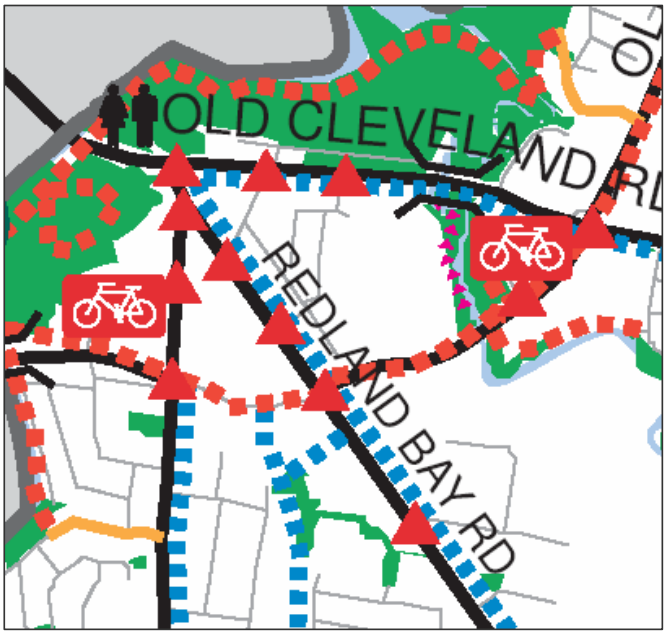
Redland
SHIRE COUNCIL

Redlands
Cycling & Pedestrian Strategy
(RCPS)



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1. FOREWORD

Walking and cycling play a key role in the transport system, but for many years have been undervalued as legitimate modes of transport for work and recreational related activities.

However, there is growing recognition from regulatory authorities that walking and cycling play an important part in managing mobility issues within our urban environment, and that neither should be considered as an inferior mode of transport.

Unfortunately more and more people are using their car, rather than walking or cycling, to undertake relatively short journeys. This is creating increasing environmental, social and economic problems, which have contributed to the decline of the number of people walking and cycling in the Shire.

The role of walking and cycling in creating a sustainable environment should not be underestimated. Encouraging and facilitating people to walk, cycle and use public transport in an integrated fashion rather than travel by car will make an important contribution to managing the impacts of car use within the Shire.

Redlands can learn from the experiences of other states within Australia and other countries about ways to reduce the use of private cars. These experiences show that it is feasible to increase cycling and walking through appropriate measures that create a safer and more comfortable walking and cycling environment.

The fundamental approach taken is to redefine the position of pedestrians and cyclists in traffic management planning and adopt measures, which cater for people rather than cars. These incentives may involve restrictive measures on car use in town centres and applying incentives to favour public transport use and bicycles. The cities and local communities that have adopted this approach have found that their economic growth and access to shopping are not harmed but, in fact grow. Places that were once undesirable for pedestrian and bicycle use through unbridled car use become attractive places to socialise and visit on a regular basis.

The way ahead for Redlands is to implement measures, which make walking and cycling an attractive viable form of regular transport. This will require a change in our attitudes towards transport and urban planning in our environment.

This strategy outlines a planning framework on how local conditions within the Shire can be changed to improve pedestrian and cyclist safety, creating a more attractive environment to increase walking and bicycle use.

2. INTRODUCTION

This document sets out the Redlands Cycling and Pedestrian Strategy (RCPS), which provides a planning framework to make a safer and more attractive cycling and walking environment within the Shire.

The aim of the RCPS is to encourage greater cycling and walking activity and establish a comprehensive and convenient cycling and pedestrian network.

The Redlands Bicycle Advisory Committee (RedBAC) initiated the development of the RCPS in June 2000 as a response to the regional cycling strategy – Cycle South East, which required local authorities to develop a strategic plan to encourage and promote safer cycling.

