

MAROONDAH BICYCLE STRATEGY



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1 EXECUTIVE SUMMARY

Maroondah City Council is committed to developing cycling into a major form of transport and leisure within the Community. This commitment is in line with State Government Policy to make Melbourne a more sustainable city by promoting non-fossil fuel based forms of transport, reducing the need to continue expanding the road network and by increasing the permeability of our suburbs and improving the health of those that live within them.

At the local government level, bicycle strategies are an effective means to promote and encourage cycling, because they can set clear goals for a bicycle network and provide a set of strategies and action plans for achieving these goals. For this reason, many Councils in Melbourne have produced bicycle strategies, including the adjacent municipalities, Manningham, Whitehorse and Knox.

The Maroondah Bicycle Strategy aims to provide strategic support to the promotion and encouragement of cycling in Maroondah by:

- Giving affect to Council's commitment to cycling in Maroondah
- Setting objectives to encourage and promote cycling in Maroondah
- Articulating a set of strategies and action plans for promoting cycling in Maroondah. These strategies and action plans with their specific objectives have been grouped into four areas, which are:
 1. Off-Road Bicycle Paths
Objective: To provide a high quality bicycle path network, both in terms of the standard of paths and associated facilities and also in terms of the routes and destinations offered.
 2. On-Road Bicycle Routes
Objective: To provide a high quality network of on-road bicycle lanes.
 3. Education, Promotion & Enforcement
Objective: To promote the use of bicycles for leisure and transport and educate the community with regards to rules and appropriate conduct when using the Maroondah Bicycle Network.
 4. Implementation and Monitoring
Objective: To effectively implement and review the Maroondah Bicycle Strategy

2 INTRODUCTION

2.1 Background

It is now widely recognised that developing cycling into a major form of transport provides real social, economic and environmental benefits for the community. This is because cycling provides physical exercise, contributes little to greenhouse gases and requires far cheaper infrastructure than motor vehicles. The benefits that can be achieved by a higher rate of bicycle usage have been recognised and embraced by the Victorian Government in the 'Melbourne 2030 Strategy'. This strategy gives strong support for the need to increase the level of bicycle usage. Achieving this goal is seen as being important to the ability of Melbourne to protect and enhance its position as one of the world's most liveable cities

The City of Maroondah strongly supports the need to promote bicycle usage in metropolitan Melbourne. This support is clearly voiced in the Maroondah Municipal Strategic Statement, which articulates the need to lift the level of bicycle usage in Maroondah in comparison to the traditional fossil fuel based forms of transport. To achieve this goal, Council recognises the need for a bicycle strategy, which provides an effective program of action for promoting cycling in Maroondah.

2.2 Objectives

The 'Maroondah Bicycle Strategy' has a number of objectives, all of which support the overall goal of building cycling into an alternative form of transport. These objectives include:

- To use the preparation of the Maroondah Bicycle Strategy as an opportunity to assess bicycle usage in the municipality and to consult with the community and other interested groups as to how to best increase the level of bicycle usage.
- To create a bicycle friendly culture within Maroondah City Council and the community.
- To develop a program to improve bicycle facilities, including a well-integrated bicycle network, which provides safe and convenient access to key destinations in and around Maroondah.
- To encourage cycling in Maroondah – to get more people riding bicycles more often.

These objectives relate specifically to cycling. However, it should be pointed out that this strategy is part of a broader push to encourage non-motor vehicle based travel in Maroondah and, therefore, it is hoped that this strategy will not only promote cycling, but also help encourage other forms of non-motor vehicle based travel, particularly walking. For example, it is expected that many of the improvements that this strategy recommends to the network of bicycle paths will not only encourage a greater level of cycling, but also encourage more people to walk, either for leisure or as a form of travel.

2.3 Study Area

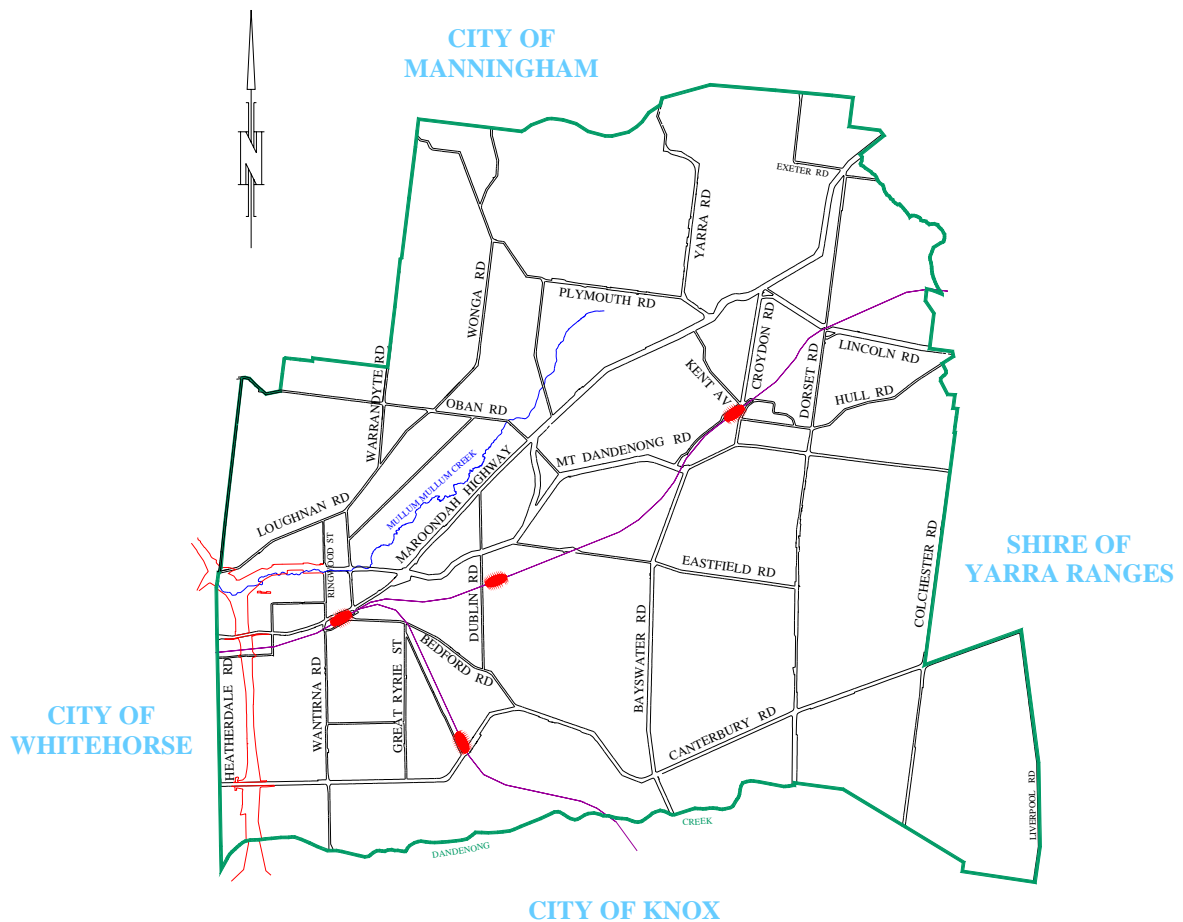
The City of Maroondah forms part of the north eastern boundary of the greater metropolitan area and is located 25 kilometres to the east of Melbourne. It presently has an estimated population of 93,440 and covers an area of 61 square kilometres. Maroondah is bordered by the municipalities of Manningham (north), Whitehorse (west), Knox (south) and Yarra Ranges (east).

Maroondah is traversed by a State Highway, which serves as an essential link between the metropolitan area and the tourist regions of the Yarra Valley. The proposed Mitcham to Frankston Freeway will traverse the western side of the municipality.

A metropolitan heavy rail line links Maroondah with the City and then splits into two further lines as they exit Maroondah and enter the Shire of Yarra Ranges and the City of Knox.

Key waterways in Maroondah include the Dandenong Creek which forms part of the southern boundary of the municipality and the Mullum Mullum Creek, which flows in a south westerly direction through the municipality and enters the City of Manningham. The Mullum Mullum Creek flows into the Yarra River.

CITY OF MAROONDAH



2.4 Strategy Development

2.4.1 Review of Relevant Publications

A review was undertaken of a range of existing publications related to the development of bicycle networks. This review assisted in the identification of the main issues and the strategic context of cycling as a component of a local and regional integrated transport system.

2.4.2 Formation of Working Group

A Working Group was formed to help in the production of the 'Maroondah Bicycle Strategy'. The working group comprised several Council Officers and interested stakeholders from the community of Maroondah and outside, including a representative from Bicycle Victoria, a representative from Maroondah Bicycle Users Group and a range of Council Officers whose areas of expertise are relevant to this strategy. These officers included representatives from traffic engineering, strategic planning, environmental planning and leisure services. This group held its first meeting on the 23rd of January 2002 and several meetings were held up until late 2002.

2.4.3 Community Survey

A survey was given to the community, which sought to find out the following information:

- General information about the participants, including their age and postcode
- Whether the participants ride a bicycle and how frequently they ride
- What sort of bicycle trips they make
- Where the participants ride their bicycles, including the routes they most commonly take
- Whether they cycle to or from anywhere outside Maroondah and which routes they take to do this
- Their three main concerns with regards to cycling in Maroondah
- Whether they use the bicycle network in ways other than cycling, such as, walking, in-line skating, etc.
- What suggestions they have to improve the safety and enjoyment of cycling in Maroondah
- Whether they would ride their bicycle more often, if their preferred changes to the Maroondah bicycle network were made

A total of 440 survey responses were received from a cross section of the community. The survey responses have provided information about current usage of the Maroondah bicycle network and have been an invaluable source of community input in deciding upon a set of action plans and strategies for promoting cycling in Maroondah and improving the municipality's bicycle network.

3 STRATEGIC OVERVIEW

3.1 Integrated Transport

The recently released 'Melbourne 2030 Strategy' articulates the State Government's commitment to creating a more integrated transport system in Melbourne. This will be a more ecologically sustainable transport system providing support for walking, cycling and public transport and reducing private car dependency. To increase the level of bicycle usage, the 'Melbourne 2030 Strategy' offers a range of policies and initiatives which promote cycling, such as, providing strong support for completion of the Principal Bicycle Network and providing improved facilities, particularly storage, for cyclists at public transport interchanges and rail stations.

3.2 Types of Networks

There are two types of bicycle networks relevant to metropolitan Melbourne:

- Principal Bicycle Network (PBN)
- Municipal Bicycle Networks (MBN)

The PBN provides interconnected 'through routes' having a high level of service across metropolitan Melbourne. It comprises approximately 2000 km of on-road facilities, mostly on main roads, and more than 1000km of off-road paths along major creeks and waterways and within freeway reservations. Municipal Bicycle Networks (MBN) comprises on-road and off-road bicycle facilities that provide for people to travel by bicycle within their community.

Bicycle Victoria is campaigning for four integrated bicycle networks to be built. These are to provide safe, direct and attractive bicycle facilities so that more Victorians can ride more often. The organisation hopes these four networks will serve different types of riders from novices to experienced cyclists. This campaign, called 'The Four Network Challenge', has a goal of achieving 16,000 km of safe bicycle facilities for Victoria, including:

- 3,000 km of bicycle lanes on main roads in towns
- 6,000 km of bicycle lanes on local roads
- 5,000 km of shared paths in towns
- 2,000 km of multi-use trails on disused rail lines

'The Four Network Challenge' is based on the premise that providing a variety of suitably extensive cycling networks best accommodates the different types of riders and thus, ensures that every Victorian has the opportunity to ride.

3.3 Types of Bicyclists

Bicyclist characteristics vary by their age, ability, experience and their purpose for cycling. The purpose of a cycling trip influences characteristics such as cycling speed, distance and preferred road environment. Broadly, bicyclists can be placed into one of three groups:

3.3.1 Commuter Bicyclists

Commuter bicyclists require a direct route between destinations and end of journey facilities. These bicyclists typically have a high level of cycling ability, travel at high speeds and travel via the arterial road network as it generally provides a direct route, good riding surface and signalised intersections to assist crossing major roads.

3.3.2 Neighbourhood/Recreational Bicyclists

Neighbourhood bicyclists and recreational bicyclists have very different characteristics to commuter bicyclists. Directness, speed and end destinations are not as important to these bicyclists. Aspects such as scenery, ease of cycling task and absence of traffic are more important. Recreational cycling trips often involve families who have ranges of cycling ability.

3.3.3 School Bicyclists

School bicyclists generally have a very low level of ability, possess little knowledge of the road traffic and are particularly vulnerable to accidents. As with pedestrians of this age, their behaviour tends to be unpredictable and they often over-estimate their ability to manoeuvre between traffic movements.

