Medium or Low) actions for both a 5 and 10 year strategy
  - Short term (1-6)
  - Long-term (7-13)

Short term priority projects should be selected based on the following criteria:

  - Ability to add dedicated bike lanes or widen curb lanes within the existing pavement width or as part of scheduled road reconstruction or maintenance
  - Special focus on linking major employment, transport and shopping nodes
  - Extending or upgrading existing on-road and off road bikeways
  - Providing for crossings of cycling barriers
  - Connecting to existing bikeway facilities
  - Focusing on improved bikeway access to more residential areas; and
  - Completing a major new off road/shared facility Upper Blue Mountains Trail.
- Providing a sketch diagram of any engineering actions and locating it on a suitable plan of the area.
- Provide costings for all actions
- Other essential actions include but not limited to:
  - Bicycle routes – existing & proposed
  - Bicycle facilities
  - Treatments to improve safety and efficiency
  - Cyclist safety, crossing points and access
  - Links to and across the Highway and Railway Corridors. Liaison with RTA or RailCorp for works.
  - Any other innovational design concepts deemed appropriate

In built up urban environments, the development of bike lanes within the constraints of existing roadways is a major challenge. In most instances, the City had taken a pragmatic approach, recommending where bicycle lanes can be installed with minimal impacts on other road users. In these cases, bicycle lanes can be achieved either by reducing the number of traffic lanes or narrowing lanes. As a general principal, widening roads to provide bike lanes is not usually practical however, on some roads, minor widening may be feasible during reconstruction works.

It should be emphasized that the proposed bike network is a planning tool. The network will continually evolve as new opportunities and challenges present themselves. Moreover, the cycleway type and alignment of each route will require more detailed design and analysis, as well as consultation with affected residents and business before actual installation.

The implementation of some elements of the cycle network will entail innovative designs to satisfy important cyclist needs, and are representative of the different challenges in building a citywide network:

Regional Strategy - Metropolitan Greenspace Program (MGP)

The Metropolitan Greenspace Program (MGP) has been identified in the Government's *City of Cities* plan for Sydney's future as a key initiative for improving links between bushland, parks, waterways and centres.

In implementing the program, the Department of Planning works closely with local councils to plan and improve regionally significant Greenspace, including parks, trails and reserves. *Building Sydney's Recreation Trails* is the strategic priority for MGP funding for the 2006–08 period.

Consultation undertaken on behalf of the NSW Government in 2004–05 identified a strong community desire for parks and trails as places to enjoy a healthy, outdoor lifestyle. The emphasis for MGP in 2007/08 was to encourage councils to enter into partnerships to develop regional trails projects across their local government boundaries. Additionally, MGP will fund projects to improve regional open space across the Sydney Region.

Aims 2006 – 2008

- To promote the development of recreation trails across the Sydney region with a focus on implementing the priorities of the *Regional Recreation Trails Framework.*
- To promote partnership between State and local government and in particular the development of joint council submissions for projects that cross local government boundaries such as major walking trails.
- To promote the planning and development of trails to provide Sydney's community with healthy and accessible recreation facilities.

Key outcomes

- Partnering with local government to improve regionally significant open space and links between bushland, parks, centres and waterways.
- Enabling more people to enjoy more parks and trails and to appreciate and enjoy our healthy lifestyle, our heritage and our natural environment.
- Delivering the Government's long-term strategy for meeting the community's need for places of recreation.

This Plan has identified the Great Blue Mountains Trail - Upper Section which links the Anderson and Ingar fire trails in Wentworth Falls to Katoomba via Cliff Drive and Katoomba to Mount York trail at Mount Victoria as being of significant importance to the regional and local cycling and walking network. It is based upon extensive community consultation and coordination with adjoining Local Government Areas of Penrith and Lithgow. Funding is currently being sought in the 2007 grant round to engage a suitably qualified consultancy firm to prepare detailed design, costing and schedules for its construction.

These particular links have previously been referred to as a "Spinal Greenway Bicycle Trail" option in Bikeways Plan 1996.

Recommendation 2.1.1

The City of Blue Mountains implement a network consisting of:

1. Local On Road – In Traffic Lane (Route signage only)
2. Local On Road – Bicycle Lane (Shoulder/Kerb)
3. Local Off Road – Shared Path
4. Recreation On Road – In Traffic Lane (Route signage only)
5. Recreation On Road – Bicycle Lane (Shoulder/Kerb)
6. Recreation Off Road – Shared Path
7. Regional On Road – Shoulder/Kerb Lane
8. Regional Off Road – Shared Path

Recommendation 2.1.2

That the City research design and demonstrate innovative measures to enhance the cycleway network.

Recommendation 2.1.3

Footpaths to be audited as part of a rolling program as to their suitability as shared paths and converted with appropriate signage and other identified treatments.

Recommendation 2.1.4

That the City investigates opportunities for developing a GIS based mapping system for the bikeway network that is routinely updated. Other information could include, signage, information boards, use of the City's Web Site, Blue Mountains Bike Group and other identified sites.

Objective 2: Ensure the safe and comfortable year round operation of bikeways through design, signage, enforcement and maintenance

The physical condition of bicycle lanes, off road paths and signed routes is a key factor in any decision to ride a bike for utilitarian or recreation purpose. If for example an off road path remains littered with broken branches for several days after a storm, many potential users will either chose a different travel mode or a less comfortable but cleared cycling route.

On street maintenance needs for cyclist are more stringent than for motorist because a cyclist is riding on two narrow, high-pressure tyres. What may appear to be adequate roadway surface for cars (with four wide low pressure tyres) can be treachous for bicycles. Small rocks, sand, gravel, ice can deflect a wheel, a pot hole can cause loss of control or damage to the wheel, and glass can puncture tyres. Gravel and other debris blown off the travel lane on the roadway also accumulates against the kerb in the area where a cyclist may ride.

A rigorous maintenance program and or commitment is required for the cycle network to ensure that cycling becomes an attractive year round travel option.

The maintenance of the cycle network will consist of three distinct functions:

1. Ongoing inspection and repair of pavement surfaces, bikeway signs and amenities

For off road-shared paths this will include:

- Regular sweeping and/or cleaning of the path
- Removal of over grown vegetation
- Replacement of damaged or missing signs
- Replacement of broken lighting and
- A re painting program for any pavement markings.

For bicycle lanes and signed routes such maintenance will be incorporated in the overall street maintenance program, with special emphasis given to the two metres adjacent to the kerb.

2. Quick restoration of the bikeway after an adverse event

Adverse events are typically weather related such as windstorms and bushfires.

3. Special consideration during and after construction activity

When a bike lane or signed route is closed for construction, the needs of cyclists must be given special consideration to ensure bicycle access is maintained at all times and may result in a separate detour route for cyclists.

Recommendation 2.2.1

That the City maintains the cycleway network throughout the year to the best of its abilities, including:

- Ongoing inspection and remediation of pavement surfaces, bikeway signs and amenities
- Quick restoration of cycleways after adverse event.

As noted previously, cyclists are more sensitive to pavement conditions than motorists. As a result, special care is required when pavement patches or utility cuts affect a bike lane or signed route. Utilities cuts can leave a rough surface for cyclist if not back filed carefully. Footpaths cuts should be finished as smooth as a new footpath.

Blue Mountains Council and other service agencies should adopt guidelines similar to the following recommendations.

Recommendation 2.2.2

Wherever possible during pavement reconstruction:

- Place cut line in an area that will not interfere with bicycle travel.
- Back fill cuts flush with the surface (humps will not get packed down by bicycle traffic)
- Ensure that cuts parallel to bicycle traffic don't leave a ridge or groove in the bicycle wheel track.
- Back fill cuts in the footpath with concrete, flush with the footpath grade.

Once high casualty and/or crash locations in the cycle network have been identified, they will be the focus of a detailed safety review. A broad range of countermeasures will be considered including:

- Widening a path or constructing a separate path for pedestrians
- Installing signage and pavement markings to identify the proper position of the path or providing warning of unusual conditions (e.g. steep grade); and
- Installing traffic signals to assist path/roadway crossings.

Recommendation 2.2.3

That the City establishes a mechanism for identifying high cycling crash and casualty locations in the cycle network, review such locations on an annual basis and implement appropriate measures.

The success of the cycleway network in attracting more cycling trips will be assisted by having a user-friendly environment for them to ride in.

Pre trip information

In order for cyclist to effectively use the cycleway network, information needs must be met both before and during a trip and include:

- Assistance in planning a route in relation to the trips origin and destination
- Warnings of unusual route features such as steep grades
- Identification of particular scenic routes for primarily recreational purposes
- Up to date listings of route detours or closures and
- Identification of the bikeway type (e.g. signed route)

On route information needs include:

- Selecting the correct direction at an intersection
- Determining distances travelled and distance still to go
- Locating amenities, such as toilets and information centres
- Identifying major destinations and landmarks, and
- Locating network connections to enable easy change of trip destination or routing.

The most basic component of cycleway information system, a map, can satisfy many of the pre trip and on-route information needs. A second component, bikeway signs, will complement the information on the map, yet will also serve as a stand-alone source of information for bikeway users who do not have a map. The information system can also include information boards at major entry points or cycleway intersections, and a website containing detailed maps and up to date route status reports.

Objective 3: Connect the network to cycleways in adjacent Local GovernmentAreas

While the Blue Mountains bicycle network is a major undertaking it can also be viewed as part of a potential cycleway system connecting the Blue Mountains to adjoining areas such as Lithgow, Hawkesbury, Penrith and the Greater Sydney Region. This view is closer to how the average cyclist would experience their trip. Local Government Area boundaries are usually invisible and do not function as trip destinations. In many instances however a LGA boundary becomes the 'end of the road" simply because a proper bikeway connection has not been made to the neighbouring area.

Each of the above Councils and State Government are in various stages in the installation of their cycleway networks. There are a number of key routes that require particular attention:

- Katoomba to Mt Victoria – Off Road – (Part of the Greater Blue Mountains Trail – Upper Section – Metropolitan Greenspace Project)
- Mt Victoria to Hartley (Lithgow) – Off Road
- Cliff Drive Katoomba to Leura – Off Road Shared Path – (Part of the Greater Blue Mountains Trail –Upper Section - Metropolitan Greenspace Project)
- Hawkesbury Road Winmalee to Windsor – On Road
- Mitchell Pass Glenbrook to Penrith – On/Off Road

- Lapstone Zig Zag to Penrith – Off Road
- Other Recreation On/Off Roads in NPWS and on Crown Land

Recommendation 2.3.1

That the City continues to work with neighbouring Councils and RTA to create seamless bikeway connections across LGA boundaries.

SPOKE 3: Safety and Education

Principle: Through education, create an environment where people can cycle on Blue Mountain streets without the fear of injury.

Objectives: The City of the Blue Mountains will investigate opportunities to:

1. Develop innovative ways, such as public/private partnerships, to fund and sustain safety education programs;
2. Establish a cycle skills training program, including developing a component for drivers;
3. Establish a protocol in response to cycling collisions; and
4. Work in partnership with other agencies to deliver message about safe cycling in the Blue Mountains.

Objective 1: Develop innovative ways, such as public/private partnerships to fund and sustain safety education programs

With an increase in both public concern about safety and request for bicycle safety training and education, the City must find a way to develop, deliver and sustain effective road safety education programs.

If the City can bring new funding partners to the table by initiating a Bicycle Safety partnership, it can use its resources to encourage an on going public, Local Government, RTA partnership on bike safety. Insurance companies, health care professionals, Police, bicycle manufactures, bicycle shops and numerous other organisations have a vested interest in bicycle safety. By inviting these stakeholders to work together and to pool resources and expertise, safety programs can be developed and implemented that would be beyond the resources of any one particular organisation. An active Safety Partnership would result in an increase in effective bicycle safety programming across the Blue Mountains.

Recommendation 3.3.1

That the City establishes a broad based City of Blue Mountains Bicycle Safety Partnership to develop and implement bicycle safety programming.

The Blue Mountains must continue to build on the current investment in Bike Week activities, the development of the Cycleway Map and other bicycle and road safety projects. Evidence from successful awareness programs that Council have already initiated about road safety and environment issues, indicates that exposing the public to these message and projects builds momentum and can result in a raised awareness levels and changes in behaviour. The City should therefore continue to fund the development and delivery of existing road safety education programs and this level of funding should be clearly identified in the annual operating budget for the City.

A multi-faceted communications strategy is needed to expand the reach into the community. The communication strategy should address both the content of the message itself and how that message is delivered. Care should be taken to broaden the range of approaches to getting the message out. Previous efforts have included local newspapers, internet sites, school newsletters, the Blue Mountains Cycleway Map and other media sources. The intent is to have bicycle safety information accessible to a wide variety of audiences. These groups include young people, women, seniors, motorist and economically disadvantages residents.

The City should address their needs to both in keeping them actively involved and to encourage them to start cycling. If the target number of cycling trips is to be obtained then the concerns of these people need to be addressed.

Recommendation 3.1.2

That the City maintains its current commitment to bicycle safety programs by:

- Providing a stable level of core funding in the annual operating budget
- Supporting an entrepreneurial approach to generating revenue for the expansion and sustainability of programs
- Investigating new innovative programs to make bicycling safety information and training more accessible to specific target audiences

Objective 2: Develop a Cycling Skills program, to include developing a unit for drivers

The provision of practical information about bicycle safety for cyclist of every age and ability is essential. A cycling skills course should cover crash avoidance techniques, bicycle handling skills, safety equipment, the Australian Road Rules, lane positioning, to anticipate possible conflict and to take preventative action with a particular emphasises on communication with other road users.

The City will make a significant investment in developing these Cycling Skills Course in the Blue Mountains. The intent is to make them available to schools, business and the general community.

The City in partnership with the other cycling groups looks towards developing and offering other cycling related programs such as bicycle mechanic course.

To realise this objective, the City must take several steps including:

- Engage suitably qualified instructors to deliver programs
- Heavily promote and advertise the Cycling Skills Course

Training cyclists and informing them about appropriate cycling techniques is not enough on its own to prevent crashes. Motor vehicle drivers must also become more skilled at sharing the road with Cyclist. Motorist needs to learn new skills and attitudes to safely share the road with cyclist and other road users in general.

Recommendation 3.2.1

That the City continues to run the Back On Your Bike Program and develop this course to meet changing techniques and best practices.

Recommendation 3.2.2

That the City investigates the opportunities in partnership with the RTA and other agencies to develop a motor vehicle driver education program.

Objective 3: Establish a protocol in response to cycling crashes

The threat or experience of being involved in a bicycle crash has a huge impact on whether people ride, how often they ride and where they choose to ride. While improving roadway conditions and adding safety equipment (like air bags) to cars can help reduce injuries to car occupants, few advances protect the cyclist in crash.

Further creating a safe environment where people can ride without fear of injury goes beyond injury prevention programs. There is a real need to respond to crashes in a way that mitigates the factors that lead to the crash. This can be done in three ways. The City can begin by encouraging cyclist to report their concerns about road safety. Secondly, analysis of crash data should be undertaken to identify and then implement improvements in infrastructure, education programs and enforcement programs. Finally, the City can provide information to cyclist involved in crashes. By establishing a protocol to cycling crashes the City can improve the cycling environment.

A review should then be undertaken to process the data on crashes on a regular basis. This review will allow for the ongoing review of bicycle crash trends. It will also serve as a mechanism to exchange information between groups and Council working on bicycle safety. This exchange should allow the Council staff to identify trends and to work co operatively on existing or new initiatives.

Recommendation 3.3.1

That the City investigates opportunities to work with the NSW Police to prevent bicycle related crashes.

Objective 4: Work cooperatively with other agencies such as the RTA and the Departments of Health & Education, to deliver messages about safe cycling in the Blue Mountains

To double the number of bicycle trips in the Blue Mountains within 13 years, the City must invest in creating a safe, comfortable and bicycle friendly environment. To be successful, the City must approach other organisations such as Police, Department of Education, Department of Health, and RTA to play a role in this process. Many of these organisations have similar mandates in terms of safety, education, environment and quality of life. Working cooperatively will make sure those messages are consistent and that the participants can avoid duplicating initiatives.

Recommendation 3.4.1

That the Blue Mountains Police, RTA and the Departments of Health and Education are requested to continue their active role in bicycle safety by:

- Bicycle patrol officers
- Working with City staff to establish enforcement priorities based on crash data
- Cycling Skills Course participation
- Providing representation on the City's Bicycle Safety Team
- Highway Patrol focus on cycle safety
- Develop materials to prevent cyclist being involved in crashes

SPOKE 4: Promotion

Principle: Every bicycle trip improves the quality of life for all Blue Mountains residents and visitors.

Objectives: The City of the Blue Mountains will seek to:

1. Encourage cycling for everyday transportation;
2. Promote cycling to a wide audience via effective use of media and public outreach; and
3. Demonstrate leadership through innovative policies and facilities that encourage City employees to cycle.

Each objective and its accompanying recommendation are outlined in greater detail in the following sections.

Objective 1: Encourage cycling for everyday transportation

While it is important to promote cycling in general, there is a specific need to encourage more bicycling commuting. New cycling infrastructure, bike lanes and bike parking for example will influence these practical trips.

Just as important, promotion needs to begin by changing attitudes, reinforcing that bicycle commuting can be both practical and enjoyable. This section describes two programs, which focus on shifting attitudes and behaviour towards cycling to work and school.

Events and Programs

The aim of Bike Week is to hold events that encourage riding around the local community and incorporate the promotion of safe cycling behaviour. This takes place in September of each year and has been successfully held for the past 10 years. Council has been helping to support, develop and coordinate Bike Week with individuals, bicycles users group and organisations. Part of the success of previous promotional efforts has been the ability to work together to organise communications and events. Communication includes newspaper press releases and special interest articles. By networking with individuals, community groups, schools, organisations, local businesses, the City seeks to increase participation. Additional resources are needed to promote Bike Week across the City. The challenge of the future is to inspire new individuals and organisations to participate by organising, facilitating, donating or assisting in Bike Week events.

Recommendation 4.1.1

That the City continues to develop Bike Week and ensure that events are available in various locations across the City.

Bike-to-School Program

Approximately 9,600 students attend Blue Mountains schools. Thousands of short distance car trips to schools create traffic safety and congestion problems because many parents and carers drive students to school.

Local Schools

School aged children in the Blue Mountains need to learn and be encouraged to ride their bikes safely. This is a basic life skill that should proceed learning to drive a car. Encouraging children to ride to school and in the neighbourhoods will result in a generation capable of making healthy choices about transportation. Today, many parents drive their children to school. Parents afraid for their children's safety, often discouraging them from cycling. Schools also discourage children from riding to school because of safety concerns and liabilities associated with bicycle theft and personal injuries. On the other hand, students are affected by smog and lack of opportunities for physical activity. Cycling should become an integral part of life in schools.

Parking around schools

There exist an opportunity to decrease the congestion around school zones by reducing the amount of vehicle vying for limited car parking around our schools. The City in partnership with local schools, Parents and Citizen groups, bus companies and Police should investigate ways of reducing the reliance and dependence on motor vehicles and look to incorporating cycling to school programs across the City.

Some potential initiatives that the City should explore with local schools include:

- Develop a plan to offer the Cycling Skills Course into schools
- Develop a Bike to School program
- Develop bicycle safety resources target for school age children
- Develop bicycle helmet education programs
- Develop a kit for Parents and Citizen and other such groups with bicycle safety training
- Membership on the Bicycle Safety Partnership.

In the last two decades, more sedentary lifestyles have resulted in an increase in the proportion of overweight children ages 7-13 (1). Short distance car trips to schools are ideal candidates to switch to cycling trips. Schools and P& C have done little to date to encourage cycling as one of the ways to solve the problems that short distance car trips to schools create.

Reference: 1. NSW Health, (2005). Prevention of Obesity in Children and Young People, NSW Government Action Plan 2003 - 2007. NSW Department of Health: Sydney.

As discussed previously the main barriers discouraging this potential increase in school-oriented cyclists are concerns about traffic safety and bike theft. Some schools actively discourage cycling to school because they do not have secure bike parking and are concerned about related liabilities.

The City should work with school committees to develop bike-to-school and bike parking pilot programs, research bike-to-school activity in selected schools and develop criteria and an ongoing (including funding) for providing bike parking at all schools.

Recommendation 4.1.2

That the City works with Schools and other agencies to develop a Bike-to-School Program, which will identify safe routes to schools and provide secure bicycle parking, and bike training and incentive programs for students and their parents.

Objective 2: Promote cycling to a wide audience via effective use of media and public outreach

Promotion of cycling occurs through two major streams: cycling related events and programs and the dissemination of cycling information through comprehensive communication programs that include a variety of materials and delivery methods. Set out in this section is a review of some recent programs and recommendations on how to build upon their success.

Currently the City spends a significance amount of time and energy on Bike Week. As a result Bike Week enjoys a great deal of media coverage and public attention. To ensure that cycling is recognised as a year round activity for an increasing number of people, and to reach the goal of doubling the number of cycling trips in the City over the next 13 years, the City needs to develop new activities and events for other times of the year.

There should be ongoing cycling promotional events in each of the areas of the City. Although the size and focus of new activities and events can vary, they should connect to existing events such as Bike Week, RTA Big Bike Ride, Cycle Sydney and other such events. The City should work in cooperation with clubs, organisations and the media to develop more events over the greater part of the year. The city could assist in the promotion of events by developing a calendar for the full year which could be intergrated into a guidebook to bicycle events in the City for all residents and visitors.

Communications

Effective communication is a very important component of a promotion plan that seeks to educate, inform and increase awareness on matters concerning cyclists in the City. Communications includes promotional materials that are available through a variety of means to residents of the Blue Mountains.

If the City's goal is to change attitudes, communication must be ongoing and not restricted just to media covering specific cycling related events. Nevertheless, media coverage remains a very effective method to reach a large number of Blue Mountains residents.

The Cycleway Map is a valuable education and promotional tool. In additional to being useful for navigating the City, the map also provided and effective means of dissemination cycling related information focusing on safety and other useful contacts.

The Cycleway Map is a valuable education and promotional tool. In additional to being useful for navigating the City, the map also provided and effective means of dissemination cycling related information focusing on safety and other useful contacts.

Recommendation 4.2.1

That the City works with relevant stakeholders to develop and produce up to date and relevant Cycleway maps. These stakeholders include:

- Tourism;
- NPWS;
- Neighbouring Local Government Areas;
- Department of Lands; and
- Health

Recommendation 4.2.2

That the City works with other groups and agencies to promote cycling facilities, programs and events through a variety of media, including:

- An annual cycling guide of activities and events;
- The City's website;
- Special cycling events throughout the year;
- Tourism;
- NPWS;
- Neighbouring LGA's;
- Department of Lands; and
- Health

Objective 3: Demonstrate leadership through innovative policies and facilities that encourage City employees to cycle

Encouraging the use of bicycles for everyday transportation is an effort that will require more resources and influence than those of the City alone. Every employer has a role to play in encouraging and supporting amongst its own work force. The City of Blue Mountains must also play an important leadership role in encouraging and supporting the City's many other employers in participating in this iniatives. To be a creditable leader, the City must do much more to encourage others, it must lead by example. Being a leader means providing high quality parking, shower and change facilities for bicycle commuters at all work places, and establishing innovative policies for encouraging City employees to cycle.

The City should explore a number of initiatives to demonstrate leadership. Some of these could include:

- Maintaining a pool of bicycles available for staff to conduct City business by bicycle rather than by car
- Compensating employees who choose to use their own bicycles for City business, just as it compensates employees who drive their own cars for City business
- Making cycle training courses available to City staff on staff time, to minimize risk associated with using a bicycle during the work day and to enhance the cycling skills necessary to commute safely by bicycle
- Create an incentive program for employees who cycle to work
- Developing a contest among departments to encourage increased ridership
- Installing bike parking facilities outside of all City buildings (police stations, parks and recreation centres) and indoor parking facilities wherever possible
- Encouraging a bicycle mentoring or linking program (so cyclist can find a colleague with whom they can ride to work with)
- Installing shower and change facilities for employees
- Providing lockers for storing clothes.

Recommendation 4.3.1

That the City takes a leadership role in encouraging and supporting cycling as a mode of transportation for City staff, including:

- Consideration be given to providing high quality bicycle parking and shower/change facilities at all civic work places during refurbishment projects
- Offering bike training courses to all City employees through the regular employee training and development programs
- Providing a pool of bicycles for City employees to use in conducting City business

Encouraging other employers to Promote Bicycle Commuting

Having established leading facilities and policies, the City should document and promote these to other employers. Promotional materials explaining the benefits of encouraging bicycle commuting, accompanied by incentive programs and friendly competition, will significantly increase bicycle commuting across the City.

Bicycle Group

The City will provide support for the Blue Mountains Bicycle Group to promote cycling within their area of influence. Their efforts to increase the number of bicycle trips will compliment those of the City and provide opportunities for partnerships to share responsibilities and resources.

The purpose of the Bicycle Group is to support people in choosing bicycle transportation in every workplace, neighbourhoods, school and community, increase the number of bicycle trips and reduce the number of car trips in the Blue Mountains.

Bicycle Friendly Business Awards

The City will recognise and honour leading edge bicycle promotion by other agencies and private corporations though the Bicycle Friendly Business Awards.

The Awards will recognize small and large businesses and corporations for their efforts in promoting cycling. These awards remind the private sector that it has a unique opportunity to facilitate the use of a healthier, more sustainable and enjoyable method of transportation.

Recommendation 4.3.2

That the City continues to encourage other employers in the Blue Mountains to promote and support bicycle commuting including:

- Providing information and technical advice on the provisions of bicycle parking facilities;
- Developing a plan for establishing Bicycle User Groups; and
- Developing an annual Bicycle Friendly Business Awards Program

SPOKE 5: Cycling and Public Transport

Principle: Greater access and service opportunities for every day travel commuters.

Objectives: The City of the Blue Mountains will investigate opportunities to:

1. Improve bicycle accommodation on public transport;
2. Improve bicycle parking facilities and access at public transport destinations; and
3. Promote ride-train-ride, ride-bus-ride and other non vehicle means of commuting.

The following sections will describe these objectives in detail and present specific recommendations. The final section of this section addresses the funding and implementation of the recommendations.

Objective 1: Improve Bicycle accommodation on public transport

While many bicycle/transit trips can be accurately described as 'bike and ride', there is a portion of travellers who use a bike - ride - bike combination by taking their bicycles on the transit vehicle. Having a bike at both ends of the trip provides greater flexibility and convenience and in some instances, can reduce the time and travel cost. Limited availability on trains, especially during peak hours, makes it difficult to use a bicycle at both ends of a trip.

For Blue Mountains cyclist, bicycle accommodation on transit options can be improved in many ways. This section reviews two improvements requested by cyclist during the study process – bike racks on bus, and permitting greater access for bikes on state rail trains.

Bike Racks on Buses

However, there currently exists no provision on buses in the Blue Mountains to carry bicycles. Bike racks on buses provide benefits for both cyclists and non-cyclists using buses, by permitting the bike to accompany the traveller and use their bike at the other end of the journey.

In the survey 11% of respondents considered racks on bus as being an important option if they are to personally start using their bicycle as a transport option.

Numerous North American cities with racks on buses include Vancouver, Seattle and Phoenix. The Seattle transit system now carries 60,000 bicyclists a month. Similar programs are currently running in Brisbane and Canberra.

A primary concern that might arise from the installation of racks on buses is the extra time taken to load the bike onto the rack and enable the bus to maintain its schedule.

The benefits and potential impacts of bike racks on buses can best be evaluated in detail via a pilot project. Bike racks would be installed on a few buses to serve a route or routes. Routes would be selected for evaluation, which minimizes impacts on bus schedules and still is able to capture significant data. The decision on whether to develop a bike rack program will be based on the results of this evaluation.

Recommendation 5.1.1

That the City in partnership with Blue Mountains Bus Company investigates the feasibility of undertaking a pilot program of bike racks on buses.

Bikes on State Rail Trains

Bicycles are permitted on trains free of charge on the weekend and in off-peak periods. However, if part or all of the journey is made between 6am - 9am or between 3.30pm to 7.30pm on weekdays then a child ticket must be purchased for the bicycle as well as a ticket for yourself.

There are a number of Blue Mountains commuters and tourists who travel in the non-peak period. A bike and ride can be an attractive option for such travellers, especially if the trip is lengthy or entails difficult riding such as steep grades of busy roads.

Refer Recommendation 4.5.3

Objective 2: Improve Bicycle Parking and Access at Public Transport Destinations

Of the 18 railway stations on the Blue Mountains Line, 8 have bicycle lockers, cages or racks. The current occupancy rate of racks is near 100% while that of lockers is 75%.

Bicycle New South Wales currently in partnership with NSW Transport monitor the usage, maintenance and hiring of bike lockers throughout the network.

The City is currently reviewing existing usage and upgrading of some locations.

The importance of enhanced bicycle parking for encouraging bike and ride activities was highlighted in the 2005 survey with 60% of respondents consider bike security as high with only 16% giving it a low rating and 34% would like more lockers at train stations and a further 51% requested them at shopping centres.

There are two main types of bicycle parking, which will be considered at transit points, bike lockers and bicycle racks.

Bicycle Lockers

Bicycle lockers are a significant improvement to the level of security for bike and ride travellers. All lockers are key operated and rented for a nominal fee per month at a time. The authorities are currently reviewing the use of lockers for security risk.

Bicycle Racks

One of the simplest and most cost effective ways to improve the quality of bicycle parking at transit stations is bicycle racks, and if possible under shelter. Shelter gives the users the assurance that their bikes are protected from adverse weather, which is not uncommon in the Blue Mountains.

Improve Bicycle Access to Public Transport Destinations

42% of the survey respondents indicated that new links should be installed around shops and railway stations. This supports concerns that on of the barriers of riding to the station are the quality of the bike ride in the vicinity of the station.

Transit stations themselves can contain barriers to travellers with bikes. Probably the most common barrier is a staircase, requiring the bike to be carried up or down. Over the past several years State Rail as part of their access program have installed lifts at Katoomba, Springwood, Penrith and Blaxland stations.

As part of the Network strategy, these linkages between key routes and transit stations will be given a high ranking.

Recommendation 5.2.1

That the City of Blue Mountains in partnership with Rail Corp undertake a comprehensive review of bicycle access to all public transport stations in the City and implement improvements wherever possible.

Objective 3: Promote ride-train-ride, ride-bus-ride and other non-vehicle means of commuting

The combination of cycling and transit makes a formidable alternative to the car for many urban trips. However, while bike and ride remains a relatively new concept in Australia, both Canberra and Brisbane have successfully implemented this type of program.

Marketing and promotion strategies must be targeted to specific audiences for maximum impact. Research shows that by combining cycling and transit the following characteristics are the most likely for conversion to bike and ride:

- The trip must be some length where fuel and other cost become a factor
- The trip may involve severe traffic congestion giving rise to unpredictable delays and perceived dangers
- There are at least moderate parking problems or cost at the end of the trip
- The family is ideally a single car family living in an area with infrequent or not easily accessible public transport, so there is pressure for the car to be available to other household members
- The individual lives more than 6-7 minute walk from the transit stop or station but no more than a 10 minute bicycle ride away
- The individual already owns a bicycle and is disposed to cycling; and
- There are no steep hills or serious hazards that the individual would have to negotiate going to and from the station

The Blue Mountains Cycle Way map provides an additional resource in this regard by detailing a number of route profiles for potential bike-and-ride converts and general bicycle rides.

Because the promotion of bike-and-ride involves two travel modes, there is a need for strong cooperation among the Road Authority (RTA), State Rail, Blue Mountains Bus Company and the City of Blue Mountains. This will entail jointly sponsored advertising campaigns, as well as joint publications and special events.

Recommendation 5.3.1

That the City of Blue Mountains, RTA, City Rail and Blue Mountains Bus Company investigate the feasibility of developing a coordinated Bike - and - Ride program and promotion strategies and related initiatives.

SPOKE 6: Bicycle Parking

Principle: Secure and convenient bicycle parking must be available at all cycling destinations to encourage and support cycling.

Objectives: The City of the Blue Mountains will investigate opportunities to:

1. Expand the current basic parking program to serve all public cycling destination;
2. Develop and provide enhanced bicycle parking facilities which provide security from theft and protection from the elements;
3. Require and encourage the private sector to provide bicycle parking at their buildings; and
4. Develop effective strategies to prevent bicycle theft.

Objective 1: Expend the basic bicycle parking program to serve all public cycling destinations

The City has installed bicycle racks at some civic centres, swimming pools, railway stations, shopping precincts and other recreation and park facilities. However, this has not been the result of a systematic program but dealt with on an individual basis or as requests are received.

The City is currently developing a set of urban design guidelines, which will determine the most appropriate type, colour, and style for each individual town or village for bicycle racks in the City.

The current trend is to have loop or hoop style racks installed. This style is well suited to village urban footpaths where there are many competing demands for limited space. However, bicycle parking on footpaths will always be secondary to their primary purpose, which is to provide safe access for pedestrians, therefore the City must begin looking at innovative approaches to bicycle parking. European cities have developed very space effecting parking racks, which could serve a model for new rack designs. Some on street parking spaces could be more efficiently converted to bicycle parking as several bicycles can be parked in the space required for one car.

Very few recreation facilities, community centres and libraries have sufficient bicycle parking. All of these locations require bicycle parking. Locations and parking type will be assessed and prioritised as part of the priorities delivery programs. The assets branch will be responsible for the management for this part of the program.

Blue Mountains schools and TAFE colleges also have a responsibility for providing bicycle parking for the students and staff. The City has a role in encouraging them to promote cycling and assisting them in developing effective bicycle parking programs.

There has been very little work by schools or the City to encourage cycling to school as previously discussed. There are 2 main barriers to encouraging cycling to Blue Mountains Schools – concerns about traffic safety and bike theft. Some schools actively discourage students from riding their bikes to school because they don't have secure bike parking.

Objective 2: Develop and provide enhanced bicycle's parking facilities, which provide security from theft and protection form the elements

The City needs to expand the range of services for cyclist by developing enhanced bike parking facilities, which offer higher levels of security against theft, damage and protection from the elements. These types of facilities typically include bicycle lockers and shelters.

This type of security is particular well suited where indoor secure parking is not available for commuters and is currently and can be continued to be located in car parks and other city owned space. Private owners for private use can also purchase lockers.

To date, Council has been successful in providing convenient short term parking, primarily on city footpaths. Council has also been similarly successful in implementing the Secure Bicycle Locker Program, which is a Department of Transport initiative, managed by Bicycle New South Wales for integrating bicycle and public transport travel.

As part of this program, secure bicycle lockers have been installed at key railway stations and transit locations, including Blackheath, Katoomba, and Wentworth Falls, Woodford, Springwood, Blaxland and Glenbrook railway stations. Lockers can be rented for a minimum period of three months, for $50.00 including GST, plus a refundable key deposit of $50.00.

Providing protection from the weather is an important amenity for the cyclist who rides in all kinds of weather. The City experiences often adverse weather conditions, particularly through the winter months. Some research is needed to develop simple design concepts, identify potential shelter locations and investigate the potential for cost recovery through advertising revenue or sponsorship.

Another idea which is gaining popularity in North America and Europe is the Bikestation, a full service bicycle storage and rental facility. Bikestations provide a full range of services for cyclist including monitoring bike parking, bike locker rentals and repair shops, changing rooms and transit and cycling information.

Indoor monitored bicycle parking and repair centres are common in Europe and Japan. There are over 3000 such facilities in Japan and 84 bike stations in the Netherlands with capacities from 1,150 to 4000 bicycles. They are typically located at public transit and train stations as well as high density bicycle destinations such as universities. (1)

At present there is not sufficient number of cyclists to warrant such a service in the Blue Mountains.

Reference: 1 New York City Bicycle Needs Study, p.23, and 1998.

Recommendation 6.2.1

That the City's Asset branch investigate the feasibility of developing and implementing a comprehensive city wide bicycle parking program, which will:

Install bicycle parking at all:

- civic centres;
- Council depots;
- recreation facilities;
- libraries;
- transit stations; and
- other civic buildings.

Objective 3: Require and encourage the private sector to provide bicycle parking at their buildings

While the City has an essential function in providing bike parking at all public destinations as described in the previous sections, the private sector has an equally important role in providing bicycle parking and commuter cyclist amenities for their employees and customers. The City will encourage the private sector in this effort by establishing bicycle parking requirements for different land uses and developing design standards in consultation with the developer, industry and established guidelines to provide high quality bicycle parking.