The RCPS is also a key component of the Redlands Integrated Local Transport Plan (RILTP). The RILTP covers a range of transport issues including public transport, cycling, walking, road network, freight, land use, environment and social constraints and travel demand management. The RCPS builds on the recommendations of the RILTP and serves as a companion document.

The RCPS, which has been developed with input from the community and key stakeholder groups reflects Council's:

- support for walking and cycling as a viable mode of transport;
- commitment to integrated and sustainable transport policies; and
- Its aim to reduce car dependency throughout the Shire for daily trips.

The strategy is consistent with the Shire's *Community Plan – Vision 2005*, which defines the community's preferred transport system in the Shire. The Community Plan sets out clear goals to expand and integrate the existing network of walkways and bikeways within urban centres, public transport and places of recreation, as well as co-ordinate land use practices which support increased opportunities for walking and cycling.

In order to achieve these goals the RILTP and RCPS will provide practical solutions to:

- encourage greater cycling and walking in the community with particular attention to safety, convenience and provision of facilities;
- reduce the need to travel by car by ensuring land use distributions and intensities support walking, cycling and public transport use; and
- identify improvements to the cycling and walking network to support an increase in cycling and walking trips.

The RCPS provides an overview of the cycling and walking environment within the Shire and offers a basic understanding of the nature of cycling and issues that affect pedestrians and cyclists at a local level. It details a comprehensive cycling and pedestrian network route plan, identifying on and off-road cycling and walking links between townships, industrial and recreational areas throughout the Shire.

Included in the strategy are targets for cycle and walking participation and objectives to achieve the overall goal to increase cycling and walking within the Shire.

Specific actions are tabled with set time-lines for implementation and responsible parties. The achievement of these targets will depend to some extent on the support from other government agencies in particular Queensland Transport and Department of Main Roads.