3.4 Road Safety

Statistics provided by VicRoads show that a significant number of bicyclists are being injured in accidents in Maroondah. From 1995 to December 2000, 31 bicyclists were seriously injured in accidents on Maroondah's roads. Over the same period of time, a total of 121 bicyclists required hospital treatment as a result of being in an accident. For the nine-year period from 1991 to 1999, bicyclist injuries made up 6.8% of serious injuries in Maroondah. However, the full extent of cycling accidents may be unknown, as many injuries to bicyclists are unreported. Some studies suggest that bicyclists comprise at least 12% of all road users hospitalised from vehicle crashes.

The Maroondah Road Safety Strategy identifies a need to improve safety for bicyclists. One action it supports for achieving this is to use the Maroondah Bicycle Strategy to ensure the needs of bicyclists are considered in the planning and design of infrastructure.

3.5 Sustainability

In its 'Melbourne 2030 Strategy' the State Government has set sustainability as a primary target for the next three decades. Underpinning this emphasis on sustainability, is the belief that our current reliance on fossil fuel and motor vehicle based transport is seriously affecting the quality of our environment, particularly the air and this, in turn, is impacting adversely on people's health. As part of the State Government's effort to create sustainable development, the promotion and encouragement of non-motor vehicle based transport, such as cycling has been given far more support. This heightened support for cycling is clearly evident in 'Melbourne 2030' and in a number of other recent government publications.

4 ISSUES

4.1 Key Points From Relevant Publications

The publications reviewed as part of the development of this strategy are listed in Appendix 1. Presented here are the key points of relevance to this Strategy, which have been gained from the literature review:

4.1.1 Strategic Support for Cycling in Maroondah

- The State Government supports the goal of creating a more integrated transport system. An intrinsic feature of this system will be a substantial reduction in the dependency of the community upon private motor vehicle based transport and a corresponding move to more ecologically friendly forms of transport, such as public transport, cycling and walking. ('Melbourne 2030 Strategy' – October 2002).
- The State Government offers strategic support for an integrated transport system in the eastern region of Melbourne. ('The Draft Outer Eastern Public Transport Plan – 2002)
- The State Government strongly supports the need to promote cycling and walking as leisure activities. It also supports such actions as reducing barriers to walking and cycling to school and providing more funding for the Principal Bicycle Network ('Physical Activity Framework' – September 2000).
- Maroondah City Council supports the promotion of cycling as a form of leisure and as an important element within the municipality's transport system. (Maroondah Municipal Strategic Statement – 1999 and the Maroondah Road Safety Strategy).

4.1.2 Safety

- As discussed earlier in section 3.4 - Road Safety, a significant number of cyclists are being injured in accidents in Maroondah. (VicRoads Road Crash Statistics - 2000 and Cyclist Trauma – 1998)
- A variety of actions should be taken to improve the safety of Maroondah's network of off-road bicycle paths. (Maroondah City Council Shared Footway Safety Audit - 1998). The major actions recommended by this document include:
 - Providing a standard treatment at all crossings of off-road bicycle paths and roads.
 - Implementing a maintenance schedule, which ensures that every path is checked twice yearly.
 - Adopting a signage schedule on all off-road paths.
 - Rebuilding the Tarralla Creek Trail.
 - Improving the surface of a number of off-road paths.
 - Removing all low gate barriers, bollards and chicanes, currently on paths.
 - Reducing the incline on sections of path that are considered to be too steep.

- Placing lights on sections of path that are in particular need of this facility.

4.1.3 Responsibility

- VicRoads has general responsibility for the development and coordination of the on-road component of the Principal Bicycle Network (Metropolitan Cycling Workshop – November 1999).
- Parks Victoria has general responsibility for the development of many of the off-road paths of the PBN (Metropolitan Cycling Workshop – November 1999).
- Local Government must work in partnership with both VicRoads and Parks Victoria in relation to each of these organisations' particular area of responsibility within a municipality (Metropolitan Cycling Workshop – November 1999).
- Local Government is responsible for all areas of a municipality's Bicycle Network outside VicRoads and Park Victoria's areas of responsibility. This includes amongst other things; the provision of bicycle lanes on all roads other than arterial roads and the maintenance of off-road paths. ('Providing for Cycling: The Role of VicRoads and Local Councils' – 1999)

4.1.4 Extension of the Maroondah Bicycle Network

- VicRoads is seeking to extend the network of on road bike lanes on Melbourne's arterial roads as part of its on-going development of the Principal Bicycle Network. For Maroondah, the Principal Bicycle Network Map (See section 8.3.1) proposes bike lanes on Maroondah Highway, Canterbury Road, Mount Dandenong Road, Dorset Rd, Colchester Rd, Wantirna Rd and Warrandyte Rd. In addition, bike lanes have recently been installed on Heatherdale Road in accordance with the PBN Map.
- Parks Victoria supports several projects relevant to Maroondah's bicycle network, including;
 - Creating a link from the Mullum Mullum Creek Trail to the Yarra Trail and the Koonung Creek Trail
 - Extending the Mullum Mullum Creek Trail south, from Currawong Bush Park to Ringwood Lake
 - Completing the gap in the Tarralla Creek Trail from Canterbury Road to the Dandenong Creek Trail
 - Developing a link from the Main Yarra Trail at Warrandyte to Ringwood Lake via Anderson's Creek
 - Developing a link from the Scotchman's Creek Trail to Ringwood Lake
 - Linking the Warburton Rail Trail to the Tarralla Creek Trail via the O'Shannassy Aqueduct Trail (Linking People and Spaces - 2000)

4.1.5 Relevant Actions of Adjoining Councils

- The bicycle strategies of the City of Whitehorse and the City of Knox recommend the formation of a Regional Bicycle Council. It is proposed by the City of Whitehorse that this body will have a number of matters to consider, including implementation of the Victorian Bicycle Strategy at the municipal level, connections of the on-road and trail networks across the region and giving priority to funding of major activities within the region. It has been recommended that this body be composed of representatives from local Councils, agencies, user groups and the police force. (Knox Bicycle Plan Review - July 2001 and The City of Whitehorse Bicycle Strategy and Works Program – 1997)

- The City of Whitehorse recommends the establishment of the following routes into or bordering Maroondah.
 - An Eastern Rail Trail, which would be placed alongside the Belgrave-Lilydale rail line and move right through Whitehorse on an east-west axis. It would enter the City of Maroondah where the railway line crosses Heatherdale Rd.
 - A Pipeline Trail, which would follow the O’Shannasse Pipe Track in a north-easterly direction through Whitehorse and enter the City of Maroondah at the junction of Heatherdale and Whitehorse Roads.
 - A bicycle path from the junction of the Eastern freeway and Springvale Road, which will follow the proposed extension of the Eastern Freeway into Maroondah.
 - An on-road bicycle path on Deep Creek Rd, which will run from Maroondah Highway and enter Maroondah at the junction of Glenvale Rd and Deep Creek Rd.
 - An on-road bicycle path along the Whitehorse side of Heatherdale Rd, which will run from Maroondah Highway to Centre Rd near the Dandenong Creek.
 - An on-road bicycle path, which will run from west to east along Canterbury Road, through the City of Whitehorse, and enter Maroondah.
 - An on-road bicycle path, which will run from west to east along Maroondah Highway, through the City of Whitehorse, and enter Maroondah.
 - A Healesville Trail, which will run from Middleborough Road in a westerly direction, along the proposed Healesville Freeway into the City of Knox. This proposal is relevant to the Maroondah Bicycle Strategy, because part of the proposed freeway will travel through Maroondah in an east to north-easterly direction. (City of Whitehorse Bicycle Strategy and Works Program – 1997)

- The City of Knox recommends the establishment of the following routes into or bordering Maroondah.

- An on-road bicycle lane along Wantirna Rd, which will run in a northerly direction from Mountain Highway across the Dandenong Creek and into Maroondah.
 - An off-road bicycle path, which will start at Mountain Highway, run north along Dorset Rd, and enter Maroondah.
 - An off-road bicycle path, from the Dandenong Creek Trail at Colchester Rd to the Liverpool Road Retarding Basin. Although this 3-kilometre path will terminate in the City of Knox, for much of its length, it will run through Maroondah. (Knox Bicycle Plan Review – July 2001)
- The City of Manningham recommends the establishment of the following routes into or bordering Maroondah.
 - An off-road path following the proposed Eastern Freeway Extension from Springvale in Manningham, passing out of Manningham and linking onto the Mullum Mullum Creek Trail in Maroondah (Manningham City Council Bicycle Strategy - 2001).

4.2 Community Comment

A detailed analysis of the community survey is shown in Appendix 2. A brief outline on the major issues raised by the community survey will be provided here.

Two questions in the Maroondah Bike Survey particularly asked for community comment on the current condition of the Maroondah Bicycle Network. These were questions 8 and 9. Question 8 asked respondents to specify their three main concerns with regard to cycling in Maroondah. Question 9 asked participants in the survey to make suggestions as to how the safety and enjoyment of cyclists in Maroondah could be improved.

In response to question 8, the most common responses were:

- Poor road/path surface (48.3% of respondents)
- Insufficient space on the road network (44.3% of respondents)
- Lack of driver consideration for cyclists (34.3% of respondents)
- Lack of directional signage (22.9% of respondents)
- Intimidation caused by on-road vehicle speed limit (21.7% of respondents)

In response to Question 9, the most popular suggestions for improving the safety and enjoyment of cyclists in Maroondah were:

- Improving the safety of cyclists (66 people) – suggestions provided under the term ‘safety’ include providing better crossing points between roads and off-road cycling paths, providing more lighting, widening some bicycle paths, installing bicycle traffic lights and security lights on bicycle paths, introducing a speed limit on bicycle paths, better controlling of the number and actions of dogs on bicycle paths, allowing cyclists more access to footpaths and providing programs to improve the attitude of drivers towards cyclists on the road.
- Providing more bicycle paths (48 people)

- Improving the surface of bicycle paths and bicycle lanes (39 people)
- Providing more space on the road for cyclists (34 people)
- Providing more bicycle facilities, such as bicycle lockers and drinking taps (20 people)
- Better linking the system of bicycle paths (11 people)
- Better provision for BMX riders (11 people)
- Improving signage on the off-road bicycle path network (10 people)
- Better promoting the Maroondah Bicycle Network (4 people)
- Providing organised rides (2 people)

4.3 Maroondah's Bicycle Network

Details of the existing and proposed bicycle network in Maroondah are shown at 8.3.2.

VicRoads Principal Bicycle Network Map for the Eastern Region is shown at 8.3.1.

4.4 Intersections & Road Crossings

The Maroondah Shared Footway Audit (1998), identified crossings as one aspect of the off-road bicycle path network, which is in particular need of attention. More specifically, the audit found that there is a lack of standard treatment in relation to both bicycle path/road intersections and intersections between bicycle paths. As a result, a number of both these types of crossings are quite hazardous. To address this situation, the audit recommends a standard treatment for these types of crossings to be applied across the off-road path network.

Part 14 of Austroads Standards Australia provides guidelines for standard treatment for intersections involving bicycle paths. Provided below is a summary of the key points contained in these guidelines:

4.4.1 Right of Way at Road – Bicycle Path Intersections

- In general, given that intersection controls generally do not favour cyclists under traffic regulations, road carriageway traffic must currently be given priority at these locations.

4.4.2 Approach to a Road – Bicycle Path Intersection

- Sight distance to the intersection must be adequate on all approaches so that both cyclist and motorist can easily identify the treatment and the priority that applies.
- Sharp downgrades to road junctions should be avoided where possible.
- Where the path alignment is straight on the approach to a road, the paths should be as flat as possible with the longitudinal down gradient being no greater than 3 per cent.
- Paths for cycling should be aligned to intersect roads at approximately 90 degrees.

- Where sight distance is restricted, curves should be used on the approach to slow cyclists to a safe approach speed.

4.4.3 General Crossing Treatment

- Where the path is intended for general use, traffic volumes are relatively low (up to 3000 vehicles per day) and it is desired that motor vehicles have priority, the treatment detailed in the following diagram should be applied.