Given that it is the City's goal to increase bicycle use, bicycle parking requirements must be based on future bicycle parking demands, not just existing cycling levels. There needs to be a review of the existing bicycle parking development control requirements for all new developments to ensure that future needs are met.

Recommendation 6.3.1

That the City evaluates the existing zoning regulations and develops new requirements for bicycle parking and shower/change room facilities that would apply to all appropriate use in the City.

To ensure that bicycle parking and shower/change facilities in private buildings meet consistently high standards, the City will produce bicycle parking guidelines in consultation with the development industry. These guidelines will explain the benefits of bicycle parking, describe the city's bicycle parking requirements and offer practical advice on how to provide high quality bicycle parking and shower change facilities, either through retro fitting or in original design process.

A clear set of guidelines will also benefit planners who review development applications for compliance with a wide range of council requirements, including bicycle parking. The guidelines will be complemented by training for staff in the development review process.

Objective 4: Develop effective strategies to prevent bicycle theft

For many cyclists, the risk of having one's bicycle stolen is a major obstacle to more frequent cycling. The usual source of information on bicycle theft is police records, however this reveals only part of the true picture as many stolen bicycles are not reported to the Police. Also, since the reporting of bicycle theft rarely results in the bicycle being found, many owners are of the opinion that there is no point in reporting it.

Effective bike theft prevention starts with secure bike parking. While the implementation of the bike parking strategy described in this section, will go a long way towards reducing bicycle theft, it is not enough. A comprehensive theft prevention strategy must consider all the factors, which contribute to bicycle theft. Cyclists must be more diligent in locking their bicycles at all times and in the use of high security locking devices. Police resources must be directed to catching bicycle thieves. The laws covering the purchase of stolen bicycles by cash converters and pawn shop type businesses must be enforced and supported by the priority education by the relevant authorities.

Recommendation 6.4.1

That the City investigate the opportunities of developing and implementing a strategy for reducing bicycle theft, in cooperation with the NSW Police, bicycle retails and insurance industry, research and develop.

SPOKE 7: Tourism

Principle: Provide the Greater Blue Mountains Region with sustainable recreational cycling opportunities in return for regional infrastructure funding and local business opportunities.

Objectives: The City of the Blue Mountains will investigate opportunities to:

1. Liaise with government agencies and related corporation utilities to develop and link cycleways with those on Council lands to develop recreational routes and facilities to attract cycling visitors; and
2. Provide businesses that develop sustainable cycling tourism with cycleway network and usage information.

Objective 1: Liaise with government agencies and related corporation utilities to develop and link cycleways with those on Council lands to develop recreational routes and facilities to attract cycling visitors.

As part of the bike network planning process the City must identify and provide a network of links that provide focus on attracting tourist to the area. These links must be intrinsically linked to other tourism attractors in the region. One of the challenges to be faced are that of providing a range of paths, trails and facilities that adequately meet the needs of the range of visitors. Research shows that visitors are coming to the region to experience a range of various experiences. These might range from galleries to fine food and extreme adventure activities.

Blue Mountains Tourism Ltd is the organisation that promotes the Blue Mountains as a tourist destination. Promoting bicycle tourism is a long term objective of this plan, and the City should work with Blue Mountains Tourism Ltd to incorporate cycling information in its tourism promotional activities.

A percentage of cycling tourist come to the mountains to access several of the renowned fire trail routes that exist in the Blue Mountains National Park. Of particular note is the Woodford Fire Trail and Narrow Neck. At present the number of approved trails is limited. Factors influencing the access are maintenance, insurance and proximity to restricted and authorised areas around the water catchment.

To enable the further development of a complete inter connecting network the City needs to continue its liaisons with these bodies in securing access to these corridors.

Recommendation 7.1.1

That the City work with Blue Mountains Tourism Ltd to explore opportunities with other interest groups, agencies and government to promote bicycle tourism in the Blue Mountains.

Recommendation 7.1.2

That the City in partnerships with Blue Mountains Tourism and other tourism operators develop a list of experienced based attractors to enable effective linkages to be identified.

Objective 2: Provide businesses that develop sustainable cycling tourism with cycleway network and useful information

The economic benefits resulting from bicycle events are well documented and therefore events and facilities that encourages cyclist to stay longer will result in increased economic benefits.

Recommendation 7.2.1

That the City establishes and maintains a data base of business with a focus towards cycling tourism and provide them with relevant and useful information.

The environment for bicycle tourism in the City will improve as the seven components of the BMBP are implemented. People who visit the Blue Mountains for other reason will be encouraged to cycle if the infrastructure makes it easier for them to do so, as it does in other cities such as Amsterdam and Copenhagen. By year 2020 of the BMBP, the City will have built a foundation for bicycle tourism.

4. IMPLEMENTATION AND EVALUATION

Introduction

The Blue Mountains Bike Plan described in the previous sections of this report, sets out recommendations for creating a safe, comfortable and bicycle friendly environment in the Blue Mountains, which will encourage people of all ages to use bicycles for everyday transportation and enjoyment. The implementation strategy describes in this section sets out the 'means' by which the recommendations will be implemented and goals of the plan achieved and includes management, co-ordination, public consultation, funding, monitoring and evaluation.

Summary of works

The Plan builds upon the framework established through the Blue Mountains Bikeways Plan 1996, which has delivered notable success, including the below network improvements.

Works scheduled and completed over the past 4 years

	Route Number	*Location*
2005-2006	L16	Katoomba – Victoria Street
	L2 and L4	Blaxland – Wilson Way and Old Bathurst Road
2006-2007	L6 and L6aa	Valley Heights – Tusculum Road
2007-2008	L16	Katoomba – Victoria and Camp Street
	L6a	Valley Heights – Tusculum Road
2008-2009	L17,L18, L19	Blackheath –Valley View Rd; Govetts Leap; Evans Lookout; Wentworth St; Gardiners Rd; GWHY and Hat Hill Road.
	L20	Mt Victoria – GWHY and Station Street
	L2	Glenbrook – Levy Street – Currently under construction.
	L9b	Lawson Town Centre – Currently under construction.

Implementation Strategy

The Plan is comprehensive and strategic in nature. As such, it will need to be implemented efficiently through an incremental process, with each step or action building upon previous ones. It is also a plan designed to be flexible, and intended to evolve over time.

The recommendations have been prioritised, and developed into three delivery programs for implementation over a thirteen-year horizon as detailed on pages 56 and 57 of this plan.

The order and timing of priorities set out in the attachments is intended as an initial guide for implementation. They will be reviewed and updated annually as part of an annual progress report that will include infrastructure and programming priorities and budget requirements for the upcoming year/s. Therefore, as the plan evolves it will need to adapt to change. This may be in response to opportunities that may emerge or because of input derived from the ongoing monitoring and evaluation of the strategy.

Attachments

Attachment 1 shows the renewal of existing network, proposed actions, cost estimates by component area and priority.

Attachment 2 shows the new proposed network, actions, cost estimates by component area and priority.

Attachment 3 shows the network maps.

Attachment 4 shows the details of The Greater Blue Mountains Trail – Upper Section.

Financial Strategy

The Bike Plan is much more than a proposed network. It includes various components and one of these is the overall delivery program. The network components of the Bike Plan have been developed into three separate Delivery Programs. The delivery programs are not a commitment by the Council to expenditure but are a forward plan preparing to coordinate planning to seek grant funding and to assist in Capital Works Program submissions.

As a result of the changes resulting from consideration of submissions made to Attachments 2 and 3, the total delivery cost has increased, as indicated in Table 2. The additions to the network have also increased the total proposed network development, as indicated in Table 3.

These variations DO NOT affect Delivery Program 1 – Priority Network as indicated in Table 1 or 1(a), as originally reported to the Council on 22 April 2008.

Current network funding

Implementing Spoke 2, the network component of the Draft Plan requires the Council to confirm a continuation of its current financial commitment, being $50,000 pa. This enables a continuation of the 50/50 annual funding arrangement which currently exists with the RTA. Subject to approval, this provides a baseline figure of $1,300,000 for the 13 year plan period.

Additional funding of $50,000 for each of the next 2 years has been allocated from the Federal Government's (DOTARS) Supplementary Funding to implement the plan.

The funding for implementation is contained in Table 1(a), and will be directed to completing Delivery Program 1 which includes all priority works identified in Enclosures 2 and 3 as outlined in Table 1.

Table 1(a): Delivery Program 1 – Funding Sources

Funding	
Council	$50,000 pa over 13 years
RTA	$50,000 pa over 13 years
DOTARS	$50,000 pa over 2 years
Total	**$1,400,000**

Table 1: Delivery Program 1 - Priority Network

To be prioritised within 2008-2012		
Route Number	*Location*	*Cost Estimate*
L1 to M4 Link	Lapstone	$3,860
L1: 1.7 – 1.26	Glenbrook/Lapstone	$309,465 High priority actions only: 1.11 – 1.16; 1.20-1.22; 1.24-1.25. 2009/10 - actions L1.7 -1.8.
L2 to L1 Link	Glenbrook	$26,860** Currently under construction.
L2 Extension East & West	Glenbrook	$38,970** Currently under construction.
L2: 2.2 – 2.8	Blaxland	$148,180
L6 Extension East	Faulconbridge	$6,500
L6: 6.7 – 6.11	Faulconbridge	$14,840
L7a: 7a.14	Faulconbridge	$26,860
L7 Extension West	Faulconbridge - Linden	$340,080
L8a	Woodford - Linden	$255,060
L12: 12.1 – 12.6	Leura	$204,540
		Total $1,375,215

** To be delivered as part of the 2008 -2009 Capital Works Program

Asset Renewal - Enclosure 2

Enclosure 2 lists the asset renewal works required to complete the existing network to an approved standard. The priority works are contained in Delivery Plan 1 with the remaining works identified within Delivery Plan 2.

New Routes - Enclosure 3

Enclosure 3 identifies the missing links that are required to complete a comprehensive network. The priority works are contained in Delivery Plan 1 with the remaining works to be considered for implementation as part of Delivery Plan 2.

Greater Blue Mountains Trail (Upper Section)

This component is identified within Enclosure 3 and has been listed separately as Delivery Plan 3. This project received Metropolitan Greenspace Program (MGP) funding in 2007/2008 to engage consultants to undertake a higher level of stakeholder consultation, detailed design, costing and works schedules. The process of engaging this consultancy has commenced and is expected to take 3 months. Once this work has been completed a report will be presented back to an appropriate Council briefing session. It is anticipated that an application will be made to the MGP for the 2008/2009 round of funding grants to construct the trail or stages of the trail. The Australian Tourism Development Program is a high potential funding source for this project as they have previously funded similar cross regional projects across the state.

The Greater Blue Mountains Trail component is a major proposal and its inclusion in the Bike Plan allows for feasibility and funding options to be explored.

Table 2 - Total Program Delivery Cost

Delivery Program	*Cost*	*Funding Source*
1 - Priority Network (Table 1)	$1,375,215	As per Table 1(a) and other external grant sources
2 - Enclosure 2 and 3 (not included in Delivery Plan 1 & 3)	$3,332,150	As per Table 1(a) and other external sources to be identified
3 - Upper Blue Mountains Regional Trail	Subject to feasibility study	External grant sources
Total	**$4,707,365**	

Network Maps – Enclosure 4

Enclosure 4 is the network maps combining the existing and proposed routes.

Table 3 - Proposed Network Development

	Distance (metres)	*Network increase*
Enclosure 2 : Renewal Works	4,300	3.5%
Enclosure 3 : New Routes	**25,360**	**21%**
Upper Blue Mountains Regional Trail	Subject to feasibility study and funding	25%
Total	**29,660**	**49.5%**

Funding commitment required to implement Delivery Plans 1 and 2.

The total cost of implementing the new infrastructure recommended in the Blue Mountains Bike Plan 2020 is currently estimated at $4,707,365. The adoption of the Bike Plan does NOT commit the Council to the provision of its contents, it does establish their adoption at a strategic level and positions the City to apply for major external funding.

The Council's continual funding commitment of $50,000 pa, when matched at source by the RTA, provides $1,300,000 over the 13 years of the plan to 2020. This core funding will be combined with DOTARS funding of $100,000 over the next 2 years. The Council's ability to complete the remaining program outlined in the Plan will be dependant on its success in obtaining other sources of income such as grants throughout the 13 year term of the plan.

Projects To Be Funded Based on Existing Resource Levels

The priority components of Enclosures 2 and 3 have been combined into Delivery Plan 1; these will be included as part of the annual CWP. The lower priorities from Enclosure 2 and 3 have been developed into Delivery Plan 2; it is intended that these would be funded from either external funding sources or proposals for additional allocations of internal funds.

Prior Funding

Previously funding contributions have been secured from NSW Department of Sport and Recreation's Capital Assistance Program. In 2006/2007, $15,000 was obtained for cycleways in Springwood and Valley Heights and in 1999/2000 $8,385 was received for cycleways in Katoomba. Council will continue to make application to this program. Also, as identified in Enclosure, the $30,000 has been secured through the Metropolitan Greenspace Program (MGP).

Maintenance cost

It should be noted that maintenance associated with the proposed construction of the network will increase. Budgeted work quantities for maintenance activities are estimates only, actual work quantities can exceed estimates, and have to be offset by reductions in other activities.

Based on current maintenance cost it is known that for every $100,000 of capital expenditure an increase of 2% to maintenance budgets would be required to maintain the infrastructure over its lifetime. It would be reasonable to assume that little or no maintenance would be required in the first four years of a new footpath section's asset life.

A calculation of asset maintenance activities indicates that the potential unit rate cost to maintain 1 metre of path over its projected lifetime is $0.91. The maintenance required for new footpath sections will be dependant upon location and the impacts of other impediments, such as trees.

It should be noted that a large percentage of the increased network is a direct result of the Great Western Highway Upgrade Projects. Whilst the Council does not bear the construction cost for this part of the network, it does inherit the long term asset liability, which is the standard agreement with the RTA as part of the handover process.

Asset Planning

All new assets created as part of the implementation of the plan will be registered onto the maintenance and renewal programs as part of the 4 year cycle, administered by the Assets Branch.

Recommendations implementation & resourcing

The Bike Plan contains a number of recommendations listed in the executive summary. These outline a comprehensive range of actions including: bicycle friendly streets, bikeway network, safety and education, promotion, cycling and transition, bicycle parking, and tourism. The network components of these recommendations have been identified and prioritised in this report. A review of the remaining recommendations indicates that the majority of actions required to implement them currently sits within existing asset management plans, branch business and action plans and their respective budgets.

The Council will seek to maximise other funding sources / arrangements to secure the Plan's delivery as these become available, including public-private partnerships, such as the proposed Bicycle Safety Partnership.

Cost estimates

The cost estimates are considered "order of magnitude costs". Infrastructure related costs are based on unit pricing. Schedule related cost are based on a preliminary assessment that looked at current expenditures and staff resources for existing cycling related program delivery in the City, and the additional effort and resources required to implement the non infrastructure components of the strategy.

Recommendation 4.1

That the City commits in principal funding of $50,000 per annum for the next 13 years to enable the delivery of the priority programme, establishing the foundation upon which the seven components of the Plan can be delivered.

Recommendation 4.2

That the City of Blue Mountains explore alternative funding sources and opportunities, including the state and federal governments and private sectors to assist in the implementation of the Plan.

Multi-Faceted Plan

The Bike Plan is much more then just the Cycleway Network. Parallel to implementing the network is a need to develop and implement safety and education programming. Bicycle parking facilities need to be provided in all areas of the City. The links between cycling and transit also needs to be strengthened. Day to day practices and policies influencing street design and maintenance will, over time, provide safer, more comfortable streets for cyclist. Many of these activities are an expansion of ongoing programs, however, there is also a need to develop new and innovative programs.

Management and Coordination

Currently, responsibility for cycling issues and cycling infrastructure is spread across many internal council groups, state government authorities and agencies and other interest groups in the Blue Mountains.

The Blue Mountains Bike Plan is an ambitious program that requires an appropriate internal organisational structure and more cohesive external partnerships for implementation.

Bike Plan Coordinating Committee (BPCC)

In order to directly coordinate the implementation of the BMBP, it is recommended that the Assets Branch establish and chair an interdepartmental staff working Committee. The Bike Plan Coordinating Committee (BPCC) will include staff from:

- Traffic & Road Safety Section
- Assets Management
- City Planning
- Environmental - Parks
- Rangers
- Community
- External membership may include:
    - Police;
    - Health;
    - RTA; and
    - Bike Groups

The primary role of the BPCC will be to coordinate budgeting, program development and delivery across affected/involved departments.

In addition, the BPCC will serve as a vehicle to coordinate and obtain input on the implementation of the plan, review staff resources and responsibilities across all groups and sections, exchange ideas and information and provide input to the preparation of annual progress reports. It is proposed that this Committee meet four times a year or as deemed necessary.

Annual Progress Report

Evaluating the annual progress of the Plan is the corner stone of the implementation strategy. Although the plan provides a timetable to implement the recommendations of the plan over the 13 years, a more detailed annual work plan is needed to guide those who will implement the strategy.

Therefore, it is proposed that the Asset Branch in consultation with the proposed Bike Plan Coordinating Committee, prepare an annual progress report to. This report will outline the progress made towards achieving the primary goals of the Plan. The report will measure the successes in implementing the recommendations set out in the strategy, identifying changes in direction and priorities for the upcoming year, including the specific routes and programs proposed to be implemented, will be presented to Council for consideration during the preparation of budgets and capital works programming.

Data collected through the monitoring of programs along with information collected through ongoing community consultation such as attitude/user surveys will inform and thus assist in the preparation of the list of annual priorities.

The first annual report will identify priorities for the 2008/09 budget, and will be submitted in 2008. This report should outline the infrastructure and programs set for implementation in 2008/09 and confirm associated budget allocations.

Recommendation 4.3

That the Council prepares annual progress report to Council, in consultation with the Bike Plan Coordinating Committee documenting the progress of the Bike Plan and presenting implementation priorities and funding requirements for the following year; and that the first report be presented in 2008 outlining Bike Plan projects to be implemented in 2008/09.

Plan Implementation (2007–2020)

Public consultation on the Blue Mountains Bike Plan 2020 does not end with the adoption of the Plan by Council. This consultation is seen as an important on-going activity that will support the implementation of the Plan. The Plan, as previously noted, is designed as a flexible document and will evolve over time in response to new and changing developments and priorities. Some of these changes will emerge through ongoing public consultation and from monitoring the implementation of the Plan.

This is an ambitious plan, yet one which is pragmatic and achievable over time.

Adoption of the Bike Plan is not the end of the process, but rather marks the beginning of a new course of action for implementing the Plan's recommendations. Implementation will require ongoing consultation between Council sections, the Cycle Committee and the public. This is particularly important for new bike lanes and off road paths, which can have significant impacts on adjacent properties and other users of parks and roads. The City's public consultation policy will be adhered to for all new cycleway projects.

Recommendation 4.4

That the cycleway routes proposed in the Bike Plan is subject to the existing approval process (detailed analysis, design and public consultation) before being considered by the City for implementation.

The Blue Mountains Cycling Committee

The cycling committee is a community advisory group to represent cyclists. The role of the committee is to provide input into the whole range of cycling programs and services offered by Council. The committee has been an invaluable resource in developing new and innovative policies and programs to encourage cycling and improve safety.

The Blue Mountains Cycling Committee will be a partner in implementing the Plan, and will continue to have a valuable role in representing the interest of all cyclists in the City. The experience and knowledge of the members of this committee is an asset that will be consulted for advice and input by Council staff during the implementation phases of the Plan. They will provide input into the development and delivery of all six components, and assist staff in identifying priorities for implementing.

Recommendations implementation & resourcing

The Bike Plan contains a number of recommendations listed in the executive summary section. The network components of the recommendations have been identified and prioritised in this report. A review of the remaining recommendations indicates that the majority of actions required to implement the recommendations currently sits within existing asset management plans, branch business and action plans and their respective budgets.

The Council will take advantage of other funding sources as they become available, including public-private sector partnerships, such as the proposed Bicycle Safety Partnership.

Monitoring and Evaluation

Monitoring bicycle trends and particularly crash history will be an important part of measuring the successes of the Plan. The review of historic data undertaken for this study clearly indicates the need to improve the collection of cycling data in the City. In addition, Council's annual community survey should be used to monitor concerns as well as the progress of the Plan.

Implementation of the Blue Mountains Bike Plan 2020 has already commenced. Monitoring the different aspects of cycling behaviour will assist in evaluating the effectiveness and overall contributions of various activities to achieve the stated vision and goals. A bicycle data collection program will serve to establish initial benchmarks and then provide ongoing data to identify trends and monitoring increases in cycling trips during the implementation stage. In order to collect consistent data and reliable data for analysing trends, Council must develop a new bicycle data collection program, which will:

- Use existing cycle travel demand information as a bench mark for assessing growth in cycling trips as the BMBP is implemented
- Measure the progress towards achieving the City's sustainability goals and targets; and
- Identify cycling issues and trends to influence implementation priorities.

Conclusion

In conclusion, the major underlying principle of the proposed Blue Mountains Bike Plan's implementation is that it is directly tied to current and future service level agreements and funding. Simply put, one is not possible with out the other. Therefore, it is imperative that the City of Blue Mountains continues to commit in principal funding over the next 13 years to implement the Plan. In addition, the City will direct staff to seek out and assess other funding sources and opportunities, service level agreements, development policies and guidelines and best practice models.

What the Blue Mountains Bike Plan sets out in this report is the product of extensive study and consultation. It is a clear response to an identified need of residents and professionals to improve the liveability of the City. Although it has substantial cost implications over time, the long term benefits, including financial, physical and social cost, as outlined in this report will significantly move the City forward towards improving the environmental, social, economic and sustainability of the Blue Mountains. Implementation of the BMBP will encourage more people to cycle more often for more reasons, and thus improve the overall liveability of our communities.

5. ATTACHMENTS

Attachment 1 - Existing Network

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Attachment 1: Existing Network (Bike Plan 1996) Proposed Actions, Priority & Cost Estimate (Updated 29 Jan 2008)

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L1	**1.1 - 1.26**	**Lapstone Railway Station to Glenbrook Shops then to Blaxland High School then Blaxland Shops.**	**Mixed traffic with Bicycle Route Marker Signs at Lapstone, then construct shared path via Glenbrook to Blaxland.**	**No signage at Lapstone but some shared path from Glenbrook to Blaxland.**	**Little or no cycleway construction Lapstone end through to Glenbrook then shared path constructed through to Blaxland.**	**Bicycle shoulder lanes needed at Lapstone Station, then on road to Governors Drive, then shared path needs work to Lapstone Public, then new shared path to 'on road' along Brooklands Rd (Avoca/Clifton?) then widen path to 2.0m to Glenbrook, maintain Shared Path to Blaxland. Install bicycle network route directional signage. Install signage to new standard.**			
L1	1.1	Explorers Road access to station	Use car park access	No work completed	Entrance has hazardous grate	Repair grate.	Low		Service Level Agreement (SLA)
L1	*	Lapstone Station	*	*	No bicycle lockers at Lapstone Station	Organise bicycle lockers through Dept of Transport. Install bike parking rails.	Low		Department Transport
L1	*	Lapstone Station	*	*	No bike parking provision.	Organise bicycle lockers through Dept of Transport.	Medium		Department Transport
L1	1.2	Signs at station access road	Sign [G8-14b] with left arrow (1), right arrow (1)	No Signs	Explorers Rd is very wide in the vicinity of the Railway Station (L1 4), allowing room for marked bicycle shoulder lanes with PS-2 markings to reduce confusion during peak times.	Install bicycle network route directional signage x 2. *(I.e. Install signs G4-204-1 Blaxland/Lapstone [Start/Finish] back to back.)* Install bicycle shoulder lanes 250 metres x 2 and 2 PS-2 logos.	Low	Signs $180 Shoulder lane @ $5000 Logos $250	$360 $2500 $500
L1	1.3	Signs at right angle bend in Explorers Road	Sign [G8-14b] with left arrow (1), right arrow (1)	No Signs	Explorers Rd narrows significantly (L1 6) - Currently no room for shoulder lanes - need to provide a shoulder on Southern side "Watch for Bicycles" & "Share the road" signs needed in narrow sections.	Widen the road to provide a smooth sealed shoulder on the Southern (uphill) side for 500 metres. Install bicycle shoulder lanes 500 x 2 and PS-2 logos on both sides. Install "Watch for Bicycles" Signs (G9 - 57) and install W6-214s along the narrow section of Explorers Rd.	Medium	Widen shoulder $84,500/km Bicycle lane @$5000/km Logos $250 Signage $180	$42,250 $5000 $500 $520
L1	1.4	Signs at Gregory Terrace	Sign [G8-14] (2)	No Signs	A 1.2m footpath to the Railway Station has been recently constructed on the northern side of Explorers Rd with coloured drop kerbs at the crossings on Hume Rd, Gregory Terrace, Caley Cres. and Evans Pde (L1 6-12). ***Perhaps this path could have been constructed as a 2.0m shared path!*** Explorers Rd is steep and narrow with an informal southern edge (L1 6). Young riders (and accompanying adults) will use the new footpath. The path has a tree encroaching into the rider envelope (L1 11)and poor sight line due to vegetation on the bend (L1 12) between Evans Pde and Governors Drive.	Acknowledge that the footpath will be used by children and accompanying adults and maintain to cycleway standards, e.g. Remove low tree branch between Evans Pde and Gov. Drive. Permanently remove vegetation on the bend in the path.	Low		Service Level Agreement

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L1	1.5	Signs in Explorers Road and in Governors Drive on approach to the intersection.	Watch for Bicycles Sign [Figure 7.15] (4)	No Signs	There are no warning signs on Governors Drive or Explorers Road (L1 13-15)	Install signs on all four sides of Governors Rd / Explorers Rd intersection. Install Watch for Bicycles Sign G9 - 57 or W6-7 with W8-23 (4)	Low	Signage $180	$720
L1	1.6	Governors Drive on southern side of Explorers Rd intersection	Construct cyclist refuge with holding rails and drop kerbs	Some work done.	There is no cyclist refuge, a 1.2m path & one narrow drop kerb have been constructed on the SW corner on Governors Drive (L1 16,17 - the bike shows the width!).	Construct cyclist refuge as per Fig. 7.7. Widen drop kerb on Western side of Governors Drive.		Refuge $7000 Kerb $ 450	$7000 $450
L1	1.7	Explorers Rd from Governors Drive to Wombat Crossing 20m east of Achievement Rd (on the southern side of Explorers Rd)	Extend width of existing path from 1.2m to 2.0m (670m)and build new 2.0m footpath (30m) to connect to Governors Drive. Declare shared pedestrian/cycle path, 700m (Q) [include signage R8-2]	No work completed	The 1.2 m path has been extended to Governors Rd (L1 14). Parts of the path are cracked and log barriers are placed too close to the path, (L1 15,16) especially on the main bend opposite the Netball club. Some sections are covered in sand including a service hatch (L1 17) . The section outside the day care centre passes through the carpark presenting serious risk of conflict between parents with very young children, cyclists and cars (L1 18). The steeper section near the eastern end of the school is eroded on the edges and is dangerous (L1 Photo 19 & 20). The carpark adjacent to Explorers Rd at Lapstone Public School (L1 28,30) may cause some danger to cyclists. Access to the school is via a wide footpath on the Eastern side of Achievement Ave, which could be declared a shared path.	Widen the path to minimum 2.0m and declare as a shared path (700m), repair cracked sections, ensure sand does not build up on path and fix eroded edges. Meet with day care management to determine the best plan of action for the conflicting uses of the cyclepath/daycare carpark area. Also meet with School Principal to determine the best plan of action for the conflicting uses of the cycle path/school carpark area. Declare the footpath on the Eastern side of Achievement Ave a shared path. Install signage to new standard x 2 & PS-2 logos x 2.	High	Widen path .8 @ $65sq/m Signage $180 Logos $250	$45,500 $360 $500
L1	1.8	Wombat Crossing 20m east of Achievement Ave to 50m west of Emu Rd	Construct 2.0m wide shared bike/pedestrian path on northern side, 230m (Q) [include signage R8-2]	No work completed	Grassed nature strip with no existing footpath. (L1 39 - 41)	Construct 230 metres 2.0m shared path and include signage & logos.	High	Construct 2.0metre shared path $160,000/km Signage $180 Logo $250	$ 36,800 $360 $500
L1	1.9	Governors Drive to Brooklands Road	Construct shared pedestrian/cyclist path through easement, 100m (Q) [include signage R8-2]	No work completed	Grassed easement with no existing footpath.	Construct 100 metres 2.0m shared path and include signage & logos.	High	Construct 2.0 metre shared path $160,000/km Signage $180 Logo $250	$ 16,000 $360 $500

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L1	1.10.	Signs in Brooklands Rd at Avoca St	Sign [G8-14] (2)	No Signs	Brooklands Rd. has a steep section into and out of a dip (L1 46).	Consider an alternative route through to Lucasville Rd, perhaps into Avoca St then Clifton Ave to avoid the steep decent and climb in Brooklands Rd. (see photos L 46a,b & c) Repair the edges to provide smooth sealed shoulders on both sides 500m x 2.Install bicycle shoulder lane 500 x 2 and 4 PS-2 logos. Install signage to new standard x 4		Widen shoulder $84,500/km Should lane $5000/km Logos $250 Signage $180	$84,500 $5000 $1000 $520
L1	1.11	Signs at Lucasville Rd/Brooklands Rd	Sign [G8-14b] with left arrow (1), right arrow (1)	No Signs	Flat ground with kerb & gutter & 1.2m footpath.	Install signage to new standard x 2.	High	Signage $180	$360
L1	1.12	Lucasville Road - Brooklands Rd to Green St	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, southern side 450m	No work completed	Sloping down towards Green St. with kerb & gutter & 1.2m footpath.	Widen path .8 metre x 450 m to 2m declare shared path. Signage x 2 & logos x 2.	High	Widen path .8m@$65sq/m Signage $180 Logos $250	$29,250 $360 $500
L1	1.13	Signs in Lucasville Rd at Explorers Rd	Watch for Bicycles' signs [Figure 7.15] with left arrow (1), right arrow (1)	No Signs	There is a pedestrian refuge at a crossing point on Explorers Rd. Not wide enough for bikes, so need to upgrade the crossing to a bicycle/pedestrian crossing.	Upgrade the Pedestrian crossing to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Install W8-200 & other signage to new standard x 3.	High	Refuge $7000 Kerb $ 450 Signage $180	$7000 $900 $540
L1	1.14	Green Street and Park Street (Green Street to Euroka Road)	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, southern side 197m	No work completed	Flat ground with kerb & gutter & 1.2m footpath. Parking issues(L1- 51) and dangerous grate on road (L1- 52).	Widen path .8 X 197m to 2.0m. Declare shared path. Signage x 2 Logos x 2. Replace grate. Contact Council Ranger/Highway Patrol to deal with parking issues.	High	Widen path .8 @$65sq/m Signage $180 Logos $250 Replace grate	$12,805 $360 $500 SLA
L1	1.15	Park Street (Euroka Road to Ross Street)	Install "Cyclist Dismount" signs through shopping area [Fig 7.14] (2)	No Signs	'Cyclists Dismount' is sign no longer recommended. With low speed zoning in the shopping centre, this area is well suited to bicycle/parking lanes.	Declare 40KPH zone in shopping precinct. Install G9-57s.Install R6-10-3 signs plus a "Please Walk Your Bike" sign on the footpath at all entrances to the shops. Consider Installing bicycle shoulder lane and PS-2 logos on both sides. Consider widening path on Northern side of Park St.	High	Signage $180	$360
L1	1.16	Ross Street (Park St to Burfitt Parade)	Sign [G8-14] (2) mid block and sign [G8-14b] with left arrow (1), right arrow (1) at Burfitt Parade	No Signs	This is the route to Glenbrook Railway Station it needs to be signposted. This areas well suited to bicycle lanes adjacent to parking space.	Install bicycle network route directional signage x 2. Install R6-10-3 x 2 signs on the footpaths. Consider Install bicycle shoulder lane and PS-2 logos on both sides.	High	Signage $180	$720
L1	1.17	Burfitt Parade (Ross St to Mann St)	Sign [G8-14] (2) midblock and sign [G8-14b] with left arrow (1), right arrow (1) at Mann Street	No Signs	There are parking issues in Burfitt Pde (L1 58,59) near the Commuter Carpark when it is full. The hill to the West of the Railway entrance is very steep with poor sight distance and the road to Mann St is very narrow with eroded edges & no shoulders (L1 60b,c,d & e) - recommend zoning Burfitt Pde from Ross St to Mann St as 40km/h. (also see Links & Bypasses section)	Widen the road to provide smooth sealed shoulders on both sides 250m x 2. Signage x 2. Logos x 2	Medium	Widen shoulder $84,500/km Bicycle lane @$5000/km Logos $250 Signage $180	$42,250 $2500 $500 $360

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L1	1.18	Park Street (Ross St to Mann St) *AND MANN STREET!*	Sign [G8-14] (2) midblock and sign [G8-14b] with left & straight arrow (1), right & straight arrow (1) at Ross St	No Signs	Park St is wide & has good shoulders as far as Hunt St, then they are poor. No mention of Mann St in 1996 Plan - need smooth sealed shoulders (L1 60e,f,g, 67 - 70) & signage	Widen the last 100m of Park St and all of Mann St to provide smooth sealed shoulders on both sides. Install bicycle shoulder lane 100 x 2. PS-2 logos x 2. Signage x 2.	Medium	Widen shoulder $84,500/km Should lane $5000/km Logos $250 Signage $180	$16,900 $1000 $500 $360
L1	1.19	Wascoe Street *from* Raymond Street to 60m west of Fletcher Street pool gate)	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, southern side 900m	Path widened, Drop kerbs provided (not always to 2.0m width!) signage installed & holding rails installed at Cowdery St, Peel St, Lennox St, Bennett St (some on the wrong side!).	Wascoe St from Ross St to Raymond St has been signposted as a shared path. The path has been widened to 2.0m Honeysuckle growing in fence and obstructing passage near E side of Raymond St crossing. The fence is too close to the path. Due to terrain restrictions, the widenning switches from one side of the older path to another, in places not maintaining the required 2.0 m width sufficiently to allow cyclists and pedestrians to pass. The MountainView café has been constructed over the cyclepath and cafe seating obstructs the path (L1 86) Overzealous edge trimming on the nature strip outside No 27 Wascoe has left a hazardous slot for wheels to fall into (L1 109b).Crossings: Cowdery St is reasonably well constructed but Peel St pre-existing drop kerb has not been widened to 2.0m at the lip. Lennox has sufficient width but poor drainage & grass leads to gravel & sand build-up, Bennett St kerbs are good. Holding rails are on the wrong side of the path on both sides of Peel St and Lennox St, thereby causing confusion and presenting a hazard.	Permanently remove the vegetation from the fence. Discuss with the School Principal the repositioning of the Weldmesh fence to allow clearance from path in accordance with Austroads 14. Infill the path to maintain 2.0m width required for safe passage all along Wascoe St, including repairing the dropped Telstra (?) service cover at Bennett St and the sewer cover near Mann St. Negotiate with shop tenants, then mark white lines and cycle logos through the area used by the café to ensure the cycleway is not obstructed. Discuss edge trimming options with the resident of No 27 Wascoe St. Widen Peel St kerb. Improve drainage of Lennox St. Remove holding rails on Peel St and Lennox St.	Medium		SLA
L1	1.20.	Mann Street at *intersection with* Wascoe Street	Construct cyclist refuge with holding rails and drop kerbs	Holding rails installed.	Pre-existing drop kerb has not been widened to 2.0m at the lip. No refuge in the centre of the crossing.	Widen drop kerb to 2.0m, assess traffic volume at peak times (Primary School start & finish) to determine the need for refuge - construct if appropriate.	High	Refuge $7000	$7,000
L1	1.21	Fletcher Street Road overbridge	Cyclist alert signage [fig 7.15] (2)	No signs.	This bridge forms a useful link to L2 & L3. It needs to be marked as a cycle route. (See Links & Bypasses section)	Install bicycle network route directional signage x 2. Install signage to new standard x 2	High	Signage $180	$720
L1	1.22	Signs Powell St, Lapstone Cres, Coughlan Rd	Sign [G8-14] (4) midblock and sign [G8-14b] with left arrow (3), right arrow (3)	No signs.	The cycleway has been diverted to run alongside the Great Western Highway after crossing Wascoe St on the northern edge of the Glenbrook Swimming Pool. A 2.0 m path has been constructed (by RTA?) and the route is much simpler than the previous route. The "BMX jump" shown in Photo L1 (125) has been removed! (It shows the importance of expansion jointing).	Install cycleway logos x 2 and signage x 2.	High	Signage $180	$720