PART A

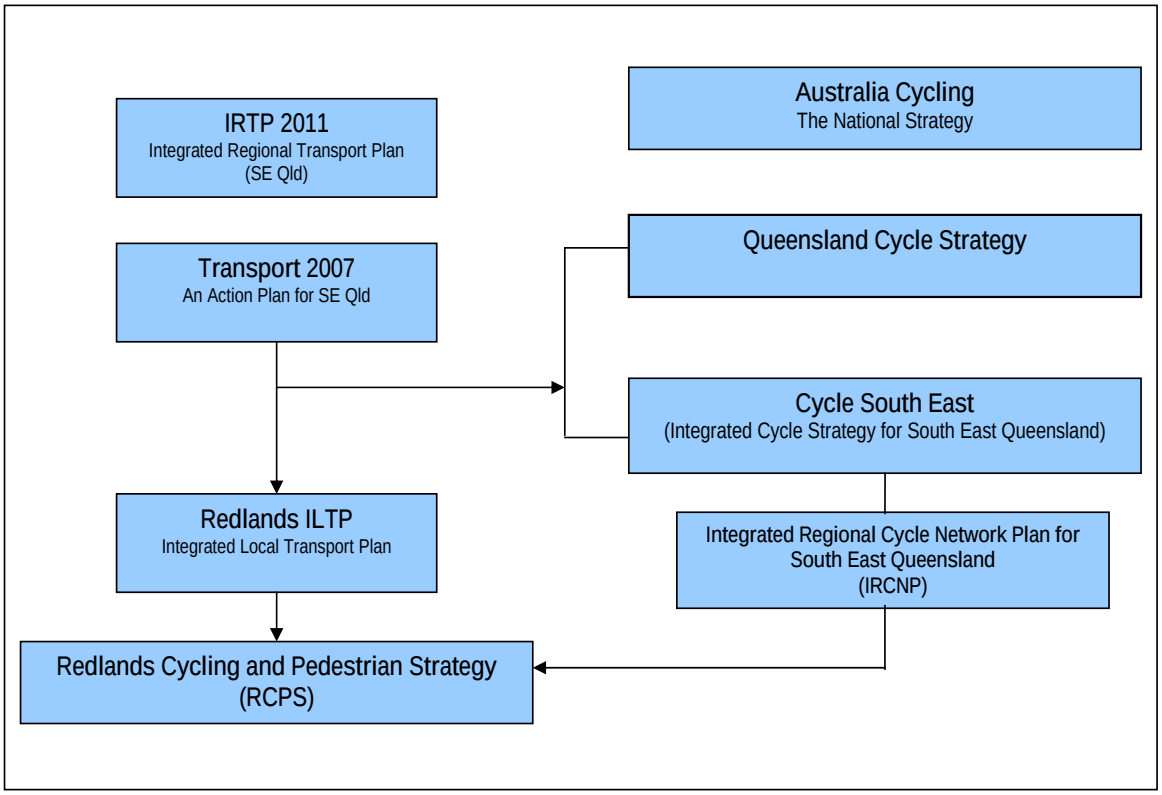
BACKGROUND

3. STRATEGY CONTEXT

The need to develop the RCPS has been influenced by a number of key plans and strategies, which include:

- Cities for Climate Protection Program
- Integrated Regional Transport Plan for South East Queensland (1997)
- Transport 2007 – An Action Plan for South East Queensland
- Draft Integrated Regional Cycle Network Plan for South East Queensland – IRCNP (2001)
- Cycle South East-Integrated Cycle Strategy for South East Queensland (1999)
- Draft Queensland Cycle Strategy
- National Bicycle Strategy, Australia Cycling 1999 – 2004
- Redland Integrated Local Transport Plan (April 2002)
- Redland Shire Strategic Plan (1998)
- Redlands Integrated Planning Scheme
- Redland Shire Council Community Plan-Vision 2005 (2001)
- Redland Shire Council – South Moreton Bay Islands Local Transport Plan (2002)
- Redland Shire Council Centres Study (2001)

Figure 1 Redlands Cycling and Pedestrian Strategy Context



4. THE NEED FOR A CYCLING AND PEDESTRIAN STRATEGY

4.1. THE VALUE OF CYCLING AND WALKING

Cycling and walking have a range of community, health, social, economic and environmental benefits. Both activities should be recognised by Council and the community as key alternatives to private motor car use.

For example, increasing participation in cycling and walking in the Shire will contribute to reducing air pollution and traffic congestion in our suburbs.

Increased cycling and walking in the Shire will also reduce the effects of a sedentary lifestyle which can lead to coronary heart disease, stroke, obesity and diabetes. Regular physical activity (including walking and cycling) can reduce the risk of coronary heart disease and assist with the reduction of high blood pressure (*National Health and Medical Research Council, 1997*).

Increasing the modal shift away from the motor car to cycling and walking will also have significant economic benefits to the individual and the community. For example The family car costs up to 55 cents per kilometre to run. In comparison the cost of buying and maintaining a bike is around 1% of the cost of buying and maintaing a car (*Greenhouse Gas Office).* Bicycle use also reduces wear and tear on public roads and each car trip replaced with a bike ride saves the community 60 cents per kilometre *(Australia Cycling 1999).*

As well as significant environmental and economic benefits, cycling and walking improves the social fabric of a community by increasing social interaction. Sound urban planning, which facilitates unrestricted access for pedestrian activity, adds to the 'feel' of a local area. Areas that encourage non-motorised access make people feel safe and comfortable. It is these elements that deliver a higher quality of life in a community and create liveable neighbourhoods *(Engwicht, 1999).*

5. REDLAND SHIRE COMMUNITY PROFILE

Redland Shire is located south east of Brisbane City adjoining Moreton Bay. It includes North Stradbroke Island and the South Moreton Bay Islands and covers a total area of 539 sq kilometres.

The Shire has areas of high environmental, cultural and visual quality. Due to the Shire's close proximity to Brisbane City and its natural and cultural environment, potential exists for significant tourist growth.