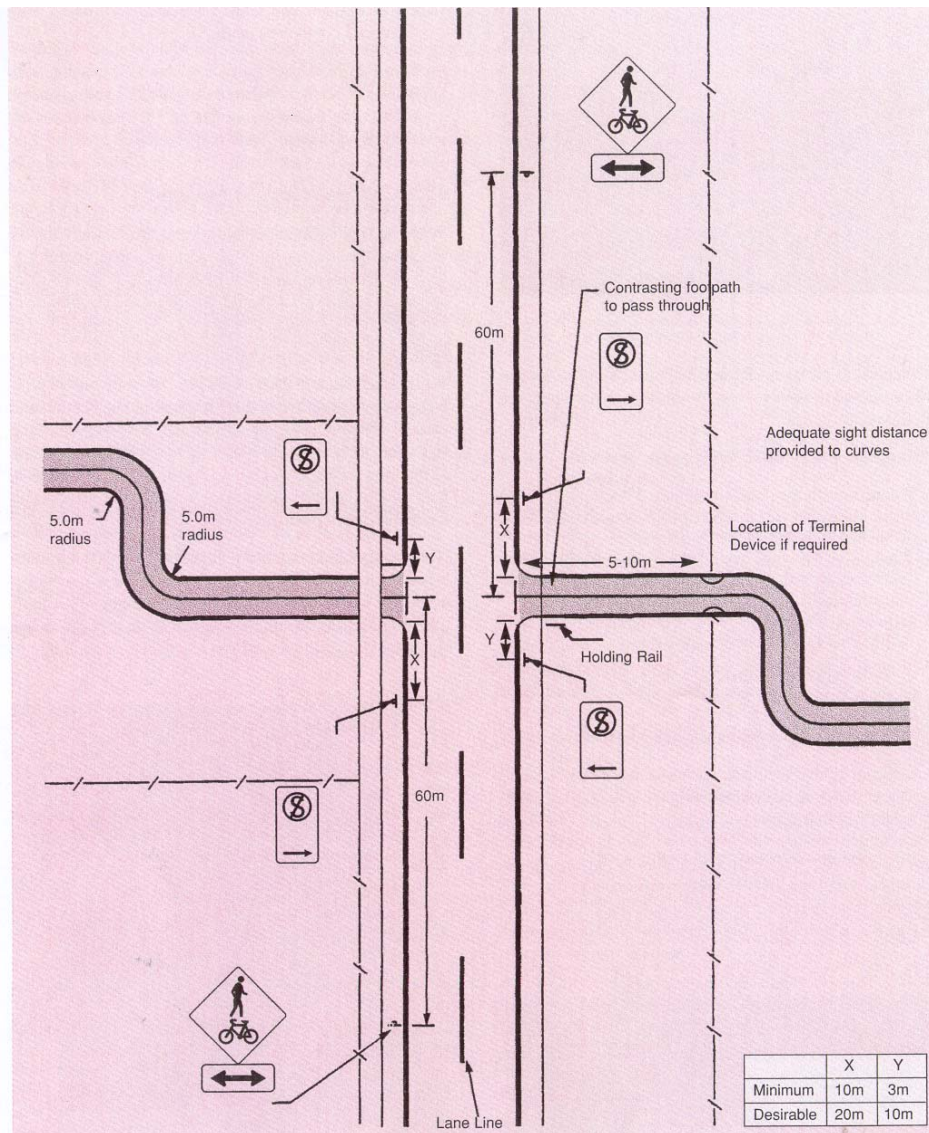


Figure 6-29 in Part 14 of Austroads: Preferred Treatment of Road/Path Intersection

- If the path is predominantly intended for use by primary school children it is essential to control their movement across the road. In this situation, the treatment detailed in the following diagram should be applied.

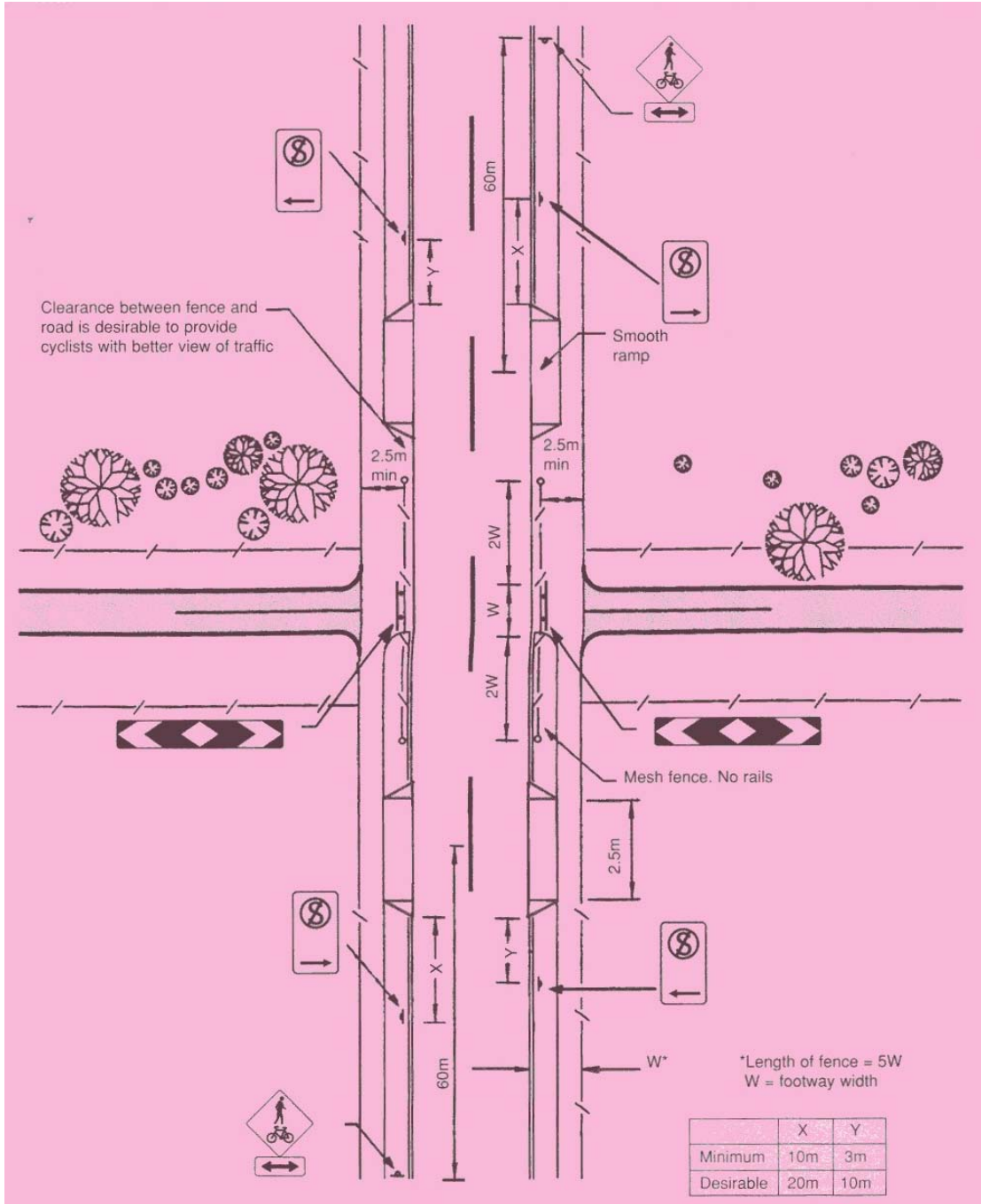


Figure 6-36 in Part 14 of Austroads: Alternative Terminal Controls at Road/Path Intersection for School Children

4.4.4 Additional Measures for Collector Roads and Arterial Roads

Where an off-road path crosses a busy local street or an arterial road away from an intersection it may be necessary to provide facilities to aid the cyclists in making a safe crossing, such as controlled crossings or physical refuges.

(a) Controlled Crossings

- Paths for cycling can be coordinated with signalised or unsignalised pedestrian crossings and school crossings. Where a bicycle route crosses a road at a signalised crossing, care should be taken to ensure that activation buttons are located to avoid the need for cyclists to cross in front of oncoming path users and are within easy reach of a mounted cyclist.

(b) Refuges

- Refuges are appropriate where:
 - Motor traffic volumes and speeds make it difficult for cyclists and pedestrians to cross two way motor traffic flow
 - The combined pedestrian and cyclist demand justifies special treatment
 - Sufficient road width exists or can be readily achieved to enable the installation of the refuge treatment (such that the resultant road width does not create squeeze points for on-road cyclists)
- The design of refuges should be in accordance with the following guidelines:
 - To accommodate a bicycle that is typically 1.75 metres long, it is desirable that a refuge be at least 2.0 metres wide. Where there are concentrated cyclist demands at certain periods of the day (e.g. secondary schools) a greater width and length may be required.
 - Refuges should be furnished with a holding rail to allow a stationary cyclist to remain mounted within the refuge area. Rails should be located clear of the gap although where the gap is wide the rails can be located within the gap, on the left hand side.
 - Refuges should be provided with adequate street lighting to enhance visibility of the island and cyclists using it at night.

4.4.5 Path Terminal Devices

- Path terminal devices, such as bollards, gates, barriers etc., present safety and convenience issues for cyclists and should only be used where no other alternative facilities are available.
- In general crossings should allow cyclists to move straight across the intersecting roadway, any slowing of cyclists preferably being achieved by curves on the path in advance of the intersection. However it is important that curves are not be too sharp as this may result in path users “cutting the corner” and increasing the chance of conflict between path users.

Road crossings need to be made clear and unambiguous by installing stop lines on the path together with give way signs or

holding rails to give clear signals to cyclists that they should stop and give way to traffic.

4.4.6 Holding Rails

- Holding rails should only be provided where there is reasonable likelihood that cyclists will have to stop at intersections with roadways or paths. In general they should not be provided at the intersections of paths with local streets where it is unlikely cyclists will have to stop and wait.
- Holding rails must be placed within easy reach of cyclists, generally on the left hand side of the path. It is important that they are placed so that the cyclists using them can easily see approaching traffic and safely cross or enter the intersecting carriageway.

In addition to the above guidelines it is desirable that holding rails are provided on local roads that are regularly used by commuter cyclists. This is because these cyclists regularly use cleats and cycling shoes, which make it difficult for the cyclist to put their foot down when they stop. Consequently, it is desirable that holding rails are installed at all intersections where it is likely that commuter cyclists will have to stop.

4.4.7 Kerb Ramps

The provisions of a gently graded and smooth invert, without a bull nose, at the gutter ramp are vital design features for the safety and comfort of all path users, including cyclists.

4.4.8 Key Bicycle Path-Road Intersections Requiring Treatment

A table has been created which details the key bicycle path – road crossings in the City of Maroondah which are in need of improvement. This table is provided in *Appendix 4*.

4.4.9 Intersections of Paths with Paths

Austrroads recommends that at these intersections the following be provided:

- Pavement markings including centre lines and Give Way holding lines
- Pavement splays in the corners (minimum radius of 2.5m)

Furthermore, it is recommended that cross intersections which allow high speed conflicts should not be provided and the area around path intersections should be kept clear of hazardous materials, such as log barriers.

The Maroondah Bike Path Safety Audit has identified approximately 18 intersections between bicycle paths that are in need of some treatment.

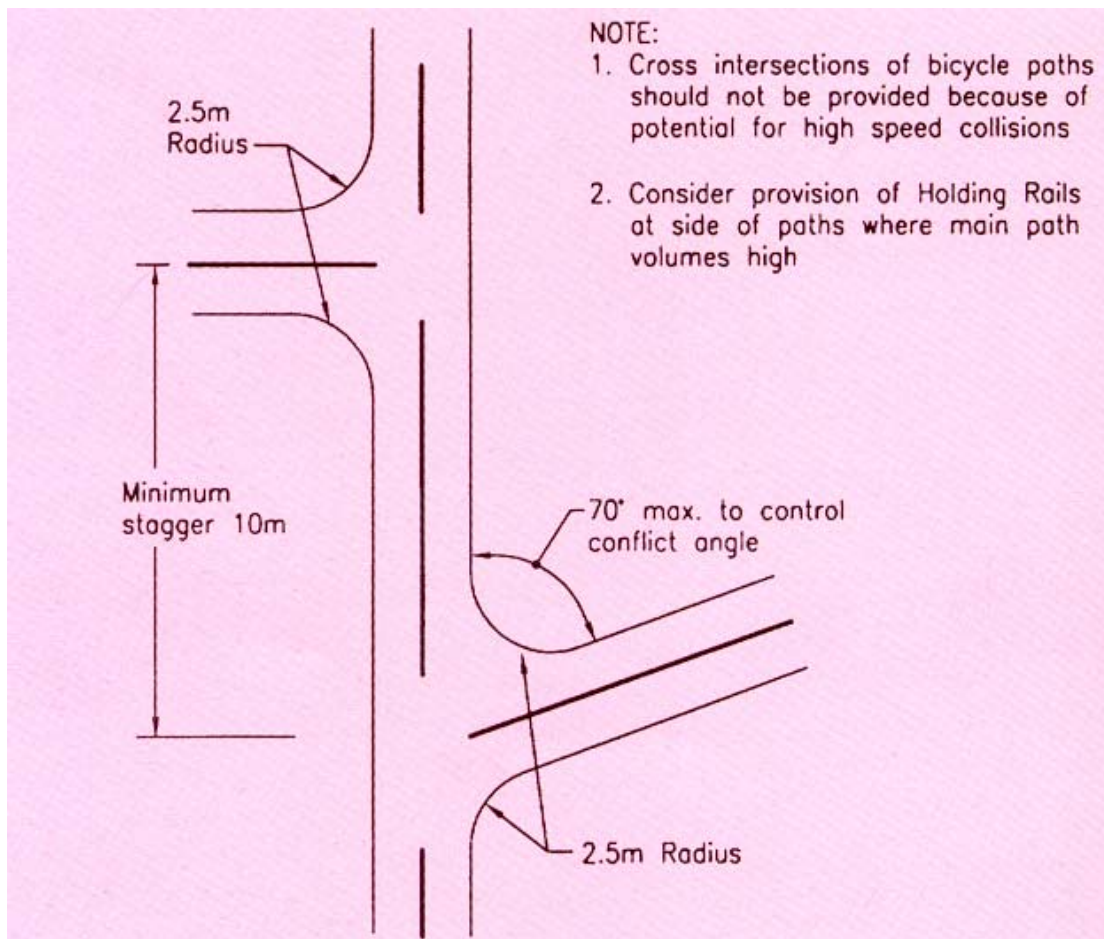


Figure 6-45 from Part 14 of Austroads: Intersections of Paths with Paths

4.5 Education

There are a number of Bicycle Education Programs currently available to the community. These programs are provided by VicRoads in conjunction with local schools, community organisations and the Council and include:

Bike Ed

Bike Ed targets children in the latter years of primary school (10-12 years). Its primary focus is teaching children about cycling in traffic. The program takes the participants through a series of skill development tasks that culminate in a number of on-road cycling activities. The program is owned by VicRoads and is delivered by schools and community organisations.