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L1	1.23	Coughlan Road, school to Great Western Hwy	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, northern side 100m	Work completed. No signs.	The photo shows a lack of grass on path edges, due to trampling during peak times, which also shows the effect of the poles getting in people's way.	Consider removing signposts by using existing power poles for signs.	Low		SLA
L1	1.24	Great Western Highway, Coughlan Road to existing Signal Crossing	Construct shared 2.0m shared path on western side, 50m (Q) [include signage, R8-2]	Wide path exists along GWH (RTA?)	The RTA has moved the Pedestrian Crossing from its previous location (East of Coughlan Rd) to the Coughlan Rd intersection but has not provided bicycle lanterns on the traffic lights (which allow cyclists to ride across crossings).	Install cycleway logos and signage. Request that RTA provide bicycle lanterns on the traffic lights.	High	Logos $250 Signage $180 Bicycle lanterns	$500 $360 RTA
L1	1.25	Great Western Highway, Coughlan Road to St Johns Road	Construct shared 2.0m shared path on western side, 600m (Q) [include signage, R8-2]	Wide path exists along GWH. No signage to inform pedestrians.	Vegetation intrusion onto path at No 74 GWH. The path narrows at the Railway overbridge (L1 141,143)	Install logos x 2. Signage x 2 Cut back vegetation. Negotiate with SRA to realign fence to allow clearance from path in accordance with Austroads 14.	High	Logos $250 Signage $180 Fence	$500 $360 SRA
L1	1.26	Great Western Highway, St Johns Road to Hope Street	Existing shared bike/pedestrian path on western side.	Existing path used but maintenance needed.	St Johns Rd is very busy during peak times with Soccer training & games. The Northern corner has poor sight lines compounded by vegetation & sand on the path. The crossing needs to be upgraded to give priority to pedestrians & cyclists. A redundant "end" sign needs to be removed (L1 147a,b). Serious cracking of concrete path near vacant block (recently demolished house) between St Johns Rd and Hope St (near No. 94). Also cracking in the 'dip' between there and No. 108. Problems with vegetation overgrowth in the 'dip'. L1 finishes at Hope St with a wide drop kerb but no bicycle lanterns.	Remove branches of shrub below 2m to improve line of sight (L1 148). Solve erosion problem which causes sediment on path. Upgrade the Pedestrian crossing to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Ensure that cracking does not become hazardous - grind to level, remove grass, replace concrete if necessary. Remove or regularly trim vegetation. Install cycleway logos and signage. Request that RTA provide bicycle lanterns on the traffic lights. Remove redundant signage.	Medium	Maintenance Refuge $7000 Install logos x 2. Signage x 2	SLA $7000 $500 $360
								TOTAL COST	**$387,745**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L2	**2.1 - 2.8**	**From Glenbrook Soccer Field, along Levy St to Lagoon Drive, then around through Brooklands shops and Northwest to Wilson Way and Blaxland Railway Station.**	**Mixed traffic with Bicycle Route Marker Signs from soccer field to Graham St, then construct shared path to Blaxland Railway Station.**	**Nil Glenbrook to Old Bathurst Road, then footpath widened to Blaxland Railway.**	**Glenbrook end not yet constructed, mostly good road edges except part of Levy St & Lagoon Dr. 2.0m off-road shared path needed in central section, Blaxland end constructed.**	**Install bicycle shoulder lanes and PS-2 logos on both sides at the Glenbrook end. Construct 2.0m shared path in the middle section. Maintenance required at the Blaxland end. Install bicycle network route directional signage. Install signage to new standard.**			
L2	**2.1**	Levy Street (*from* Barnett Street to Lagoon Drive)	Sign [G8-14] (8) midblock and sign [G8-14b] with left arrow (1), right arrow (1) at Lagoon Drive	No Signs	**Levy St experiences high traffic volumes along its whole length.** From Hare St to Glenbrook Rd - K&G both sides with ample width for a cycle lane. School zone & high traffic volumes in peak times. **Levy St from Glenbrook Rd to Lagoon Drive.** Road edges variable Northern shoulder is unmade - Southern shoulder is largely unmade & many sections poor with drop-offs - one small section near Fletcher St is kerbed & guttered.	SEE NEW PROPOSED LINKS - OFF ROAD SHARED		SEE NEW PROPOSED LINKS - OFF ROAD SHARED	
L2	**2.2**	*Intersection of* Lagoon Drive *and* Kidman Street	Sign [G8-14b] with left arrow (1), right arrow (1)	No Signs	**Lagoon Drive from Levy St to Skarratt St.** Shoulders unmade but road has sufficient width for shared use. **Lagoon Drive from Skarratt St to Kidman St.** Shoulders unmade road is narrower and edges are poor with drop offs. The left turn from Lagoon Dr into Kidman is tight, steep and dangerous (L2 25). Need to ensure cars don't cut into bicycle lane going around the corner.	Ensure safe left turn out of Lagoon Drive into Kidman St. Repair edge to provide smooth sealed shoulders on both sides of road from Levy to Kidman 250m x 2, then Install bicycle shoulder lane 250 x 2. PS-2 logos x 2. Install G9-57s x 2	High	Widen shoulder $84,500/km Shoulder lane $5000/km Logos $250 Signage $180	$42,250 $2500 $500 $360
L2	**2.3**	*Intersection of* Kidman Street *and* Murphy Street	Sign [G8-14b] with left arrow (1), right arrow (1)	No Signs	**Kidman St turning in to Murphy St** - approaching Brooklands shops - traffic volume increases causing danger to cyclists.	Consider declaring 40KPH zone in shopping precinct. Install G9-57 x 2. Install bicycle shoulder lane from Lagoon Drive to Murphy 100 x 2 and PS-2 logos x 2.	High	Shoulder lane $5000/km Logos $250 Signage $180	$1000 $500 $360

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L2	2.4	*Intersection of* Murphy Street *and* Haymet Street	Sign [G8-14b] with left arrow (2), right arrow (2) through two T-Junctions *(first turning right then turning left)*	No Signs	**Murphy St to Husselbee St** - Brooklands shops - traffic volume increases causing danger to cyclists. **Murphy St from Husselbee St to Haymet St** - narrow street with roll K&G and a tight intersection at Haymet St.	Murphy St Kidman to Haymet install bicycle shoulder lane 300 x 2. PS-2 logos x 3 Install G9-57 x 3 through shops and at intersections.	High	Shoulder lane $5000/km Logos $250 Signage $180	$1500 $750 $540
L2	***2.4A missing link!***	*The 1996 plan wasn't clear in this section. It originally required cyclists to ride along Haymet St for a short distance and then turn left into Murphy St, but didn't mention these details!*	*	*	**Murphy into Haymet and into Murphy again.** The turn from Murphy into Haymet and left again into the continuation of Murphy is awkward. The right turn from Murphy into Graham St (incorrectly identified as Wilson Way in 1996 Bike Plan) is poor for cars due to poor visibility to the left, it may be better to remove cyclists from this intersection by redirecting the route.	**Redirect the route** one block further along Haymet and turn left into Hersey St. **Advantages** - safer travel along Haymet, safer to exit Hersey onto shared path, cost saving of shorter path along Grahame St. Install G9-57 x 2 at intersections. Install bicycle shoulder lane x 50 x 2.PS-2 logos x 2.	High	Shoulder lane $5000/km Logos $250 Signage $180	$500 $500 $360
L2		**New section of route L2 - Haymet St** from Murphy to Hersey St	*	*	K& G both sides, plenty of width for cycle lanes.	Install bicycle shoulder lane and PS-2 logos on both sides. Install G9-57s at intersections.		As Above	As Above
L2		**New section of route L2- Hersey St** from Haymet St to Grahame St (Incorrectly named as Wilson Way in 1996)	*	*	Redirect the route along **Hersey St** then turn right onto shared path along Eastern side of Grahame St. Hersey has two side streets, (Cathy St & Glenell St) but the intersection with Grahame St is far safer. K& G both sides, plenty of width for cycle lanes.	nstall bicycle shoulder lane 300 x 2. PS-2 logos x 2. Install G9-57 x 2.	High	Shoulder lane $5000/km Logos $250 Signage $180	$3000 $500 $360
L2	2.5	***Grahame St**, from Hersey St to Layton Ave/ Mitchell's Pass Road roundabout.*	Construct shared 2.0m shared path on Eastern side,380m (Q) [include signage, R8-2]	No signs. No path constructed.	Along **Grahame St** there ia a wide unpaved nature strip with well worn dirt track. The starting point of the shared path should be at least 50 m along Hersey St from the intersection to provide visibility of cyclists crossing Hersey St to get to it. The 1996 Plan had no mention of crossings over Mitchell's Pass Rd or Old Bathurst Rd These MUST be provided to make the route viable.	Construct 2.0m shared path, eastern side from the last 50m of Hersey St (provide drop kerbs) to Grahame St and northwards along Grahame St, across Matthew Pde to Layton Rd/Mitchell's Pass Rd Roundabout 200 metres. Construct a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines) over Mitchell's Pass Rd., suggested 20m East setback from the roundabout. Install signage G9-57 x 4. G9-63 x 2. R8-2 x 2. PS-2 x 2	High	Construct 2.0 shared path $169,000 Refuge/crossing $7000 Signage $180 Logos $250	$49,000 $7000 $1800 $ 500

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L2	2.6	Wilson Way from Mitchell's Pass Rd to Old Bathurst Road	Construct shared 2.0m shared path on Eastern side, 400m (Q) [include signage, R8-2]	No signs. No path constructed.	Variable quality 1.2 m footpath which diverts from the road edge near Old Bathurst Rd.	Widen path .8m eastern side for 400m from the Layton Rd/Mitchell's Pass Rd Roundabout - Construct a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines) over Old Bathurst Rd - suggested 20m East setback from the roundabout. Install signage R8-2 x 2. PS- logos x 2	High	Widen path .8 @$65sq/m Signage $180 Logos $250 Refuge/Crossing	$26,000 $360 $500 $ 7000
L2	2.7	Wilson Way from Old Bathurst Road to Boorea St	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, northern side 500m (include signage, R8-2)	Path widened.	Due to terrain restrictions, the widening switches from one side of the older path to another, in places not maintaining the required 2.0 m width sufficiently to allow cyclists and pedestrians to pass. A dangerous edge on a Telstra pit needs attention, (L2 61), cracking in path needs a remedy (L2 70).	Infill the path to maintain 2.0m width required for safe passage. Request Telstra bring pit down to ground level. Rectify cracking a of recently poured section.	High		SLA
L2	*2.8*	*New action proposed from Boorea St to Blaxland Railway Station.*	*	*	Variable width of path due to BMCC and RTA construction. Some signs do not comply with current standards.	Infill the path to maintain 2.0m width required for safe passage. Remove non-compliant signs, eg. "Cyclists dismount" at western end of shared path. Replace non-compliant "(bike logo) end" sign (L2 Boorea to Blaxland Rail (3)) with correct shared path sign R8-2 and end plate R7-4.	High	Signage $180	$540
								TOTAL COST	**$148,180**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L3	**3.1 - 3.7**	**Mitchell's Pass Road, Blaxland from Roundabout to Glenbrook Road then to Levy Street, Glenbrook**	**Mixed traffic with Bicycle Route Marker Signs, widen shoulders.**	**Some shoulder sealing, no signage.**	**Some section have excellent shoulders, others are in poor condition, there is no bicycle signage.**	**Widen the road to provide smooth sealed shoulders on both sides. Install bicycle shoulder lanes and PS-2 logos on both sides except at the Glenbrook Lagoon squeeze point where signage is needed. Install bicycle network route directional signage. Install signage to new standard.**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L3	3.1	Mitchell's Pass Road (*from* Wilson Way to 100m East)	Widen road shoulder, 100m.	Shoulder sealed on Northern side but made dangerous due to lip on the Southern side.	The new road feeding out from Explorers Estate (Thomas Way) will cause bottlenecks for westbound traffic and danger to cyclists. The developers have provided a new roll gutter on the Northern side (only) but the bitumen resheet is inadequate. There is no shoulder for cyclists on the Northern side and the resheet does not go to the edge of the existing Southern shoulder, thereby creating a lip. ***Perhaps council could have required a full resheet and provision of a smooth sealed shoulder on both sides as part of the planning permit*** (see photos L3 2- 8). The Southern edge is variable and currently needs repair .	Widen road at the intersection of Thomas Way sufficiently to construct a right turn lane into Thomas Way and provide shoulder lanes on both sides for cyclists (reposition the centre line if necessary). Install PS-2 logos on both sides. Install W6-214s on both sides.	Low	Widen shoulder $84,500/km Bicycle lane @$5000/km Logos $250 Signage $180	$845 $50 $500 $360
L3	3.1a	*Mitchell's Pass Road central section between Wilson Way and Glenbrook Road - not covered under 1996 Plan*	*	*	The central section has a rolled kerb but no shoulder on the Northern side -see Photo L3 - (11), and the shoulder on the Southern side is wide, but the shoulder and lane are very poor with numerous potholes. (See Photos L3 13 - 17).	Provide 500m smooth sealed shoulders on both sides, install should lanes. Reposition the centre line if necessary. Install PS-2 logos x 2. Install W6-214 x 2.	Low	Widen shoulder $84,500/km Bicycle lane @$5000/km Logos $250 Signage $180	$84,500 $5000 $500 $360
L3	3.2	Mitchell's Pass Road (*from* Glenbrook Road to 130m West)	Widen road shoulder, 130m.	Shoulder has been sealed at some stage but is variable width and in poor condition.	The Northern side has no formal shoulder or gutter (see Photo L3 12)and the Southern side has a very narrow shoulder/informal gutter with numerous potholes (See Photos L3 18, 22)	Provide smooth sealed shoulders 130m on both sides, reposition the centre line if necessary. Install PS-2 logos 2. *Install W6-214 x 2.	Low	Widen shoulder $84,500/km Shoulder lane $5000/km Logos $250 Signage $180	$21,970 $1300 $500 $360
L3	3.3	Mitchell's Pass Road *at* roundabout and *Layton Ave at* Rail Underbridge	Cyclist alert signage. [fig 7.15] (2)	No signs.	L2 off-road will cross Mitchell's Pass Rd, therefore a safe crossing needs to be constructed.	Install bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines) over Mitchell's Pass Rd for L2 route and provide safe intersection of L2 & L3. Install signage G9-57 x 2, G9-63 x 2 to new standard.	Low	Refuge/Crossing $7000 Signage $180 Logos $250	$7000 $720 $500
L3	3.4	Glenbrook Road (*from* Mitchell's Pass Road to Haymet St)	Reseal road shoulder both sides, 600m.	Total resheet with roll kerbing completed.	An excellent surface with adequate width for provision of cycle lanes.	Install 600 on both sides shoulder lanes and PS-2 logos x 2. Signage R7-1-4 x 2.	Low	Bicycle lane @$5000/km Logos $250 Signage $180	$6000 $500 $360

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L3	3.5	Mitchell's Pass Road *intersection with* Glenbrook Road	Sign [G8-14b] with left arrow (1), right arrow (1)	No signs.	Provides connection to Mitchell's Pass - a very popular cycle route (see proposed Regional Routes section) and proposed Mitchell's Pass Contra flow Cycleway (see Proposed Extensions section). Left turn out of Glenbrook road will need to be designed to protect cyclists from encroachment by vehicles.	Ensure good connectivity with other routes. Ensure safe left turn out of Glenbrook Rd. Install directional signage.	Low	Signage $180	$360
L3	3.6	Glenbrook Road, squeeze point *along Glenbrook Lagoon bund wall* (at speed humps)	Clear signage and line marking of no overtaking or passing to include cyclists in general traffic flow.	No signs.	The road width is constrained by the width of the bund wall and by huge gum trees. This section should be zoned as a "slow point" with reduced speed (40km/h max) and "no passing or overtaking including bicycles" signage. Current "Give Way" signage is good.	Install "Slow Point" signage and "No Overtaking or Passing" signs. Consider declaring lower speed limit (max 40km/h) Install PS-2 logos x 2 in both directions and G9-57 x 2.	Low	Signage $180 Logos $250	$360 $500
L3	3.7	Mitchell's Pass Road and Glenbrook Street *(sic) Unclear as to what was meant here!*	Sign [G8-14b] (8)	No signs.		Install signage to new standard.	Low	Signage $180	$360
L3	3.8	*Glenbrook Rd from Haymet to Levy St - not covered under 1996 Plan*	*	*	Good shoulders & rolled gutter in parts but edges in very poor condition in other parts on both sides.	Repair 550m shoulders on both sides. Install 550m x 2 bicycle shoulder lanes.PS-2 x 2logos. Signage R7-1-4 x 2	Low	Widen shoulder $84,500/km Bicycle lane @$5000/km Logos $250 Signage $180	$84,500 $5500 $500 $ 360
								TOTAL COST	**$223,765**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L4	**4.1 - 4.9**	**Boorea St, Blaxland, from near Railway Station to Rusden Road, then it splits-Right to Old Bathurst Rd & East Blaxland Public School. Left along Rusden Rd to Blackbutt Ave, Mt Riverview**	**Mixed traffic with Bicycle Route Marker Signs on Boorea St, widen/construct shared path along Rusden Rd & Old Bathurst Rd.**	**Boorea shoulder lanes -no logos, etc -Rusden-path etc to East Blax PS. Nil North to Blackbutt.**	**Boorea is wide with excellent shoulders & K&G, white edge line -no logos or signage & a dangerous LATM. Rusden to EBPSchool has a shared path - some work needed. Rusden to Blackbutt shared path not constructed.**	**Install PS-2 logos on both sides of Boorea St, remove LATM. Carry out maintenance and reconfigure crossings on Rusden and Old Bathurst to EBP School. Construct shared path along Rusden Rd to Blackbutt Circle and reconfigure crossing. Install bicycle network route directional signage. Install signage to new standard.**			
L4	**4.1**	Boorea Street (*from* Wilson Way to Rusden Road)	Sign [G8-14] (10) midblock and sign [G8-14b] with left and straight arrow (1), right and straight arrow (1) at Wilson Way	No signs.	Shoulders are generally very good and divided from the carriageway by a white edge line. In sections, the shoulder narrows due to a corner (westbound-Photo L4a 4), a Wombat Crossing (Photo L4a 12), a central pedestrian refuge (Photo L4a 14) at Reserve Ave and poor LATM on a corner just east of Reserve Ave (Photos L4a 15 - 19). There are 2 or 3 hazardous grates in the gutter (Photos L4a 9,21, 23). The surface is breaking down outside No. 95.(Photo L4a 23)	Install PS-2 x 4logos in bicycle shoulder lanes on both sides and ensure they are continuous through intersections, crossings etc. Install signage R7-1-4 x 4.	Medium	Signage $180 Logos $250	$720 $1000
L4	**4.2**	*Intersection of* Boorea Street *and* Rusden Road	Sign [G8-14b] with left and straight arrow (1), right and straight arrow (1) at Rusden Rd.	No signs.	Signs are needed.	Install signage to new standard.	Medium	Signage $180	$720

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L4	4.3	Rusden Rd (*from* Boorea St *to* Old Bathurst Road.)	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, eastern side 470m (include signage, R8-2)	Work partially completed.	Path not widened until Antill St then path (but **not** drop kerb) widened to 2.0. Hedges encroaching on path reduce effective width back to 1.2m! R8-2s and holding rails have been recently installed at Antill St and are in good condition. There are cracks and lips in the path which have been sprayed yellow (near No.13) and there are two narrow crossings and pedestrian refuges across Rusden Rd (photos L4b 10&17). Neither provide adequate storage for a bicycle and the main (and newer) one near the roundabout (see Photo L4b 17)forms part of the proposed extension of the shared path Westwards along Old Bathurst Rd., it is also the path for all pedestrians & cyclists from the Rusden Rd shared path to access the East Blaxland shops, as seen in Photo L4b (16).	Widen drop kerbs at Antill St. *Remove or regularly trim vegetation. (See Proposal 4.7 re removal of the middle crossing). Upgrade the crossing on Rusden Rd near the intersection of Old Bathurst Rd to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Install signage to new standard.	Medium	Widen path .8m@$65sq/m Kerb $400 Refuge/Crossing $7000 Signage $180 Logos $250	$30,550 $400 $7000 $360 $500 .
L4	4.4	Old Bathurst Road (*from* Rusden Rd *to* Blaxland East Public School .)	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, northern side 200m (include signage, R8-2)	Work partially completed.	New fencing has been constructed at the corner of Rusden & Old Bathurst - now the (non standard) "cyclists give way" sign at the corner of Rusden makes no sense. The paving along Old Bathurst Rd is irregular, has an exposed tree root and is not wide enough in places, or is becoming overgrown with grass and shrubs. Crossing warning signs on Old Bathurst Rd do not warn about cyclists. Kerb side lanes are marked but have no cycle logos. There is a "cyclists give way" sign at the corner of Redfern St. On the Southern side of Old Bathurst Rd, the path is widened at the bus stop but is 1.2m from there to the shops.	Cover tree roots. Upgrade the Pedestrian crossing to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Install G9-57s on Old Bathurst Rd to warn of cyclist crossing and also of cyclists on Old Bathurst Rd being squeezed through the crossing. Consider widening the path on the Southern side of Old Bathurst Rd as far as the shops.	Medium	Refuge/Crossing $7000 Signage $180	$7000 $ 720
L4	4.5	Rusden Road (from Boorea St to Cherrywood Ave)	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, eastern side 800m (include signage, R8-2)	No work completed	The path on the Eastern side of Rusden Rd is well used by pedestrians (as is the unmade track on the grassed nature strip on the western side -made difficult by illegal parking!- see Photo L4c (1a)L) The LATM on Rusden Rd at Dixon Rd is hazardous for on-road cyclists (See Regional Routes proposals).	Widen the path for 800m and all drop kerbs x 8 on the Eastern side to 2.0m. Upgrade the Pedestrian refuge crossing to a bicycle/pedestrian crossing	Medium	Widen path .8m@$65sq/m Refuge/Crossing $7000 Signage $180 Logos $250	$52,000 . $7000 $1440 $2000
L4	4.6	Rusden Road (from Cherrywood Avenue to Bunbinla Avenue)	Construct 2.0m cyclist/pedestrian path on Western side,500m [include signage, R8-2]	No work completed	There is a 1.2m path on the Eastern side - it would make more sense to continue widening that side to avoid crossing Rusden Rd until the existing pedestrian refuge between Bunbinla and Elizabeth Rd. See Action No. 4.9 for a discussion of the crossing.	Widen the path 500m and all drop kerbs x 8 to 2.0m on the Eastern side as far as the pedestrian refuge just beyond Bunbinla Ave. Install signage R8-2 x 2. PS-2 x 2.	Medium	Widen path .8m@$65sq/m Signage $180 Logos $250	$32,500 $360 $500

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L4	4.7	Rusden Road on Southern side of Boorea Street intersection.	Construct cyclist refuge with holding rails and drop kerbs	No work completed	There is no access across Rusden Rd. at the exit from Boorea St. There are two crossings further South along Rusden Rd. It would be best to remove the middle pedestrian refuge crossing (which is below standard see Photo L4b (10)R) and to replace it with an upgraded crossing just South of the Boorea St exit. The transition from on-road shoulder lanes in Boorea St to shared path on the Western side of Rusden, then to cross Rusden at the new crossing, would need to be designed.	Design & construct the transition from on-road shoulder lanes in Boorea St to shared path on the Western side of Rusden (recommended minimum distance Southwards along Rusden is 15m), then to cross Rusden at a new bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Decommission the middle pedestrian refuge crossing of Rusden Rd. Construct works to new standard. Install signage R7-1-4 x 2, PS-2 x 2.	Medium	Refuge/Crossing $7000 Signage $180 Logos $250	$7000 $360 $500
L4	4.8	Rusden Road, near Cherrywood Avenue	Construct cyclist refuge with holding rails and drop kerbs	No work completed	There is currently no crossing in the vicinity.	It is proposed to remain on the Eastern side until after Bunbinla Ave, therefore this crossing would not be needed.			No Action required
L4	4.9	Rusden Road (*from* Bunbinla Ave *to* Blackbutt Circle)	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Western side 800m (include signage, R8-2)	No work completed	There is 1.2m footpath on the Eastern side of Rusden Rd which could be widened as far as the crossing, rather than building a new path on the Western side to this point. There is a pedestrian refuge crossing between Bunbinla and Elizabeth Rd. It is below the standard for a bicycle crossing and should be upgraded. The footpath has steep drop-offs near Bunbinla Ave. The access to the shopping centre needs to be widened to 2.0m at Elizabeth Rd (see Photo L4c 29). The path from Elizabeth Rd to Blackbutt circle is 1.2m wide with narrow drop kerbs (See Photos L4c 29 - 42) .	Widen the path 800m and drop kerbs to 2.0m on the Eastern side from Bunbinla to the crossing. Build up path edges to remove drop-offs. Upgrade the pedestrian refuge between Bunbinla Ave and Elizabeth Rd to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Widen the path and all drop kerbs to 2.0m on the Western side from the upgraded crossing Northwards past the Mt Riverview shops and Public School to included the crossing of Blackbutt Circle. Widen the access to the shopping centre to 2.0m. Install signage R8-2 x 4. PS -2 logos x 4.	Medium	Widen path .8m@$65sq/m Refuge/Crossing $7000 Signage $180 Logos $250	$52,000 . $7000 $720 $1000
								TOTAL COST	**$213,350**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L5	**5.1 - 5.9**	**Hope St & GWH intersection, Blaxland, through shops (or via Bypass) along GWH footpath to service road through Warrimoo, then splits to go to Sun Valley Rd, or straight (See L5 variation) via Waratah Rd to Green Parade, Valley Heights.**	**Widen path, dismount signs at shops, RTA 2.0m path to service road, signs to rail underpass, then signs to Sun Valley Rd, then Construct 2.0m path along GWH, North side, use pedestrian refuge, then South side to Green Pde., Valley Heights.**	**No work completed**	**Footpath narrow at start, new service station poses hazards, busy even to walk a bike through shops (see Bypass section) crossings need work, RTA 1.2m path to service road, traffic lights need bicycle lanterns, often overgrown, dangerous section at No.206 GWH. Side road is 40km/h, no signs through Warrimoo shops 2 signs near underpass then no signs but good road with smooth roll kerbs to Sun Valley Rd. The L5 Variation (i) from the underpass along Waratah Rd to Green Pde., is signposted but needs work. No crossing of GWH at Green Parade.**	**Widen path to max. possible. Install 2 ped/bike crossings at service station, R6-10-3 signs at shops, widen path & drop kerbs from Blaxland shops to service road. Request RTA to provide Bicycle Lanterns at Baden Place Traffic lights. Widen path along service road , through Warrimoo shops to lower Railway underpass, signs on service road to Sun Valley Road, L5 Proposed Variation II -Install crossing over GWH and shared path to Green Pde underpass, install one-way through underpass. Install bicycle network route directional signage. Install signage to new standard. See L5v Waratah for Waratah Rd work.**			
L5	**5.1**	Great Western Highway (from Hope St, *Blaxland* to *new* Service Station, *Blaxland*)	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, eastern side 800m (include signage, R8-2)	No work completed.	Drop kerbs at Hope St are below standard width. The existing path is erratic and has drop-off edges hazardous to cyclists. Anyone sitting on the bus stop seat would obstruct the existing narrow path (see Photo L5 (3). There appears to be insufficient space between the Armco and the gutter to provide a shared path at 2.0m, but using the whole space will come close to 2.0m. Overhanging vegetation impairs line of sight. Roots have raised the path near the date palm and concrete wedges have been placed and are effective at present. The construction of the new service station is underway and all paving will need to be brought up to standard and access/right of way issues resolved urgently.	Widen the path 100m x .8 and drop kerbs to 2.0m or a wide as possible and build up any remaining path edges. Move bus seat (and Armco) back to give clearance from shared path. Repairs/replaces path surfaces adjacent to new Service Station. Ensure cyclist/pedestrian right of way across entry/exits of Service Station - Install 2 bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines) and G9-57x 2 warning sign for motorists on GWH and in the service station. RTA to provide a left turn lane into the service station while maintaining on-road cycle lane.	Medium	Widen path .8m@$65sq/m Signage $180 Logos $250 Kerbs $400	 $6500 $360 $800

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L5	5.2	GWH, between *new* Service Station, *Blaxland* (*through retail area)* and View St, *Blaxland*)	Cyclist dismount' signage through retail area [fig. 7.14].	No signs.	The footpath is not suitable for cyclist usage, it is constricted and has (illegal?) shop signs, abandoned shopping trolleys, high pedestrian usage and likelihood of conflict. The RTA has provided a combined bicycle lane & car slowdown/speed up lane between the parking and traffic lanes westbound (which is often blocked by parked cars!). Some cyclists may use this to get through the shopping centre but it is unsuitable for eastbound cyclists who have been using the shared path. They are also unlikely to use the eastbound cycle lane on the highway, as this involves crossing the highway to get to it. They may wish to go around the Southern side of the shopping centre (see Links & Bypasses section). The footpath from outside the IGA arcade to View St splits into two and requires redesign if it is to be used as a shared path.	*Install R6-10-3x 2 signage, plus a "Please Walk Your Bike"x 2 sign (in the absence of any reference to bike paths entering shopping precincts in Austroads 14 or the RTA bicycle guidelines!) at the western end of the Service Station, at Station St entrance to the shopping precinct and at the IGA arcade (eastbound). *Consider redesigning the path between IGA arcade and View St to allow a shared path as traffic volumes are lower here. *Install signage to new standard.	Medium	Signage $180	$720
L5	5.3	GWH between View St, *Blaxland* and Baden Place, Blaxland	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Western side 800m (include signage, R8-2)	No path widening. No signs.	The path is narrow and has drop-offs on the edges, especially at the Western side of View St (see Photos L5 (22-27), is overgrown with vegetation, has narrow drop kerbs and has a School Speed Zone sign which is hazardous to cyclists.	Widen the path 800m and drop kerbs to minimum 2.0m and declare as a shared path. Fill all drop-offs. Discuss overzealous path edge trimming with residents. Remove or regularly trim vegetation. Request RTA reposition School Speed Zone sign to allow 3m wide passage below (perhaps attach one side to telegraph pole.) Install R8-2 x 8 signage & PS2 logos x 8.	Medium	Widen path .8m@$65sq/m Signage $180 Logos $250 Kerbs $400	$52,000 $1440 $2000 $1600
L5	5.4	GWH, Baden Place, *Blaxland* to *Service Rd roundabout {previous Ampol Service Station}* (By RTA)	New footpath to be provided by RTA at 2.0m width.	RTA has constructed a footpath, not a 2.0m shared footpath/cycle path as expected by BMCC.	The path is narrow and has drop-offs on the edges, is overgrown with vegetation, has narrow drop kerbs, concealed driveways and a very hazardous narrow section (what were they thinking? - see Photos 56-60) just near the Integral Energy substation. Bicycle access to and through the roundabout on the service road is unclear, the path around the edge is clearly sub-standard and suitable only for pedestrian traffic (see Photos L5 71-73). Fortunately the roundabout (see Photo L5 (69, 70) has low traffic volumes but it needs to be clearly marked out (see Fig 7.9 p 49 of RTA NSW Bicycle Guidelines) to avoid confusion.	Widen the path 500m and drop kerbs x 4 to minimum 2.0m and declare as a shared path. Fill all drop-offs. Discuss overzealous path edge trimming with residents. Remove or regularly trim vegetation. Fill all drop-offs. Request RTA to remedy the narrow section to allow 2m wide safe passage. Improve two way bicycle access though the roundabout on the service road by installing bicycle shoulder lanes x 500 and PS-2 logos x 4 /green surfacing. Install Bicycle network route directional signage x 4	Medium	Widen path .8m@$65sq/m Signage $180 Logos $250 Kerbs $400 Bicycle Lane $5000k/m	$32,500 $720 $1000 $1600 $2500

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L5	5.5	GWH (*Service Rd roundabout* to Waratah Rd, Warrimoo)	New RTA service road. Sign [G8-14] 1350m (10)	RTA service road constructed. No signs installed.	RTA footpath is below standard width for a shared path. RTA service road has low traffic volumes, 40km/h speed limit and speed humps, but is too narrow for two marked cycle lanes, especially through the Warrimoo shops (see Photos L5 74-92)	Widen the path 1350m and drop kerbs x 4 to minimum 2.0m and declare as a shared path primarily for uphill use or downhill by inexperienced cyclists. Install R8-2 x4 signage & PS2 logos x 4.	Medium	Widen path .8m@$65sq/m Signage $180 Logos $250 Kerbs $400	$87,750 $720 $1000 $1600
L5	5.6	Waratah Rd to connection under GWH *then* to Railway Pde	New RTA connection under GWH. Sign [G8-14b] with left arrow (2) and right arrow (2).	RTA underpass constructed. No signs installed.	The underpass has low traffic volumes but no on road space for cyclists, there is a wide path on the eastern side where a short shared path could be provided but entry and exit need to be made safe and practical.	Install W6-214 x 2 and PS-3 x 2 logos on both sides of Waratah Road. Consider declaring a short shared path on the eastern side -provide safe and practical entry and exit facilities.	Medium	Signage $180 Logos $250	$360 $500
L5	5.7	Railway Pde from GWH underpass, west to Sun Valley Rd	New RTA service road. Sign [G8-14] 1100m (8)	RTA service road constructed. No signs installed.	The service road has relatively low traffic volumes, rolled kerbs on the Northern side and is signposted as 40kph.	Install bicycle shoulder lane 1100 x 2 and PS-2 x 2 logos R7-1-4 x 2.	Low	Signage $180 Logos $250 Shoulder Lane $5000k/m	$360 $500 $11000
L5	5.8	GWH at Sun Valley Rd to Pedestrian refuge	Construct 2.0m concrete path, Northern side 220m (include signage, R8-2)	No work completed.	The intersection of Sun Valley Road has been moved Eastwards and the pedestrian refuge on the crest of the rise, in the middle of the corner, has been removed and replaced by a New Jersey Barrier.	Examine the options for a safe pedestrian/cyclist crossing of the highway from Sun Valley Road to Green Parade including provision of a 2.0m off-road shared path parallel to the GWH, and safe 2 way pedestrian/cyclist passage through the underpass in Green Parade.			To Be Reviewed
L5	5.9	GWH from Pedestrian refuge west to Green Parade.	Construct 2.0m concrete path, Southern side 80m (include signage, R8-2)	No work completed.	There is no safe access across the GWH from Valley Heights to Sun Valley, for pedestrians or inexperienced cyclists. The only option is to travel down Waratah Rd to Warrimoo and use the underpass through to Railway Avenue, then travel back up to Sun Valley Rd.	See above.			To Be Reviewed
								TOTAL COST	**$207,530**
Route No.	**Action No.**	**Location**	**No Proposed Action in 1996**		**Current Condition**	**Proposed Action 2006**	**Priority**		
L5 V Waratah	*	**From the Western railway underpass at Warrimoo, along Waratah Rd to Green Parade, Valley Heights.**	*	*	**BMCC has constructed a sealed link road between Warrimoo and Valley Heights on the Southern side of the railway, with rolled kerbs and bike route signage.**	**Seal the Westbound shoulder, shoulder lane & PS-2 logos Westbound. PS-2 logos Eastbound . Install W6-214s in both directions. Install G9-57s. Remove veg on edges.**			