Cycle On

This program targets secondary school students. It has a focus on cycling safely in traffic and much of the program involves on-road cycling activities. There is also a section on bicycle touring in this program. This is a VicRoads program.

The Safe Routes to School Program

This is a pedestrian and cycling program that targets primary school children (5-12 years). The program includes a combination of education and engineering activities. The program aims to involve children, parents, teachers, Council Officers and VicRoads in reducing local road dangers and improving awareness of road safety issues around school. The program is jointly funded by Councils and VicRoads.

Road Smart

This program targets all levels of primary school (6-12 years). It is primarily a pedestrian program, but does also cover in-line skating and roller-skating on footpaths. Although this program does not directly relate to cycling, it is relevant to pedestrian activities on the off-road bicycle network. This program is provided by VicRoads.

Other Programs

Apart from these programs, VicRoads also makes available a range of bicycle education publications and products to support community safety programs, such as an education package for Secondary Schools entitled 'Teaching Cycling Safety'.

4.6 Promotion

Promotion is an essential part of a bicycle strategy. It creates awareness of the benefits of cycling and encourages people to accept and use cycling as a travel mode and as a recreational activity.

In the 'Maroondah Bike Survey', a number of people suggested that the Maroondah Bicycle Network needs better promotion. To achieve this aim there are a number of strategies that can be used, including:

- Informing the public about the Maroondah Bicycle Strategy through an official launch and by placing articles in local newspapers, notices at Municipal Buildings and making presentations about its release to relevant community groups and schools.
- Providing organised rides on sections of the Maroondah Bicycle Network.
- Providing easy access to the 'Discover Maroondah by Bike Map'. This is a map of the Maroondah Bicycle Network, which was released in early 2003.
- Promoting cycling education programs in schools, such as those summarised above in 'Education'.
- Making all bicycle facilities, such as bicycle lockers and drinking taps, clearly visible so that the public are aware of their existence.
- Making the public aware when any of the proposed works on the Maroondah Bicycle Network, detailed in this Strategy, are completed.
- Promoting related initiatives and policies, such as those encouraging exercise and non-motor vehicle based forms of transport.
- Employing a Bicycle Co-ordinator, who will act as a contact point between the Council and the Community in relation to the Maroondah

bicycle network and who will have a key role to play in the promotion of this network.

4.7 Enforcement

Members of the public behaving in an illegal and/or inappropriate manner can put the safety of people using the bicycle network and their property at risk. Law enforcement is, therefore, required to protect people using the bicycle network. A number of strategies are important to achieving this objective. These include:

- Making the Community aware of rules and appropriate conduct on bicycle paths that relate to cycling and walking.
- Making bicyclists aware of their rights and obligations on the road.
- Facilitating enforcement of proper bicycle equipment standards.
- Facilitating enforcement of legal rider and car driver behaviour.
- Deterring bicycle theft and encouraging systems that improve the ability to recover stolen bicycles.
- Facilitating provision of adequate resources to enforce laws regarding appropriate behaviour on the bicycle network.

There are several agencies that can help with enforcement of laws and appropriate behaviour in relation to cycling in Maroondah. These are:

The Police Force – The police force is the principal enforcement agency in relation to traffic violations, including cycling, in Victoria. Enforcement of moving traffic violations can only be undertaken by the police force. It can be seen, therefore, that Council's enforcement policy can only be successful if it has the full support and commitment of the Victoria Police. Council will need to work in close co-operation with the Police to ensure efficient use of limited resources to provide adequate enforcement of bicyclist and motorist behaviour.

Maroondah City Council – Since only the Police can enforce moving traffic violations, Council Officers are limited in their ability to enforce laws relating to bicyclist behaviour. Council Officers can enforce local law issues related to bicycle parking and bicyclist behaviour in Council Reserves and at Council facilities. However there are other ways in which Council can help enforce rules relating to cycling and these include:

- Providing signage detailing rules on the bicycle network
- Alerting the police force to breaches of the rules, particularly when a serious breach has occurred
- Educating the community about rules relating to cycling and the issues surrounding these rules.

Schools – Schools can play a role in enforcing rules relating to cycling by running education programs that explain these rules, such as the 'Bike Ed' and 'Cycle On' programs. Also, schools do have some ability to punish students if they disobey certain traffic rules.

5 Action Plans and Strategies

5.1 Off-Road Bicycle Network

ACTION PLAN 1: Off-Road Bicycle Paths

OBJECTIVE: *To provide a high quality bicycle path network, both in terms of the standard of paths and associated facilities and also in terms of the routes and destinations offered by this network.*

1	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
1.1	Maintenance of bicycle path network	<ul style="list-style-type: none"> Implement a maintenance schedule of Maroondah's bicycle paths, which ensures every bicycle path is checked, at least, twice yearly. 	Maroondah City Council	Bicycle Groups and Community	◆			Improved maintenance of Maroondah's network of bike paths.
1.2	Structural improvements to paths	<ul style="list-style-type: none"> Widen sections of path that are deemed too narrow. Areas of path currently needing widening include: <ul style="list-style-type: none"> - Sections of the Croydon Road Path - Sections of the Plymouth Road Path - Sections of the Tarralla Creek Path Improve and/or rebuild any surface area of the bicycle paths that are deemed unsatisfactory. Areas of path currently needing structural works include: <ul style="list-style-type: none"> - Sections of Tarralla Creek Path, which needs to be rebuilt. - The Ringwood Lake-Heathmont Path, between Ringwood Secondary College and Railway Avenue, which needs to be rebuilt. - The Plymouth Road Path, which requires minor crack sealing along its entire length. - The Dorset Golf Course Path, between the golf course and Colchester Rd. Where possible undertake works to reduce the gradient on all sections of path that are steeper than the grades recommended in Austroads Standards. Areas of path currently in need of this improvement are: <ul style="list-style-type: none"> - Sections of the Dandenong Creek Path 	Maroondah City Council		◆ ◆ ◆ ◆ ◆	◆ ◆	◆	Structural flaws in Maroondah's network of bike paths are addressed.

1	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
		<ul style="list-style-type: none"> - Sections of the Dorset Golf Course Path - The Mount Dandenong Rd Path near Ross Rd - Sections of the Tarralla Creek Path 			◆	◆	◆	
1.3	Linking key gaps in the current network of off-road bicycle paths.	<ul style="list-style-type: none"> • Link key gaps in the bicycle path network. Gaps currently needing linking are: <ul style="list-style-type: none"> - The Tarralla Creek Path at Oak Lane and between Bayswater and Eastfield Roads - Between the Tarralla Creek Path and the Dandenong Creek Trail - Between Croydon Road and Mount Dandenong Road on the Croydon Road Path - Between Mount Dandenong Rd and the Mullum Mullum Creek Trail - Between the Mullum Mullum Creek Trail and Plymouth Road - Between Plymouth Rd and Lincoln Road - Between the Mullum Mullum Creek Trail and Ringwood Lake <p>It should be noted that these gaps might be linked by the creation of the off-road trails outlined below in 'Action 1.4'.</p>	Maroondah City Council	VicRoads Parks Victoria	◆	◆	◆	Key gaps in the current network of road-paths are addressed.
1.4	Providing an integrated network of bicycle paths.	<ul style="list-style-type: none"> • Provide a range of off-road cycling routes, which together provide linkage to key destination points in the municipality and to the bicycle networks of adjoining municipalities. These routes will include: <ul style="list-style-type: none"> - The Mullum Mullum Creek Trail. This trail will connect the Mullum Mullum Creek Path to a path along the proposed extension of the Mitcham to Frankston Freeway. This will provide a route from Maroondah to the Yarra Trail. - The Eastern Rail Trail. This trail will be placed alongside the Belgrave-Lilydale railway line. It will cross Maroondah on an east-west axis. Since the City of Whitehorse is proposing to do the same on its section of the Belgrave-Lilydale line, this trail will extend well beyond Maroondah's western 	Maroondah City Council	VicRoads Parks Victoria			◆	Maroondah has a suitably extensive and integrated network of off-road bicycle paths, which satisfies the needs of a diverse and vibrant cycling community.

1	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
		<p>boundary.</p> <ul style="list-style-type: none"> - The Dandenong Creek Trail (from the “Hills to the Bay”). This trail will commence at Liverpool Road Retarding Basin in Knox, follow the Dandenong Creek along the southern boundary of Maroondah and allow riders to continue through several municipalities before reaching Port Phillip Bay. - The Tarralla Creek Trail. This trail will connect the Tarralla Creek Path to the Dandenong Creek Path and beyond. Using this trail, cyclists will be able to travel from the Croydon Town Centre to Port Phillip Bay - The Ringwood Lake/Heathmont Trail. By connecting the Ringwood Lake Path and the Heathmont Road path, this trail will provide a route between the Mullum Mullum Creek Trail and the Dandenong Creek Trail. - The Brushy Creek Trail. This trail will use a path along Brushy Creek to provide a route between Mooroolbark Station and Brushy Park. - The Dorset Recreational Trail. This trail will connect the Tarralla Creek Trail, to the Dorset Recreational Reserve and then provide an on-road route southwards along Colchester Rd. This trail will provide a link to the Dandenong Creek Trail and to the City of Knox. The City of Knox has a bicycle lane along its section of Colchester Rd. - The O’Shannassey Pipe Track. This is part of Parks Victoria’s Metropolitan Trail Network identified in their open space strategy, <i>Linking People and Spaces</i>. A trail could be constructed along the pipe track connecting Croydon with Lilydale. At Lilydale, cyclists could join the Warburton Trail. Council will also look at the possibility of extending this trail westward from Croydon to where the pipe enters the City of Whitehorse. There it could link with the City of Whitehorse’s planned development of the pipe track into a bicycle trail, which will extend south westerly from Heatherdale Rd through Whitehorse 					<p>◆</p> <p>◆</p> <p>◆</p> <p>◆</p> <p>◆</p> <p>◆</p>	

1	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes		
					High	Medium	Low			
		<p>from Heatherdale Rd through Whitehorse and onto the Scotchmans Creek Trail.</p> <ul style="list-style-type: none"> - The Mt Dandenong Rd Trail. This trail will connect off-road paths along Mount Dandenong Road, Croydon Road and Lincoln Road to provide a route from Ringwood, through Croydon Town Centre, and on to Croydon North. - The Croydon Hills Trail. This trail will connect Yarra Rd, the Melbourne Water Pipeline, Kerry Rd, Narr-Maen Reserve and Plymouth Road. This will provide a route through the suburb of Croydon Hills. - The Healesville Trail. This will be an off-road bicycle path, which will follow the proposed Healesville Freeway through Whitehorse and Knox and into Maroondah on its southern boundary. It will then move through the municipality in an easterly direction, exiting on Colchester Rd between Canterbury Rd and Mt Dandenong Rd. This trail will provide users in Heathmont, Bayswater North and Kilsyth with further access to off-road trails. 					◆			
1.5	Safety on bicycle paths	<ul style="list-style-type: none"> • Apply a standard treatment at all road and off-road intersections. This treatment will be in accordance with Austroads Standards. The Maroondah Bike Safety Audit identifies 36 such intersections as currently in need of some form of treatment. A list of these intersections is provided in Appendix 4. • Apply a standard treatment at bicycle path junctions. This treatment will be in accordance with Austroads Standards. The Maroondah Bike Path Safety Audit identifies approximately 18 bicycle path intersections in need of treatment. • Where appropriate remove vehicle regulatory devices including low gate barriers, bollards and chicanes. • Place lights in all sections of path that are in particular need of this facility. • Install a broken centre line along all main paths and a solid centre line in locations such as sharp corners or approaches to intersections to help 	Maroondah City Council	VicRoads Department of Education Local Schools Community	◆			◆	◆	Improved safety on Maroondah's bike paths.

1	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
		<p>remind trail users to keep to the left and reduce conflict between trail users.</p> <ul style="list-style-type: none"> Employ a signage schedule for all paths. The signage schedule will ensure that sufficient and appropriate regulatory, warning and guide signs are provided on all paths. Promote awareness of bicycle safety, particularly amongst children by supporting relevant educational programs, such as 'Bike Ed' and 'Cycle On'. 				◆		
1.6	Facilities on the bicycle path network	<ul style="list-style-type: none"> Provide more drinking taps along paths Provide more maps and geographical signage on the bicycle path network. To assist with navigation on trails, a broken centre line to be marked along the length of all main trails and stop lines on intersecting trails, as recommended in Parks Victoria's Signage Audit of the Metropolitan Trail Network (April 2003). Investigate the option of complementing the 'Maroondah Bike Map' with a more specialist all-weather map, which the Community could purchase. 	Maroondah City Council			◆ ◆ ◆		Improved provision of facilities on the bike path network

5.2 On-Road Bicycle Routes

ACTION PLAN 2: On-Road Bicycle Routes

OBJECTIVE: To provide a high quality network of on-road bicycle lanes

2	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
2.1	Providing an integrated network of on-road bicycle lanes.	<ul style="list-style-type: none"> Lobby for further development of VicRoads' PBN of on-road bicycle lanes within Maroondah. In particular, the creation of bicycle lanes on the following roads: <ul style="list-style-type: none"> Maroondah Highway. This will create an on-road route through Maroondah in an east-west direction. This route will connect with the bicycle lanes proposed by the City of Whitehorse for its section of Maroondah Highway/Whitehorse Road. Canterbury Road. This will create an on-road route through Maroondah in an east-west direction along the southern boundary of the municipality. This route will connect with the bicycle lanes proposed by the City of Whitehorse for its section of Canterbury Road. Deep Creek Rd/Loughnan Rd. This will create a further on-road link between the City of Whitehorse and Maroondah by connecting with bicycle lanes proposed by the City of Whitehorse for its section of Deep Creek Rd. Dorset Rd. This will provide a north-south route on the eastern side of Maroondah. Furthermore, this route will provide a further link with the Knox bicycle network by linking with the off-road bicycle path Knox proposes to build beside Dorset Rd, between the Dandenong Creek and Mountain Highway. Wantirna Rd. This will provide a north-south route between the Ringwood CBD and the Dandenong Creek Trail. It will also provide linkage to the City of Knox by connecting to the proposed bicycle lanes on Wantirna Rd. 	Maroondah City Council	VicRoads			◆	Maroondah has a suitably extensive and well-integrated network of on-road bicycle lanes, which satisfies the needs of a diverse and vibrant cycling community.

2	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
2.2	On-road safety of cyclists	<ul style="list-style-type: none"> Support campaigns to educate the Community about the rights and obligations of cyclists on roads Promote awareness of bicycle safety, particularly amongst children, by supporting relevant educational programs, such as 'Bike Ed', 'Cycle On' and 'Road Smart'. Address the safety concerns for cyclists in Council decisions concerning traffic and traffic engineering. The needs and safety of cyclists to be considered as part of any road construction or reconstruction program including LATM works. Work effectively with all partners dealing with safety issues on Maroondah's roads to ensure that any safety concerns for cyclists are promptly addressed. 	Maroondah City Council	VicRoads Department of Education Local Schools Victoria Police Community	◆ ◆	◆ ◆		The on-road safety of cyclists is improved.

5.3 Education and Promotion

ACTION PLAN 3: Education and Promotion

OBJECTIVE: *To increase the proportion of people using the Maroondah Bicycle Network for leisure and transport.*

3	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
3.1	Community awareness of the benefits of cycling	<ul style="list-style-type: none"> Support programs and actions which increase Community awareness of the benefits of cycling 	City of Maroondah	VicRoads Victoria Police Community	◆			Increased Community awareness of the benefits of cycling
3.2	Community awareness of the Maroondah Bicycle Network	<ul style="list-style-type: none"> Organise and support events that help promote awareness of the Maroondah Bicycle Network such as Bicycle Victoria's "Ride to Work" day held in October each year. 	City of Maroondah	Community, relevant user groups, such as Maroondah BUG & BV		◆		Increased Community awareness of the Maroondah Bicycle Network
3.3	Facilities which encourage cycling	<ul style="list-style-type: none"> Encourage provision of more ends of journey facilities at key destination points in Maroondah, such as showers, bicycle lockers and designated bicycle parking areas. Suitable places for these facilities include railway stations, shopping centres and major work sites in Maroondah. 	City of Maroondah	The owners and managers of key destination points within Maroondah.	◆			Improved provision of facilities which encourage cycling
3.4	Catering for different types of users of the bicycle network	<ul style="list-style-type: none"> Respond to the needs of the different types of cyclists when making planning decisions regarding the Maroondah Bicycle Network. Council investigate options for the provision appropriate facilities for BMX riders in Maroondah. 	City of Maroondah	VicRoads Parks Victoria Youth Groups	◆		◆	All the different types of cyclists are well catered for by the Maroondah bicycle network.

5.4 Enforcement

ACTION PLAN 4: Enforcement

OBJECTIVE: To ensure that rules and appropriate conduct are adhered to on the Maroondah Bicycle Network.

4	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
4.1	Increase Community awareness of the rights and obligations of cyclists and the appropriate conduct when cycling.	<ul style="list-style-type: none"> Facilitate campaigns that educate the Community about rules that relate to the rights and obligations of cyclists on the road such as the "Share the Road" campaign run by the Victorian Bicycle Advisory Council. Council adopt the Code of Conduct for cyclists detailed in Appendix 5 of this Strategy. Council promote the Code of Conduct by: <ul style="list-style-type: none"> Publicising it in local newspapers and appropriate Council publications Placing it on signs in the Maroondah Bicycle Network Making presentations to interested stakeholders and user groups, including schools and the Police Force. 	City of Maroondah	VicRoads Parks Victoria Victoria Police Community	◆ ◆ ◆			Improved Community awareness of the rights and obligations of cyclists and appropriate conduct when cycling
4.2	Provision of facilities that help prevent crime and inappropriate behaviour on the bicycle network.	<ul style="list-style-type: none"> Council encourage the provision of: <ul style="list-style-type: none"> More bicycle lockers at major long-term parking spots for bicycles, such as railway stations and major workplaces within Maroondah. More signage promoting appropriate behaviour on the bicycle network. Signage should be based on VicRoads Cycle Notes 10 – Shared Path Behavioural Signs. The installation of lighting at points of recognised security risk for users of the Maroondah bicycle network. 	City of Maroondah	The owners and managers of key destination points within Maroondah.	◆ ◆	◆		Improved provision of facilities that help prevent crime and inappropriate behaviour on the bicycle network.
4.3	Enforcement of appropriate behaviour on the Maroondah Bicycle Network	<ul style="list-style-type: none"> Council work closely with local enforcement agencies, particularly the police, to help identify and address any concerns relating to conduct on the Maroondah Bicycle Network. Council provide clear contact points for the Community to voice any concerns in relation to appropriate behaviour on the Maroondah Bicycle Network. 	City of Maroondah Police Force	VicRoads Parks Victoria	◆ ◆			Improved enforcement of appropriate behaviour on the Maroondah Bicycle Network.

5.5 Implementation and Monitoring

ACTION PLAN 5: Implementation and Monitoring

OBJECTIVE: To effectively implement and review the Maroondah Bicycle Strategy

5	Strategic Issues	Actions	Lead Agency	Partners	Priority			Outcomes
					High	Medium	Low	
5.1	Employment of a Bicycle Co-ordinator	<ul style="list-style-type: none"> Council employ a Bicycle Co-ordinator, who will play a key role in the implementation and monitoring of the Maroondah Bicycle Strategy. This position would also help create a clear contact point between the Council and Community in relation to bicycle matters and therefore, play a pivotal role in education, enforcement and the promotion of the Maroondah Bicycle Network. Depending upon the availability of funding, it may be necessary to share the funding of this position with one or more neighbouring Councils. 	City of Maroondah	Neighbouring Councils	◆			There is effective co-ordination of the implementation of the bicycle strategy and a clear contact point exists between the Council and the Community in relation to cycling issues.
5.2	Managing the Bicycle Network on a Regional Level	<ul style="list-style-type: none"> Maroondah City Council will, in conjunction with neighbouring Councils, create a Regional Bicycle Council. The role of this body will be to provide regional co-ordination in the planning of cycling infrastructure and programs. This body will be composed of representatives from neighbouring Councils, agency officers and representatives of user groups. 	City of Maroondah and neighbouring Councils			◆		There is effective co-ordination between Maroondah and its neighbouring Councils in relation to the provision of cycling programs and infrastructure.
5.3	Creation of the Maroondah Bicycle Committee	<ul style="list-style-type: none"> Council create a Maroondah Bicycle Committee. This will be a co-ordinating body, which will have responsibility for the implementation, monitoring and review of the Maroondah Bicycle Strategy. The committee will be composed of Community representatives, relevant Council officers and certain other relevant agencies and stakeholders. This committee will meet on a bi-monthly or quarterly basis and provide a tri-annual review of the Strategy. 	City of Maroondah	Community representatives, relevant Council Officers and certain other relevant agencies and stakeholders.	◆			Implementation of the Maroondah Bicycle Strategy is effectively monitored and the Strategy is effectively reviewed on a tri-annual basis.

6 Implementation and Monitoring

6.1 Expenditure

This Strategy is a strategic document, which provides a list of action plans to promote and encourage cycling in Maroondah. It does not provide comprehensive costings for the action plans, as detailed estimates will be prepared for the work programs developed during the strategy implementation phase. However, in 'Appendix 5' of this document general costings have been provided which relate to a range of key works to be completed by Council during the implementation of this Strategy.

6.2 Funding

There are several possible sources of funds for the action plans proposed in this Strategy. These sources are outlined below with an explanation of the different funding programs they offer.

- **Maroondah City Council**

Maroondah City Council has three works programs that can provide funding for cycling projects in the municipality. These are the:

- **New Capital Works Program:** This program primarily offers funding for all new cycling infrastructure projects. Applications for funding are made by Council officers and must be lodged in November each year. The funding is for a three-year period.
- **Capital Renewal Program:** This program primarily offers funding for renewal works of existing cycling infrastructure. Applications for funding are made by Council officers and must be lodged in November each year. The funding is for a three-year period.
- **Council Maintenance Budget:** This budget offers funding for maintenance work on existing cycling infrastructure. Applications for funding are made by Council officers and must be lodged between February and March. The funding is for a one-year period.

- **Parks Victoria**

Funding is available for bicycle related projects through Parks Victoria's 'Agency Grants Program'. The primary focus of this funding is the creation of paths on the Metropolitan Trail Network.

Applications are made by Council officers and must be lodged in January. The funding is made available at the start of the following financial year.

- **VicRoads**

VicRoads has two key programs which offer funding for bicycle related projects. These are the:

- **Traffic Road Users Management (TRUM) Section Funding:** In relation to cycling, this program primarily offers funds to extend the on-road component of the Principal Bicycle Network. Councils can apply for this funding and applications

must generally be lodged prior to the end of the calendar year. The funding is made available at the start of the following financial year.

- **The Black Spot Program:** This program offers funding for areas of road that are deemed to be particularly dangerous. Under this program, funding is available to improve sections of the on-road bicycle network that are particularly dangerous for cyclists. For example, funding may be provided to improve the safety of a particular road-bicycle path intersection that has a clear history of cycling accidents. Councils can apply for funding from this program and applications must generally be lodged prior to the end of the calendar year. Funding is made available at the start of the following financial year.

- **Sport and Recreation Victoria**

Sport and Recreation Victoria makes available funding for cycling facilities, which includes bike trails, under its 'Community Facilities Funding' program. Applications for this funding are due in December and the funds are made available at the start of the following financial year.

- **Federal Government**

Funding is available for cycling infrastructure through the Federal Government's 'Roads to Recovery' Program. This program is prepared to fund the construction and reconstruction of both on-road and off-road cycling facilities. The funding is made available over a four-year period.

- **Cycling Promotion Fund**

The Cycling Promotion Fund is funded by the cycling industry and its role is to promote cycling within the Community. This organization does make available some funding for promotion activities. There is no specific timeline for the submission of applications and the providing of funds. The Cycling Promotion Fund also makes available a variety of resources promoting cycling, such as posters, stickers and badges.