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L5 VAR	**5V.1**	Waratah Rd Warrimoo at Rail Underpass through to Green Parade at Railway underbridge, Valley Heights.	none	n/a.	BMCC has constructed a sealed link road between Warrimoo and Valley Heights on the Southern side of the Railway. This was designed to be cycle friendly as far as possible, including rolled kerbs and sealed shoulders, however, design did not always carry across to construction. A slow point, necessitated by a Telstra pit, is hazardous for cyclists as it is very narrow, forcing cyclists into the traffic lanes (Photos L5v 7-10). The road has rolled kerbs on the Railway side and no kerbing on the other side along the central section. Unfortunately, Raised Pavement Markers have been placed on the inside of the white edge line, and there is no smooth sealed shoulder, therefore, cyclists must ride inside the white line and encounter the RPMs (Photo L5v 11). Ther are several tight left hand corners (Westbound) near Green Pde which pose a threat to cyclists as cars have poor line of sight and will cut in close to the power poles (Photo L5v 11). Only minimal bicycle route signage is used (non-standard "Bike Route" signs and one sign is obscurred by vegetation (Photo L5v 15). A W6-7 sign is a	Seal the Westbound shoulder 2500m and install bicycle shoulder lane 2500 x 2 and PS-2 x 3 logos on Westbound side (due to slower uphill speed). Install PS-2 x 3 logos on Eastbound side. Install several W6-214s x 4. Install G9-57 x 4 at all narrowing and squeeze points and on the steep uphill sections either side of Greens Rd, Warrimoo. Remove or regularly trim vegetation along edges.	Medium	To be review ed pending SRA Upgrade of bridge	
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L5 a	**5.10 - 5.14**	**From Pedestrian Overbridge at Warrimoo across Railway Parade and down Rickard Rd to Warrimoo Oval.**	**Install a crossing over Railway Parade, then mixed traffic with Bicycle Route Marker Signs down Rickard Rd.**	**Overbridge completed, 2.0m shared path constructed and signage installed.**	**Crossing the bridge involves pushing then carrying the bike - not wheelchair friendly. The shared path is new and in good condition, there are some maintenance and signage issues.**	**SRA / RTA to upgrade the bridge to wheelchair standard. Carry out maintenance as described. Install bicycle network route directional signage. Install signage to new standard.**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L5a	5.10.	RTA propose to extend Pedestrian Overbridge over GWH at Warrimoo Station. This will provide connection to Railway parade.	*Let RTA do the job!*	Overbridge completed.	Access has been provided to walk or push a bicycle across the bridge, connecting L5 to Railway Parade (and L5a) at Warrimoo Station. It is necessary to carry your bike up/down the stairs - not suitable for wheelchair access!	SRA/RTA to upgrade the bridge to wheelchair standard. Install signage to new standard.	Low	Signage $180	$360
L5a	5.11	Warrimoo Station Carpark to Rickard Road across Railway Parade	Install holding rails both sides of road.	No holding rails installed.	New RTA standards discourage the provision of holding rails.	Do not install holding rails.			No Action
L5a	5.12	Warrimoo Station Carpark to Rickard Road across Railway Parade	Install dropped kerbs, both sides of road	Work completed.	Kerbs are good but the refuge on Railway Pde is not wide enough to house a bicycle, and restricts the road width making a squeeze point for cyclists riding along Railway Pde.	Paint instructions in the refuge for storing bikes sideways. Install G9-57 x 6 at all squeeze points on Railway Parade.	Low	Signage $180	$1,080
L5a	5.13	Rickard Road, *from* Railway Parade to Warrimoo Oval	Provide signage 1200m [G8-14] (8)	Council has constructed a shared path along the eastern side of Rickard Rd from Railway Parade to John Wycliffe Christian School. R8-2 signage has been provided.	The drop kerbs at the Rickard Rd crossing are not 2.0m at the gutter level (photos L5a . The 'Cyclists give way' sign at the crossing of Rickard Rd, near Railway Parade is poorly positioned & does not meet the current standard (photo L5a 9).There are issues of dropoffs into soft grass (photo L5a 3), poor alignment of the path (photos L5a 11,12,15), cars parking adjacent to the path (photo L5a 14). Overgrowing vegetation such as the tunnel at No 33, while very quaint, is a safety hazard (photos L5a 15,16) as is other vegetation visible in photos L5a 20,21& 23. Other issues are; gates opening out across the path (photo L5a 26), very poor line of sight on the corner near Cross St (photos L5a 20-22), large tree branches dangerously low in the rider envelope (photos L5a 24, 29,31,32), gaps in the path (photos L5a 39, 40) and placement of signage on steel poles when they may have gone on telegraph poles (photos L5a 37,38).	Widen drop kerbs to 2.0m at gutter level. Replace the "Cyclists Give Way" signs with a half sized R1-2s and position them closer to the crossings. Fill all drop-offs. Improve the alignment of the path by infilling with triangular sections to improve traffic flow. Remove or regularly trim vegetation. Discuss parking issues with offenders. Remove branches from rider envelope. Ensure that gates cannot open across the path. Remove hedges to solve the visibility problems near Cross St. Repair gaps in the path. Reposition signs onto power poles, remove and reuse the poles elsewhere. Install Bicycle network route directional signage & upgrade other signage (e.g. Replace Cyclists Give Way signs) to new standard. Install PS-3 & PS-4 logos to increase awareness of shared nature of the path.		Work Completed	

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L5a	5.14	Rickard Road at Warrimoo Oval	Seal road shoulder, 50m from tennis courts to oval.	No work completed	Access across Rickard Rd to the Tennis Courts & Football Field has not been provided as planned. Shoulders are in a very poor state. High traffic volumes present serious threats to cyclists during peaks as car parking is informal.	Provide safe access across Rickard Road with drop kerbs and signage, near the Tennis Courts. Seal the shoulder as planned. Isolate shared path from the car parking area at the oval.	Low		**works will be included as part of Plan of Management Upgrade 2006/07**
								TOTAL COST	**$1,440**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L6	**6.1 - 6.11**	**Farm Road, Springwood from the intersection with Bruce Road, through to Burns Road, along Burns to Macquarie Rd. West on Macquarie, through the shops and on to the pedestrian railway crossing near Stanway Ave. Over the crossing and across the GWH to Buttenshaw Park and through to Plateau Road, near the pool.**	**Mixed traffic with Bicycle Route Marker Signs on Farm Rd, widen path along Burns Rd, signs to Town Centre, then rely on Town Centre Plan. Signs along Macquarie to Stanway then use railway crossing, widen the path, cross GWH then widen path to & through Buttenshaw Park to Plateau Rd.**	**Nil on Farm Rd or Burns Rd, widening along Macquarie to Hawkesbury, nothing through Town Centre to Level Crossing, to & through Buttenshaw completed.**	**Farm Rd needs a path widened, so does Burns Rd. Maintenance needed along Macquarie Rd. Town Centre needs bike/parking lanes and two bypasses. Macquarie to Level Crossing needs widening and crossing needs work. Minor path construction and signage needed near Buttenshaw Park.**	**Widen path along Farm Rd, improve drop kerbs, widen path on Burns Rd, maintenance along to town centre, then install cyle/parking lanes & two bypasses widen path to level crossing, then widen crossing & improve access to Buttenshaw Park, change signs in Buttenshaw. Install bicycle network route directional signage. Install signage to new standard.**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6	6.1	Farm Road, *from* Bruce Road to Burns Road	Provide signage 600m [G8-14] (4)	No signs.	A 1.2m footpath has been recently constructed on the Eastern/Northern side of Farm Rd (Photos L6 3-12). It has some steep rises and falls across driveways and has a width restriction close to Burns Rd due to rock outcrops. Due to the high traffic volume along Farm Rd during peaks, it is advisable to widen this path and provide an off-road facility for cyclists (including access to the Public School for young cyclists).	Widen the path 600m to minimum 2.0m and declare as a shared path. PS2 x2 & R8-2 x2	Low	Widen path .8m @$65sq/m Signage $180 Logos $250	$39,000 $360 $500
L6	6.2	Burns Road, *from* Farm Road to Macquarie Road	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, eastern side 900m (include signage, R8-2)	No work completed.	Road edges are poor (see photos L6 - 14-16), but there is an existing 1.2m footpath on the Eastern side of Burns Rd (Photos L6 12-14, 18-28). It has some width restriction, especially close to Burns Rd, and from the Pedestrian Crossing (which should be upgraded to accomodate cyclists) at Springwood Public School to Macquarie Rd, due to historical factors. The path has power poles and other signage which will restrict the width and steps should be taken to reduce hazards to path users. There are issues with visibility on corners and vegetation growing over the path (see Photo L6 - 12) and issues with cars parking on the footpath/gutter (see Photo L6 - 13). A drop kerb has been provided at Hilton Rd and all drop kerbs would need to be to the 2.0m standard, at Bonton Rd and Farm Rd. Due to the high traffic volume along Burns Rd during peaks(and high speeds - see Photo L6 17 showing damage to a house caused by a car running off the road), it is advisable to widen this path and provide an off-road facility for cyclists (including access to the Public School for youn	*Widen the path 900m & kerb x 4 to minimum 2.0m and declare as a shared path. *Upgrade the Pedestrian crossing to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). *Reposition signs onto power poles where possible. *Reposition sign poles to give clearance for cyclists. *Attach red & yellow reflective 'target boards' (fig 6.3 RTA NSW Bicycle Guidelines around power poles within the path or cycling envelope. *Install R8-2 x 3 signs & PS2 l x 3 logos	Low	Widen path .8m@$65sq/m Signage $180 Logos $250 Kerbs $400	$58,500 $540 $750 $1600

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6	6.3	Macquarie Road, *from* Burns Road to Hawkesbury Road	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, eastern side 500m (include signage, R8-2)	Work partially completed.	The crossing of Burns Road is below standard and does little to assist cyclists (see Photos L6 28, 30, 31). The path from Burns Rd to De Chair Ave has been widened, however a Telstra phonebooth sits on the path. The path has been widened but the benefit of this effort is lost because vegetation is allowed to cover virtually the whole widened section (see Photos L6 32 - 34). The Eastern side of the De Chair Ave crossing is good, with a wide drop-kerb, holding rail and sign, all in good condition (Photos L6 35- 38). There is a Telstra pit and cover which sit above ground level, creating a tripping hazard for pedestrians (Photo L6 35). The road is wide and less agile pedestrians may benefit from a refuge, which could be large enough to shelter a bike. The Western side is curved, so that the drop-kerb, although of a reasonable width, appears narrow, so cyclists may use one of the two closer driveways nearby, thereby causing confusion for motorists (Photo L6 39). The holding rail is on the wrong side of the path, thereby possibly also causing confusion and presenting a hazard. There are 'Cyclists gi	Upgrade the crossing of Burns Road to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Remove the vegetation near the phone booth. Request that Telstra fix the pit and cover. Install a pedestrian/cyclist refuge in the De Chair Ave crossing. Remove the holding rail on the Western side of De Chair Ave. Widen the drop kerb to 2.0m as seen from the refuge, ensuring absolutely no lip, due to the angle of incidence. Replace all 'Cyclists give way' signs with half-sized R1-2s. Attach red & yellow reflective 'target boards' (fig 6.3 RTA NSW Bicycle Guidelines around power poles within the path or cycling envelope. Remove or regularly trim vegetation. Install R8-2 x 4 signage & PS2 logos x 4.	Low	Refuge $7000 Kerb $400 Signage $180 Logos $250 Target Boards $180	$7,000 $400 $720 $1000 $720
L6	6.4	Macquarie Road Roundabout *(intersection with Hawkesbury Road)*	Cyclist alert signage. [fig 7.15] (3) - see Section 2.2.3 of report.	Some signage but not cyclist alert signage.	No cylist alert signage, but signs indicating the presence of a school (Photo L6 53) when the St Thomas site moved to Winmalee perhaps 15 - 20 years ago! The 'Cyclists give way' sign at the roundabout (Photo L6 55,56) is neither clearly visible, nor logically positioned (as the crossing here doesn't lead anywhere) and does not conform to current standards. There is a forest of signs distracting cyclists and drivers from the task of safely manouvering through this roundabout. There is vegetation encroaching on the shared path. The land adjacent to the Southern side of the roundabout is for sale, possibly for commercial use, which could lead to hazards for path users (Photo L6 58). The path on the North-western corner of the roundabout (see Photo L6 62) has very poor line of sight and is a logical route to L6b (and part of the proposed extension of the L6b route). There is a steel powerpole/light post within the path and there is also a large RTA sign with 2 poles within the rider envelope (Photos L6	Remove out of date (school) or unnecessary (Cyclists give way) signs, minimise the forest of poles, reposition signs to more effective locations (alcohol free zone) where possible. Remove branches of shrubs below 2m to improve line of sight. Ensure that the development of land adjacent to the shared path does not present a safety hazard to path users.Consider widen the path on the North-western corner of the roundabout to min 3.0m to account for poor visibility and power pole placement. Attach red & yellow reflective 'target boards' (fig 6.3 RTA NSW Bicycle Guidelines around power poles within the path or cycling envelope. Request RTA to reposition the sign and remove the hazardous signposts. Install signage to new standard.	Medium	Signage $180	$720

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6	6.5	Macquarie Road *through the* Shopping Centre (*from* Hawkesbury Road to Ferguson Road)	Town Centre treatment to be recommended by Town Centre Study.	Town Centre Plan did not provide for cyclists on the basis that cyclists could join in the traffic flow (at 40km/h max).	The town centre needs some facilities for cyclists as there may be one or two cyclists who would find it difficult to join in with the traffic flow at 40km/h! The path on the Northern side of Macquarie Rd, near the roundabout is obstructed by the bus stop, as a track can be seen worn into the grass by pedestrians and cyclists moving around the obstacle (Photo L6 64). The pedestrian crossing near the Hawkesbury Rd/Macquarie Rd roundabout is in poor condition with narrow drop kerbs (Photo L6 67,68). The paths on both sides of the road should be declared as shared paths as far as the Neighbourhood Centre / Greenway Lane (Eastern end) and widened to a minimum 2.0m clear of obstructions. Within the shopping precinct, cyclists should be discouraged from riding on the footpath and with low speed zoning in the shopping centre, this area is well suited to bicycle/parking lanes. There are two proposed bypasses for cyclists to avoid the shopping centre, one to the North and one to the South - See Links & Bypasses section.	Widen the path on the Northern side near the roundabout to min 3.0m to account for bus stop placement. Upgrade the Pedestrian crossing near the Hawkesbury Rd/Macquarie Rd roundabout to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Install G9-57s and W6-214s as needed in the shopping precinct. Install R6-10-3 signs plus a "Please Walk Your Bike" sign on the footpath at all entrances to the shops. Install bicycle shoulder lane and PS-2 logos on both sides. Install signage to new standard.	Medium	Refuge $7000 Signage $180 PS logos $250 Bicycle lane @$5000per k/m	$7000 $2880 $1500 $5000
L6	6.6	Macquarie Road *from* Ferguson Road to 50m West of Stanway Avenue	Provide signage 1000m [G8-14] (8)	No signs.	From the Subway at the intersection of Ferguson Rd and Macquarie Rd to Homedale St, the path is wide enough to be a shared path. Macquarie Road from Homedale to Short St is a narrow section of road, unsuitable for inexperienced cyclists. It is necessary to widen the existing 1.2m path to 2.0m and declare it as a shared path. Outside the Baptist Church, the path is in poor condition and there are two posts, presumably erected by the church and previously used to hang a chain across the driveway, which appear to be on public land, and present a hazard to cyclists and pedestrians (see Photo L6 97). From Wingara Hamlet to just beyond the level crossing (Photo L6 100), the path is 2.0m wide (Photo L6 99), then it narrows to 1.2m (Photo L6 101- 111) up to the next level crossing (past Stanway Ave).	Discuss the removal of the posts outside the Baptist Church with the church administration.*Widen the path and drop kerbs to minimum 2.0m and declare as a shared path.*Install signage to new standard.	High	Work to be completed 06/07	Work to be completed 06/07

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6	6.7	Existing at-grade pedestrian crossing of railway	Cyclist dismount signage' at crossing [fig 7.14]	Cyclists give way signs installed.	Cyclists give way signs (would anyone expect the trains to give way?) have been installed along with non-standard bike route signs (see Photos 112,113,115,117). If cyclists are expected to give way to pedestrians, the signs need to say that. The crossing is only about 1m wide and the turn on the highway side is very tight.	Clarify what is meant by the 'Cyclists must give way' signs or remove them. Request SRA to widen the crossing to minimum 2.0m with a minimum 200mm clear of any drop-off. Install signage to new standard.	High	SRA to Action	SRA
L6	6.8	Rail crossing to pedestrian refuge on southern side of GWH	Widen existing path to maximum possible given fence constraint, 80m (include signage, R8-2 for shared path)	No work completed except for signs.	The path is approx 1.0 M, and is obstructed by a power pole (see Photo L6 114,116). It may be possible to have the SRA move the fence around 1.2m closer to the rail line to allow construction of a 2.0m shared path. An illegally parked 4WD, advertised for sale, managed to totally block the shared path, indicating the need for greater public awareness of the role of the path (Photo L6 117). Graffiti removal fluid has damaged the pictures on a warning sign (Photo L6 118).	Request SRA to move the fence back 1.2m. Widen the path and drop kerbs to minimum 2.0m and declare as a shared path. Attach red & yellow reflective 'target boards' (fig 6.3 RTA NSW Bicycle Guidelines around power poles within the path or cycling envelope. Install signage to new standard.	High	Fencing Widen path .8@$65 sq/m Signage $180 kerb $400	SRA $5200 $360 $400
L6	6.9	Existing at-grade pedestrian refuge on GWH	Cyclist dismount signage' at crossing [fig 7.14]	Signs installed both sides.	The Southern side of the crossing is very tight (Photo L6 120) and there is a lip in the concrete (Photo L6 121). Both drop kerbs are too narrow (Photos L6 122, 123).The rest of the crossing is generally well constructed with a suitable refuge mid way. Holding rails are in good condition and non-standard signs are in place but have sustained some damage. On the Northern side, the sign is physically knocked around.	Widen the path and drop kerbs to minimum 2.0m, removing the lip, and declare as a shared path. Replace the "Cyclists Give Way" signs with a half sized R1-2s and position them closer to the crossings.	High	Kerbs $400 Signage $180	$800 $360
L6	6.10.	*From the* Pedestrian refuge, *along the Northern side of GWH to* Buttenshaw Park	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Northern side 80m (include signage, R8-2)	Path widened.	The path is a good 2.0m path from the crossing to just near the entrance to Buttenshaw Park. At that point, there is a large Radiata Pine tree taking up space, the path is constricted and has not been made wide enough (Photo L6 131). There is a simple railing beside the path and this needs to be taken closer to the gutter to allow sufficient space around the tree. There needs to be warning signage for vehicles entering and leaving the Springwood Nursing Home (Photos L6 128-130). The access to the path through Buttenshaw Park is currently via the parking area. It may be safer to widen the footpath to a point opposite the entry and make a new path through the garden bed to the path, with a marked crossing.	Move the railing closer to the gutter and widen the path to 2.0m around the tree. Discuss with the management, the installation of W6-9s (2)and W8-23s (2) in the Nursing Home driveway exit. Install W8-200 sign on the Highway. Widen the path to minimum 2.0m across the front of Buttenshaw Park (and up to Churchill St, as proposed in the New Proposed Routes section.) Install bicycle/pedestrian crossings (as in Fig 7.5 in NSW guidelines) at the entry and exit to the park car parking area, as well as a crossing through the carpark to the path which travels through the park.	High	Maintenance Refuge $7000 Signage	SLA $7000 $720

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6	6.11	*Path through* Buttenshaw Park to *(Churchill Place and)* Plateau Road	Construct 2.0m cyclist/pedestrian concrete path through park 400m (include signage, R8-2)	Work completed.	The path through the park passes the historic gateposts from "Moore Court" the now demolished home of Charles Moore, Mayor of Sydney from 1867 - 1869 and MLC from 1880 to 1895 (Photos L6 136-139). The path travels through vine covered structures, making it a very pleasant ride. The path is very good and is well signposted. The Southern exit from Buttenshaw Park has a 'Cyclists must dismount' sign (Photo L6 135) which makes little sense and appears to no longer be necessary under the new guidelines, as does the side path to Churchill Place (Photos L6 144,145) . The path winds its way around the side of the Aquatic Centre carpark to Plateau Road and has edge drop offs which are hazardous.	Remove the 'Cyclists must dismount' signs at the exits from Buttenshaw Park (on the Southern side and at Churchill Place). Fill all drop-offs. Ensure signage is to new standard.	High	Maintenance	SLA
								TOTAL COST	**$143,030**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L6 a	**6.12 - 6.16**	**From the railway underpass at the Eastern end of Green Parade, Valley Heights, to the intersection of Macquarie Rd & Burns Rd. Springwood.**	**Mixed traffic with Bicycle Route Marker Signs, shoulder repair in Tusculum and path widening in Macquarie Rd.**	**Nil in Green Pde, signage & cycle lanes in Tusculum & 2.0m path & signage on Macquarie.**	**Signage needed in Green Pde, squeeze points at subway & at the Eastern end of Tusculum, loss of cycle lanes on Tusculum due to turning lanes, shared path needs widening & vegetation removal.**	**Install signage in Green Pde, improve safety at squeeze points, reinstate cycle lanes through turning lanes, widen shared path, remove vegetation from path. Install bicycle network route directional signage. Install signage to new standard.**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6a	6.12	Green Parade at Railway underbridge, *Valley Heights*	Cyclist Alert signage [Fig 7.15] (2)	No signs.	Squeeze points are a problem in both directions, the subway is dangerous for cyclists unless car speed is considerably reduced and drivers are aware of the possibility of encountering cyclists. The road needs to be widened at the intersection of Green Pde and Coolabah Rd. The shoulder needs sealing between the overbridge and the SRA Depot (photo 6a 10)	SRA planning to up grade underpass 07/08. Widen/Repair the road and provide a smooth sealed shoulder at the intersection of Green Pde and Coolabah Rd for 400m. Install 2250m bicycle lanes.W6-214 x 4. PS-2 x 4	Medium	Maintenance Bicycle lane @$5000/km Logos $250 Signage $180	SLA $11,000 $1000 $720
L6a	6.13	Tusculum Road	Repair road shoulder where necessary, 400m Southern & 800m Northern shoulder.	Road shoulder was repaired.	Road shoulder has been sealed and a cycle lane provided in both directions (Photos L6a 15,17). There is vegetation growing over the westbound cycle lane at the Eastern end of Tusculum Rd (Photo L6a 17). The turning lanes provided later for the Grammar Prep School have been at the expense of the bicycle lanes (Photos L6a 23-25). Some white lines are wearing away (Photo L6a 28) and some potholes and damage have occurred to the road surface (Photos L6a 20, 21). Cars exiting the Railway Museum/ Community Club bring railway ballast out onto the cycle lane (background of Photo L6a 28).	Remove vegetation from the cycleway - slash well back from Armco. Realign/repaint cycle lanes to allow continuity at turnoffs for the Prep School, improve alignment at turning areas. Repaint white edge lines where they have worn away. Repair potholes. Ensure railway ballast from Museum does not spill onto cycle lane. Install signage to new standard.	Medium	Combined Off road shared path and bicycle lane to be completed 06/07	
L6a	6.14	Tusculum Road	Cyclist Alert signage at squeeze point near rail overbridge [Fig 7.15] (2)	No signs.	The Eastern end of Tusculum is very narrow due to historical alignment issues. It is very dangerous for cyclists unless car speed is considerably reduced and drivers are aware of the possibility of encountering cyclists, see photos (L6A 11-14).	Install W6-214s and G9-57s at all narrowing and squeeze points.	Medium	Signage $180	$720
L6a	6.15	Green Parade & Tusculum Road	Signage 2250m[G8-14] (14)	Some signs.	Signs have been installed at the beginning and end of the marked cycle lanes in Tusculum Rd, but the signage used is not up to the current standard (Photo L6a 16). There are no cycle logos in the bicycle shoulder lanes in Tusculum Rd. (Photos L6a 15,17). Green Parade has no signage or lane marking (Photos L6a 2-10).	Combined Off road shared path and bicycle lane to be completed 06/07 *Install PS-2 logos in the bicycle shoulder lanes both directions in Tusculum Rd. In Green Parade, repair Northern shoulder between Tusculum and the SRA Depot. *Widen verge at corner opposite Coolabah Rd. *Install bicycle shoulder lanes and PS-2 logos. *Install signage to new standard.		See 6.12 and 6.13	

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6a	6.16	Macquarie Rd *(from* Tusculum Rd to Burns Rd)	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Southern side 160m (include signage, R8-2)	Path widened but not to 2.0 in some areas. Signs installed.	The path has been widened to 2.0 m for most of its length from Tusculum Rd to Burns Rd with the exception of the part closest to Tusculum Rd where it runs between the road edge and an armco barrier (Photo L6a 39R). There is also a large gum tree which restricts the width(Photo L6a 37R). It is desirable to widen this section to 2.0m by extending onto the sealed verge, Photos L6a 37 & 39 show the potential to widen without loosing road lane width or on-road cycle access. (It would be necessary to mark this out with edge lines!). Much of the path suffers from plant intrusion into the cycleway with more than half its width being lost (Photo L6a 41). Signage is minimal and to the old standard. The road crossing of Burns Rd is dangerous due to road width and the drop down from the cycleway to the road edge. A holding rail has been placed across the slope to act as a barrier (Photo L6a 50) - it is probably better to have it there than not. Signs are obscured by vegetation (Photo L6a 48-50).	Combined Off road shared path and bicycle lane to be completed 06/07. Remove or regularly trim overhanging vegetation. Repair damaged path near gum tree. Install Bicycle network route directional signage.	Medium	Maintenance Signage $180	SLA $360
								TOTAL COST	**$13,800**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6 b	**6.17 - 6.21**	**From Winmalee High School to the Macquarie Road/Hawkesbury Road roundabout, Springwood**	**Construct shared path in High School Drive, maintain existing path to Linksview Rd, construct new shared path to Macquarie Rd with a crossing near Moore Rd. Include signage in all works.**	**Yes, but with some changes.**	**The path is complete and is very popular with cyclists and walkers, not all sections are up to standard and signage need to be revisited. Some sections require urgent maintenance, others require significant reconstruction.**	**Upgrade pedestrian crossings and improve safety at refuge crossings, improve path surface, paint holding rails, infill gaps in path, maintain existing paths, remove hazardous vegetation, provide on-road markings on service roads or construct shared paths, install bicycle lanterns at traffic lights, realign the path at a dangerous section near St Columbus and another near the water tower. Construct another bicycle only path on the Northern side of Golf Links Hill. Widen the path to 2.0m near Lawson Rd. Improve safety on the Long Tan Bridge. Widen the path to 3.0m at the Macquarie Rd roundabout. Upgrade all signage and remove redundant signage. Install bicycle network route directional signage. Install signage to new standard.**			
L6b	**6.17**	High School Drive, *from* Hawkesbury Road *to Winmalee High* School	Construct 2.0m cyclist/pedestrian concrete path western side 50m (include signage, R8-2)	Path is approx. 2.0m wide, no signs.	This section of the path is in excellent condition and appears to be wide enough to cope with student loads as the grass is not trampled. There is no bicycle signage here.	nstall bicycle network route directional signage. R8-2 x 2 and PS2 x 2 logos.	Low	Signage $180 Logos $250	$360 $500
L6b	**6.17*a***	Existing Shared bicycle/pedestrian path, Hawkesbury Road *from Endeavour Drive to Linksview Rd.*	Maintenance as required	Some maintenance has been carried out, more is needed!	WINMALEE HIGH SCHOOL TO HAWKESBURY RD- The path near the school is narrow, both pedestrian crossings need maintenance, the white paint is wearing out and the drop kerbs are very narrow. At the corner, the path has bare soil and treated pine logs causing tripping hazards.	Upgrade the Pedestrian crossings to bicycle/pedestrian crossings (as in Fig 7.5 in RTA NSW Bicycle Guidelines). Remove logs and provide a smooth surface for the path at the corner. Install R8-2 x 2 and PS2 x 2.	Low	Refuge/Crossing $7000 Signage $180 Logos $250	$7000 $360 $500

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b	6.17*a*	*HAWKESBURY RD FROM HIGH SCHOOL DRIVE INTERSECTION TO WHITE CROSS RD*	Maintenance as required	Maintenance is needed.	The access from the road to the path is covered deeply in gravel. The holding rail is rusty. The path is in good rideable condition but there is significant lateral cracking along the path where there is no gutter (e.g. Photo L6b 20). The crossing of Tristania Way has rolled kerbing but no drop-kerbs, creating a hazard (photo L6b 43). The holding rail is rusty and the give way signage is not up to current standards. There is a lip forming near No. 443 and a drop-off near No.431. The traffic lights do not have Bicycle Lanterns and the paving (although new) does not allow easy movement (Photo L6b 61-64). It is narrow with gaps and narrow drop-kerbs. The connections to the expanded shopping area are discussed in the Proposed Extensions section.	Improve the drainage to keep the path entry point free of gravel. Remove holding rails. Observe the cracking and lips forming and undertake remedial action ahead of problems occurring. Install drop kerbs at Tristania Way. Improve flow around the traffic lights by infilling gaps in the path with concrete to provide min. 2.0m width and easier wheelchair/pram/bike access. Request that RTA install bicycle lanterns on the traffic lights.	Low	Drainage & maintenance Kerb $400 Widen path .8@$65sq/m Bicycle lanterns	SLA $800 $1300 RTA
L6b	6.17*a*	*HAWKESBURY RD FROM THE INTERSECTION WITH WHITE CROSS RD TO SUMMERHAYES PARK*	Maintenance as required	Maintenance is needed.	The path is in good rideable condition but there is significant cracking occuring. There are informal drain covers which present a tripping hazard (Photos L6b 75,80).There is a lip forming near No. 398 and hazardous edge slots due to excessive edge trimming on the corners nearby (Photos L6b 86-88). The new path on the Eastern side of the road is narrow and unsuitable for cycling (Photos L6b 89,90,110.) There are small drop-offs near No.390. The crossing of Kristine St as significant drop-offs, two rusty holding rails, a full sized R1-2 Give Way Sign AND a 'Cyclists give way' sign (overgrown and hidden) heading South, but no signs heading North. There are W6-7 warning signs in Kristine St(& W8-23) and on Hawkesbury Rd (& 'on side road' signs) but W6-9s would have been better. From Kristine St, the path is bitumen and has some cracking, worn patches and drop offs. At Summerhayes Park entrance, there are two rusty holding rails, a 'Cyclists give way' sign and R8-2 on each side (overgrown, damaged and hidden) heading North. There is also a shadecloth screen and f	Replace informal drain covers with flush ground level cycle safe grates. Grind lips down. Discuss overzealous path edge trimming with residents. Fill all drop-offs. Where appropriate, replace 'cyclists give way' signage with half sized R1-2s. Remove the shadecloth on the fence at Summerhayes Park.	Low	Grates & Maintenance Signage $180	SLA SLA

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b	6.17*a*	*HAWKESBURY RD FROM SUMMERHAYES PARK TO BUNNAL AVE*	Maintenance as required	Maintenance is needed.	From Summerhayes Park, the bitumen path has some cracking and drop-offs especially where informal driveways cross. There is evidence of past grass intrusion into the bitumen and some deformation due to tree root damage. Near Bunnal Ave, the path curves away from the road and the line of sight is very poor due to Pittosporum and Privet shrubs blocking the vision. There is also an informal back entrance to Summerhayes Park & Tennis Club. At Bunnal Ave, the crossing has two rusty holding rails and the give way signage is not up to current standards. There is a large expanse of road to cross and a refuge would be useful at this point. There is one W6-7 and one 'on side road '(graffittied) sign on the Western side of Hawkesbury Rd but nothing to warn drivers turning off Hawkesbury and into Bunnal from the other direction and no signs in Bunnal.	*Repair tree root damage in a tree-friendly manner.*Remove Privet & Pittosporum vegetation on the curve to improve line of sight.*Construct 2m shared path on the back entrance to Summerhayes Park & Tennis Club. *Construct a cyclist/pedestrian refuge at Bunnal Ave. Remove holding rails.	Low	Maintenance Refuge/Crossing $7000	SLA $7000

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b	6.17*a*	*HAWKESBURY RD FROM BUNNAL AVE TO OPPOSITE LEE RD*	Maintenance as required	Maintenance is needed.	The lack of any other instruction assumes that pedestrians and cyclists on the shared path will use a half-width service road from No. 324 to 312 Hawkesbury Rd. This is very dangerous and the only sign is at the Southern end saying it is a bike route and telling cyclists to give way! (Photos L6b 180-186) Where the path returns to the road edge, garden shrubs at No. 312 can conceal cars backing out across the path (Photo L6b 184). The bitumen path has some cracking and dropoffs especially where informal driveways cross. There is a sunken Telstra pit cover leaving an edge on the kerb which has been noted by others and sprayed yellow, but not repaired (Photo L6b 193). There is significant grass intrusion into the bitumen and deformation due to tree root damage (Photos L6b 195-198). Vegetation intrudes on the path, narrowing its useable width for much of this section. There is a sign opposite Lee Rd (Photo L6b 217) which appears to have been placed on the wrong side of the path, as the arrow points the wrong way (it could be replaced with an R8-2). At the same point, ther	Install a painted shared path (PS-3s and PS-4s) in the parking lane of the service road 250m, exclude parking and encourage parking on the grass on the other side. Request Telstra reposition the pit cover level with the ground. Remove or regularly trim grass and other vegetation. Improve flow by infilling gaps in the path with concrete to provide min. 2.0m width. Repair tree root damage in a tree-friendly manner. Fill all drop-offs. Remove redundant signage.	Low	Painted Shared path @$5000 k/m Logos $250 Telstra pit Maintenance	$2500 $500 Telstra SLA

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b	**6.17*a***	*HAWKESBURY RD FROM OPPOSITE LEE RD TO HALCYON AVE*	Maintenance as required	Maintenance is needed.	There is a concrete path in the vicinity of No. 278 which winds away from the road edge through a treed section. It is often covered with leaf litter and sediment. The path is in good rideable condition but there is some cracking along the edges and some deformation due to tree root damage.There is a narrow side path up to the road edge and a crossing with pedestrian refuge (L6b 220,221) leading to the shops. The crossing is not up to shared path standard. There is a footpath leading through to Bunnal Ave which may be wide enough to be a shared path if the vegetation was kept back from the edge. Further along the path, cars (as shown by the rubber markings) have worn away the soil leaving dropoffs on the edge of the path (L6b 226,227). The path changes back to bitumen and heads back to the road edge, where vegetation blocks the line of sight at the bend (L6b 232). There is a large tree in the middle of the path and the white painted markings which directed bikes to the left side of the tree need to be repainted and should also include RS-4s to direct pedestrians as well. The tree its	Sweep the concrete section of the path regularly. Remove or regularly trim grass and other vegetation. At the two crossings over Hawkesbury Rd, widen the path x 10m to the crossings, and the drop kerbs x 4 to minimum 2.0m. Ensure the refuges are adequate for bikes. Widen the paths to the shops to 2.0m x 10m and declare as a shared path with R8-2 x 2.*Repaint the markings, including PS-4s x 2 on the main path to direct traffic around the tree. Attach red & yellow refective 'target boards' x 2 (fig 6.3 RTA NSW Bicycle Guidelines) around the tree within the path. Fill all dropoffs. Repair tree root damage in a tree-friendly manner. Repair other path damage. Where appropriate, replace 'cyclists give way' signage with half sized R1-2s x 2. Remove redundant 'cyclists give way' signage. Install 500m painted shared path (PS-3s and PS-4s x 2) in the parking lane of the service road near Halcyuon Ave, exclude parking and encourage parking on the grass on the other side.	Low	Maintenance Widen path.8@$65sq/m Signage $180 Logos $250 Kerb $400	SLA $1300 $1080 $1500 $1600

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b	**6.17*a***	*HAWKESBURY RD FROM HALCYON AVE TO ST COLUMBUS TRAFFIC LIGHTS*	Maintenance as required	Maintenance is needed.	The path is in good rideable condition but there is significant cracking and surface wear occuring and grass is intruding into the bitumen for up to 30% of the width (L6b 271).There is a power pole in the path near the Nursery(L6b 268). Vegetation is hanging over the path, causing significant narrowing (L6b 270-273) and blocking line of sight at Yandina Ave., where the path is narrowed to half its width by grass intrusion (L6b 277-279). The (one) holding rail at Yandina is rusty and there are driver warning signs on all 3 approaches but no 'cyclists give way' signs. At Paulwood Av, there are two rusty holding rails, driver warning signs on Hawkesbury Rd only, NOT in Paulwood Ave, 'cyclists give way' signs and overgrown grass and eroded gravel deposited on the path, as well as pathside vegetation blocking the line of sight (L6b 283-289). Outside St Columbas, there is mud on the path where a track leads down from the school, the path has cracking and tree root damage. Pittosporum shrubs block the line of sight near the traffic lights. At the traffic lights, there are no Bicycle Lanterns at the crossing, t	Repair tree root damage in a tree-friendly manner. Repair other path damage, removing grass to reclaim the full width. Remove Pittosporum and other vegetation on the curves to improve line of sight. Where appropriate, replace 'cyclists give way' signage with half sized R1-2s x 2. Remove redundant 'cyclists give way' signage. Request that RTA install bicycle lanterns on the traffic lights. Remove holding rails.	Low	Maintenance Signage $180 Bicycle lanterns	SLA $360 RTA