- **Community Road Safety Council**

The Community Road Safety Council is an organisation funded by VicRoads and consisting of groups and individuals interested in promoting road safety. Members include representatives of the Community, the Police, VicRoads, Ambulance Service, and Local Government. VicRoads provides a set budget each year (in the order of about \$30,000) for the CRSC to spend on road safety programs, which can include bicycle education programs. Members of the CRSC can apply for funding and applications must be lodged between April and May each year. Funding is made available for approved road safety initiatives the following financial year.

6.3 Maroondah Bicycle Committee

As part of this Strategy a Maroondah Bicycle Network Management Committee is to be established to co-ordinate the implementation, monitoring and review of the Maroondah Bicycle Strategy. As part of this role, the committee will provide a three-year review of the Bicycle Strategy, which will assess current progress with the strategies and action plans detailed in this document and provide recommendations for future actions and strategic work.

The committee will be composed of members of the Community, relevant Council Officers and other interested stakeholders. It is proposed that this committee will meet on a bi-monthly or quarterly basis.

7 REFERENCES

7.1 Relevant Strategies and Documents

- Bayside Bicycle Strategy - Bayside City Council (1997)
- Bicycle Strategy - Manningham City Council (2001)
- Bicycle Victoria's 4 Network Challenge – Bicycle Victoria
- Knox Bicycle Plan Review – Knox City Council (2001)
- Linking People and Spaces - Parks Victoria (2002)
- Maroondah Municipal Strategic Statement– Maroondah City Council (1999)
- Maroondah Road Safety Strategy– Maroondah City Council (2002)
- Melbourne 2030 Strategy– State Government of Victoria (2002)
- Metropolitan Cycling Workshop (A Summary)- Victorian Bicycle Advisory Council (1999)
- The Outer Eastern Public Transport Plan – Department of Infrastructure (2002)
- Physical Activity Framework – State Government of Victoria (2000)
- Physical Activity Framework: A Progress Report– State Government of Victoria (2002)
- Providing For Cycling: The Role of VicRoads and Local Councils – VicRoads (1999)

7.2 Technical References

- Guide to Traffic Engineering Practice, Part 14 – Bicycles– Austroads (1999)
- City of Maroondah Shared Footway Safety Audit – Bicycle Victoria (1998)
- Cyclist Trauma – Bicycle Victoria (1998)
- Map of the Principal Bicycle Network – VicRoads (2002)
- Road Crash Statistics – Victoria Accident Details – VicRoads (2000)

8 APPENDICES

8.1 APPENDIX 1: REVIEW OF RELEVANT LITERATURE

The key documents reviewed in the creation of the Maroondah Bicycle Strategy include:

The Maroondah Municipal Strategic Statement (Maroondah City Council -1999)

The Maroondah 'Municipal Strategic Statement' (MSS) sets out the policy objectives of the Maroondah City Council. This document clearly supports the encouragement of cycling in Maroondah. Clause 21.04-3 (Transport and Accessibility), states Maroondah City Council will encourage increased use of public transport and alternative means of transport to reduce the dependency on motor vehicle based travel within Maroondah. Furthermore, Clause 21.06-3 (Open Space) asserts that Council will "implement an open space/bicycle path network that links essential services and facilities and reduces the reliance of the community on motor vehicle based travel".

Maroondah Road Safety Strategy (Maroondah City Council - 2002)

The goal of this Strategy is to improve safety on Maroondah's roads. To achieve this aim, it identifies key action plans to address road safety issues and focuses Council and State Government resources on areas that can achieve maximum reduction in the incidence and severity of road crashes. This strategy focuses on the rights and safety of all road users, including cyclists. For example, a number of the proposed actions within this document are aimed at promoting safety for cyclists.

Melbourne 2030 Strategy (State Government of Victoria – 2002)

This document articulates the State Government's vision for Melbourne for the next 30 years and provides a set of policies to achieve that vision. A major priority of 'Melbourne 2030' is to decrease the use of cars in this city and increase the use of more ecologically friendly forms of transport, such as public transport, cycling and walking. This is part of an overall objective of making Melbourne a more sustainable and liveable city.

Bicycle Strategies of the Cities of Knox, Manningham and Whitehorse

The cities of Knox, Manningham and Whitehorse have existing bicycle strategies, the details of which are provided in the references section. These documents have been studied to ensure that there is effective linkage between the strategic direction and proposed works of these strategies and those of Maroondah.

The Shire of Yarra Ranges is currently in the process of writing a bicycle strategy. To ensure that there is sufficient linkage of the strategic actions proposed by the Maroondah Bicycle Strategy and those proposed by the Shire of Yarra Ranges, a process of consultation has been undertaken between relevant Council Officers from both municipalities.

Linking People and Spaces (Parks Victoria - 2002)

This document sets long term strategic goals for developing and enhancing Melbourne's open space network. A key goal of this document is improving Melbourne's network of bicycle paths. As mentioned earlier, this document contains several proposals highly relevant to the Maroondah's bicycle network.

The Outer Eastern Public Transport Plan (Department of Infrastructure – 2002)

The Outer Eastern Public Transport Plan was created to deliver a Public Transport Plan for the eastern region of Melbourne that best achieves the State Government's economic, social and environmental policy outcomes. In line with State Government objectives, this plan seeks to create a highly integrated public transport system.

Physical Activity Framework (State Government of Victoria – 2000) and the Physical Activity Framework: A Progress Report (State Government of Victoria-2002)

The Physical Activity Framework is a coordinated policy approach to physical activity, whereby all government and non-government agencies cooperate in program development, planning and delivery. The overall objective of the Framework is to increase levels of physical activity in the Victorian community. The Framework is relevant to the Maroondah Bike Strategy because it strongly supports the need to promote cycling and walking as leisure activities. Furthermore, it supports certain actions aimed at promoting cycling and walking. These actions include; providing more funding for the Principal Bicycle Network, providing a set of guidelines for community safety, promoting the 'walking bus' program and reducing barriers to walking and cycling to school.

Providing for Cycling: The Role of VicRoads and Local Councils (VicRoads 1999)

This document outlines how cyclists are catered for in the VicRoads structure. It explains the two types of bicycle networks relevant to metropolitan Melbourne, which are the Principal Bicycle Network (PBN) and the Municipal Bicycle Networks (MBNs). As explained in this document, the PBN provides interconnected 'through routes' having a high level of service across metropolitan Melbourne. It comprises approximately 2000km of on-road facilities, mostly on main roads and more than 1000km of off-road paths along major creeks and waterways and within freeway reservations. Municipal Bicycle Networks (MBNs) comprise of on-road and off-road bicycle facilities that provide for people to travel by bicycle within their community. This document explains VicRoads level of responsibility in relation to each of these types of bicycle networks.

City of Maroondah Shared Footway Safety Audit (Bicycle Victoria – 1998)

Bicycle Victoria was asked to provide a comprehensive safety audit of over 24kms of shared footways and bike paths in the City of Maroondah. A report was produced as part of this audit which contains Bicycle Victoria's field data, findings and recommendations.

Cyclist Trauma (Bicycle Victoria - 1998)

This report presents and analyses data on accidents in Victoria, which caused either the injury or death of cyclists. The data presented in this document covers several years preceding 1998.

Road Accident Statistics for Maroondah's roads (VicRoads - 2000)

This data was accessed from the VicRoads website. It provides statistics on the number of cyclists injured or killed in accidents on Maroondah's roads.

Guide to Traffic Engineering Practice – Part 14: Bicycles (Austroads 1999)

This is a technical publication which serves as guide for road authorities, engineers, planners and designers involved in the planning, design and construction of cycling facilities. It is intended to provide a basis for national uniformity in planning and designing for bicycle use.

8.2 APPENDIX 2: ANALYSIS OF THE DATA FROM THE MAROONDAH BIKE SURVEY

Provided below is a summary of the data provided by the Maroondah Bicycle Survey. This information provided by this survey can be broken down into two broad topics, which are:-

- Current usage of the Maroondah Bicycle Network
- Increasing Usage of the Maroondah Bicycle Network

8.2.1 Current Usage of the Maroondah Bicycle Network

This analysis of current bicycle usage has been broken into several sub-topics, namely, level and frequency of bicycle usage, types of trips being made, commonly used routes, cycling to and from Maroondah and other uses of the Maroondah Bicycle Network.

Level and Frequency of Bicycle Usage

Question 3 of the bike survey asked people whether they ride a bike. Of the 440 people who responded to the survey, 366 respondents (83.2%) said they ride a bike and 71 respondents (16.1%) stated that they do not ride a bike. Question 4 asked those who do ride a bike how often they do this. 152 respondents (34.5%) ride two or more times a week, 74 respondents (16.8%) ride 1 to 7 times per month and 141 respondents (32%) ride occasionally. 73 respondents (16.6%) of the respondents did not answer this question.

Types of Trips Being Made

Question 5 of the bike survey asks people to specify what sort of bike trips they make. 303 respondents (82.8%) of the 366 people who responded to this question ride for leisure. 238 people (65%) of respondents ride to local shops. 200 respondents (54%) ride to visit friends. 138 respondents (37.7%) ride to work or school. 105 respondents (28.7%) ride to public transport. The remaining types of trips accounted for between 46 to 55 respondents (12-15%). These were going to sport, going to community facilities and other types of trips. This data shows that cycling is being used for a variety of different types of trips.

Commonly Used Routes

An issue which is very important to making decisions about how to improve the City of Maroondah's bike network is that of which routes are most commonly used by cyclists. In the Council's bike survey, 341 people responded to a question asking which routes they commonly take when cycling. They were then asked to identify what type of routes these are from the following list; off-road trails, on-road paths, footpaths and other types of routes.

The most commonly taken type of route was off-road trails. A total of 178 respondents (52.2%) of the 341 people who answered this question ride on these trails. The most commonly used trails appear to be the Dandenong Creek Trail and the Mullum Mullum Creek Trail. Other tracks used include the path around Ringwood Lake, the path between Ringwood Lake and H.E. Parker Reserve, the Eastfield Park paths and the Tarralla Creek Path (formerly the Croydon Main Drain Path).

In relation to the level of usage of bicycle paths, The 'Maroondah Shared Footway Audit' found that a number of the paths are particularly well used. These include; the Tarralla Creek Path, the Mullum Mullum Creek Path and the Plymouth Road Path.

A total of 151 respondents (44.3%) stated they ride on the footpath. 150 respondents (44%) stated that they use on-road paths. Finally, 41 respondents (12%) per cent stated they ride on other forms of tracks.

Cycling to and from Maroondah

Question 7 of the bike survey asked people whether they cycle to or from anywhere outside Maroondah. A total of 148 respondents (33.6%) of the 440 responses to the survey replied that they do cycle to and from Maroondah. Approximately 125 respondents clearly specified which routes they take to do this. Many of these routes use bicycle paths that cross the municipality's boundaries at different points. These paths include, amongst others; the Tarralla Creek Path and the Dandenong Creek Trail. The responses show that another commonly used type of route to and from Maroondah are the main roads that pass through the municipality. Mount Dandenong Road and Maroondah Highway appear to be the most frequently used main arterial roads by cyclists to get to and from Maroondah.

A larger proportion of people, 213 respondents (48.4%) replied that they do not cycle to and from Maroondah. Thus, even though a significant proportion are travelling to and from Maroondah, many, if not most, cyclists are performing only local trips.

Other Uses of the Maroondah Bicycle Network

As mentioned in the introduction to this Strategy, this document is part of a broader push to increase the level of non-motorised forms of travel within Maroondah, which includes not only cycling, but also walking and other related activities. It is important, therefore, that this Strategy takes into account these other activities, so that they can be properly accommodated in any changes to the bicycle network.

The Maroondah Bicycle Survey provides useful information about how the bicycle path network is being used for activities other than cycling. In response to Question 9 of the survey, which asked people whether they use the bicycle network in ways other than cycling, a total of 172 respondents (51.7%) of the 333 people who answered this question stated that they use the network to walk for leisure. 120 respondents (36%) use the network to walk the dog. 115 respondents (34.5%) use the network for jogging. 86 respondents (25.8%) use it to walk to school or work. 82 respondents (24.6%) use the network for inline skating or skateboarding. 17 respondents (5.1%) use it to push a pram or stroller. Finally, 20 respondents (6%) use it for some other form of purpose. These other forms of use include such activities as; horse riding, riding a scooter and feeding the ducks. It is apparent from these figures that the bicycle path network is being commonly used for a variety of activities other than cycling.

8.2.2 Increasing Usage of the Maroondah Bicycle Network

This section of the strategy will perform two functions. It will, firstly, identify the key problems with the current bicycle network and, secondly, discuss suggestions to improve the network so that more people are encouraged to use it. The information and suggestions for this section come from various sources, including; 'The City of Maroondah Shared Footway Safety Audit', road accident statistics from VicRoads, minutes from meetings of the 'Maroondah Bicycle Strategy Working Group' and the 'Maroondah City Council Bike Survey'. The bike survey has provided a particularly large pool of information for this section. Question 8 of the survey asked respondents to specify their three main concerns with regard to cycling in Maroondah. A total of 420 people answered this question and their responses provide much data about what the community perceive to be the major shortcomings in the current

network. Question 9 asked participants in the survey to make suggestions as to how the safety and enjoyment of cyclists in Maroondah could be improved. The responses to this question provide a wealth of suggestions as to how the community believes the Maroondah bicycle network should be improved, so that they will feel more encouraged to cycle.

The discussion on how to improve the current network has been broken into a number of topics, which include; quality of road and path surfaces, on-road bike lanes, extensiveness of the bicycle path network, safety, user-friendly facilities and finally, events and activities.

Quality of Road and Path Surfaces

In response to question 8 of the bike survey, the most commonly listed concern was poor quality of road and cycling path surfaces in Maroondah. 203 respondents (48.3%) of the respondents to this question listed this as a major concern. The 'Maroondah Shared Footway Safety Audit' agreed that surface of bicycle paths is a problem. The audit states that debris and overhanging and encroaching foliage are a problem on all paths. The surface of certain paths were highlighted for remedial action. The Plymouth Road bike path was seen as requiring minor crack sealing along its whole length and it was described as narrow and rough at the eastern end, with trees growing on the path edge. The Ringwood Lake Path between Hill St and Ringwood Secondary College Driveway to Railway Avenue was also highlighted as needing maintenance due to this section of the trail being badly degraded. The Tarralla Creek Path was described as being very narrow and rough and not meeting the Austroads standard width for a shared footway. The Mullum Mullum Creek Path was listed because loose screenings have accumulated on the surface of sections of this path and, consequently, have an unstable surface for cycling. It should be noted that the Lincoln Road Path surface was seen as being in very good condition.

The current quality of road and path surfaces was the subject of many suggestions for improving the bicycle network. In response to question 10 of the survey, a total of 39 people suggested that the surface of bike lanes and bicycle paths in Maroondah be improved. Many people were of the opinion that the existing gravel cycling paths should be replaced with concrete ones. In relation to bike lanes on roads, several people complained that these are too bumpy and suggested that they need to be resurfaced. A number of respondents suggested that the bicycle network needs to be better maintained. In particular, they felt that there needs to be more pruning of trees that overhang the bicycle paths and that all sections of the network should be regularly checked for damage to the surface and to ensure that litter is removed.

The Shared Footway Audit supported the need for Maroondah's bicycle paths to be better maintained. It recommended that a programmed maintenance schedule be developed where each path is checked every 6 months. It was recommended that this program of maintenance should involve the cutting back of overhanging foliage, improving sight lines on curves by cutting back foliage and removing trees if required, sweeping debris off the path and cutting back weed growth. The audit stated that a great improvement to the paths could be achieved through ensuring this maintenance is carried out. Apart from general maintenance work, the audit also recommended that the Tarralla Creek Path and the Ringwood Lake Path between Hill St and Ringwood Secondary College Driveway to Railway Avenue should be rebuilt.

On-road Bike Lanes

In response to question 8 of the bike survey, 186 respondents (44.3%) stated that insufficient space for cyclists on the road network was one of their three major concerns with regard to

cycling in Maroondah. This lack of space could be caused by two things, firstly, by a lack of bicycle lanes in the road network and secondly, by the existing lanes on roads being too narrow. It was noted in the minutes of the Maroondah Bike Strategy Working Group that there are no bike markings on Maroondah's road network.

The strength of community concern about lack of space on the road for cycling, is also reflected in the suggestions given to question 10 of the bike survey. A total of 34 people called for more space on the road for cyclists. Of this number, 33 called for more bicycle lanes and one person called for wider lanes. This strongly suggests that community concerns about space on the road are predominantly based on a belief that there are insufficient lanes and that Council needs to provide a more extensive network of bike lanes if on-road cycling in Maroondah is to be substantially encouraged.

Extensiveness of the Bicycle Path Network

The data the Council has collected for this bike strategy points to there being a lack of integration in the off-road network. Evidence of this problem can firstly be seen in the responses to question 8 of the bike survey. 96 respondents (22.9%) stated that incomplete and fragmented off-road paths are a major concern. The Shared Footway Safety Audit points to some specific gaps in the bicycle path network. These gaps are in the Tarralla Creek Path at Oak Lane and between Bayswater and Eastfield Roads. Furthermore, in meetings of the Maroondah Bicycle Strategy Working Group it was noted that there is a gap between the Tarralla Creek Path and the Dandenong Creek Trail. The working group saw this lack of connection as a major shortfall, because people are forced to dodge traffic while crossing Canterbury Road.

Of the 251 different suggestions given in the Bike Survey about how the network of bike paths could be improved, 48 people suggested that there should be more bicycle paths and 11 people suggested that the whole network of bicycle paths needs to be better linked. In relation to better linking the bicycle path network, it was accepted in the Maroondah Bicycle Strategy Working Group that the Tarralla Creek Path should be linked to Dandenong Creek Trail. It was noted that if this occurred, it would be possible to cycle from Croydon to Carrum.

Signage

In the bike survey 45 respondents (10.7%) cited lack of directional signage on bicycle paths as a major concern. The Shared Footway Safety Audit agrees with community concerns about signage on bicycle paths. The audit found that there are very few regulatory, warning or guide signs on the paths. For example, it finds that some good signage has been installed on the Tarralla Creek Path, but that this signage is not comprehensive and in some places it is incorrect. Furthermore, the existing signs on this path have been badly vandalised.

In the bike survey, approximately 10 people suggested that there needs to be more signage on the bicycle path network. This suggestion is supported by the audit, which claims that a signage schedule is needed for all paths except Plymouth Road, Croydon Road and Lincoln Road. These roads were deemed to have sufficient regulatory signage in place.

Safety

Both Bicycle Victoria's 'Cyclist Trauma' Report and statistics provided by VicRoads show that a significant number of cyclists are being injured in accidents in Maroondah. The statistics from VicRoads show that from 1995 to December 2000, 31 cyclists were seriously injured in accidents on Maroondah's roads. Over the same period of time, a total of 121 cyclists

required hospital treatment as a result of being in an accident. Over the period 1993-1997, 'Cyclist Trauma' states there were 102 cycling casualties in Maroondah and that this amounts to 112 casualties per 100,000 people in the municipality. This latter figure was the fourteenth highest in comparison to the 19 other metropolitan municipalities for which data was compiled and analysed.

The bike survey showed the community is concerned about a range of safety issues in relation to cycling. It has already been shown above that there is concern about the lack of space cyclists have on the road. Further to this, 144 respondents (34.3%) felt that drivers have a lack of consideration for cyclists. Lack of lighting was cited as a major concern by 96 respondents (22.9%). 91 respondents (21.7%) felt that the on-road vehicle speed limit was intimidating. Road intersection and crossing points were thought to be unsafe by 72 respondents (17.1%). Steep terrain was cited as a major concern by 69 respondents (16.4%). Finally, a total of 67 respondents (16%) per cent cited that they were concerned for their personal safety when cycling because they felt isolated. Presumably, this concern relates to riding on bicycle paths.

The Shared Footway Safety Audit agreed with people's concerns about the safety of crossing and intersection points. For example, on the Mullum Mullum Creek Path, the audit found that the road crossings at Oliver, Oban and Kalinda Roads pose real hazards to path users. It also noted that, at the intersection of the Plymouth Road Path and Bemboka Road, no provision has been made for pedestrians and cyclists at the roundabout. Furthermore, the audit found that there is a lot of inconsistency in the way road crossings are treated. This was deemed to particularly be a problem on paths, which regularly have road crossings, such as, the paths, which adjoin Plymouth Road, Croydon Road, Lincoln Road and Mt Dandenong Road.

Another major safety concern raised by the audit is the use of certain inappropriate traffic controlling devices on bicycle paths. These include the use of bollards, chicanes and gate barriers on paths. These gate barriers are generally low height (0.6m), constructed of pine log fencing and cross the full width of the path. The audit points out that, according to AustRoads Part 14, bollards, chicanes and low-level structures, such as the aforementioned gates, can be unsafe for cyclists.

The audit also supports concerns raised in the bike survey about the steepness of certain sections of the bicycle path network. The audit found that sections of the Dandenong Creek Path are very steep. Also, very steep sections of path were found to exist on the Dorset Golf Course Path in places where the paths connect to the top of the levee bank of the retarding basin.

Finally, the audit found that poor sight lines were present in many instances along Maroondah's bicycle paths. These were generally caused by either the paths being built adjacent to a fence line or where there were trees or shrubs growing on the inside of curves in paths. Resolution of these issues requires the development of regular maintenance schedules for the bicycle network.

A substantial number of suggestions, given in the bike survey, for improving the Maroondah bicycle network relate to the issue of safety. Approximately 66 suggestions can be best categorised as relating to this issue. A range of these relate specifically to bicycle paths. These suggestions include; providing better crossing points, providing more lighting, widening some paths, installing bicycle traffic lights, introducing a speed limit on paths, better controlling the number and actions of dogs using the paths and installing security cameras on some paths. Several people offered suggestions specifically aimed at improving safety for

cyclists on roads. These included allowing riders more access to footpaths and undertaking programs to improve the attitude of drivers towards cyclists on the roads.

The audit claimed that a great improvement to the safety of Maroondah's cycling paths could be made if the schedule of general maintenance, mentioned earlier, was carried out. The audit also recommended that safety could be improved on paths, where there are regular road crossings, if a standard treatment was applied to these crossings. The audit recommends that pavement markings of centre lines, directional arrow heads, give way lines and holding rails be installed at these crossings. The audit also recommends that at path junctions, pavement markings of centre lines, directional arrow heads and give way lines be installed.

User-friendly Facilities

Council can provide certain facilities to encourage people to cycle. Examples of such facilities are drinking taps, maps and bicycle lockers. There is a perception in the community that there is a shortage of cycling facilities. For example, 75 people (17.9%) specified lack of bicycle storage at destinations as one of their three main concerns with regards to cycling in Maroondah.

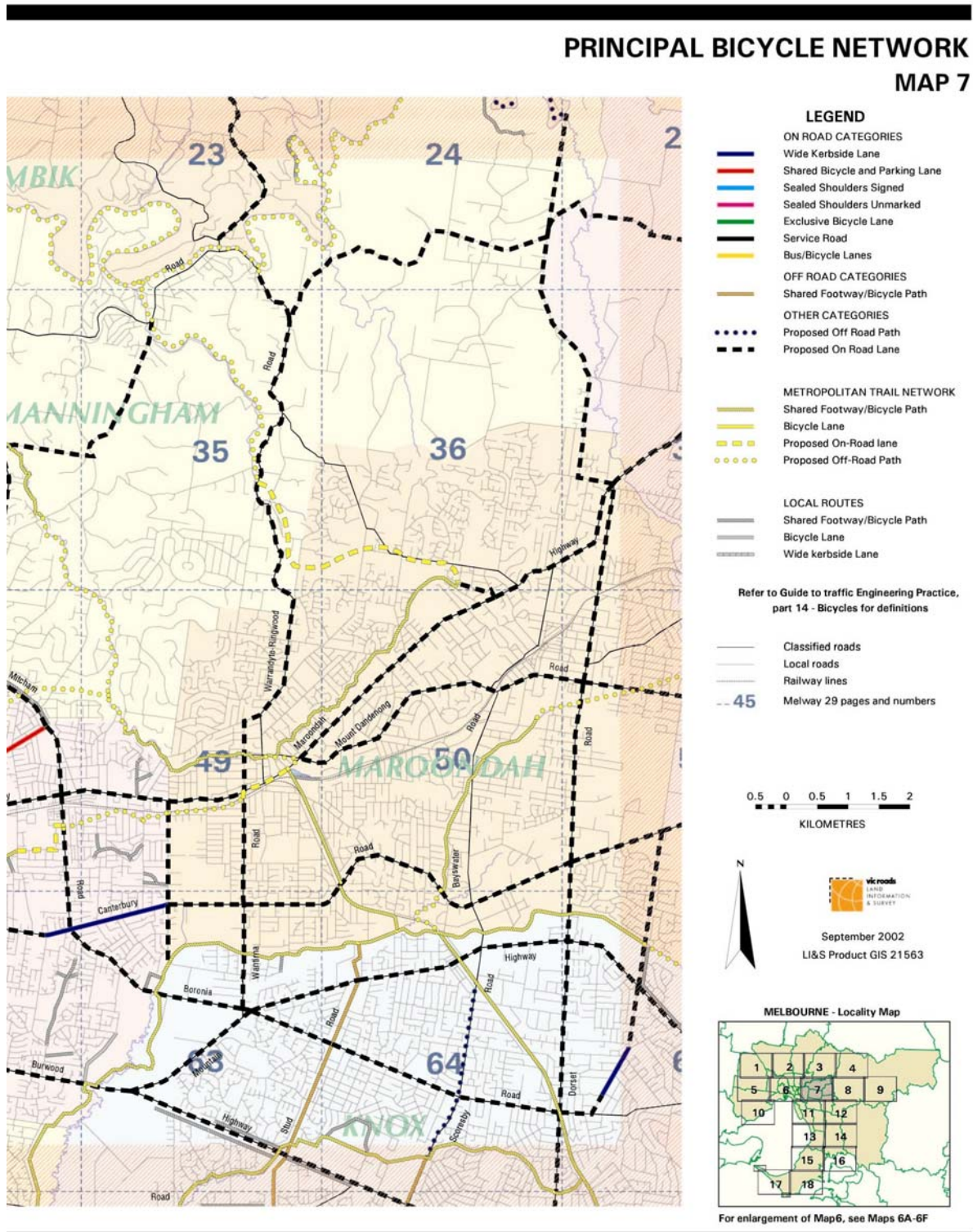
In the bike survey, approximately 20 people suggested improvements to the provision of facilities that compliment the bicycle network. These suggestions included providing more drinking taps, bicycle racks at schools, bicycle parking at shopping centres and more trees along the bicycle paths. The trees were requested for the shade they would provide. It was also suggested that bicycle lockers and maps of the bicycle network be provided. A further 11 people suggested that there needs to be better provision for BMX riders in the bicycle network and that this should be done by creating more BMX tracks and jumps. Finally, one person suggested that a skate park should be provided as part of the network.