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b	6.17*a*	*HAWKESBURY RD FROM ST COLUMBUS TRAFFIC LIGHTS TO LINKSVIEW RD*	Maintenance as required	Maintenance is needed.	There is a major problem with the path alignment just South of the St Columbas intersection. The path rises up suddenly to get around a property boundary and there is vegetation growing on the critical point which restricts line of sight (L6b 314-319). Apparently the alderman who originally instigated the bikepath was involved in an accident with another cyclist at this point over 10 years ago and it is still dangerous today. From here on, the bitumen path is in good rideable condition but there is significant cracking and surface wear occuring and grass is intruding into the bitumen. At some points the tree root damage is significant, with the worst section being quite dangerous at No. 140. (L6b 344). Just North of Linksview Rd, the path has sediment across it and ther is a raised drainage cover which doesn't seem to drain well. The holding rail at Linksview Rd is very rusty and there is a 'cyclists give way' sign which is not up to current standards.	Realign and reconstruct the path to remove the sharp change in direction and elevation. Repair tree root damage in a tree-friendly manner. Repair other path damage, removing grass to reclaim the full width. Remove vegetation on the curves to improve line of sight. Where appropriate, replace 'cyclists give way' signage with half sized R1-2s x 2. Remove redundant 'cyclists give way' signage. Remove holding rails.	Low	Maintenance Signage $180	SLA $360
L6b	6.18	Hawkesbury Road, Linksview Road to Ellison Road pedestrian crossing	Construct 2.0m cyclist/pedestrian concrete path western side 120m (include signage, R8-2)	An existing path was widened to approx. 2.0m	The Southern side of the crossing at Linksview Rd is overgrown with grass, so that it is hard for cyclists/pedestrians to determine the width of, and effectively use, the path (Photo L6b 356). There is no formal drop kerb and there is a lip which would cause problems for a wheelchair user. The holding rail shows loss of paint and surface rust. The path heading South has been widened to approx 2.0m but is overgrown with grass and covered in parts with leaf litter (Photo L6b 359). There is a 'Cyclists give way' sign about 20m South of the crossing, which is too far back for cyclists crossing Linksview Rd but appears to be directed at cyclists riding Northwards on Hawkesbury Road, who actually have right of way! (Photo L6b 359). At one point there is a small lip developing due to a tree root lifting the slab (Photos L6b 360, 361) . The widening changes sides but there has not been any tapering of the path, resulting in a misalignment of the path (Photo L6b 362, 363) . There is no formal kerb & gutter and the edge of the path is eroded in	*Remove or regularly trim grass and other vegetation.*Install a drop kerb to minimum 2.0m at Linksview Rd.*Improve flow by infilling gaps in the path with concrete to provide min. 2.0m width.*Repair tree root damage in a tree-friendly manner. *Fill all drop-offs.	Low	Maintenance Kerb$400	SLA $400

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b	6.19	Hawkesbury Road, Ellison Road pedestrian crossing to Pedestrian Refuge South of Moore Road	Construct 2.0m cyclist/pedestrian concrete path eastern side 1200m (include signage, R8-2)	A shared path has been constructed on the Eastern side as far as a pedestrian refuge between Lawson Rd and Eucalypt Rd.	ELLISON RD TO PATTERSON RD - A gap in the paving exists on the North Eastern corner of the crossing, a little more concrete would make the passage easier, also, the push button for the lights is on the wrong side of the path and cyclists have to dismount or block the way to activate the lights (Photo L6b 372,373.). The push button on the South Eastern corner is also badly positioned and is much more difficult to access (Photo L6b 379,382.) The crossing of Ellison was given bicycle lanterns, but the crossing of Hawkesbury Road was not, therefore cyclists are able to ride across Ellison Rd but are not legally able to ride across Hawkesbury Rd. This anomaly should be overcome by the RTA installing the necessary bicycle lanterns. The holding rails on both sides of Ellison Rd are rusty. There is a (bent) 'Cyclists give way' sign at a set of traffic lights - no longer needed. The trees and other vegetation at the Southern side of the Ellison Rd crossing cover almost half of the path and reduce visibility significantly (Photos L6b 384,385.). There is a warning sign for drivers, a W6-7 has been used	Improve flow by infilling gaps in the paving with concrete to provide easier wheelchair/pram/bike access. Request that RTA provide convenient push button locations for cyclists and install bicycle lanterns on the traffic lights. Remove holding rails Where appropriate, replace 'cyclists give way' signage with half sized R1-2sx 2. Remove or regularly trim grass and other vegetation.	Low	Maintenance Signage $180 Bicycle Lantern	SLA $360 RTA

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b		*PATTERSON RD TO BUCKLAND DRIVEWAY*	*	*	PATTERSON RD TO BUCKLAND DRIVEWAY The first part of this section is known as 'Golf Links Hill" and is a very steep section of path. There are a number of issues here with the path being used by young riders at relatively high speed and conflicts with older pedestrians from the nursing homes and retirement villages, sometimes on mobility scooters. The hedges and obscured driveways present a real hazard for path users. An additional cycle-only path on the Northern side would relieve the pressure on this busy section of path (See links & Bypasses section.). Hedges obscure a driveway near Patterson Rd (Photo L6b 398). There is a section of path missing (see Photo L6b 399) outside the Endeavour Nursing Home, which has a large brick enrty/exit with pedestrian warning sign, but no bicycle warning sign. The painted stop signs on the driveway and gatepost are not adequate (Photos L6b 400-403). The Lyndhurst development has a see-through fence, proper "Give Way" sign and a convex mirror, but still has poor visibility of the shared path, due to having a large hedge. There is also a small "wa	Infill all gaps in the paving with concrete. Repaint holding rails. Remove redundant 'cyclists give way signage. Where appropriate, replace 'cyclists give way' signage with half sized R1-2s x 2. Discuss with the management of each, the installation of W6-9s (2) and W8-23s (2) and crossing markings giving priority to path users (as in Fig 7.3 RTA NSW Bicycle Guidelines) in the Endeavour, Lyndhurst and Buckland driveway exits. Remove or regularly trim grass, hedges and other vegetation. Sweep gravel off the path and improve drainage to stop it being redeposited. Widen the path to the kerb around the power pole near No 41. Paint RS3s and arrows to direct flow around the pole. Attach red & yellow reflective 'target boards' (Fig 6.3 RTA NSW Bicycle Guidelines) around power poles within the path or cycling envelope. Request Sydney Water to raise sunken service covers near water tank. Repaint RS-3s and arrows. Maintain treated pine fencing by tightening bolts and trimming sharp edges to minimise the hazard. Remove the lip on the bitumen at Buckland driveway.	Low	Maintenance Signage $180 Logos $250	SLA $1080 $2000
L6b	*	*BUCKLAND DRIVEWAY TO PEDESTRIAN REFUGE between Lawson Rd and Eucalypt Rd*	*	*	BUCKLAND TO PEDESTRIAN REFUGE. The 1.2m footpath has not been widened to 2.0m, so this section is not up to shared path standard. There are also issues with overhanging vegetation, poor line of sight, gravel on the path and narrow drop kerbs. The signage is covered in graffiti.	Widen the path 250m and drop kerbs x 2 to minimum 2.0m and declare as a shared path R8-2 x 2 PS2 x 2. Remove or regularly trim grass, hedges and other vegetation. Sweep gravel off the path and improve drainage to stop it being redeposited. Remove graffiti from signs.	Low	Widen path .8@$65sq/m Signage $180 Logos $250 Maintenance	$16,500 $360 $500 SLA

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L6b	6.20.	Hawkesbury Road, *from the* Pedestrian Refuge South *of* Moore Road *to Macquarie Road*	Construct 2.0m cyclist/pedestrian concrete path western side 600m (include signage, R8-2)	Yes, as far as Silva Rd.	The pedestrian refuge crossing is not wide enough to house a bike, placing path users at risk (Photo L6b 488). There is a (hidden!) 'To bike Route' sign on the Eastern side but none on the Western side of the crossing (Photos L6b 486,487,490). On the Western side, there is clearly a need for a path to the North along Hawkesbury Rd (Photo L6b 489). There is a drop-off where there is a gravel driveway (Photo L6b 490). The bus stop seat is well positioned and the R8-2 signs are in good condition, but could have been placed on the power pole (Photo L6b 491). There are three power poles in the path (Photos L6b 492,496) which need reflective markings. There are two gaps in the path in front of Harwood Lodge at No.14(?) (Photos L6b 493-497). There is a ground-off edge outside No 20 and a sunken Telstra pit cover outside No. 6. (Photos L6b 501, 502). The 'Start' and 'End' signs are not correct and should be removed, (Photos L6b 503,504) and the R8-2s could have gone on the power pole! The path on the Southern side has tree root damage and repairs (holding out! Photos L6b 506-511). The crossir	Upgrade both Pedestrian refuge crossings to bicycle/pedestrian crossings (as in Fig 7.5 in RTA NSW Bicycle Guidelines). Reposition signs onto power poles where possible. Attach red & yellow reflective 'target boards' x 2 (Fig 6.3 RTA NSW Bicycle Guidelines) around power poles within the path or cycling envelope. Request Telstra reposition the pit cover level with the ground. Remove redundant Start & End signs. Examine solutions for the Long Tan Bridge, perhaps both sides could be used as (narrow) shared paths. Attach red & yellow reflective 'target boards' x 2 (fig 6.3 RTA NSW Bicycle Guidelines) around the light pole within the path. Request RTA to reposition the sign and remove the hazardous signposts.	Low	Refuge/Crossing $7000 Signage $180 Maintenance Telstra pit	$7000 $ 720 SLA Telstra
L6b	6.21	Silva Road at Hawkesbury Road	Cyclist Alert signage [Fig 7.15] (2)	No signs.	The crossing of Silva St is well positioned, the R8-2 sign is damaged (but OK, Photos L6b 505,506), but there are no warning signs for drivers.	Install W6-9 x 2 signage.	Low	Signage $180	$360
								TOTAL COST	**$56,300**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L7	7.1 - 7.14	Plateau Rd Springwood from the Pool to Coomassie Ave, Douglas St, Grose Rd, Meeks Cres to GWH then along GWH to Faulconbridge Railway Station.	Mixed traffic with Bicycle Route Marker Signs on Plateau Rd and Coomassie Ave, the shared path from Douglas Ave, crossing with refuge over Grose Rd, shared path along Meeks to Everton, then mixed traffic with Bicycle Route Marker Signs along Meeks to GWH, then signage to Faulco Railway Station.	Yes and no, with some extras.	Extra shared path on Plateau and Coomassie, some signage, Douglas paved, no crossing over Grose Rd at Meeks, no signage to GWH or to Station.	Improve safety at crossings near Pool. Remove hazardous vegetation. Deal with hazardous parking. Widen all drop kerbs. Install refuges over Coomassie Ave at Douglas St and over Grose Rd at Meeks Cres. Install a pedestrian/cyclist crossing over Everton Rd near Meeks Cres. Install shared path along Meeks past the bends. Install on road markings and improve safety along Meeks to Russell Ave. Install 3.0m emergency vehicle access Russell to GWH. Install safe crossings at service road and service station between Meeks and St Georges Cres. Remove a fence panel and construct a small section of path at the base of the steps to the bridge. Install bicycle network route directional signage. Install signage to new standard.			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L7	7.1	Plateau Rd - *and then* Coomassie Avenue, from Springwood Pool to Douglas Street	Signage 1000m[G8-14] (8)	A shared path constructed and signs in Coomassie Ave only.	The path starts at the end of L6, at the Eastern end of the Aquatic Centre car park. There is a crossing with small holding rails in excellent condition. On the northern side are two raised blisters which afford some protection to cyclists using the crossing, but narrow the traffic lane for cyclists using the road to travel Eastwards. The double white line appears to pre-date the crossing and is no longer appropriate. For cyclists and wheelchair users heading West, there is a wedge of grass which would be easier to negotiate if it was concrete (L7 2).The path runs East (see Extensions & Links) and West along the Northern side of Plateau Rd. Westwards, the path is in very good condition (footprint? L7 6). There is another crossing at the Western end of the Aquatic Centre (L7 7-11) which has the same format and arrives at a narrow path with an innapropriate grass wedge. From here to Douglas St, the path is very good but has several issues: Dangerous tree branches and overhanging vegetation reducing line of sight (L7 14-16, 35,46-50); car & trailer parking (L7 21,24,27);worn bitumen or	Remove redundant line marking. Install G9-57s x 6 in advance of crossings.Remove small wedges of grass near crossings and replace with concrete. Remove or regularly trim grass and other vegetation. Contact Council Ranger/Highway Patrol to deal with parking issues. Widen the drop kerbs to 2.0m at the gutter level. Install pedestrian/cyclist refuge of sufficient width to house several bikes across Coomassie Ave at Douglas St.	High	Maintenance Signage $180 Refuge/Crossing	SLA $1080 $7000
L7	7.2	Douglas Street, *from* Coomassie Avenue to Grose Road	Construct 2.0m cyclist/pedestrian concrete path Southern side 100m (include signage, R8-2)	Yes	The concrete path is very good but has grass overgrowing it, vegetation overhanging within the rider envelope and 'Cyclists give way' and redundant Start & End signage.	*Remove redundant signage. *Remove or regularly trim grass and other vegetation.	High	Maintenance	SLA

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L7	7.3	Grose Road, *from* Douglas Street to Faulconbridge Public school	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Eastern side 140m (include signage, R8-2)	Yes	The path is widened and older sections are showing some wear, signage is in good condition but the sign near the crossing is hidden by vegetation. The crossing is a pedestrian only crossing and has narrow drop kerbs. On the Western side, the two crossings over the bus bay have no markings or signage. The path is widened and grass is growing between newer and older sections, there is vegetation within the rider envelope (L7 67). Root damage has been successfully ground down and signage is in good condition, but the sign near the bus bay is confusing as it is closer to the road than the path. There is a power pole in the path near Meeks Cres. There is a wedge of grass on the turn into Meeks Cres.	Remove or regularly trim grass and other vegetation. Upgrade the crossing of Grose Road to a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Install line marking and PS-3 & PS-4 x 2 on the crossings of the bus bay. Remove or regularly trim grass and other vegetation. Reposition R8-2 to a new sign post on the corner of the property boundary between the bus bay and No.26? Attach red & yellow reflective 'target boards' x 2 (fig 6.3 RTA NSW Bicycle Guidelines) around the power pole within the path. Remove grass wedge and replace with concrete.	High	Maintenance Refuge/Crossing $7000 Signage $180 Logos $250	SLA $7000 $360 $500
L7	7.4	Grose Road at Meeks Crescent	Install cyclist refuge	No	A refuge would be very helpful, as the intersection is very complicated due to the offset between Meeks and Douglas and the short sight distance for drivers heading South along Grose Rd.	Install pedestrian/cyclist refuge of sufficient width to house several bikes.	High	Refuge/Crossing	$7,000
L7	7.5	Grose Road at Meeks Crescent	Install holding rails both sides of road.	No	Not recommended in RTA NSW Bicycle Guidelines	Don't install holding rails.		No Action	
L7	7.6	Grose Road at Meeks Crescent	Install dropped kerbs, both sides of road	No	There are two driveways which could be used as the drop kerbs.	Not necessary if the driveways can be safely incorporated into the crossing.		See 7.4	
L7	7.7	Meeks Crescent, *from* Grose Road to 65m west	Construct 2.0m cyclist/pedestrian concrete path Southern side 65m (include signage, R8-2)	Yes	The path is widened and has significant grass intrusion along expansion joints and overgrowing the edges. There is some vegetation overhanging the path. There is poor line of sight at the bend in Meeks Crescent due to vegetation and the path is constricted by an informal driveway. The service driveway at the back of the school has a steep side which presents a hazard to cyclists, pedestrians and wheelchair users.	Remove or regularly trim grass and other vegetation. Ensure that the path is 2.0m width on the bend or widen to 2.0m	High	Maintenance	SLA

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L7	7.8	Meeks Crescent, *from* 65m west of Grose Road to Everton Road	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Southern side 280m (include signage, R8-2)	Yes	The path is widened and has significant grass intrusion along expansion joints and overgrowing the edges. The treated pine logs are too close to the path and are in poor condition. The drop to the car parking lane in Meeks Crescent is high and presents a hazard to cyclists, pedestrians and wheelchair users. This area is very congested during peaks and a wider path adjacent to this parking lane would be very helpful. The treatment at the intersection with Everton Rd is dangerous, as cyclists and other path users are forced out onto the road at a point where many vehicles are turning left. It would be safer to install a crossing over Everton Rd.	Remove or regularly trim grass and other vegetation. Remove the treated pine logs. Widen the path beyond the minimum 2.0m to a safer 3.0m along the parking bay. Install a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines) over Everton Rd. Install signage to new standard.	No Action	No Action - Preferred Route along GWHY	
L7	7.9	Meeks Crescent, *from* Everton Road to GWH	Repair road shoulder, Eastern side only 100m	No	The road shoulder needs to be repaired (L7 93,94,96,100)and even then the squeeze point at the left hand bend would be very hazardous for on-road cycling. A shared path on the Southern side of Meeks Cres to a less busy point, beyond the next bend (L7 97- where the Sirion is!), would solve this problem.	Repair the road shoulder and road surface on the corner. Construct a 2.0m shared path along Meeks Crescent on the Southern side to a point 20m beyond the bend and before the rock outcrops near No. 27. Direct cyclists onto the road along Meeks Crescent to the GWH and for cyclists heading towards Grose Rd, from the road onto the path. Install signage to new standard.		No Action - Preferred Route along GWHY	
L7	7.10.	Meeks Crescent, *from* Everton Road to GWH	Install signs, 500m [G8-14] (4)	No	There are no signs and the shoulders are quite poor, with large drop-offs and dangerous informal drainage pits, some without lids at all (L7 95,100 and beyond), these present a tripping hazard for pedestrians. Drivers need to be aware of the possibility of cyclists and pedestrians being on the road	Reconstruct all informal drainage pits.*Reduce the speed limit to 40km/h for the section of Meeks Crescent where pedestrians and cyclists will be on-road. *Install W6-9s and W6-214s.*Paint PS-2s and PS-4s on the edges of the road. *Install signage to new standard.		No Action - Preferred Route along GWHY	
L7	7.11	Meeks Crescent, *from* Russell Ave to GWH	Install "Bicycle Excepted" signs [R9-3]	Yes	The surface through this link is very poor, as this is an emergency vehicle access, it needs a good wide access path. There is currently a hazardous service cover with significant raised edges (L7 103-106) and the entry to the path has a drop-off, making cycling dangerous. Current signs are graffiti covered and the posts are leaning.	Construct a 3.0m service road to a standard able to carry a fully laden fire truck. Install R9-3 'bicycles excepted' signage. Install signage to new standard.		No Action - Preferred Route along GWHY	

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L7	7.12	GWH from Meeks Crescent to Faulconbridge *Railway* Station	RTA to provide 2.0m wide footpath on northern side, 350m	Yes	The RTA originally provided a 2.0m path from Grose Rd to the Parkes Crescent. The railing constructed on the curve near Meeks Crescent reduced the effective width of the path on the curve to 1.3m. After negotiation by the Blue Mountains Bicycle Group (BMBG), this was widened to 2.7m. Current poor maintenance has led to weed intrusion from the small green verge and through the expansion jointing, making the widening innefective and the path dangerous once more (L7 110-115). The service road provided for the ex-RTA land just up from the curve presents a hazard to path users, as the timber fence reduces sight lines for cyclists coming down the hill and for drivers exiting the service road. Clearly drivers will block the path as they wait for a gap to enter the highway. Similarly, the entrance to the service road presents issues of right of way, as do the entrance and exit of the service station near the traffic lights. Path users should clearly be given priority over vehicles crossing the path. The line of sight Eastwards for drivers leaving the service station, and for path users, is very poor	Request that RTA maintain vegetation in a weed free state and remove or regularly trim grass and other vegetation. Install STOP signs 2 at the exits of the service road and the service station. Remove or modify fencing to improve the line of sight at the exit of the service road and the exit of the service station. Install bicycle/pedestrian crossings (as in Fig 7.5 in NSW guidelines) at the entry motor vehicle entry points to the service road and the service station. Ensure that cracking does not become hazardous - grind to level, remove grass, replace concrete if necessary. Remove hazardous sign posts and reposition signs to other poles or walls, or if absolutely impossible, wrap bright reflective tape around the posts.Fill all drop-offs. Remove hazardous fence panel at the base of the steps of the bridge and install a section of exposed aggregate concrete path to improve flow.	Medium	Maintenance Signage $180	SLA $360
L7	7.13	GWH from Meeks Crescent to Faulconbridge *Railway* Station	Declare shared cycle/pedestrian path and install signs [R8-2] (10)	No signs.	There is no shared path signage.	*Install R8-2 x 4 signage & PS 3/PS4 x 4 logos.	Medium	Signage $180 Logos $250	$720 $2000
L7	7.14	Proposed pedestrian overbridge on GWH at station by RTA	Cyclist dismount signage' at proposed overbridge [fig 7.14]	No signs.	Visibility is good and for much of the time it would be safe for cyclists to ride over the bridge. At peaks, it would be safer for cyclists to walk their bikes.	*Install "Cyclists please walk your bike past pedestrians" signs.	Medium	Signage $180	$360
								TOTAL COST	**$26,380**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L7 a	**7*a*.14 - 7.17**	**Grose Road, Faulconbridge from Douglas St to Chapman Parade, then along Chapman to Lindsay Rd.**	**Mixed traffic with Bicycle Route Marker Signs on Grose Rd and Chapman Parade to Lindsay Rd, road surface repair on Chapman Parade, then shoulder sealing near Lindsay Rd.**	**Road repairs and shoulder sealing, also footpath construction in Chapman Parade. No signs.**	**Grose Rd - commuter traffic& school traffic. Less traffic on Chapman - weekend flow to Norman Lindsay Gallery. Grose Rd is good- K&G, parking lanes with white edge lines & 1.2m footpath. Chapman Parade is narrow with no K&G a 1.2m footpath on the Northern side and poor shoulders as far as Tamara Rd. The road is narrow with rolled kerbs as far as Bill Barnacle Ave, then has almost no K&G as far as Lindsay Rd.**	**Install a shared path along Grose Rd from a crossing at Meeks Crescent to another crossing over Grose after the roundabout. Widen the existing 1.2m path down Chapman Pde to Tamara Rd. Install warning signs and paint PS-2s & PS-4s on the road as far as Watkin Wombat Way (or extend 2.0m shared path), then install bicycle shoulder lanes to Lindsay Rd. Install signage to new standard.**			
L7a	**7*a*.14**	Grose Road, *from* Douglas *Street* to Chapman Parade	Signage 400m[G8-14] (4)	No signs.	Grose Road experiences high traffic volumes during peak times, related to commuter traffic and school traffic. Grose Rd is in good condition with K&G and parking lanes with white edge lines. There is a 1.2m footpath on the Eastern side. Pedestrian traffic on the footpath is heavy during peaks, so a shared path would still lead to conflict between users. A new shared path on the Western side may be the best option for improving safety in Grose Rd as the 1.2m footpath would be technically difficult to widen at one point near No. 33 (L7a 8) and there are several points at which line of sight is restricted (L7a 4,5,10,11,14).	Widen 1.2m path to 2m x 400m to Chapman Parade. Install R8-2 x 2 and PS3/4 x 2 logos	High	Widen path .8@$65sq/m Signage $180 Logos $250	$26,000 $360 $500
L7a	**7.15**	Chapman Parade from Grose Road to Highview Avenue	Repair road surface, 500m	Major works done to install roundabout, minor repairs to seal edges.	Chapman Parade is narrow with no formal K&G. A 1.2m footpath has been constructed on the Northern side just past Highview to Tamara Rd. There are issues with the crossing of the High School driveway where a shrub reduces visibility and path users should be given priority (L7a 20,21), drop-offs, e.g. (L7a 23), a narrow section past some trees (L7a 24), the existence of a hazardous unmarked support wire for a power pole (L7a 28) and a difficult section just near Tamara Rd (L7a 29-31).	Widen the path 500m and drop kerbs x 2 to minimum 2.0m and install R8-2 x 2 & PS3/4 x 2 declare as a shared path. Remove or regularly trim vegetation. Ensure priority for path users across the school driveway by installing a Give Way sign for drivers entering and a Stop sign on exit. Attach red & yellow reflective 'target boards' x 4 (Fig 6.3 RTA NSW Bicycle Guidelines) around power poles and support wires within the path or cycling envelope.	Medium	Widen path .8@$65sq/m Signage $180 Logos $250 Maintenance	$32,500 $1440 $500 SLA
L7a	**7.16**	Chapman Parade, at Lindsay Road	Seal road shoulders, both sides for 300m	Major works done to bypass Norman Lindsay Gallery entrance.	Chapman Pde is wide between Watkin Wombat Way and Lindsay Rd with no K&G.	Install 2m path 1000m from Tamara Road to Norman Lindsay Cr. Install R8-2 x 4 and PS3/4 x 4.	Medium	Shared path @ $160.000km Signage $180 Logos $250	$160,000 $720 $2000

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L7a	7.17	Chapman Parade from Grose Road to Lindsay Road	Signage 1500m[G8-14] (10)	No signs.	Traffic on Chapman Pde diminishes with distance. Tom Hunter Park generates a lot of road traffic, especially on weekends. Less traffic beyond Lantana Drive, however weekends see an increased flow to the Norman Lindsay Gallery. Chapman Parade is narrow with no K&G a 1.2m footpath on the Northern side and poor shoulders as far as Tamara Rd. The road is narrow with rolled kerbs as far as Bill Barnacle Ave, then has almost no K&G as far as Lindsay Rd.	See 7.16	Medium	See 7.16	
								TOTAL COST	**$242,040**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L8	**8.1-8.14**	**Hazelbrook from the existing pedestrian road/rail overbridge near the Public School, along GWH, down Beechmount Ave to Hazelbrook Pde, Falcon St, Albert St, Glendarrah St, Oaklands Rd to Hall Parade as far as Redgum Ave.**	**Widen the path along the GWH and Beechmount Ave, mixed traffic with Bicycle Route Marker Signs to Glendarrah, construct a connecting contra-flow in Glendarrah, then mixed traffic with Bicycle Route Marker Signs to Oaklands Rd. Widen the path along Oaklands Rd to Hall Pde, then mixed traffic with Bicycle Route Marker Signs at Hall Pde as far as Redgum Ave. Widen the path on Oaklands from Glendarrah to GWH, then widen the path along GWH to Stuart Place.**	**No work completed**	**The section along GWH is a 1.2m path in poor condition, but will shortly be replaced with a 2.0- 2.5m shared path when the RTA works are completed. Beechmount is a steep 1.2m path, Hazelbrook Pde has a 1.2m path. On road is proposed for Hazelbrook, Falcon, Albert and most of Glendarrah, but is not safe for school kids. Oaklands has a 1.2m path with bad visibility in some spots. On road is proposed for Hall Parade, which has a 1.2m path currently used by riders. The path along the GWH is 1.2m and has some conflict points. There is almost no bicycle signage on the route.**	**Negotiate for the best outcome for cyclists with RTA. Install a shared path from the new RTA path down Beechmount, Hazelbrook to Falcon St then either shared path or shoulder lanes to Albert St, then construct shared path to Glendarrah and along the Northern side to Oaklands. Widen the path to shared path on Oaklands and Hall Pde as far as Redgum Ave. Install wide drop kerbs and some pedestrian/cyclist crossings. Install bicycle network route directional signage. Install signage to new standard.**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L8	8.1	GWH Hazelbrook, *from* the Pedestrian overbridge near Clearview Ave to Beechmount Ave.	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, northern side 280m (include signage, R8-2)	No work completed	This location is part of the current road works being carried out by the RTA between Hazelbrook and Woodford. Current plans show the provision of a shared off road path of minimum 2.0m width on the Northern side of the Highway along the whole of the worksite from Ferguson Ave in the West to Station St Woodford. A new pedestrian/cycle bridge will be constructed at Hazelbrook Railway Station and a new underpass under the railway at Oaklands Rd. At present, the 1.2m path is in very poor condition, covered with gravel with dangerous drop-offs and has a tree overhanging the path.	Negotiate with RTA to ensure cycle access through the underpass and safe passage through all intersections, as well as the use of appropriate Bicycle/pedestrian logos (PS3 & PS4) on the shared path and PS-2s on the 2.0m shoulder which is to be provided on each side of the highway. Request the use of Vibraline to separate the on road bicycle lane from the motor vehicle lanes and the continuation of the bicycle lane through all left turns off and onto the highway, as per RTA NSW Bicycle Guidelines. Install signage to new standard.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	
L8	8.2	Beechmount Ave *from* the GWH to Hazelbrook Parade.	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, western side 100m (include signage, R8-2)	No work completed	1.2m path is in good condition, has evidence of thick grass growing over the edges near Hazelbrook Parade and has a tree overhanging the path.	Widen the path and drop kerbs to minimum 2.0m and declare as a shared path. Remove or regularly trim vegetation. Fill all drop-offs. Install signage to new standard.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	
L8	8.3	Beechmount Ave / Hazelbrook Parade intersection.	Sign [G8-14b] with left arrow (1), right arrow (1)	No signs.	RTA has done major works to improve safety at Hazelbrook Primary School including connecting the two halves of Hazelbrook Parade. A 2.0m path has been constructed past the Northern edge of the school and a new bus facility created. There is a new 2.0m path on the Southern side of Hazelbrook Parade from the MOOSH driveway, heading Eastwards, however, at the time of the audit in March 2006, there was no evidence of provision of any cycling specific facilities. (See Links & Extensions section)	Ensure a safe connection to the L8 Public School Link. Install signage to new standard.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	
L8	8.4	Hazelbrook Parade *from Beechmount Ave to* Falcon St.	Sign [G8-14] (2) midblock and sign [G8-14b] with left arrow (1), right arrow (1) at Falcon St. (not Lagoon Drive!)	No signs.	In this section, Hazelbrook Parade is narrow, has a bend with poor visibility and is too steep for young riders to ride up. It is not suitable for on-road use by primary school age children. There is a 1.2m path in good condition on the Northern side of the road although line of sight issues exist at the lower corner near Falcon St. When the crossing is provided, if a refuge is used, it may be necessary to seal the Northern shoulder of Falcon St from Talbot Rd to Liggins Rd (L8 13)	*Widen the path 400 m and kerbs x 2 to minimum 2.0m. Install R8-2 x 2 and PS3/4 x 2 *Declare as a shared path.	Low	Widen path .8@$65sq/m Signage $180 Logos $250	$26,000 $360 $500

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L8	8.5	Falcon St *from* Hazelbrook Parade to Albert Rd	Sign [G8-14] (2) midblock and sign [G8-14b] with left arrow (1), right arrow (1) at Falcon St./ Albert Rd. intersection.	No signs.	Falcon St is a level wide street with adequate width for cycle lanes but no facility for pedestrians.	Install 500m 2.0m shared path. R8-2 x 2 & PS3/4 logos x 2.	Low	Shared path @ $160.000km Signage $180 Logos $250	$80,000 $360 $500
L8	8.6	Albert Rd / Winbourne Rd intersection - Path to go straight across Winbourne into the One-way section of Glendarrah St.	Sign [G8-14b] with straight ahead arrows (2).	No signs.	The 1996 plan had no proposals for Albert St, only Falcon St as far as Albert, and the intersection of Albert with Windbourne, although the crossing of Windbourne was not mentioned. Albert St. is narrow, winding and has no footpath. It is not suitable for on-road use by primary school age children. Photo L8 25 shows the view from the intersection of Windbourne Rd looking in the direction of Falcon St. It shows tight corners with poor line of sight and a densely planted nature strip.	Construct 300m path on the Eastern verge to minimum 2.0m. R8-2 x 2. PS3/4 x 2 and declare as a shared path Remove or regularly trim vegetation.	Low	Shared path @ $160.000km Signage $180 Logos $250	$48,000 $360 $500
L8	8.7	The One-way section of Glendarrah St from Winbourne to Short St.	Seal shoulder on Southern side and mark contraflow bike lane westbound, 120m.	No work completed	The entrance to Glendarrah St is tight and steep for young riders. The shoulder is heavily vegetated and would require grading prior to sealing to construct the cycle lane. The existing No Entry sign has graffiti on it. It would be simpler to abandon the contra-flow idea, which would only benefit cyclists going in one direction, and construct a shared path, which would benefit cyclists and pedestrians going both directions.	Construct 500m path minium 2m from Winbourne to Oaklands Road R8-2 x 2 & PS3/4 logos	Low	Shared path @ $160.000km Signage $180 Logos $250	$80,000 $360 $500
L8	8.8	*The one-way section of* Glendarrah St *from* Winbourne to Short St.	Signage, Bike lane R7-14 (4) & R7-4 (2), No Entry - Bicycles Excepted R9-3 (1)	No signs.	If the cycle lane were to be a contra-flow lane, signage would need to be provided to warn drivers travelling East in Glendarrah St about encountering cyclists approaching in an otherwise one way street, as well as cyclists travelling Eastbound. Motorists in Short St would also need to be warned about cyclists coming out of the contraflow cycle lane.	Install signage to new standard.		SEE 8.7	
L8	8.9	Glendarrah St *from* Short St to Oaklands Road.	Sign [G8-14] (2) midblock and sign [G8-14b] with left arrow (1), right arrow (1) at Oaklands Road. (not Lagoon Drive!)	No signs.	Glendarrah between Short St and Rosedale Ave is narrow, has no formal guttering and rough unsealed shoulders and has a crest with poor visibility and no footpath. It is not safe for on-road use by young cyclists. The Southern nature strip has difficult terrain, the Northern nature strip would be preferred for the construction of a shared path. Between Rosedale and Oaklands Rd, Glendarrah has good verges and kerb& gutters and may be suitable for on-road cycle lanes, however there is still no footpath.	Construct 2.0m min path and drop kerbs, Northern side, declare shared path. Install signage to new standard.		SEE 8.7	

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L8	8.10.	Oaklands Road *from* Glendarrah St to Hall Parade.	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Eastern side 1000m (include signage, R8-2)	No work completed, no signs.	Oaklands road from Glendarrah St to Birdwood Pde is a good 1.2m path. Opposite Lester Ave there is a very tight, steep bend with poor visibility (Photos 39,40(looking back), there are other bends with poor sight lines as well. The path experiences several points where it will be difficult to widen to 2.0m.	Widen path 1000m to minium 2.0m Install R8-2 x 4 . PS3/4 x 4 declare shared path. *Remove or regularly trim vegetation.	Low	Widen path .8@$65sq/m Signage $180 Logos $250	$65,000 $720 $1000
L8	8.11	Hall Parade from Oaklands Road to Redgum Avenue.	Sign [G8-14] (4)	No signs.	Hall Parade is narrow, winding and steep and not suitable for on-road use by primary school age children. It does not have constructed shoulders and kerb & guttering. There is a 1.2m path in good condition on the Northern side of the road. Line of sight issues exist near Blue Hills Rd where the nature strip is heavily planted.	*Widen the path 500x.8m & drop kerbs to minimum 2.0m, R8-2 x 2 & PS3/4 x 2 declare shared path. *Remove or regularly trim vegetation.	Low	Widen path.8@$65sq/m Signage $180 Logos $250	$32,500 $360 $500
L8	8.12	Oaklands Road *from* Glendarrah St to GWH.	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Eastern side 100m (include signage, R8-2)	No work completed	1.2m path is in good condition, has evidence of grass growing over the edges and has a shrub overhanging the path. The bitumen path closer to the GWH is poor and has holes in it. There is also a sign stating that cyclists and skateboarders must dismount. This is not in agreement with current standards.	As the construction of the new GWH and intersection will probably affect the existing path area, discuss with RTA. *Widen the path & drop kerbs to minimum 2.0m, Eastern side, declare shared path. Remove or regularly trim vegetation. Install signage to new standard.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	
L8	8.13	GWH *from* Oaklands Rd, Eastwards to Stuart Place *(main shopping area)*	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Northern side 130m (include signage, R8-2)	No work completed	Vehicles entering the Service Station near Oaklands Road have very poor line of sight of cyclists and pedestrians travelling Eastwards on the existing shared path (see Photo L8 67). The 1.2m path is in good condition and widens out closer to the shopping centre. The path East of the main carpark is variable in it's surface material. RTA states that a 2.0m min. shared path will be constructed all along this section	Discuss with RTA, the provision of the proposed shared path to minimum 2.0m on the Northern side of the new GWH.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	
L8	8.14	Oaklands Rd *from* Glendarrah St to GWH *AND* GWH *from* Oaklands Rd, Eastwards to the pedestrian crossing *over the* GWH *near Winbourne Ave.*	Sign [G8-14] (2) midblock, with left arrow (1), right arrow (1) and sign [G8-14b] (2) midblock with left arrow (1), right arrow (1)	No signs.	There are few bicycle related signs and no warning to motorists who are crossing footpaths. Cyclists and pedestrians are at risk and should be given priority at these points.	Ensure cyclist/pedestrian right of way across entry/exits of Service Station. Install bicycle/pedestrian crossing and warning signs for motorists. Install signage to new standard.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
								TOTAL COST	$337,520
Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority		
L9	**9.1-9.14**	**Lawson, Honour Ave from Livingstone St to GWH underpass, through to Loftus St and West to Engadine St, then off-road along Lurnea St to Hay St, along Hay to Railway Pde and on to Bullaburra Railway Station.**	**Mixed traffic with Bicycle Route Marker Signs from Livingstone to service road, then widen path to Underpass, 'dismount' signage, then construct shared path along Loftus, install refuge crossing at Engadine, construct shared path to Bullaburra then install refuge crossing to Railway Station.**	**Some work completed.**	**Honour Ave from Livingstone to the service road has good visibility but poor shoulders. Repairing shoulders and installing bicycle shoulder lanes is recommended. There is a proposed link East to Hazelbrook. The service road would make a good two way cycle path/shared path. The footpath from this to the Underpass needs widening to become a shared path. The tunnel needs a barrier removed and bollards installed. Loftus St has a path which needs widening to become a shared path. An off-road shared path is needed along Engadine/Lurnea to Hay and on to Railway Parade. Much of this distance already has a footpath. A Pedestrian/cyclist crossing is needed at the Railway Station.**	**Provide smooth sealed shoulders & bicycle shoulder lanes from Livingstone to service road opposite Orient St., then directional arrows on the service road, connecting with a shared path to the Underpass. Widen the path to provide a shared path along Loftus to Engadine, install a crossing, then continue along Engadine, Lurnea, Hay St and Railway Pde to Bullaburra Railway Station. Install a pedestrian/cyclist crossing and bike parking facilities. Install signage to new standard.**			
L9	**9.1**	Honour Avenue *from* Livingstone Street to Waratah Street	Sign 650m[G8-14] (6)	No signs.	There is currently no provision or signage for cyclists. East of Livingstone St is a proposed link to Hazelbrook (see Links Section).The road has no centre line and there is good visibility but the edges are informal and there are no smooth sealed shoulders and no kerb & guttering. Smooth sealed shoulders and bicycle shoulder lanes should be provided to ensure rider safety.Opposite Orient St there is a service road to the left (L9 12 -14) which is a sealed bitumen one lane road in good condition (there is a pot hole at the entry point L9 12, and there is a deeply eroding gutter L9 15,16). This could be used as a two way bike lane (with occasional car traffic) to connect the shared path to the shops with the shoulder lanes along Honour Ave. or access to the GWH along Orient St (L9 10 - see Links section) It would be necessary to install give way signs at its exit onto Honour Ave. Beyond Orient St, Honour Avenue narrows and the line of sight is obstructed (L9 17,18), so the service road is a good option for the bike route.	Repair edges where required to provide smooth sealed shoulders on both sides. Install 600 x 2 bicycle shoulder lanes and PS-2 x 4 logos on both sides from Livingstone St to service road opposite Orient St. Install directional arrows, BA-3L at entry from Honour Ave, BA-1 along service road (2 each way), BA-3L at exit to shared path BA-3R at entry from shared path (on Path), BA-4R at exit to Honour Ave and Orient St. Install PS 3s and PS-4s on each side of the service road near the entry points. Repair pothole at entry from Honour Ave. Repair eroding gutter.	Low	Work to be undertaken at same time of GWHY Upgrade Bicycle Lane $5000km Signage $180 Logos $250 Maintenance	$6000 $1800 $2000 SLA

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L9	9.2	Honour Avenue *from* Service Road to Bellevue Street	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Eastern side *(sic - Southern side!)* 60m (include signage, R8-2)	No work completed.	There is currently no provision or signage for cyclists. This path should be widened as planned.	Widen the path & drop kerbs to minimum 2.0m, declare shared path as planned. Install signage to new standard.	High	Works will be part of GWHY Upgrade. Due for Completion 2008/09.	
L9	9.3	Honour Avenue *from* Bellevue Street to GWH Underpass	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Eastern side *(sic - Southern side!)* 120m (include signage, R8-2)	No work completed.	There is currently no provision or signage for cyclists. This path starts off at 1.2m then widens to cover the full width from kerb to fence line (L9 21,22), the narrow part should be widened as planned.	Widen the path & drop kerbs to minimum 2.0m, declare shared path as planned. Install signage to new standard.	High	Works will be part of GWHY Upgrade. Due for Completion 2008/09.	
L9	9.4	GWH Underpass at Lawson *Railway* Station	"Cyclist Dismount signage" at each end of pedestrian underpass [Fig 7.14]	No signs.	There is currently no provision or signage for cyclists. There is a steel barrier across one half of the tunnel which serves no useful purpose, except to stop cars from driving any further through the tunnel. It presents a hazard to all tunnel users as it is encountered before one's eyes, and photochromatic glasses, have adjusted to the darkness. This barrier should be removed and replaced with bollards at the entry to the tunnel (L9 24-26). 'Cyclists Dismount' is sign no longer recommended but cycling through the tunnel is hazardous to all users as line of sight is very poor. Signage to current standards is required at all four entrances to the tunnel.	Remove existing steel barrier. *Install two bollards at the Southern entry to the tunnel. Install R6-10-3 signs plus a "Please Walk Your Bike" sign at all entrances to the tunnel. Install signage to new standard.	High	Works will be part of GWHY Upgrade. Due for Completion 2008/09.	

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L9	9.5	Loftus Street *from* Lawson *Railway* Station to Engadine Street.	Construct 2.0m cyclist/pedestrian concrete path Southern side 650m (include signage, R8-2)	No work completed.	There is currently no provision or signage for cyclists. There is a footpath for the whole length of this section. It will not be easy to widen this to 2.0m as the space between the bushy bank and the road is limited and there is a significant drop of up to 0.5m to the road (L9 39-46). This drop is not such a problem for a pedestrian but very hazardous for an innexperienced cyclist. Ity is vital, particularly in this situation, that all dropoffs on path edges are filled. It will be necessary to instal a railing where there is a dropoff greater than 200mm, to prevent running off onto the road. This means the path must be 2.5m, as a standoff of 0.5m is needed (See Fig 8.8 RTA NSW Guidelines). There are also sections with poor line of sight made worse by overhanging vegetation and two telegraph poles adjacent to the path (opposite Werona St) which may impinge on the width of the path (as they also require a 0.5m standoff!). These poles have affected the location of the existing footpath, perhaps Integral could be asked to reposition these poles.	Install on road route Widen the path & drop kerbs to minimum 2.0m clear of any obstructions or 2.5m min where the railing is installed. Fill all drop-offs. Install a cycle safe railing, declare shared path. Remove or regularly trim vegetation. Request that Integral reposition the two poles adjacent to the path. If this is not possible, attach red & yellow reflective 'target boards' (Fig 6.3 RTA NSW Bicycle Guidelines) around power poles within the path or cycling envelope. Install signage to new standard.	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	
L9	9.6	Loftus Street *at* Engadine Street.	Install cyclist refuge	No work completed.	There is currently no provision or signage for cyclists. The proposed location of the crossing at this intersection is hazardous (L9 49-53). Drivers travelling on the main route around Lurnea, into Engadine, then left onto the bitumen section of Loftus will be checking to their right while maintaining a relatively high speed. They would then look ahead to find cyclists crossing within a few metres of the crossing (L9 53). Moving the crossing 50m East along Loftus would overcome this issue.	Install refuge 50 m East of the intersection of Engadine and Loftus. Install signage to new standard.	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	
L9	9.7	Loftus Street *at* Engadine Street.	Install holding rails both sides of road.	No work completed.	Not recommended in RTA NSW Bicycle Guidelines.	Don't install holding rails.	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L9	9.8	Loftus Street *at* Engadine Street.	Install dropped kerbs, both sides of road.	No work completed.	Dropped kerbs may not be necessary as there are no formal guttters or kerbs.	Don't install dropped kerbs - check drainage and sediment build up- if OK, lay path level with road as in L 12 (88).	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	
L9	9.9	Lurnea Street *from* Engadine Street to Hay Street.	Construct 2.0m cyclist/pedestrian concrete path Eastern side 380m (include signage, R8-2)	No work completed.	There is a very pleasant ride along a flat dirt track to the east of Lurnea St, with timber railings (needing some repairs) crossing the creek (L9 52,54,56- 59, 63). Laying a concrete shared path will make this an all-weather track, as it would currently get very muddy in wet weather. The track now emerges onto the road before the intersection of Lurnea and Hay Sts. The new path will now start 50m from the corner in Loftus St, run beside Engadine St for a while, then run parallel to Lurnea St for much of its length, then run through the bush to the dead-end section of Hay St, cross this small lane and climb up onto the path reserve on the Northern side (L9 63 - 69).	Construct 2.0m min path and drop kerbs, declare shared path. *Make minor repairs to the railing. *Install signage to new standard.	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	
L9	9.10.	Hay Street *from* Lurnea Street to Railway Parade	Construct 2.0m cyclist/pedestrian concrete path Northern side 800m (include signage, R8-2)	No work completed.	This section now has a 1.2m path with steps (between Sayers St and Stephen St - L9 76-80). These are very hazardous as they are not immediately visible from the West (see skid mark L9 79). It should be possible to construct ramps of a lower grade on either side of the steps and install warning signs and paint directional arrows on the path. The remainder of the path as far as Railway Pde should be easy to widen. The road crossings are at the same level as the road, so no dropped kerbs are needed.	Construct 2.0m min path, declare shared path. Install signage to new standard.	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	
L9	9.11	Railway Parade *from* Hay Street to Bullaburra *Railway* Station	Construct 2.0m cyclist/pedestrian concrete path Northern side 250m (include signage, R8-2)	No work completed.	This section has a restricted width and a railing on the path, until the path disappears (L9 90-97). The need for a railing on the Northern side means that the path must be 2.5m min. There are also issues to do with parking and fitting the path between the road and the service road.	Widen the path & drop kerbs to minimum 2.0m clear of any obstructions or 2.5m min where the railing is installed. Fill all drop-offs. *Install a cycle safe railing, declare shared path. Resolve parking issues and space problems. Install signage to new standard.	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L9	9.12	Railway Parade *at* Bullaburra *Railway* Station	Install cyclist refuge	No work completed.	Pedestrians need a formal crossing here too. It would be preferable to install a bicycle/pedestrian crossing (as in Fig 7.5 in RTA NSW Bicycle Guidelines). The bicycle parking facilities could do with a little upgrading! (L9 102). This is the endpoint of this route but a logical connection to Wentworth falls is proposed (See Links section).	Install a bicycle/pedestrian crossing (as in Fig 7.5 in RTA NSW Bicycle Guidelines). Organise bicycle lockers through Dept of Transport. Install bike parking rails. Install sign G7-6-1 to mark bike parking installations.	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	Dept Transport $180
L9	9.13	Railway Parade *at* Bullaburra *Railway* Station	Install holding rails both sides of road.	No work completed.	Not recommended in RTA NSW Bicycle Guidelines.	Don't install holding rails.	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	
L9	9.14	Railway Parade *at* Bullaburra *Railway* Station	Install dropped kerbs, both sides of road.	No work completed.	Dropped kerbs may not be necessary as there are no formal guttters or kerbs.	Don't install dropped kerbs - check drainage and sediment build up- if OK, lay path level with road as in L 12 (88).	Medium	Further Investigation to occur as part of development of Bullaburra West GWHY Upgrade 07/08	
								TOTAL COST	**$9,980**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L10	**10.1-10.6**	**Wentworth Falls, from the Southern end of Falls Rd to GWH then split, Westwards to the TAFE, or Eastwards to Station St, along to Blaxland Rd and around to the West to Sinclair Cres.**	**Mixed traffic with Bicycle Route Marker Signs from Wilson St to GWH, 'dismount' signage at traffic signals, widen path Westwards to TAFE, widen/ declare path Eastwards to Station St, mixed traffic with Bicycle Route Marker Signs and cyclist alert signage through shops to Sinclair Cres, then mixed traffic with Bicycle Route Marker Signs along Blaxland Rd around to Sinclair Cres West.**	**RTA has completed some work**	**Falls Rd to Anglican Church variable width & shoulder with some eroded edges. Church to GWH, ample room for bicycle shoulder lanes. Footpath to Parkes St.- Widen? From light to Station St is wide but poles & shop crowding a problem. Traffic lights need Bicycle lanterns, the path westbound ids great but poles in the path are an issue. Bicycle lanterns at Mitchell St lights. Shopping centre gets crowded. No bike route facilities now, best to keep bikes off path - road wide enough for lanes. The bridge is narrow, then Blaxland Rd has variable width & shoulder with some eroded edges and a path to Toulon Ave.**	**Repair edges, install bicycle shoulder lanes and PS-2 logos on Falls Rd. Widen the path on Falls Rd to shared path. RTA to remove post in path, maintenance issues at shops, Install R6-10-3 signs plus "Please Walk Your Bike" signs Install bicycle network route directional signage. Install signage to new standard. Install bicycle shoulder lanes and PS-2 logos in Station St. Repair edges, install bicycle shoulder lanes and PS-2 logos on Blaxland Rd. Widen the path on Blaxland Rd to shared path**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L10	10.1	Falls Road from Wilson Street to GWH	Sign 1850m[G8-14] (14)	No signs.	Falls Rd from Wilson St to the Anglican Church is of variable width and shoulder condition and has eroded edges in places. The narrow sections could be given smooth sealed shoulders so that bicycle shoulder lanes can be installed. From the Church to the GWH, there is ample room to continue the bicycle shoulder lanes. There is a footpath at least as far as Parkes St. This could be widened to provide cycle access for young kids to get to school.	Repair the edges to provide smooth sealed shoulders on both sides where required. Install 1850 x 2 bicycle shoulder lanes and PS-2 x 10 logos. Widen the path & drop kerbs x 10 to minimum 2.0m, R8-2 x 10.	Medium	Maintenance Bicycle lane @$5000km Signage $180 Logo $250	SLA $18,500 $1800 $2500
L10	10.2	GWH from Falls Road to Station Street	Declare shared pedestrian/cyclist path, 300m, northern side some widening required) (include signage, R8-2)	Work completed.	The RTA has widened the path next to the works done outside the School of Arts (L10 33-37) and BMCC appears to have installed holding rails. There is a road sign with a steel post right in the middle of the path. This has to be removed! There is a nearby section with gravel on the path. The drop kerbs are narrow but holding rails and signs are in good condition. There is a service road, Plantation Ave, along the back of the shops on the Western side. This could be utilized for bicycle through traffic (see links & Bypasses section). The path outside the pizza shop is quite busy with seating and signs.	Request that RTA remove the steel post. Investigate the reason for the gravel deposits and remedy the problem, sweep the path clean. Widen the drop kerbs x 2 to minimum 2.0m at the gutter. Install direction G9-60 x 2 and R6-10-3vx 2. Install PS3/4 x 2	Medium	Maintenance - RTA Signage $180 Logos $250	RTA $720 $500
L10	10.3	GWH at Falls Road traffic signals	"Cyclist Dismount signage" at pedestrian crossing [Fig 7.14]	No signs.	As this crossing forms part of the cycleway, it needs to have bicycle lanterns.	Request that RTA provide bicycle lanterns on the traffic lights. *Install signage to new standard.	Medium	Bicycle lantern	RTA
L10	10.4	GWH from Falls Road to TAFE Entrance	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Eastern (sic- Northern?) side 500m (include signage, R8-2)	No work completed.	The RTA has constructed a new wide shared path on the Northern side. It is excellent but for the fact that the sign posts are placed well within the cycle path area. The signs need to be removed or, if 3.0m exists between the post and the wall, a white edge line could be painted to separate the posts from the bike path. All drop kerbs are wide and the traffic lights at Mitchell St have bicycle lanterns. The RTA path continues westwards on the Southern side - see links & extensions section.	Resolve the issues of the signposts in the path.	Medium	Signage	RTA

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L10	10.5	Station Street from GWH to Sinclair Crescent	Sign 500m[G8-14] (6) Bicycle alert signage [fig 7.15] at pedestrian crossing (2) and Rail overbridge (2)	No signs.	There is currently no provision or signage for cyclists. The shopping centre can become crowded at peaks and riding on the path is not safe for all path users. Most cyclists will walk through the shopping centre or ride on-road, perhaps signage could be installed to encourage thoughtful behaviour. The main street is wide enough to be able to install bicycle lanes adjacent to the parking space. The bridge is narrow, extra signage at this squeeze point and the use of PS-2 logos on the road should improve safety outcomes.	Install R6-10-3 x 2 signs at all entrances to the shopping centre. Install bicycle shoulder lanes and PS-2 logos on both sides. In narrow sections, install white lane edge line and PS-2/PS 3 logos on the smooth sealed shoulder and install W6-214s.	Medium	Further Investigation	
L10	10.6	Blaxland Road from Sinclair Crescent East to Sinclair Crescent West	Sign 3700m[G8-14] (24)	No signs.	Blaxland Road has variable width and shoulder condition and has eroded edges in places. The narrow sections could be given smooth sealed shoulders so that bicycle shoulder lanes can be installed. There is a footpath as far as Toulon Ave. This could be widened to provide cycle access for young kids to get to school. There is a proposed extension along Waratah Rd, see Links Section.	Install W6-214 x 10 & PS2 x 10 *Repair the edges to provide smooth sealed shoulders on both sides where required. Install bicycle lane 3700 x 2.	Medium	Maintenance Signage $180 Bicycle Lane @$5000km Logos $250	SLA $1800 $37,000 $500
								TOTAL COST	**$63,020**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L11	**11.1**	**Wentworth Falls, Sinclair Crescent from Blaxland Road Westwards to GWH near Hole in the Wall**	**Mixed traffic with Bicycle Route Marker Signs**	**No signs.**	**Edges in poor condition for most of Eastbound and all of Westbound. A footpath exists from the Lake to Blaxland Rd East.**	**Widen road, repair edges, realign centre marking, install bicycle shoulder lanes & PS2s for full length. Widen footpath from Lake to Blaxland Rd East with crossing from Northern side to Southern side. Install bicycle network route directional signage. Install signage to new standard.**			

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L11	11.1	Sinclair Crescent from Blaxland Road to GWH	Sign 2200m[G8-14] (16)	No signs.	The intersection with the GWH is good Eastbound but the left turn out of Sinclair has significant drop-offs and potholes with puddles when wet (L11 1-9). Sinclair Crescent has variable shoulders, there are some good sections Eastbound with smooth shoulders and formal or informal rolled kerbs (L11 14, 22-25), but for most of its length, the shoulder is hazardous for cyclists. Westbound, there is no smooth shoulder at all. There is no provision for cyclists and no signage. There is a footpath from the Lake, along the Northern side of Sinclair Crescent which could be widened to form a shared path. There is also a short path on the Southern side from Blaxland Rd to the creek crossing, which could be widened.(L11 33,34,36).	Widen the road to provide continuous smooth sealed shoulders on the Northern side and re-align the centre markings to provide even lanes. Repair edge Westbound for the entire length, including at GWH. Install bicycle shoulder lanes 2200m x2. W6-214 x 6 and PS-2 logos x 6 on both sides from GWH to Blaxland Rd East. Widen the path 250m x .8 & kerbs x 2 to minimum 2.0m, Northern side from the Lake to the East side of the creek crossing. Install bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines). Widen the path 500m x .8 & kerb x 2 to minimum 2.0m, Southern side from the crossing to Blaxland Rd. R8-2 x 2 & PS3/4 x 2.	Medium	Maintenance Bicycle lane @$5000km Signage $180 Logo $250	SLA $22,000 $1440 $500
								TOTAL COST	**$23,940**

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority		
L12	**12.1-12.6**	**South Leura from Watkins St into Fitzroy St, Gladstone Rd, Craigend St into Woodford Rd, Lachlan Ave, then Victoria St to Railway Parade then split and go East via Scott Ave to GWH or West to The Mall.**	**Mixed traffic with Bicycle Route Marker Signs from Watkins St into Fitzroy St, Gladstone Rd (realign centre line), Craigend St into Woodford Rd, Lachlan Ave, then Victoria St to Railway Parade then split and go East via Scott Ave to GWH or West to The Mall.**	**Some work completed near Korowal.**	**Watkins Rd and Fitzroy St are sealed and suitable for bicycle lanes adjacent to parking space. Gladstone road is wide and could be realigned to give space for bicycle lanes. Craigend St, Woodford Rd, Lachlan Ave to Victoria St to Railway Pde requires significant shoulder repair and sealing to enable bicycle shoulder lanes. Railway Pde and Scott Ave require on road shoulder lanes to provide a recreational/regional route link, and the continuation of the shared path which extends from Korowal to Russell Rd, to provide connection to Leura Public School via the overbridge.**	**Repair /widen shoulders and install bicycle shoulder lanes and PS-2 logos on both sides, from Watkins Rd to Railway Pde, and along Railway Pde / Scott St from The Mall to GWH. Widen 1.2m footpath to shared path from The Mall to Russell Rd and from Korowal to GWH Install bicycle network route directional signage. Improve safety at left hand corners by using small off-road paths. Install signage to new standard.**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L12	12.1	Watkins Road *from Sublime Point Rd to* Fitzroy Street *and along to Gladstone Road*	Cyclist Alert signage on bends [Fig 7.15] (4), Sign route 650m [G8-14] (4)	No signs.	Watkins Rd is fully sealed with formal kerb & guttering. It is quite wide and is well suited to bicycle lanes adjacent to parking space. There are two tight right angle bends (L12 6-10) - need to ensure cars don't cut into bicycle lane going around the corners - a suggested treatment is shown in fig 4-20, Austroads 14. Fitzroy St is also well sealed, has K&G, is wider than Watkins Rd and is even more suitable for bicycle lanes adjacent to parking spaces. There is currently no provision or signage for cyclists in either street.	Install bicycle shoulder lanes 650 x 2. W6-214 x 2. PS-2 x s logos, allowing space for car parking - see Photo 1.2 RTA NSW Guidelines (or Fig 4-6 Austroads 14).	Low	Bicycle lane @$5000km Signage $180 Logos $250	$6,500 $360 $500
L12	12.2	Gladstone Road *from* Fitzroy St to Craigend Street	Realign centre line to provide similar lane widths in both directions,380m	No work completed.	Gladstone Rd has an informal Western edge and k &g on the Eastern side. The Eastern side is currently used for parking (L12 24,27), so realigning the centre line to evenly share the space in each direction would cause problems. It may be better to realign the centre line but divide the Western side into bicycle lane and traffic lane, and divide the Eastern side, between Northcote Rd and Fitzroy St into a traffic lane, a bicycle lane and a parking lane (See Austroads 14 - Section 4.4.2). Heading South, the turn from Gladstone into Fitzroy has two hazardous grates and is a tight turn (L12 18,19) - need to ensure cars don't cut into bicycle lane going around the corners. Heading North towards the roundabout, the road narrows and becomes more hazardous for cyclists. It is important to provide smooth sealed shoulders and continue the bicycle shoulder lanes.	Install bicycle shoulder lanes 380 x 2. W6-214 x 2. PS-2 x 2 logos, allowing space for car parking - see Photo 1.2 RTA NSW Guidelines (or Fig 4-6 Austroads 14).	Low	Bicycle lane @$5000km Signage $180 Logos $250	$3,800 $360 $500
L12	12.3	Gladstone Road *from* Fitzroy St to Craigend Street	Sign 380m[G8-14] (2)	No signs.	There is currently no provision or signage for cyclists. It is important to improve cycle safety at the roundabout by providing bicycle markings (See Fig 7.8 RTA NSW Guidelines).	Install bicycle shoulder lanes through the roundabout to current standards (Fig 7.9,RTA NSW Guidelines)		SEE 12.2	
L12	12.4	Craigend Street *to* Woodford Road *to* Lachlan Avenue *to* Victoria Street *as far as Railway Parade.*	Sign [G8-14] (2) midblock in Victoria St and sign [G8-14b] with left arrow (5), right arrow (5)	No signs.	This section has some very tight squeeze points, e.g. Northbound near the corner of Woodford Rd and Lachlan Ave, and some very poor shoulders (L12 33-35). It is important to provide smooth sealed shoulders and continue the bicycle shoulder lanes to allow as much room as possible for cyclists.	Install bicycle shoulder lanes750 x 2. W6-214 x 6. PS-2 x 6 logos - see Photo 1.2 RTA NSW Guidelines (or Fig 4-6 Austroads 14). Widen/repair the road to provide smooth sealed shoulders on both sides.	Low	Bicycle lane @$5000km Signage $180 Logos $250 Maintenance	$7500 $1080 $ 3000 SLA

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L12	12.5	Railway Parade from Victoria Street to The Mall, Leura	Sign 750m[G8-14] (8)	No signs.	There is currently no provision or signage for cyclists. Railway Pde experiences a much greater traffic flow and the on-road facility would be unsuitable for less experienced riders. This road has variable shoulders, patches of K & G interspersed with unsealed shoulders and drop offs. It is important to provide smooth sealed shoulders and continue the bicycle shoulder lanes for more experienced riders, as well as providing a shared path for younger riders using this as their route to/from school at Leura Public School, accessed by the pedestrian crossing (L12 56,57) which is a constriction for on-road cyclists and the Rail/GWH overbridge (L12 59). The RTA has plans (but no current funding) for modifications to this bridge to enable bicycle access!	**See 12.6**			
L12	12.6	Scott Avenue *from* GWH *along* Railway Parade *to* Victoria Street.	Sign 1300m[G8-14] (10)	Signs and path installed.	There is currently no provision or signage for cyclists from Victoria St to the point between Gladstone St and Russell Rd where the footpath widens to become a shared path. This is a very complicated section of road, as shown by the amazing road sign near Salisbury Ave (L12 70). It is vital to provide on-road access through this section as it acts as a regional link between the Cliff Drive Recreational Route and the GWH. There are issues with cars encroaching on the cyclists space on left hand corners near Woodford Rd (L12 74 - 80). It is also necessary to link the shared path which currently extends from Korowal School to Russell Rd, with Leura Railway Station, and to cater for the riders from Leura Public School. Near the Korowal entrance, there is a green railing adjacent to the shared path, this effectively reduces the usable width of the path by 0.5m, in some places, the path is only 1800, so it becomes 1300 - a wide footpath only! The Shared path should also be extended from Korowal to GWH, where the RTA have plans (but no money at present) to build a pedestrian/cyclist	From Russell Rd to Leura Mall widen existing path .8 x 1.5km & drop kerbs to minimum 2.0m, declare shared path . Construct 2.0m shared path 500m from Korowal to the GWH. Install signage R8-2 x 8 PS2 x 8	High	Widen path.8@$65sq/m Construct shared path @160,000/km Signage $180 Logo$250	$97,500 $80,000 $1440 $2000
								TOTAL COST	**$204,540**

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority		
L13	**13.1-13.10.**	**South Leura, starting at the Southern end of Olympian Pde, along to The Mall, then North, through the shopping centre to the GWH, then West along the Northern side as far as the Eastern link, then to Civic Place, Katoomba.**	**Mixed traffic with Bicycle Route Marker Signs from Olympian Pde to The Mall roundabouts, cyclist alert signage, the widen path Eastern side, Pedestrian Crossing over GWH ('dismount' signage) then widen/construct shared path to Civic Place.**	**No signs in South Leura or Mall, RTA working on GWH, signs installed to Civic Pl.**	**There is currently no provision or signage for cyclists along Olympian Pde, The Mall, at the roundabouts, in the Shopping centre, across the railway bridge or up to the new RTA works. The RTA appear to be making provision for cyclists in their works, which will replace much of the work done by council from Leura to Civic Place, Katoomba.**	**Install bicycle shoulder lanes and PS-2 logos on both sides of Olympian Pde and The Mall up to and through the roundabouts, shopping village and across the rail bridge. Install shared path over the rail bridge and up to the new RTA roundabout. Negotiate with RTA to ensure compliance with current standards and for the best outcome for cyclists on the new works from Leura to Katoomba. Install bicycle network route directional signage. Install signage to new standard.**			
L13 *Refer L12a new link*	**13.1**	Olympian Parade *from Lone Pine Ave, along* The Mall *to* Leura	Sign 1900m [G8-14] (12) and sign [G8-14b] with left arrow (1), right arrow (1)	No signs.	Olympian Parade and The Mall are wide roads in good condition with kerb & guttering. There is currently no provision or signage for cyclists, but these roads are very suitable for bicycle shoulder lanes.	Widen existing path .8 x 1900m. Install R8-2 x 10 & PS2 x 10. **Part of Greenspace Regional Project**	High	Widen path.8@$65sq/m Signage $180 Logo$250	$123,000 $1800 $2500

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L13	13.2	Leura Mall Roundabouts	Cyclist Alert signage [Fig 7.15] (8)	No signs.	There is currently no provision or signage for cyclists at the roundabouts or the section of The Mall that connects them, through the main shopping village. The roundabouts require some provision for cyclists in accordance with RTA NSW Guidelines. The road has a split carriageway with one-way traffic and a parking lane. A bicycle lane is required. There are two options: 1. Install a bicycle lane adjacent to the parking lane (as in Fig 5.3 RTA NSW Guidelines); 2. Install the bicycle lane on the extreme right hand side, beside the median strip, to allow cars to enter and exit parking spots without crossing the bicycle lane. This would also reduce conflicts between cyclists and car door opening. As each end of the section has a roundabout, cyclists would merge into the traffic and exit to the left side of the carriageway as per usual. For either option, the bicycle lane could be painted with a green surface (as in Fig 5.3 RTA NSW Guidelines). The same treatment could be used on Northbound and Southbound carriageways.	**See 13.1**			
L13	13.3	Leura Mall *from the Railway* Station to GWH	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Eastern side 90m (include signage, R8-2)	No signs.	There is currently no provision or signage for cyclists at the railway overbridge or on the roadway or paths leading to the new roundabout above the Leura GWH tunnel. The 1991 plan proposed to widen the Eastern footpath, however, no mention was made of how to get from that footpath across the railway bridge to the shopping centre. This is a significant flaw, as as there is no access on the Eastern side of the bridge (L13 18,19). (It is probable that this was a typographical error, as Action 13.4 was to be on the Western side!) Perhaps a logical solution would be to direct the route from the roundabout, onto the Western footpath, accessed by an existing ramp on the Western side in Railway Parade (L13 17) and across the footpath on the bridge (L13 18) to a widened Western footpath. It would also be advisable to provide bicycle shoulder lane markings across the bridge for use when the path across the bridge is busy.	Install bicycle shoulder lanes and PS-2 logos on both sides of the bridge. Install line markings, PS-3s & PS-4s and signage on the existing path across the bridge and declare as a shared path. Install a safe entry/exit point in Railway Parade (West). Widen the path & drop kerbs to minimum 2.0m, declare shared path from the bridge to the RTA new roundabout, Western side, 90m. Install signage to new standard.		**Review**	

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L13	13.4	The Mall/ Great Western Highway intersection	Install pedestrian crossing across GWH western side with 'Cyclist dismount signage' [fig 7.14]	No work completed.	The major RTA works have provision for pedestrian crossings of the roads at the new roundabout above the Leura GWH tunnel (L13 20- 23). It is unknown as to how these will link to L13, but this is intended by the RTA in their design strategy " Location of the cycle lanes on the entry and exit ramps to the Leura Mall intersection would enable cyclists to access local routes and Leura Village."	Negotiate with RTA to ensure compliance with current standards and for the best outcome for cyclists.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	RTA
L13	13.5	Great Western Highway *from* The Mall, *Leura,* to Civic Place, *Katoomba*	Widen existing 1.2m concrete path to 2.0m cyclist/pedestrian path, Northern side 450m (include signage, R8-2)	Most work completed.	Council has constructed a significant proportion of the planned path to Katoomba but much of this will be replaced by new works constructed by RTA in the current works.	Negotiate with RTA to ensure compliance with current standards and for the best outcome for cyclists.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	RTA
L13	13.6	Great Western Highway *from* The Mall, *Leura,* to Civic Place, *Katoomba*	Construct 2.0m cyclist/pedestrian concrete path Northern side 135m (include signage, R8-2)	Most work completed.	Council has constructed a significant proportion of the planned path to Katoomba but much of this will be replaced by new works constructed by RTA in the current works.	Negotiate with RTA to ensure compliance with current standards and for the best outcome for cyclists.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	RTA
L13	13.7	Great Western Highway *from* The Mall, *Leura,* to Civic Place, *Katoomba*	Seal path -bituminous or new concrete northern side, 245m (include signage, R8-2)	Most work completed.	Council has constructed a significant proportion of the planned path to Katoomba but much of this will be replaced by new works constructed by RTA in the current works.	Negotiate with RTA to ensure compliance with current standards and for the best outcome for cyclists.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	RTA
L13	13.8	Great Western Highway *from* The Mall, *Leura,* to Civic Place, *Katoomba*	Widen existing bituminous seal 320m northern side (include signage, R8-2)	Most work completed.	Council has constructed a significant proportion of the planned path to Katoomba but much of this will be replaced by new works constructed by RTA in the current works.	Negotiate with RTA to ensure compliance with current standards and for the best outcome for cyclists.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	RTA
L13	13.9	Great Western Highway *from* The Mall, *Leura,* to Civic Place, *Katoomba*	Install kerb ramps (7)	Most work completed.	Council has constructed a significant proportion of the planned path to Katoomba but much of this will be replaced by new works constructed by RTA in the current works.	Negotiate with RTA to ensure compliance with current standards and for the best outcome for cyclists.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	RTA
L13	13.10.	Civic Place *to* GWH East link	Declare shared pedestrian/cyclist path, 250m, northern side reseal required(120m) (signage, R8-2)	Work completed.	This section is in good order and is not shown on the RTA proposals for this area, therefore it is important to discuss this with RTA to ensure access to/from the cycle path along the new works.	Negotiate with RTA to ensure compliance with current standards and for the best outcome for cyclists.	High	Currently under construction as part of GWHY Upgrade. Due for Completion 2007/08.	RTA
								TOTAL COST	**$127,300**

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority		
L14	14.1-14.7	Katoomba, starting at Echo Point, along Echo Point Dr, into Lurline St as far as Gang Gang St, then through the Railway Station Underpass and up to the GWH, then West along the Northern side as far as Mort St.	Mark bicycle/parking lane with Bicycle Route Marker Signs from Echo Pt to Gang Gang St, then declare shared path to Railway Underpass, 'dismount' signage at crossings & underpass, declare shared path to Mort St, then construct 20m shared path at Mort St.	Mostly completed, some signage not installed.	While bicycle shoulder lanes have been installed over much of this route, they are not up to current standards and require work to rectify some significant hazards. At Echo Point, bike parking facilities are not signposted, there is a hazardous gutter across the road, bicycle lanes are below standard width, logos are the wrong size and lane marking is not continous across minor road intersections. In Lurline St, logos and lane marking require attention, drain covers are hazardous, bicycle lanes are cluttered with bins, overgrown with vegetation, shoulders are not sealed adequately. Near Gang Gang St, the shared path markings are confusing, steps are a hazard, path marking is required and parking is a problem. Signposting should be improved at the railway underpass and near Gearin Hotel, the pedestrian crossings require upgrading and the traffic lights need bicycle lanterns. The path to Mort St requires surface maintenance, is below standard width in places, has hazardous armco barriers and undersized drop kerbs. Signposting is also required in places.	At Echo Point, install bike parking signs , remove a hazardous gutter across the road, improve hazardous/non-standard lane marking. On Lurline St, replace dangerous grates, improve hazardous/non-standard lane marking, remove hazards caused by bin placement, unsealed shoulders, overgrowing vegetation. Near/on Gang Gang St., improve shared path signage, line marking and logos. Upgrade pedestrian crossings, improve signage at underpass, improve shared path signage, line marking and logos near Gearin Hotel, request RTA install bicycle lanterns at traffic lights. On the path to Mort St, repair tree root damage, improve path width, (RTA?) improve safety of the armco barriers, widen drop kerbs. Overall, install bicycle network route directional signage, install signage to new standard.			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L14	14.1	From Echo Point Drive *along* Lurline Street *to Gang Gang Street - ECHO POINT DRIVE SUB-SECTION*	Mark bicycle/parking lane, 4000m (l)	Lines have been marked on the road.	At Echo Point, next to the Visitor Centre, there are two bike parking racks with a wonderful view. Due to their colour, they are not easy to see and there is no signage. There are a further two racks some diatance from the cafe and shops, also with no signage.There is no indication as to where the bike route starts or finishes (it should connect along Cliff Drive with Rec 5 - which currently bypasses Echo Point!). There are three significant safety issues at Echo Point: Firstly, the entry to the lookout has a deep drain across the road which causes a cycle hazard at over 10km/h; Secondly, the lanemarking to and from the lookout along Echo Point Drive is below the minimum 1m standard due to the constricted width of the road. PS-3 logos have been used due to the narrow lanes but PS-2s should be used on road surfaces (Fig 3.5, RTA NSW Guidelines); Thirdly, the white edge lines for the bicycle lanes run to the gutter at corners, giving cyclists nowhere to go and allowing drivers to move in towards the kerb and cut cyclists off. (L14 4,7, 8,12,13). The solid lane	Install sign G7-6-1 to mark bike parking installations.*Remove the hazardous drain across the road. *Where possible, rectify the narrow bicycle lanes to RTA/Austroads standards. *Rectify the narrowing of the bicycle lanes at corners to RTA/Austroads standards.*Install PS-2s and allow existing PS-3s to fade out.*Install bicycle network route directional signage.	Medium	Signage $180 Logos $250 Line marking $5000	$720 $2000 $5000