Events and Activities

A number of people suggested that the bicycle network could be improved by providing more events and services that relate to the network. Suggestions included organising bicycle tours and campaigns to promote the bicycle network.

8.3 APPENDIX 3: BICYCLE & SHARED PATH NETWORKS

8.3.1 VicRoads Principal Bicycle Network in Maroondah



8.4 APPENDIX 4: KEY BICYCLE PATH-ROAD INTERSECTIONS REQUIRING TREATMENT

The range of treatments required at bicycle path-road intersections includes:

- A. The removal of any hazardous object such as bollards and chicanes
- B. The provision of appropriate signage, including give way, regulatory and guide signs
- C. Maintenance work to improve sight lines leading to the intersection
- D. Removal of a dangerous gradient leading to the intersection
- E. The provision of centre lines and/or directional arrows
- F. The provision of holding rails

Details of issues and specific works required at bicycle path-road intersections can be found in the *Maroondah Bicycle Path Safety Audit*. The following tables detail some of the treatments identified at various principal road-bicycle path intersections.

Intersection of Dandenong Creek Path with:

Wantirna Rd	<ul style="list-style-type: none"> • Realign bike path to achieve gentler grade at junction with Wantirna Rd. • Install “shared path” signage.
Bayswater Rd	<ul style="list-style-type: none"> • Install regulatory & guide signs • Build shared footway on east side of Bayswater Rd from Glen Park Rd to Dandenong Creek • Rebuild path to minimum 2.0m in width
Dorset Rd (underpass)	<ul style="list-style-type: none"> • Install centre line and directional arrow heads through the underpass
Colchester Rd	<ul style="list-style-type: none"> • Rebuild barrier to provide a minimum opening for path users of 1.4m • Seal path

Intersection of Tarralla Creek Trail with:

Canterbury Road	<ul style="list-style-type: none"> • Relocate existing signs so that they are more visible to users of bike path and install guide signage. • Rebuild shared path in Canterbury Road to a width of 2.5m
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Intersection of Mullum Mullum Creek Trail with:

Oliver St	<ul style="list-style-type: none"> • Remove the chicane • Install a holding rail • Cut back overhanging foliage
Oban Rd	<ul style="list-style-type: none"> • Rebuild barrier to provide a minimum opening for path users of 1.4m, fence/barrier height adjacent to path 1.1 – 1.35m high • Provide pram crossings at kerb • Redesign crossing point so that it is highlighted to Oban Rd traffic – create a refuge in Oban Rd, install holding rails where the path intersects on each side of road • Install regulatory, warning and guide signs • Install centre line, directional arrow heads and give way line at intersection • Repair path surface
Kalinda Rd	<ul style="list-style-type: none"> • Remove obsolete low barrier across path and bollard on path • Install regulatory and guide signage • Install pram crossings and holding rails • Repair path surface, consider tree root guards

Intersection of Plymouth Road Shared Footway with:

Yarra Road (Start of path)	<ul style="list-style-type: none"> • Grind bull nose to provide a flush surface on pram crossing where path meets Yarra Road
Narr-maen Drive	<ul style="list-style-type: none"> • Indicate road crossing with give way lines, centre lines and directional arrow heads on bike path on east and west sides of Narr-maen Dve • Install holding rails • Install regulatory and guide signage • Grind bull nose on pram crossing • Repair path surface
Crossman Drive	<ul style="list-style-type: none"> • Indicate road crossing with give way lines, centre lines and directional arrows. • Install holding rails • Install regulatory and guide signage

Cambridge Close	<ul style="list-style-type: none"> • Indicate road crossing with give way lines, centre lines and directional arrows. • Install holding rails <p>Install regulatory and guide signage</p>
Bemboka Rd	<ul style="list-style-type: none"> • Provide refuges in splitter islands with pram crossings at the kerbs or a “zebra” crossing over Bemboka Rd

Intersection of Croydon Road Path with:

Kent Avenue	<ul style="list-style-type: none"> • Widen path to 2.3m (width is limited by proximity of trees) and declare as a shared footway • Install centre line, directional arrow heads and give way line at Kent Avenue
Tallent St	<ul style="list-style-type: none"> • Cut back section of concrete kerb at intersection of path and road • Install holding rail on north side of Tallent Street • Install centre lines, directional arrow heads and give way lines • Build section of path • Paint power pole white to 2m high and use centre white line and directional arrow heads to indicate one-way traffic around pole or reposition pole
Elizabeth St	<ul style="list-style-type: none"> • Install holding rails, centre lines, directional arrow heads and give way lines • Remove low pine log fencing on edge of path
Samuel St	<ul style="list-style-type: none"> • Install holding rails, centre lines, directional arrow heads and give way lines • Install regulatory signs
Driveway into Croydon Secondary College	<ul style="list-style-type: none"> • Remove obsolete post on path edge at driveway • Lower service cover to be flush with the path • Install regulatory signs, centre lines, directional arrow heads and logos
Emily Crt	<ul style="list-style-type: none"> • Install holding rails, centre lines, directional arrow heads and give way lines
Grandview Ave	<ul style="list-style-type: none"> • Install holding rails, centre lines, directional arrow heads and give way lines
Hardidge St	<ul style="list-style-type: none"> • Install holding rails, centre lines, directional arrow heads and give way lines
Ann St	<ul style="list-style-type: none"> • Install holding rails, centre lines, directional arrow heads and give way lines

Intersection of Dorset Golf Course Path with:

Colchester Rd	<ul style="list-style-type: none"> • Reassess necessity of restrictive gate structure. If required rebuild barrier to provide a minimum opening for path users of 1.4m, fence/barrier height adjacent to path 1.1 – 1.35m high • Install regulatory and guide signs
Trawalla Rd	<ul style="list-style-type: none"> • Replace graffitied signs on the road • Remove section of pine log fence linking bike path to gates at Golf Course

Intersection of Lincoln Road Path with:

Arthur Pl	<ul style="list-style-type: none"> • Cut back overhanging trees and foliage • Install give way, centre line and directional arrows on bike path • Install holding rails
Amiga Crt	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Install holding rails
Elmore Ave	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Install holding rails • Replace graffitied sign (end SF)
Bartlett Ave	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Install holding rail • Replace graffitied sign (end SF)
Dixon Ave	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Install holding rails

Intersection of Mount Dandenong Road Path with:

Diana St	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Install holding rails
Beaufort Rd	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Remove bollard beside path • Install holding rails • Install regulatory and directional signage

Ross Rd	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Remove bollard beside path • Install holding rails • Regrade path to give an acceptable gradient on west side of road
Clegg Ave	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Install holding rails • Install regulatory and directional signage
Richards Ave	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Install holding rails • Regrade short steep section of path on north side to achieve an acceptable gradient (5%)
Wicklow Ave	<ul style="list-style-type: none"> • Install give way, centre line and directional arrows on bike path • Install regulatory and directional signage • Widen path to 2.0m

8.5 APPENDIX 5: ESTIMATED COST OF KEY ACTIONS

Provided below are some indicative costings, which relate to works to be completed by Maroondah City Council in the implementation of this Strategy. It should be noted that these estimates have been prepared in 2003.

Action	Estimated Cost
Implement a maintenance schedule of Maroondah's network of bicycle paths	It has been estimated that it costs \$5 per linear metre a year for maintenance of off-road paths (inclusive of patching, crack sealing, weed spraying and extra crushed rock where appropriate). There are approximately 26 km of bicycle path in Maroondah providing a total cost of \$130,000.
Structural Improvements to shared paths, including local widening, rebuilding and improving the gradient of paths.	<p>For this category of action, costs have been estimated for the following works.</p> <p>widening sections of the Croydon Rd Path - \$3,200</p> <p>widening sections of the Plymouth Rd Path - \$625</p> <p>rebuilding the Tarralla Creek Path - \$440,000</p> <p>rebuilding the path between Ringwood Secondary College and Railway Avenue - \$12,000</p> <p>rebuilding the Dorset Golf Course Path, between the east side of the path to Colchester Rd - \$13,000</p> <p>alleviating the grade on sections of the Dandenong Creek Path - \$12,500</p> <p>alleviating the grade on sections of the Dorset Golf Course Path - \$15,000</p> <p>alleviating the grade on sections of the Plymouth Rd Path - \$2,500</p>
Applying a standard treatment at shared path-road intersections	The estimated cost of providing a full standard treatment to a shared path-road intersection is \$1500. There are approximately 36 bicycle-path road intersections needing one or more actions to meet the desired standard.
Applying a standard treatment at intersection of bicycle paths.	The estimated cost of providing a full standard treatment for an intersection between bicycle paths is \$700. There are approximately 18 bicycle path intersections

paths.	needing one or more actions to meet the desired standard.
Employing a Signage Schedule on the network of off-road paths	<p>A typical one kilometre stretch of path would require:-</p> <p>2 shared use signs @ \$150 each (including installation)</p> <p>3 plank signs @ \$700 each (including installation)</p> <p>Signage would also be required for any intersections, but these costs are included above in the costing for intersection treatment.</p>
Providing drinking taps along paths	It has been estimated that it costs \$500 for each drinking tap, provided that the tap is located near an existing source of water). It is estimated that one drinking tap will be needed approximately every 2 kilometres, leading to an overall cost of about \$13,000.
Providing bicycle lockers at end of journey destinations	It has been estimated that it costs \$500 to supply and install a bicycle locker. To provide three lockers at each of Maroondah's railway stations and two each at the Croydon and Ringwood business districts will cost \$12,500.
Organising events, which promote awareness of the Maroondah Bicycle Network	It is estimated that to organise a community fun ride on the Maroondah Bicycle Network, at which a BBQ and a band is provided, will cost about \$1200.
Employment of a part-time Bicycle Co-ordinator	If employed on a full-time basis it is expected the annual cost would be \$40,000-\$50,000. However, it is possible that this position could be shared with at least one neighbouring Council and therefore, the cost of funding this position may be about \$20,000 to \$25,000 per annum.

8.6 APPENDIX 6: CODE OF CONDUCT

Provided below is a code of conduct for cyclists, which is based upon the recommendations of Bicycle Victoria and VicRoads.

The Law and Cycling

By law cyclists using on-road and off-road paths must:

- Wear an approved helmet
- Take due care and consideration of others and obey traffic regulations where they apply

In addition to these rules, there is etiquette for use on off-road bicycle paths and roads.

Etiquette for Off-road Paths

- Keep left unless overtaking
- Overtake on the right
- Ride in a single file in heavy traffic
- Wheeled traffic gives way to foot traffic
- Ring your bell, call 'Passing' and slow when passing others from behind
- Move off the path if stopped
- Wear bright clothing during the day and reflective material at night
- Use a reasonable and safe speed when cycling based upon other users present on the path (eg. Walkers, dog-walkers) and cycling conditions (eg weather conditions, field of vision).

Etiquette for On-Road Cycling

- Obey traffic signals
- Always ride on the correct side of the road
- Use lights when riding at night – white light at front and red rear light
- Ride predictably in as straight a line as possible
- Use the hook turn for right hand turns
- Ride in a single file in heavy traffic
- Treat bikes as vehicles
- Dress in bright clothing when riding during the day and display reflective material at night.