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L14	14.2	*LURLINE ST FROM ECHO POINT DRIVE TO MERRIWA ST*	Mark bicycle/parking lane, 4000m (l)	Lines have been marked on the road.	Issues in this section: 1. There is a bicycle lane on either side of the road. This lane is shared with parking and it would be advantageous to use the lane treatment shown in Photo 1.2 RTA NSW Guidelines (or Fig 4-6 Austroads 14); 2. The white edge lines for the bicycle lanes run to the gutter at corners in this section as well, giving cyclists nowhere to go and allowing drivers to move in towards the kerb and cut cyclists off. In some cases this forces cyclists into slotted drains! (L14 28,30,35); 3. There are numerous slotted drain covers which are hazardous for cyclists (L14 18, 23-25, 27, 31, 35, 37). In some instances, non-conventional drain covers and driveways have raised edges which are hazardous for all road users (L14 19, 28-30); 4. The reflective Raised Pavement Markers are placed within the cycle lane, causing a hazard for cyclists. These should be placed in the motor vehicle lane; 5. PS-3 logos have been used in some places, rather than PS2s, some logos have worn and need to be repainted.	*Implement parking lane markings to Austroads standards. *Rectify the narrowing of the bicycle lanes at corners to RTA/Austroads standards.*Install PS-2s and allow existing PS-3s to fade out. *Replace slotted and/or raised drain covers with cycle-safe covers. *Reposition RPMs out of cycle lane.	Medium	Line marking $5000 Logos $250 Drains & RPMs	$5000 $2000 SLA
L14	14.1	*LURLINE ST FROM MERRIWA ST TO GANG GANG ST*	Mark bicycle/parking lane, 4000m (l)	Lines have been marked on the road.	The issues 1-4 from the above section also appear here. Issues particular to this section are: 5. In places, the shoulder lane is not wide enough to allow truck parking and bicycle access (L14 40); 6. The shoulder lane is below the minimum width (1.0m), has vegetation growing over it, or gravel on the surface, has dropoffs or is blocked by rubbish/recycling bins (L14 44-47, 58-64); 7. There is some very confusing lane marking and/or shared path marking along the Western side of Lurline between Beverley Place and Gang Gang St. The footpath is marked as a shared path (L14 53,54). Are cyclists expected to negotiate the steps between the holding rails?(L14 67). Is the shoulder lane suddenly a shared path? (L14 71). Understandably, innexperienced cyclists may not wish to use the shoulder lane through the narrow section, but the steps present a significant problem, as does illegal parking across the path (L14 75). Line markings and PS 3s & PS-4s are required on the path in Gang Gang St.	Implement parking lane markings to Austroads standards. Rectify the narrowing of the bicycle lanes at corners to RTA/Austroads standards.Install PS-2s and allow existing PS-3s to fade out. Replace slotted and/or raised drain covers with cycle-safe covers. Reposition RPMs out of cycle lane. Repair the edges to provide smooth sealed shoulders on both sides. Ensure that the cycle lane is not used for placement of bins - provide other flat surfaces. Remove or regularly trim vegetation. Sweep gravel off the bicycle lanes and ensure erosion is dealt with appropriately. Clarify the shared path signage. Remove redundant signage.Resolve the problem of the steps in the shared path - install a short wheeling ramp as in Figs 7-11, 7-12 Austroads 14. Contact Council Ranger/Highway Patrol to deal with parking issues. Install line markings and PS 3s & PS-4s on the path in Gang Gang St.	Medium	Should Lanes $5000 k/m Logo $250 Drain Covers Wheel Ramp $3000 Signage $180	$5000 $1000 SLA $3000 $720

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L14	14.2	*From* Lurline Street *along* Gang Gang Street *to the Railway Station Underpass*	Declare shared pedestrian/cyclist path, 100m, (Q) (signage, R8-2)	Signs have been installed.	The entry/exit points in Lurline St need to be formalised and signposted.	Provide safe transition from shoulder lanes to shared path and vice versa. *Install signage to new standard.	Medium	Should Lanes $5000 k/m Logo $250 Signage $180	$1500 $500 $360
L14	14.3	Great Western Highway *from* Civic Place to Mort Street	Declare shared pedestrian/cyclist path, 800m, northern side, (Q) (signage, R8-2)	Signs have been installed.	The path has been declared a shared path but it is not always the minimum 2.0m width. The rear face of the armco barriers presents a hazard to cyclists. The surface is patchy and tree roots are lifting sections of the path. Repairs have been carried out but some need to be re-ground (L14 101,102). Vegetation encroaches on some sections of the path (L14 99,102) and an armco barrier narrows the path considerably at one point (L14 104).	Repair tree root damage in a tree-friendly manner. Remove or regularly trim vegetation. Fill all drop-offs. Improve flow by infilling gaps in the path with concrete to provide min. 2.0m width and easier wheelchair/pram/bike access. Improve safety of the rear face of the armco barriers Widen the path & drop kerbs x 6 to minimum 2.0m.	Medium	Maintenance Barrier safety Kerbs $400	SLA RTA $2400
L14	14.4	Great Western Highway *from* Civic Place to Mort Street	Construct 2.0m concrete path 20m at Mort Street	RTA path constructed.	RTA has done major works as part of the Shell Corner project and has provided a path at Mort St. which is less than 2.0m. and is not signposted.	Widen the path 20m & drop kerbs to minimum 2.0m, declare shared path.	Medium	Widen path .8 $65 sq/m Signage $180 Logo $250 Kerb $400	$1300 $180 $250 $400
L14	14.5	Great Western Highway *from* Civic Place to Mort Street	Install kerb ramps (5)	Kerb ramps have been installed.	Kerb ramps and holding rails have been installed. The drop kerbs but are not the full 2.0m width. The holding rail at Albion St is damaged (L14 110).	Remove damaged holding rail.	Medium	Maintenance	SLA
L14	14.6	Katoomba *Railway* Station Underpass	"Cyclist Dismount signage" at pedestrian underpass (4) [Fig 7.14]	Small RTA 'dismount' signs.	Most cyclists will walk through the tunnel, perhaps signage could be installed to encourage thoughtful behaviour.	Install R6-10-3 signs plus a "Please Walk Your Bike" sign.	Medium	Signage $180	$360
L14	14.7	Civic Place /GWH intersection	"Cyclist Dismount signage" at pedestrian crossings (4) [Fig 7.14]	No 'dismount' signs.	Upgrade the pedestrian crossings as they form part of the bike route. The path outside the Gearin Hotel is a possible point of conflict for path users and needs markings.. The traffic lights are at the convergence of several cycleway. Perhaps the traffic signals could be upgraded to include Bicycle lanterns.	Upgrade the Pedestrian crossings to bicycle/pedestrian crossings (as in Fig 7.5 in RTA NSW Bicycle Guidelines) *Request that RTA provide bicycle lanterns on the traffic lights.	Medium	Traffic light lanterns	RTA
								TOTAL COST	**$31,690**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L15	**15.1-15.5**	**Katoomba, starting at the Sports Centre at the intersection of Gates Ave and Peckmans Rd, along Gates to Cascade St, then left to Waratah St and Eastwards to Lurline St.**	**Construct shared path from Gates Ave to sports centre, then mixed traffic with Bicycle Route Marker Signs along Gates Ave, Cascade St, then line-mark on-road cycle path along Waratah St to Lurline St.**	**Mostly completed.**	**The path to the sports centre is narrow and has no signs, the connection to Gates Ave needs to be formalised, Gates Ave needs some shoulder repair. Gates and Cascade need shoulder lanes. Waratah is good but PS-3s were used instead of PS-2s, some signs are missing, e.g. warning signs in side streets.**	**Widen the path to the sports centre and install signs, formalise the crossing /transition to on road. Repair shoulders in Gates Ave, install shoulder lanes in Gates & Cascade. Install warning sigh\ns on cross streets. Install bicycle network route directional signage. Install signage to new standard.**			
L15	**15.1**	Gates Avenue *from* Peckmans Avenue to Cascade Street	Construct shared cyclist/pedestrian concrete path from Gates Ave to sports centre,50m (Q) (include signage, R8-2)	Path constructed but not 2.0m and no signs.	The path to the sports centre is 2.0m from the door to the end of the carpark, then narrows to 1.5m (L15 1-7) At the corner of Gates and Peckman, the path narrows to 1.0m and runs beside a wire fence with a power pole restricting the width to around 0.8m. Clearly the path is narrow for a footpath and is not suitable for cycle use. The only indication as to what cyclists are expected to do here is a 'cyclists give way' sign about 30m back from the corner and set well off the road (L15 11). A more formal crossing arrangement would improve safety at this point.	Widen the path 50m & drop kerbs to minimum 2.0m, declare shared path. Install PS-3 and PS-4 logos on path. Construct a 10m section of shared path from the point at which the path narrows, to the side of the road. Use painted lines on the road to feed cyclists out onto the shoulder Eastwards and from the Westbound shoulder to the shared path. Install give way signs and dotted lines for drivers to give priority to the cyclists entering or leaving the shared path. In the narrow section of Gates Ave, install white lane edge line and PS-2/PS-3 logos on the smooth sealed shoulders.	Medium	Widen path .8 $65Sq/m Shared Path $160,000k/m Should lane $5000 Signage $180 Logo $250	$ 3250 $1600 $100 $720 $1000

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L15	15.2	Gates Avenue *from* Peckmans Avenue to Cascade Street	Sign 450m [G8-14] (4)	Bike route signs installed.	There is a 'Watch For Bicycles' sign in the narrow section of Gates Ave which appears to be twisted away from view of drivers in Gates Ave- perhaps it is for a driveway exit! (L15 10). At this point, the gutter is constructed from railway sleepers and juts out into the roadway. On the Southern side of Gates Ave opposite Warriga St, the grassed verge juts out into the roadway (L15 15). The shoulder is not sealed in the part of Gates Ave near the Pool entry/exit. The mid block Bicycle Route signs are on their own poles, but would have been more visible attached to the power poles (L15 13,14), the sign Westbound is obscured by trees (L15 13,15). Gates Ave is quite steep, uphill cyclists may need space to wobble or get off and push, while downhill cyclists may get up some speed without fear of being cut off by a motorist who is not aware of their presence. For these reasons, Bicycle shoulder lanes would be usefull in both directions.	Adjust 'Watch for Bicycles' sign if needed. Remove railway sleepers from the edge of the road. Install bicycle shoulder lanes 450m x 2 and PS-2 x 2 logos R7-1-4 x 2. Reposition Bike route signs onto power poles where possible.	Medium	Shoulder lanes $5000 k/m Signage $180 Logo $250	$4500 $360 $500
L15	15.3	Cascade Street at Gates Avenue and *Cascade Street at* Waratah Street	Sign [G8-14b] with left arrow (2), right arrow (2)	Bike route signs installed.	There do not appear to be any Bike Route right arrow/left arrow signs at the corner, but there are two mid block signs. Bicycle shoulder lanes are essential here for continuity.	Install bike route right arrow/left arrow signs. Install bicycle shoulder lanes 100 x 2. PS-2 logo x 2 R7-1-4 x 2.	Medium	Signage $180 Logo $250 Bicycle Lane @$5000 k/m	$360 $500 $1000
L15	15.4	Waratah Street *from* Cascade St to Lurline Street	Sign 350m [G8-14] (6)	Bike route signs installed.	There do not appear to be the full quota of Bike Route signs.	*Install/reposition Bike route signs onto power poles where possible. *Review signage and logos.	Medium	Signage $180 Logo $250	$720 $1000
L15	15.5	Waratah Street *from* Cascade St to Lurline Street	Line mark on-road cycle path 350m as shown in attached sketch	Bicycle shoulder lanes/parking lanes are marked on the road.	The lane marking appears to be good, PS3s have been used in some spots - these are intended for off-road shared paths. PS-2s should be used in shoulder lane marking.	As they wear and need repainting, *Replace PS-3s with PS-2s. *Install signage to new standard.	Medium	Maintenance	SLA
L15	15.6	In Katoomba Street and Parke St at Waratah St intersections	Cyclist Alert signage [Fig 7.15] (3)	No signs.	There are no Bike Route warning signs (W6-7 & W8-23) on side streets which enter Waratah Rd., but Waratah Rd has these fitted where it crosses L14	Install Bike Route warning signs (W6-7 & W8-23 x 2) on side streets which enter Waratah Rd.	Medium	Signage $180	$360
								TOTAL COST	**$15,970**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L16	**16.1-16.3**	**North Katoomba, from South St along Victoria St to Camp St, then Station St to Civic Place.**	**Construct a shared path along Victoria St for 1280m, then mixed traffic with Bicycle Route Marker Signs along Camp St and up/down Station St. to Civic Place.**	**No work completed.**	**There is no provision for cyclists from South St to Civic Place. There is a 1.2m path footpath along Victoria St from Mistral St to Camp St. Camp St is very wide and requires a crossing with refuge, widening of the existing path and construction of a short shared path. Station St is wide enough to declare as a shared path.**	**Construct a shared path along one of two proposed routes from South St to Camp St. Install a crossing with refuges on Camp St and a short shared path. Declare the Western path on Station St as a shared path. Install line marking through the gardens at Civic Place or construct a crossing near Civic Place and use the Eastern side of Station St. to join up to L13. Install bicycle network route directional signage. Install signage to new standard.**			
L16	**16.1**	Victoria St, *from* South St to Camp St.	Construct 2.0m cyclist/pedestrian concrete path, eastern side 1280m (include signage, R8-2)	No work completed	Victoria St from South St to Mistral St (Kat Nth Public School) 300m has no path. From there to Camp St there is a 1.2m footpath on its Eastern side 750m. There are dangerous grates near Whinmoor Lane (L16 17,18) There are two alternatives for Victoria St: (A) Widen the 1.2m path on the Eastern side and construct a new path to South St. It would then be necessary to construct a bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines) across South St., There are 7 roads and 2 lanes to cross along this section and in some places it is difficult to find 2.0m for the path! (B) Construct a new path through the road easement (in some cases bushland) on the Western side of Victoria St., with only 2 less busy roads (in addition to Victoria St) to cross! If (B) was constructed, a crossing at the narrow point in Victoria St just near Camp St (L16 25,26) would be necessary.	Option A - install 300 shared path from South St to Mistral. Widen 1.2 path 750m to 2.0 & kerbs. Install refuge on South St to Northern side. Install R8-1 x 14 signage & PS2 logos x 14. Construct refuge in South street to Northern side	High	Shared path $160,00k/m Widen Path .8 $65sq/m Signage $180 Logo $250 Refuge $7000	$ 48,000 . $48,750 $2520 $3500 $7000

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L16	16.2	Camp St, *from* Victoria St to Station St.	Sign [G8-14b] with left arrow (2), right arrow (2)	No signs.	There is no provision for cycling and no pedestrian crossings in this area. The road is very wide but not suitable for young cyclists. It is advisable to continue the shared path around the corner under the awning of the old shop from Victoria St (L16 27,28) to a new crossing, with refuge, in Camp St, midway between Victoria St. and Station St (L16 28,33). The road has white line marking to direct traffic towards the narrower section to the West (L16 28,33). It would be useful to construct the crossing from the Northern kerb of Camp St to a wide refuge in the centre, then across to the white line, and construct a raised blister from the white line to the Southern kerb. The share path would then continue along the Southern side of Camp St as far as Station St.	Construct a crossing with wide refuge. Construct the blister. Construct 2.0m min path 50m and drop kerbs. R8-1 x 2 and PS2 logos x 2 declare shared path.	High	Refuge $7000 Blister $1500 Shared path $160,000 k/m Signage $180 Logo $250	$7000 $3000 $8000 $360 $500
L16	16.3	Station St, *from* Victoria St to Civic Place.	Sign 550m, [G8-14] (6)	No signs.	The footpath along Station St is wide enough to be a shared path (with only one lane to cross) and should be declared and signposted. At the entrance to the BMCC carpark, the path could either wind its way through the gardens to Civic Place and/or cross Station St (crossing needed) and continue 100m on the Eastern side to link up with L13.	If necessary, widen the footpath on the Western side to minimum 2.0m, ensure a smooth surface and declare as a shared path.*Install crossing as needed. *Install line marking through the gardens at Civic Place or construct a crossing near Civic Place and use the Eastern side of Station St to join up to L13.*Install signage to new standard.	High	Refer New Link 16a Extension	
								TOTAL COST	**$128,630**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L17	*	**Blackheath - Valley View Rd from Evans Lookout Rd into Wentworth St, then Gardiners Crescent to GWH and Blackheath Railway Station**	**Mixed traffic with Bicycle Route Marker Signs and repair road shoulders from start to GWH, then declare 50m of shared path to the pedestrian crossing ('dismount' signage).**	**Shoulder repairs in Wentworth St , none in Valley View, no shared path or signage**	**Shoulder poor from start to Brightlands Rd, then good shoulders to Eady St. There are two crests, one near the start and a very hazardous one near Eady St. The village streets are wide and tree lined but need line marking for cyclists. The paths along the GWH need formalising and the pedestrian crossing needs upgrading.**	**Install bicycle shoulder lane marking and logos on all on road sections, formalise the shared path along GWH and upgrade both pedestrian crossings. Install bicycle network route directional signage. Install signage to new standard.**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L17	17.1	Valley View Road, intersection with Evans Lookout Rd	Repair road shoulder 100m southern end	No work completed	The shoulder is unmade and unusable between Evans L.O.Rd and Brightlands Rd. From Brightlands Rd to Eady St, smooth sealed shoulders are provided, from Chelmsford to Eady, the shoulder has recently been sealed.	Repair shoulder & Install bicycle shoulder lane 100m x 2 and PS-2 x 2 logos. Install R7-1-4 x 2	High	Bicycle Lane @$5000km Signage $180 Logos $250 Maintenance	$1000 $360 $500 SLA
L17	17.2	Valley View Road	Cyclist alert signage on crest[fig 7.15] (2)	No signs.	The crest near Brightlands Road is on a straight section with a wide road surface but needs to be signposted to ensure safety.	Already included in 7.3			
L17	17.3	Valley View Road from Evans LO Rd to Hargreaves Rd.	Sign 600m, [G8-14] (6)	No signs.	There is no provision for cyclists.	Install bicycle shoulder lane (approx 600m x 2) where width permits and R7-1-4 x 2 and W6-214 x 2 signage & PS2 logos x 4	High	Bicycle Lane $5000 Signage $180 Logos $250	$6000 $720 $1000
L17	17.4	Wentworth Street	Repair road shoulder, 100m, south of Prince George St	No work completed	The road between Hargraves St and Eady St has been given smooth sealed shoulders and informal gutters. There is a very dangerous crest between Eady St and Prince George St, this section is steep, has a corner and is narrow and hazardous for all road users. The shoulders are unmade and there is a drop-off.	Widen the road 100m to provide smooth sealed shoulders on both sides.	High	Maintenance	SLA
L17	17.5	Wentworth Street, Hargreaves St to Hat Hill Rd	Sign 1350m, [G8-14] (10)	No signs.	The village roads are wide and tree lined with good smooth sealed shoulder/parking lanes. This area is well suited to bicycle/parking lanes.	Install bicycle shoulder lane 1350m x 2 and PS-2 x 10 logos & R7-1-4 x 10	High	Bicycle Lane @$5000 Signage $180 Logos $250	$13,500 $1800 $2500
L17	17.6	Gardiner Crescent, from Wentworth St to GWH	Sign [G8-14] with arrows (6)	No signs.	The village roads are wide and tree lined with good smooth sealed shoulder/parking lanes. This area is well suited to bicycle/parking lanes.	Install bicycle shoulder lane100m x 2 and PS-2 x 2 logos & R7-1-4 x 2	High	Bicycle Lane @$5000km Signage $180 Logos $250	$1000 $360 $500
L17	17.7	GWH, Blackheath *(from Gardiner Cres to pedestrian crossing at Railway Stn.)*	Declare shared pedestrian/cyclist path, 50m, north *(sic)* side of Gardiner Cres (Q) *(sic)* (include signage, R8-2)	No work completed	Surely this should have been the SOUTHERN side of Gardiners Cres, past the Service Station. This area needs to be clearly marked to ensure pedestrian /cyclist safety.	Ensure cyclist/pedestrian right of way across entry/exits of Service Station - provide crossings and warning signs for motorists.	High	Signage $180	$720
L17	17.8	GWH, Blackheath Pedestrian Crossing *(s?)*	Cyclist dismount signage at pedestrian crossings	No signs.	Cyclists need to cross the GWH to gain access to both the Railway Station and the level crossing.	Upgrade both Pedestrian crossings with lanterns.	High	Lanterns	RTA
L17	17.9	GWH, Blackheath Railway Station	*	*	The path from the Pedestrian crossing to the Railway Station bicycle parking facilities is 1.2m wide.	Widen the path 20m to minimum 2.0m and declare as a shared path.*Install R7-1-4 signage & PS2 logo.	High	Widen path .8 $65sq/m Signage $180 Logo $250	$1,300 $360 $500
								TOTAL COST	**$32,120**

Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L18	**18.1-18.2**	**Blackheath - Govetts Leap Road, NPWS Heritage Centre to Wentworth St**	**Mixed traffic with Bicycle Route Marker Signs and repair road shoulder.**	**Road shoulders are in good repair, no signs.**	**Good width with shoulders, K&G close to town - suit bicycle shoulder lanes.**	**Install bicycle shoulder lane and PS-2 logos on both sides. Install bicycle network route directional signage. Install signage to new standard.**			
L18	**18.1**	Blackheath - Govetts Leap Road, NPWS Heritage Centre to Wentworth St	Repair road shoulder, 2000m	Road shoulders are in good repair.	Closer to the town centre, kerb & guttering is on both sides with good width roads and sealed shoulders (Photo L18 12). In the middle section Kerb & guttering is only on the Southern side of the road but a smooth sealed shoulder exists on the Northern side. There is sufficient width to install bicycle lanes along this road as far as the Heritage Centre. The loop around the lookout is narrow but a very good seal.	Install bicycle shoulder lane 2000 x 2 and PS-2 x 10 logos & R7-1-4 x 10 . Install direction signage to Heritage centre and town centre.	High	Bicycle Lane @$5000 Signage $180 Logos $250	$20,000 $1440 $2000
	18.2	Blackheath - Govetts Leap Road, NPWS Heritage Centre to Wentworth St	Sign 2200m, [G8-14] (16)	No signs.	There are no signs along the road until the Heritage Centre, where there is a non-standard "Watch out for bikes" sign. The loop is also posted at 40km/h.	Install signage to new standard.		As above	As Above
								TOTAL COST	**$23,440**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L19	**19.1**	**Blackheath - Hat Hill Road from Wentworth St to Connaught Road**	**Mixed traffic with Bicycle Route Marker Signs.**	**No signs.**	**Hat Hill Rd from GWH to Connaught Rd is a wide sealed road with formal K&G - an ideal on-road cycle facility.**	**Install bicycle shoulder lanes and PS-2s from GWH to Connaught Rd. Repair edge, provide shoulder to end of bitumen. Install bicycle network route directional signage. Install signage to new standard.**			

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L19 *Ref New Link L19 Extension*	**19.1**	Hat Hill Road *from* Wentworth St to Connaught Road.	Sign 1300m, [G8-14] (10)	No signs.	Hat Hill Road from the GWH to Wentworth St and through to Connaught Rd is a wide sealed road with formal kerb & gutter and is an ideal location for an on-road cycle facility. Beyond Connaught Rd, the road is much narrower and the edges are breaking up in places. As this section has lower traffic density, the provision of an edge line with smooth sealed shoulders to Austroads standards would be adequate.	Install bicycle shoulder lanes 1300m x 2 and PS-2 x 6 logos & R7-1-4 X 6 on both sides from GWH to Connaught Rd. *Repair edge on both sides were required to provide a smooth sealed shoulder and edge line to Austroads 14 standards, from Connaught Rd to end of the bitumen. *Install route direction signage to railway station and lookouts.	High	Bicycle Lane @$5000 Signage $180 Logos $250 Maintenance	$13000 $1080 $1500 SLA
								TOTAL COST	**$15,580**
Route No.	**Action No.**	**Location**	**Proposed Action 1996**	**Action Completed?**	**Current Condition**	**Proposed Action 2006**	**Priority**		
L20	**20.1-20.4**	**Mt Victoria Railway Station along Station St to GWH then to Public School.**	**Mixed traffic with Bicycle Route Marker Signs from Station to GWH, then shared path through school.**	**No work completed**	**There is no provision for cyclists.**	**Install bicycle network route directional signage. Upgrade the pedestrian crossing on the GWH, install bicycle shoulder lanes and logos on Station St. Negotiate and install a shared path through school grounds. Install signage to new standard.**			
L20	**20.1**	*Mt Victoria* GWH / Station St. *intersection* at Crossing	Cyclist alert signage [fig 7.15] (2)	No signs.	School warning signage only - no 40km school zone or cyclist alert signage.	Install W6-7 x 3 and G9-57 x 2 Cyclist dismount signage x 2 on GWH and Station St Install signage to new standard.	High	Signs $180	$1,260
L20	**20.2**	*Mt Victoria* GWH / Station St. *intersection* at Crossing	Cyclist dismount signage at pedestrian crossings (2) [fig 7.15]	No signs.	Crossing only caters for pedestrians. Surface and lines worn.	Upgrade both Pedestrian crossings to bicycle/pedestrian crossings (as in Fig 7.5 in RTA NSW Bicycle Guidelines) across GWH and Station St. *Upgrade path 50m to 2.0m min path and drop kerbs x 2, Southern side of GWH to school, declare shared path. Ensure cyclist/pedestrian right of way across entry/exits of Post Office & General Store by installing bicycle/pedestrian crossing (as in Fig 7.5 in NSW guidelines) and W6-7 & W8-23 x 2 warning signs for motorists. R8-2 x 2 & PS 2 x 2 *Request that RTA provide bicycle lanterns on the traffic lights.	High	Signs $180 Kerbs $400 Logos $250 Widen path .8m $65 sq/m	$ 1080 $800 $500 $3250
L20	**20.3**	Station St. *from* Mt Victoria *Railway* Station to GWH	Sign 500m [G8-14] (6)	No signs.	Station St. has a poor surface but adequate width to install marked cycle lanes.	Install bicycle shoulder lanes 500m x 2 and PS-2 x 4 logos & R7-1-4 x 4 on both sides. Provide safe transition from shoulder lanes to crossings. Install signage to new standard.	High	Bicycle lane @$5000 k/m Signage $180 Logos $250	$5000 $720 $1000

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Route No.	Action No.	Location	Proposed Action 1996	Action Completed?	Current Condition	Proposed Action 2006	Priority	Unit Rate	Cost Estimate
L20	20.4	Mt Victoria Public School	The school has suggested that a public path be provided through the school grounds. To be investigated by BMCC.	No work completed	A path exists through the school but it is 1.2m with sand deposits on the surface (showing bicycle tracks!), and to enter, the cyclist has to go through a gate declaring the area Inclosed Grounds.	Negotiate with the DET to establish a shared public path through the school grounds.	High		Ref to DET
								TOTAL COST	**$13,610**

TOTAL PROJECT COSTS : $2,715,025

Attachment 2 - New Proposed Network

Attachment 2: New Proposed Routes (Updated 11 April 2008)

Proposed Route	Bikeways Plan 1996 Status	Location	Current Condition	Proposed Action 2006	Priority	Unit Rate (each/per km)	Cost Estimate
L1 to M4 - Link	Existing on road local (Gov Dr), no mention of Darwin Dr.	L1 Extension from Explorers Rd along Governors Drive/ Darwin Drive to GWHY at Lapstone Hill	Hazardous drop off (up to 250mm) due to erosion along edge of bitumen between GWHY and bridge. Good sealed shoulder & K&G in Lapstone - tight on corners and across gullies.	Seal the shoulders, 300m between GWHY and the bridge at the entrance to Lapstone, install bicycle lanes. PS-2 x 2 logos. Install W6-214s x 2. Remove veg on edges. Provide alternate route (signposted only) Southwards via Darwin Drive to avoid steep hill on Governors Drive near bridge. Install bicycle network route directional signage.	Medium	Bicycle lane @$5000km Signage $180 Maintenance Logos $250	$3000 $360 $500
						Total Cost	**$3,860**
L1 to Nat. Park Link	Recreational on road	Extend L1 from Glenbrook Railway Station along Burfitt Pde and Bruce Rd to the National Park entrance gates.	Narrow road through the bends. There is an off road path, not declared as a shared path, on the railway side of the road. Wide shoulders from Bush Place to railway overbridge then tight profile to NPWS gate.	Install bicycle network route directional signage.	Medium	Signage $180	$1,440
						Total Cost	**$1,440**
L1 to L2 Link B	No mention.	Fletcher St Overbridge near Glenbrook Pool to Kidman St	Footpath has just been laid at 1500mm.	Widen the path to 2.0m and declare as shared path. Install bicycle network route directional signage.	Medium	Review	
						Total Cost	
L2 to L1 Link	No mention.	Hare Street from GWHY to Levy Street Glenbrook	Local road two way.	Will provide link from Glenbrook precinct to St Finbar's School and residential areas. Widen existing path 400m to 2.0m. Install R8-2 x 2. PS3/4 x 2	Medium	Widen path .8@$65sq/m Signage $180 Logos $250	$26,000 $360 $500
						Total Cost	**$26,860**
L2 Extension East	No mention.	Barnett Street Glenbrook from Levy Street to access road to lookouts.	Local road, two way until access road which is gravel	Install bicycle network route directional signage & W6-214 in both directions.	Medium	Signage $360	$360
						Total Cost	**$360**
L2 Extension West	Existing on road local.	Levy Street from Hare Street to Fletcher Street	Currently 1.2 wide footpath connecting Brooklands shopping centre, St Finbar's School and residential areas. Will link to L1.	Widen footpath 550m to 2 metres. Install R8-2 x 2. PS3/4 x 2.	Medium	Widen path .8@$65sq/m Signage $180 Logos $250	$35,750 $360 $500
						Total Cost	**$38,610**

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L3 Extension East	Existing on road local.	Mitchell's Pass from Glenbrook Rd to Emu Plains	Narrow, two way road to Lennox Bridge, then narrow one-way downhill to Emu Plains.	On-road cycling. W6-241s X 2. Install bicycle network route directional signage.	Medium	Signage $180	$360
						Total Cost	**$360**
L4 Extension East	No mention.	Old Bathurst Rd from Tallowood to Emu Plains	Wide two way road until Binya Street then narrow steep grade to Emu Plains.	Install bicycle lane from Tallowood to Bunya 950m. PS-2 logos x 2. Install W6-2142 x 2. At Binya install steep grade and narrow signage for cyclist.	Low	Bicycle lane @$5000km Signage $180 Logos $250	$4750 $900 $500
						Total Cost	**$6,150**
L4 Extension	Existing on road local.	L4 Extension to L2 Old Bathurst Rd	BMCC has constructed a 2.0m shared path on the Northern side from Wilson way to Rusden Rd, with a narrow section around significant trees near Reserve Ave	Complete the shared path at 2.0m min. Examine alternatives to get past the trees - perhaps using part of the parking lane. Install bicycle network route directional signage.		No Action	
L5 Extension	Existing on road local.	Warrimoo via Waratah Rd to Green Pde, Valley Heights	BMCC has constructed a narrow road link with roll -guttering as advised by BMBG. There is a chicane (necessitated by a Telstra pit) which is used as a traffic calming mechanism. This presents a hazard to cyclists, as do two westbound corners with power poles very close to the road edge. Some signage is present.	Examine possibilities for bicycle bypasses of the chicane, and examine the two corners to determine how to improve safety. Install bicycle network route directional signage.	1-5 years Remedial Works	See L5 for details	
L6a Extension North	No mention.	Green Pde from Tusculum across railway bridge to pedestrian bridge over GWHY, then West along a shared path past The Avenue	In the short term, the section from Tusculum to the GWHY overbridge would be on road and not optimal. Long term SRA plans may involve a continuation of the bridge to the station and across to the Southern side. There is a 1.2 m footpath along the Northern side of the GWHY.	Widen the path to 2.0m and declare as shared path. Install bicycle network route directional signage. Install signage to new standard, taking care to slow traffic on the rail overbridge.	Low	To Be Reviewed	
L6b to L6 Link	No mention.	From George St (nr Hawkesbury Rd roundabout) West along GWHY to Lewin St.	There is adequate space for a shared path to be constructed from George St to West of Boland Ave. There is a section opposite the Police Station, between Boland Ave and Boomerang Ave, where it would be preferable to construct a path on the Northern side of the fence. This may involve earthworks. From Moorecourt to Lewin, there is a footpath.	`	High	To Be Reviewed	

L6b to Bunnal Ave to shops - New Link	No mention.	Footpath linking Bunnal Ave to the shops on Hawkesbury Road near Lee Rd	The footpath is already built, is approx 100m long and is 2m wide near Hawkesbury Rd.	Widen the path to 2.0m (if under 2m) and declare as shared path. Install bicycle network route directional signage. Install signage to new standard.	Low	SEE L6b - 6.17a for details.	
L6b Extension East	No mention.	Hawkesbury Road from Whitecross Road to Booker Road	No pedestrian or off road cycling facilities exist	Provide 3500m of 2 metre shared path. Install R8-2 x 8. PS3/4 logos x 8.	Low	Shared path @$160,000 km Signage $180 Logo $250	$560,000 $1440 $2000
						Total Cost	**$563,440**
L6b Northern Extension	No mention.	From Shelton Ave, White Cross to Sunset Blv.	The footpath is already built, is approx 250m long and is 2m wide near Hawkesbury Rd and varies in width around the back of a BMCC owned Youth Centre. A 1.8m wooden fence has been constructed around the Centre, beside/across what was a very narrow shared path. Visibility is almost nil and the path is now very dangerous for all users.	Remove the wooden fence beside the Youth Centre and replace with a transparent fence repositioned away from the path. Widen the path to 2.0m (if under 2m) and declare as shared path. Install bicycle network route directional signage.	High	Review	
L6c New Link	Existing on road local.	Macquarie Rd from L6 to Faulconbridge Railway Station	A new bridge crossing the GWHY and railway is cycle friendly. Much of the road is quite narrow (along Sir Henrys Pde). A new Scout hall is a trip generator. The "big dipper" has poor visibility.	This route would be on road only. W6-214 6. On the steepest section 'dipper' install G9-57 x 2. .	Low	Signage $180	$1,440
						Total Cost	**$1,440**
L7b New Link	No mention.	St Georges Crescent	No footpath beyond Russell Ave. Cars often park across the unmade footpath, forcing elderly pedestrians, parents with strollers and young cyclists and pedestrians onto the roadway.	Construct 500m of 2.0m shared path along the Northern side of St Georges Cres from Russell Ave to Adeline St. R8-2 x 44. PS3/4 x 4	Low	Shared path @$160,000 km Signage $180 Logo $250	$80,000 $720 $1000
						Total Cost	**$81,720**

L7 Extension West Off/On Road Faulconbridge to Linden	Regional on road only	Parkes Cres, Faulconbridge Westwards to Weemala Ave, crossing GWHY then off-road to Martin Place and Numantia Rd to GWHY footpath near the water tower.	This section forms a large part of the "missing link" - the only section of the GWHY where no off-highway cycleway exists between Katoomba and Emu Plains. Between Parkes and Bellevue, it is a 1.2m footpath. From Bellevue Westwards for 500m, there is a service road requiring some sealing. For 250 m past the old petrol station (Northern side of GWHY) and up to the fruit store, no path exists. From the Fruit Store to Weemala Ave, there is a narrow footpath of some description.	Widen existing path 900m to 2.0m. Construct 1500m of 2.0m shared path along the Northern side of the GWHY from the old service station past the Fruit Store to Weemala Ave. Construct a centre refuge and safe passage across GWHY at Weemala Ave. Construct 200m of 2.0m shared path on the Southern side from opposite Weemala Ave to Martin Place. Provide on road facility along Martin Place and Numantia Rd, connecting to the footpath past the water tower and on to Linden Railway traffic lights. Widen the path to 2.0m where possible and declare as shared path. R8-2 X 6. PS3/4 x 6.	High	Shared path @$160,000 km Widen path @$65sq/m Signage $180 Logo $250 Regfuge	$272,000 $58,500 $1080 $1500 $7000
						Total Cost	**$340,080**
L6 Extension East	Regional on road / existing off-road shared from St Georges Cres to Meeks Cres.	From Parkes Cres Faulconbridge along GWHY to Buttenshaw Park	RTA has provided a 2.0 off-road cycle path from Parkes Cres to Churchill St. The path from Churchill to Buttenshaw Park is below width for 100m.	Widen the last 100m of path to 2.0m .	High	Widen path @$65sq/m	$6,500
						Total Cost	**$6,500**
L8 Extension East	Not previously list but incorporated as part of GWHY upgrade.	New access road and shared path as part of GWHY upgrade from Clearview Av Hazelbrook to Station Street Woodford.	RTA to provide a 2 meter off-road shared path from Clearview Av to Station Street Woodford.	Installed as per programmed works by RTA.	High	Work s will be part of GWHY upgrade. Due for completion 2007/08	RTA
L8 Extension West	Not previously list but incorporated as part of GWHY upgrade.	Adjacent to GWHY from Clearview Av Hazelbrook to Queens Road Lawson.	RTA to provide a 2m off-road shared path from Clearview Av to Queens Road .	Installed as per programmed works by RTA.	High	Works will be part of GWHY upgrade. Due for completion 2007/08	RTA

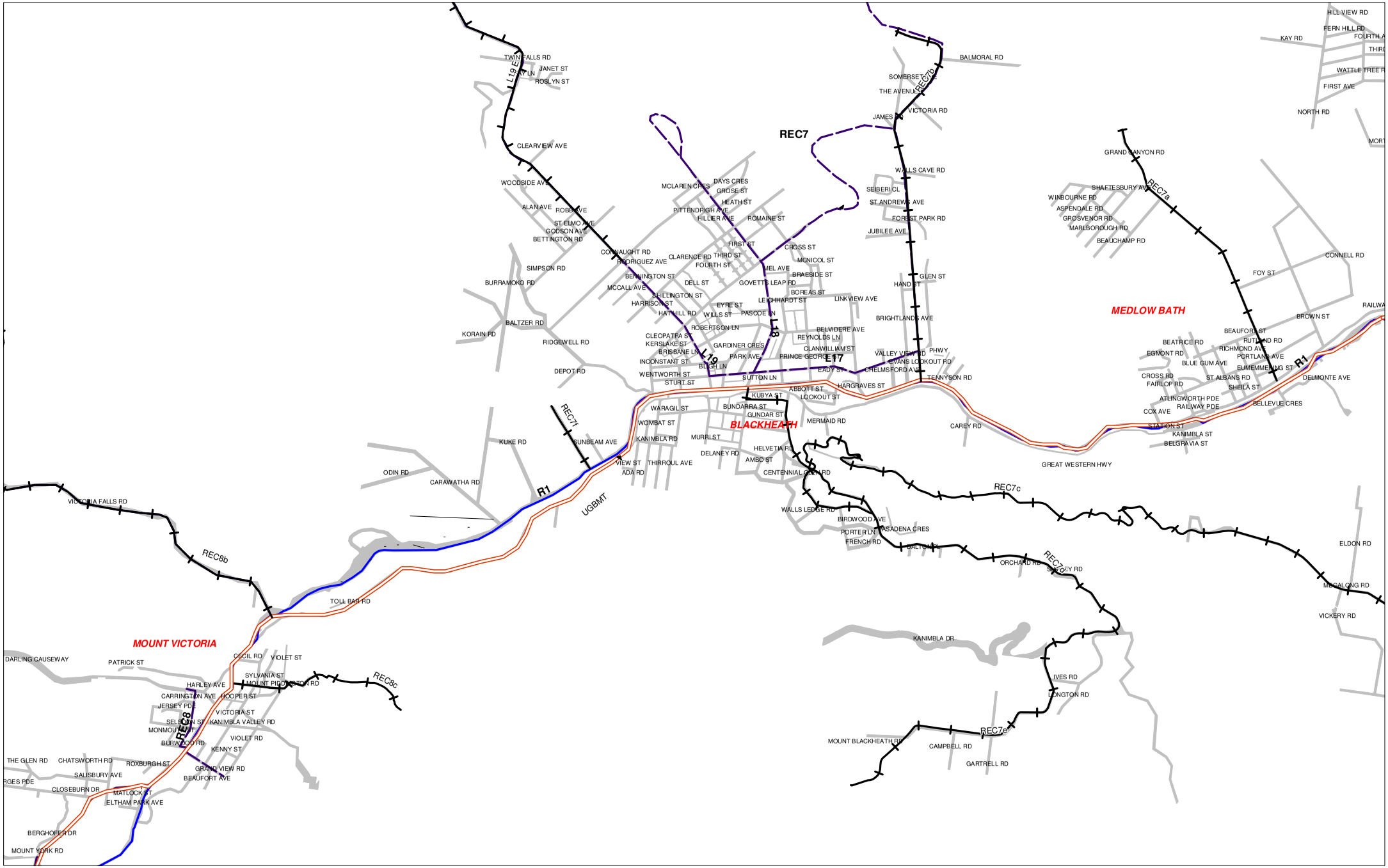
L8a New Off Road Hazelbrook to Linden	Existing on road local from Hazelbrook to Woodford along Railway Avenue. No mention from Woodford to Linden Railway Station. Recreational on road along Glossop Rd, Linden.	Hazelbrook to Woodford via Railway Parade then off-road path along GWHY to Tollgate Drive Linden, on road along Glossop Rd and Linden Ave to the Observatory	On road from the proposed underpass at Oaklands Rd, Hazelbrook to Linden along Railway Pde is in good condition with some potholes/bumps and eroded edges in parts. The pedestrian refuge between Orama Rd and Valley Rd causes dangerous conditions for cyclists. There is an informal route along the Northern side of the GWHY from Station St/ The Appian Way Woodford to Tollgate Drive Linden, which needs to be formalised. Tollgate Drive is in good condition and joins up (on the Southern side of the GWHY) with a footpath which leads down to the Linden Railway Traffic Lights & crossing.	This route would link with new GWHY Upgrade off road shared path which is being constructed. It would link up at The Appian Way at Woodford. On road link 580m along Station Street into Bridge Lane. Construct 1500m of 2.0m shared path along the Northern side of the GWHY from Bridge lane to Tollgate Drive Linden. On road 1900m length of Tollgate Drive, Linden and along Glossop Rd & Linden Ave to the Observatory. Burke Rd to Station. R8-2 x 2. PS3/4 x 2. W6-214 x10.	High	Shared path @$160,000 km Signage $180 Logo $250 Bicycle lane $5000	$240,000 $2160 $500 $12,400
						Total Cost	**$255,060**
L9 Extension East	Existing on road local.	Hazelbrook to Lawson via Baths Rd	Good but narrow on road -no shoulder in parts of Honour Ave, rolled K&G between lower Honour Ave and Hazelbrook RFS. Very narrow in Terrace Falls Rd Hazelbrook.	Install W6-214 x 8. Install bicycle network route directional signage.	High	Signage$180	$1,440
						Total Cost	**$1,440**
L9a New off Road Link	No mention.	Queens Rd Lawson to Ridge St Bullaburra	GWHY Lawson upgrade project.	RTA commitment for GWHY.	RTA Lawson Upgrade	Work s will be part of GWHY upgrade. Due for completion 2007/08	RTA
L10 link to L9, Bullaburra	Existing on road local.	Wentworth Falls to Bullaburra	Generally good local road with poor surface in older sections and eroded edges. The linking section, between towns, is recently sealed and has median barriers on hills which cause constriction of the road width and a hazard for cyclists.	To be reviewed as part of Bullaburra West GWHY Upgrade.	High	Works will be part of GWHY Bullaburra West upgrade. Due for completion 2008/09	RTA
L10a New Link	No mention.	Waratah Rd Wentworth Falls, joining two ends of Blaxland Rd (L10).	Generally good local road with poor surface in older sections and eroded edges.	Seal the shoulders and repair poor surface. Install shoulder lanes & PS-2 logos. Install bicycle network route directional signage. Install signage to new standard.	Low	No Action	
L 10b New Link	No mention.	Fletcher St and Valley Road Wentworth Falls	Generally good local road. Will link L10 from Falls Road to GWHY	Install route direction signage	Low	Signage $180	$1,440

						Total Cost	**$1,440**
L12 Extension East	No mention.	Scott Avenue at Leura to connect with off road shared path on GWHY at Caltex service station Wentworth Falls.	Off road shard path exist on southern side of Scott Av down to the Korowal school. There is no off road link to the GWHY & Wentworth Falls. The section of road between Korowal and the GWHY is narrow with bends.	Installed shared path from Korowal to GWHY on Southern side and then along South side of GWHY to link up with shared path near Caltex service station at Wentworth Falls.	Medium	SEE L12 12.6 for details.	
L12a New Link	No mention	West Street Wentworth Falls to Willow Park Av Leura	Shared path current exist at both ends of proposed link leaving critical gap in network.	This link will complete shared path for this section of the route. It will contect at West Street along Southern side across Scott Av and through Digger Cooper Reserve and connect with new shared path near Leura Public School. Construct 2km of 2.0m shared path. Refuge at Scott Avenue. Install R8-2 X 6. PS3/4 x 6.	High	Shared path @$160,000 km Signage $180 Logo $250	$320,000 $1080 $2000
						Total Cost	**$323,080**
L13 Extension East	Previously listed but not completed. Incorporated as part of GWHY upgrade.	GWHY from Mount Hay Leura to Woodlands Road Katoomba	Currently under construction.	Installed as per programmed works by RTA.	High	Work s will be part of GWHY upgrade. Due for completion 2007/08	RTA
Rec 6a New Route	No mention.	Tablelands Road from GWHY to Queen Victoria Hospital (QVH)	Good local road. Sealed to QVH then gravel links to trail heads. Very important links with Ingar Fire Trail, McMahons Lookout and Anderson Fire Trail. Very popular Mountain Bike Routes. Sealed to Queen Victoria Hospital.	Install W6-214 x 6. Install W6-210 & W6-211 where appropriate.	Low	Signage $180	$1,440
						Total Cost	**$1,440**
Rec 6b New Route	No mention.	Mount Hay Road from GWHY to end.	Local road, partly sealed then gravel to end. Popular mountain bike route.	Install W6-214 x 6. Install W6-210 & W6-211 where appropriate.	Low	Signage $180	$1,440
						Total Cost	**$1,440**
Rec 5a New Link	No mention.	Glenraphel Drive from Cliff Drive into Narrow Neck Trail to end.	Mainly gravel road with some narrow, steep and windy sections. Very popular tourist and cycle route.	Install W6-214 x 6. Install W6-210 & W6-211 where appropriate.	Low	Signage $180	$1,440
						Total Cost	**$1,440**

L16a Extension	Existing on road local	Station St from Civic Place to Camp Street	Good local road. Needs installation of bicycle network route directional signage.	Western side footpath is currently 2.0m, ensure a smooth surface and declare as a shared path. *Install line marking through the gardens at Civic Place or construct a refuge/crossing near Civic Place and use the Eastern side of Station St to join up to L13.*Install R8-1 x 2 signage and PS2 x 2 logos.	High	Refuge $7000 Signage $180 Logo $250	$7000 $360 $500
						Total Cost	**$7,860**
L16b New Link	No mention.	Twynan street from Victoria St to Barton Street. Barton Street from Twynam Street to South Street.	No footpath in Twynan Street. Barton street has a 1.2 wide path. This link would connect Victoria Street route along a more desired route - flatter and more easier accessible with North Katoomba Public School, Bureau Park and Oval and North Katoomba residential area.	Install 200m of 2m shared path in Twynam Street. Widen 1000m footpath in Barton Street to 2m. Install R2-8 x 6. PS3/4 x 6.	High	Shared path @$160,000 km Widen path @$65sq/m Signage $180 Logo $250	$32,000 $65,000 $1080 $1500
$						**Total Cost**	**$99,580**
Rec 7a New Route	No mention.	Grand Canyon Rd from Railway Parade to Point Pilcher, Medlow Bath	Local road, sealed to Connell Rd then gravel to end.	Install bicycle network route directional signage & W6-214 x 6 in both directions.	Low	Signage $180	$1,080
$						**Total Cost**	**$1,080**
Rec 7b New Route	No mention.	Evans Lookout Road from GWHY to end	Local sealed road, popular with tourist. Minimum width in most locations	Install bicycle network route directional signage & W6-214 x 6 in both directions.	Low	Signage $180	$1,080
$						**Total Cost**	**$1,080**
Rec 7c New Route	No mention.	Station Street from Bundarra to Shipley Road. Shipley Road from Station Street to Megalong Road. Megalong Road from Shipley to end.	Generally good local road to Megalong Road. Megalong Road is then quiet narrow and windy. Very popular with cyclist and has a number of tourist attractors in valley.	Install bicycle network route directional signage & W6-214 x 10 in both directions. Install W6-210 & W6-211 where appropriate.	Low	Signage $180	1080
$						**Total Cost**	**$1,080**
Rec 7d New Route	No mention.	Station Street from Bundarra to Shipley Road. Shipley Road from Station Street to Hargraves Lookout.	Generally good local road although it is narrow and windy in some locations. Very popular with cyclist and has a popular lookout at end.	Install bicycle network route directional signage & W6-214 x 6 in both directions.	Low	Signage $180	$1,080
$						**Total Cost**	**$1,080**
Rec 7e New Route	No mention.	Station Street from Bundarra to Shipley Road. Shipley Road from Station Street to Kanimbla Drive. Kanimbla Drive to ramp - end of seal	Good local road although it is narrow, steep and windy in some locations. Very popular with cyclist.	Extension from Hargraves lookout. Install bicycle network route directional signage & W6-214 x 2. Install W6-210 & W6-211 where appropriate.	Low	Signage $180	$1,080
$						**Total Cost**	**$1,080**

L19 Extension North	No mention.	Hat Hill Road from Connaught to end - Perry's Lookdown and Anvil Rock	Hat Hill Road from GWHY to Connaught rd currently exist. Sealed local road to Robb Avenue then gravel to end.	*Install bicycle shoulder lanes 500m x 2 and PS-2 x 2 logos & R7-1-4 X 2 on both sides Connaught Rd to end of bitumen. *Repair edge on both sides were required to provide a smooth sealed shoulder and edge line	Low	Shoulder Lane $5000 Signage $180 Logos $250 Shoulder Repair $65000	$5000 $360 $500 SLA
$						**Total Cost**	**$5,860**
Rec 7f New Route	No mention.	Ridgewell Road to end - Baltzers Lookout	Gravel road to tourist attractor.	Install bicycle network route directional signage & W6-214 in both directions.	Low	Signage $180	$360
$						**Total Cost**	**$360**
Rec 8a New Route	No mention.	Mt York Road from GWHY to end.	Good local road. Very popular with tourist & cyclist.	Part of Greenspace Project	Low	Refer Greenspace Project for full details.	
$						**Total Cost**	**NIL**
Rec 8b New Route	No mention.	Mt Victoria Falls Road to end	Gravel road to tourist attractor. Need to link with Mt Victoria to Katoomba Rail Trail when completed.	Install bicycle network route directional signage & W6-214 in both directions.	Low	Signage $180	$720
$						**Total Cost**	**$720**
Rec 8c New Route	No mention	Mt Piddington Road from GWHY into Sylvania & Apex to Mt Piddington	Local sealed road, popular with tourist. Minimum width in most locations.	Install bicycle network route directional signage & W6-214 in both directions.	Low	Signage $180	$1,440
$						**Total Cost**	**$1,440**
Greater Blue Mountains Trial (upper section) - Part of Greenspace Regional Project	Previously listed but not completed.	Katoomba to Mount Victoria connecting with Rec 5, Rec 8, Rec 8a & Rec 8b to Katoomba connecting with L14	See Council report April 2003	This route has been identified as one of high importance both as a regional link with the GWHY and linking local walking tracks and major tourist attractions. The plan for this link is the development of a 20km multi purpose trail adjacent to the railway corridor between Katoomba and Mt Victoria. This trail has the capacity to link with a number of recreation trails including Point Pilcher, Mt Victoria Falls, Mt Piddington, Mt York, Berghoffers Pass and onto Hartley Vale in the Lithgow LGA. This trail will link with the Cliff Drive route Rec 5.	High	**Refer Greenspace Project for full details.**	Subject to feasibility study
$						**Total Cost**	
						TOTAL PROPOSED ROUTE COSTINGS	**$1,843,000**

Attachment 3 - Network Maps



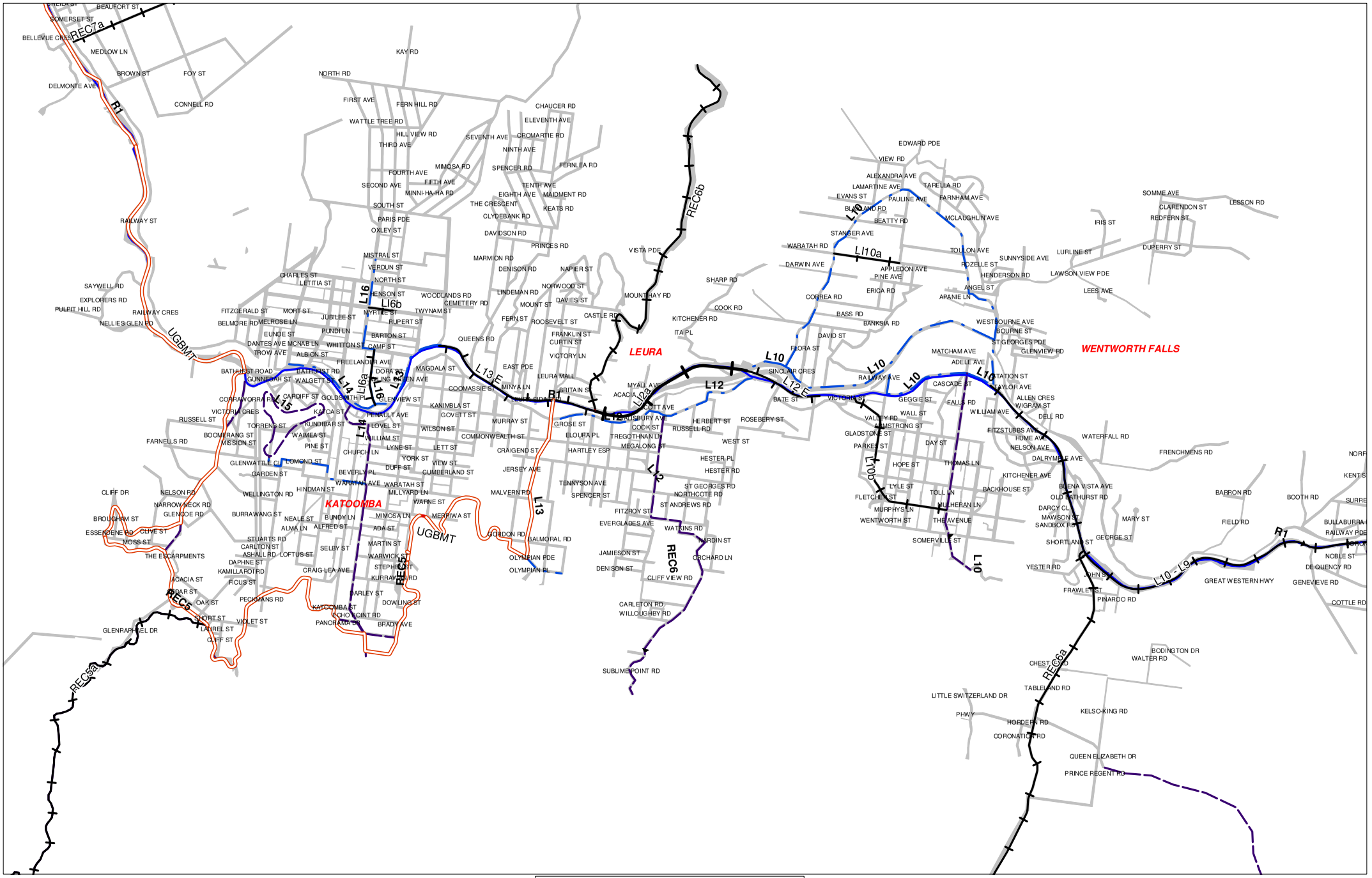
Blue Mountains Bike Plan 2020

Map 1

- New Proposed Extension
- New Route
- Upper Great Blue Mountains Trail
- Regional Route
- Local Routes
- Recreational Route

N

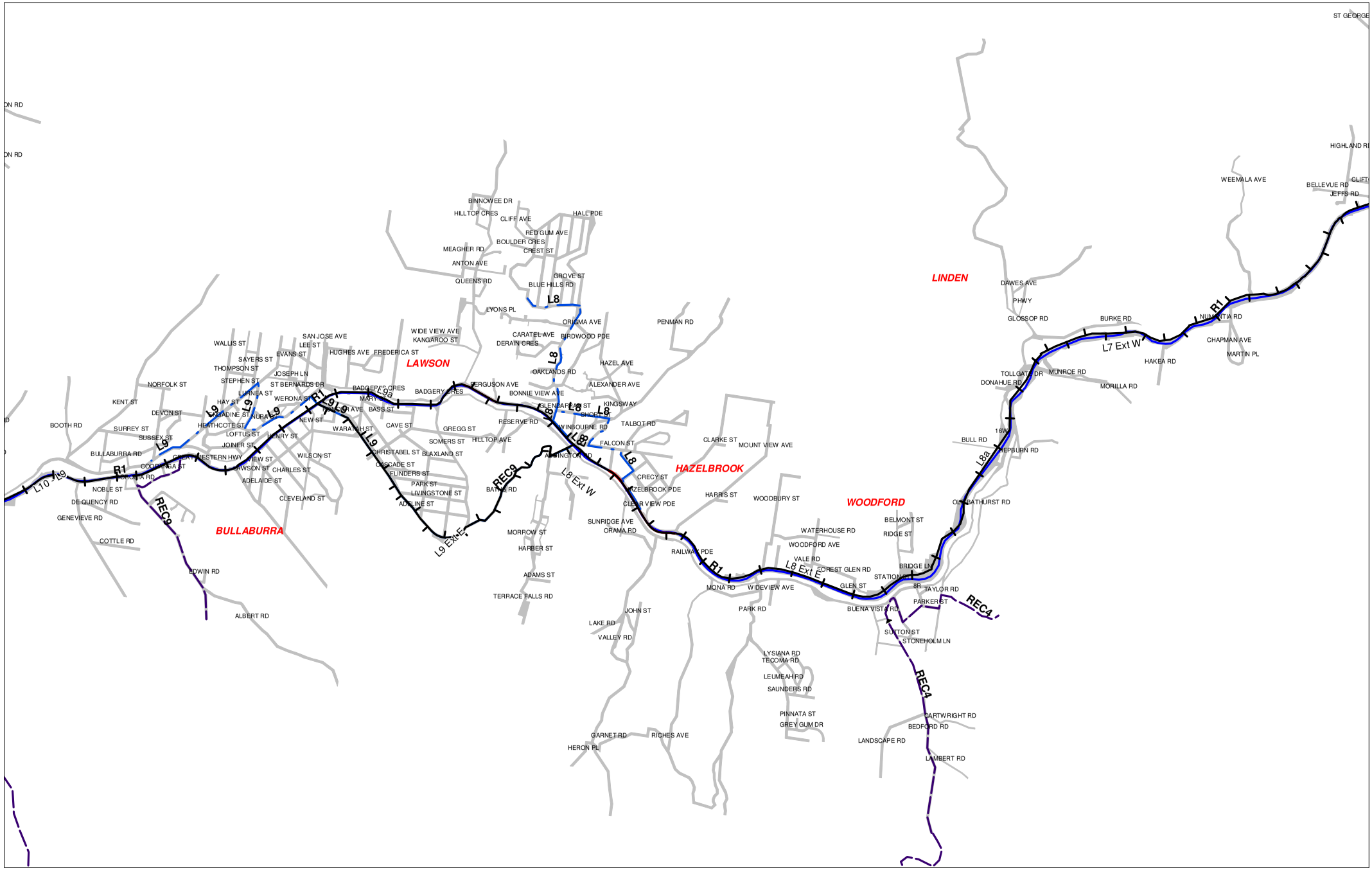
Prepared By: City of Blue Mountains
Print Date: 13.12.2007



Blue Mountains Bike Plan 2020

Map 2

Prepared By: City of Blue Mountains
Print Date: 13.12.2007



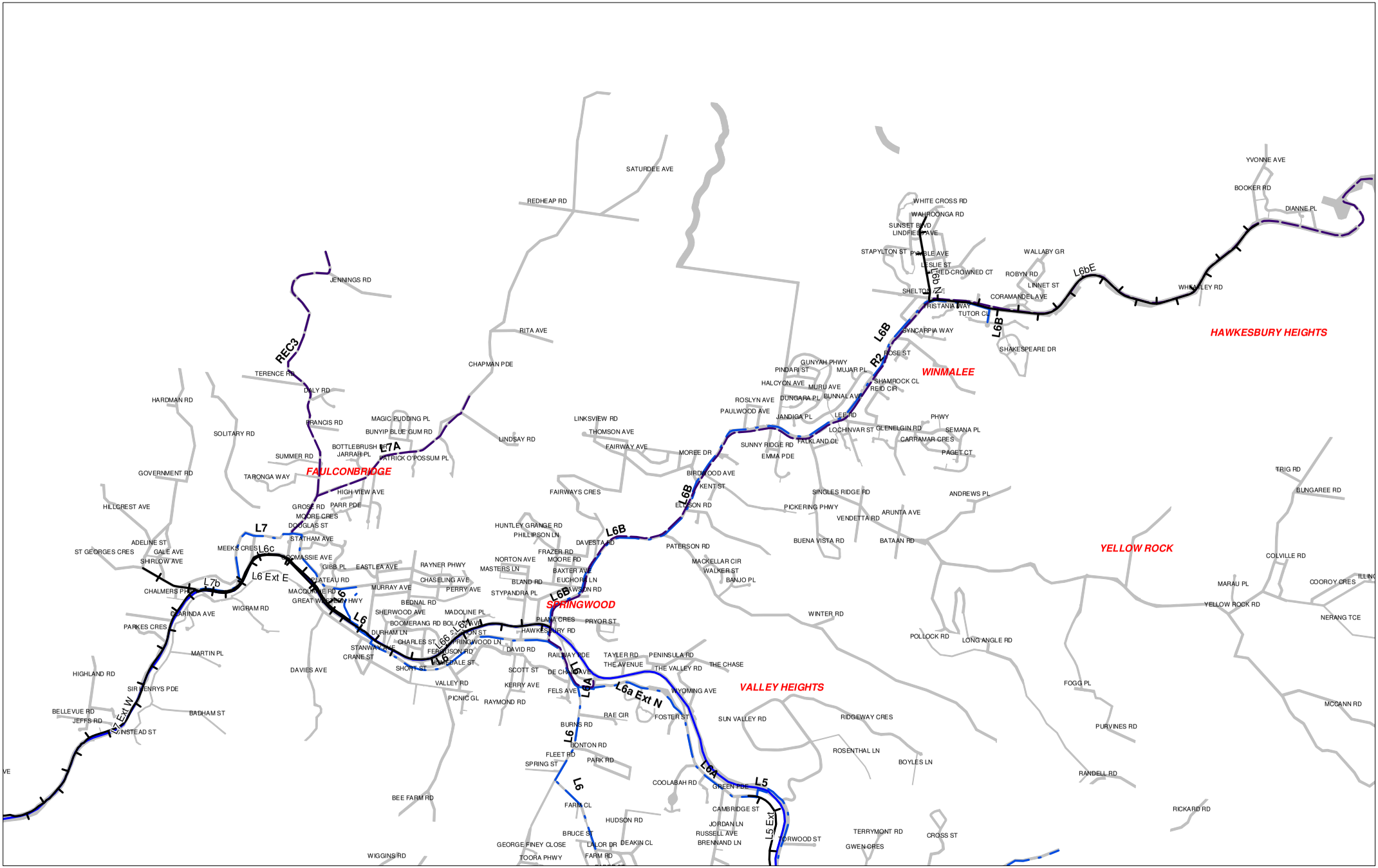
Blue Mountains Bike Plan 2020

Map 3

- New Proposed Extension
- New Route
- Upper Great Blue Mountains Trail
- Regional Route
- Local Routes
- Recreational Route

N

Prepared By: City of Blue Mountains
Print Date: 13.12.2007



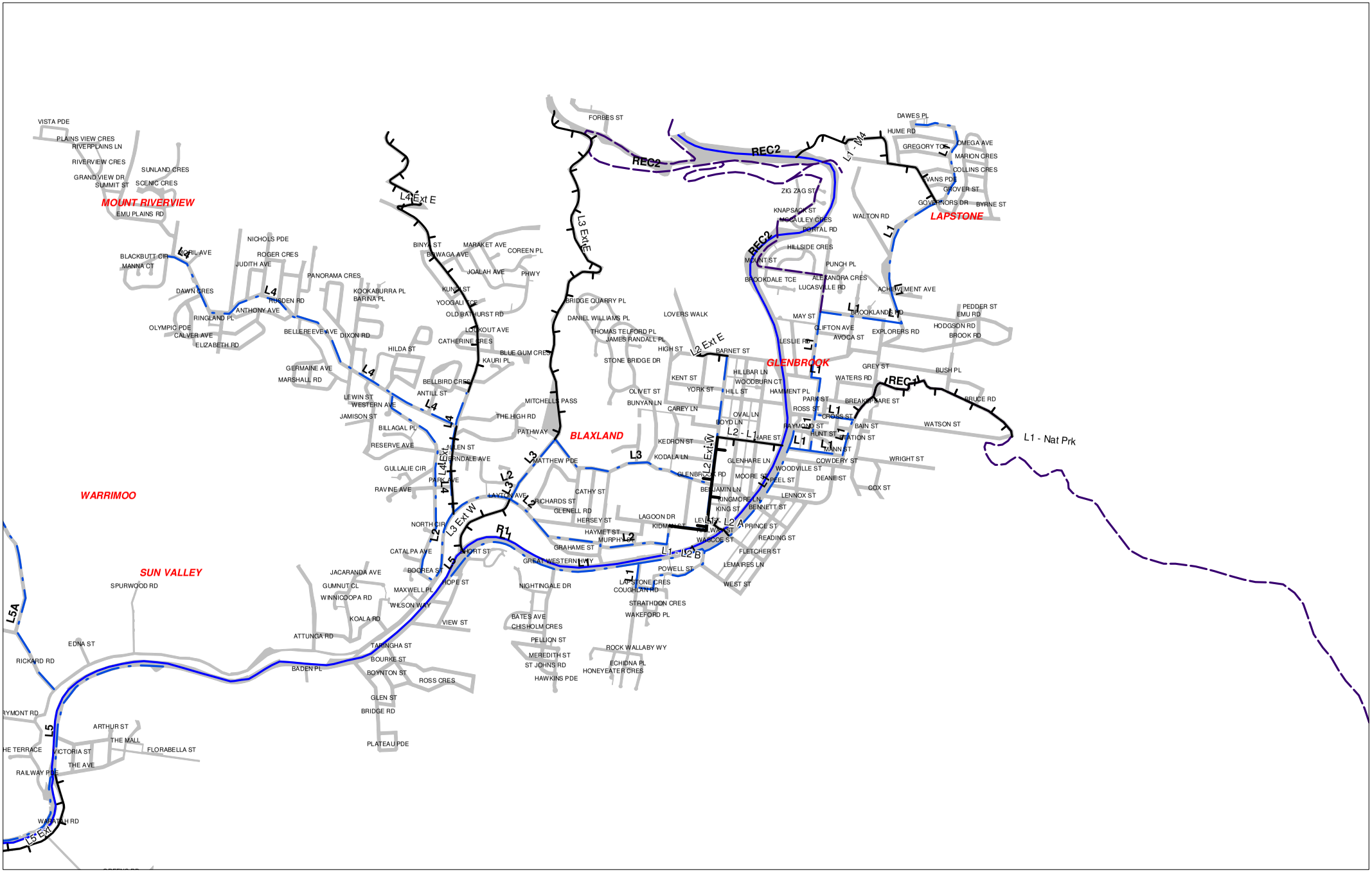
Blue Mountains Bike Plan 2020

Map 4

- New Proposed Extension
- New Route
- Upper Great Blue Mountains Trail
- Regional Route
- Local Routes
- Recreational Route

N

Prepared By: City of Blue Mountains
Print Date: 13.12.2007



Blue Mountains Bike Plan 2020

Map 5

- New Proposed Extension
- New Route
- Upper Great Blue Mountains Trail
- Regional Route
- Local Routes
- Recreational Route

Prepared By: City of Blue Mountains
Print Date: 13.12.2007

Attachment 4 - Great Blue Mountains Trail

Metropolitan Greenspace Application Map

BIKE PLAN 2020

Legend

- NPWS lands
- Cycleway Link Roads
- Section 1 — CLIFF DRIVE ROUTE
- Section 2 — KATOOMBA to MT VICTORIA

blue mountains City Council

Mount Irvine

Bell

Mount Wilson

Mount York

Stage 4
Mt Victoria to Mt York

Mount Victoria

Stage 3
Blackheath to Mt Victoria

Great Western Highway

UPPER MOUNTAINS TRAIL LINK:
KATOOMBA to MT VICTORIA ROUTE
along Great Western Highway
(SECTION 2)

Blackheath

Blue Mountains National Park

Stage 2
Medlow Bath to Blackheath

Shipley

Stage 1
Explorers Tree to Medlow Bath

Wentworth Falls West
(Completed)

Megalong Valley

PROPOSED Great Western Highway UPGRADE
(Local Link Strategy)

Lawson

Hazelbrook

Linden

Wentworth Falls East
(Completed 2008)

Explorers Tree

Katoomba

Leura

Wentworth Falls

Blaxland

Woodford

Springwood

Valley Heights

Warrimoo

Blaxland

Glenbrook

Lapstone

Mount Riverview

Yellow Rock

Yellomundee Regional Park

Winmalee

Hawkesbury Heights

Stage 10
Bathurst Rd
to
Explorers Tree

Stage 9
Cliff Drive
to
Bathurst Rd

UPPER MOUNTAINS TRAIL LINK
CLIFF DRIVE ROUTE
(SECTION 1)

Stage 8
Narrow Neck
to
Cliff Drive

Stage 4
Scenic World
to
Short Street

Stage 3
Banskia Park
to
Echo Point

Stage 5
Leura Cascades
to
Banksia Park

Stage 6
Leura Mall
to
Leura Cascades

Kings Tableland

INGAR FIRE TRAIL
(Existing Trail)

Stage 7
Short Street
to
Narrow Neck

Stage 2
Katoomba Falls
to
Scenic World

Stage 1
Echo Point
to
Katoomba Falls

ANDERSON FIRE TRAIL
(Existing Trail)

OAKS FIRE TRAIL
(Existing Trail)

Blue Mountains National Park

N

1

BMCC Community & Corporate

DT July 2007

Glenn Sherlock
Strategic Planning Specialist - Transport
Blue Mountains City Council

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