5.1. POPULATION AND DEMOGRAPHICS

- The Shire is experiencing sustained population growth with the total population estimated to grow from 118,025 in 2001 to 163,448 by 2016 *(PIFU 2001*).

- The vast majority of population growth is occurring on the mainland areas of the Shire and is projected to increase from 111,947 in 2001 to 157,299 by 2016. Notable growth areas include Victoria Point, Redland Bay, Ormiston, Sheldon – Mt Cotton, and Birkdale (*2001 Redland Shire Centres Study, Urbis*).

- The continued population growth within the Shire raises significant questions as to how the Shire's transportation and land use needs will be met. Issues such as traffic congestion and pollution from gas emissions, a produce of sustained population growth, will have a dramatic effect on the liveability and environmental qualities for residents and visitors.

- The Redlands community is characterised by an ageing population. It is projected that by 2016, 38.5% of the Shire's population will be aged 50 years and over compared to 27.9% of the 2001 population.

5.2. TRANSPORT

- Expanding residential development and dispersed growth in population has had significant impacts on the cycling and walking environment. The distribution of population has resulted in a high reliance on the private motor vehicle for transport. It is anticipated that travel by car will remain the dominant travel mode unless there are significant shifts in current land use and transport planning (*Shire Transportation Study 2000*).

- The private motor vehicle is the most significant mode of travel chosen for journeys to work, constituting 62% of all trips. This dominance appears even more pronounced for shopping, recreation, social and for personal business trips across the Shire (*Shire Transportation Study, 2000*).

- The Island communities of North Stradbroke Island/Minjerribah and the Southern Moreton Bay Islands are unique in a regional context and reliance on public transport is high between Islands and the mainland for residents and visitors. There is increasing pressure to improve transport services to these Islands and manage visitor use at peak periods throughout the year.

- Employment migration out of the area is high with 60% of the Shires' workforce travelling to work outside of the area. Many of the trips are made by private motor vehicle and are single occupancy (*Shire Transportation Study 2000)*.

- In order to sustain and improve the economic viability of the Shire, the promotion of local employment opportunities is of paramount importance to the Redlands community. (*Vision 2005 and Beyond*). An increase in local employment will assist in reducing extended vehicle trips and enhancing the opportunity for trips to local businesses via cycling and walking as well as assist in developing an effective public transport system.

6. REVIEW OF CYCLIST AND PEDESTRIAN REQUIREMENTS

6.1. TYPES OF CYCLISTS

There are many different types of cyclist using our current roads, bicycle lanes and shared paths. A classification of cyclists is detailed in **Table 1**. This Table does not depict a hierarchy of users in terms of facility provision, but summarises the main characteristics of each type of cyclist including:

- Facility requirements;
- Trip purpose and type;
- Skill and ability; and
- Safety and accident potential.

Developing an effective strategic cycle and pedestrian network requires an understanding and appreciation of the various forms of cyclists and other path users.

An appreciation of the various users also helps to identify trip demands, which in turn can be used to develop priority actions to increase cycling by the various community groups most likely to cycle. Cycle South East recognises the following trip type markets. These markets have been recognised as having the greatest potential to increase cycling trips.

- Trips to work;
- Trips to school;
- Neighbourhood utility trips;
- Trips to public transport;
- Recreation trips;
- Tourism trips; and
- Sport and racing.

The majority of cycling in the Shire is on shared paths and the general road network. There are limited examples in the Shire of exclusive cycle facilities.

The range of bicycles on the market affects the type of cyclist and their trip requirements. The growth in recumbent and power assisted bicycles within the Shire is expected to increase. These bicycles require extra width and space due to higher speeds and larger turning areas. The growth in extended child carriers on the rear of bicycles will also affect desirable path widths and access points into shared paths.

Table 1 Cyclist Requirements and Characteristics

Type of Cyclist	Requirements / Characteristics
Commuter Cyclist (C)	• Direct and convenient routes to workplace, public transport nodes, tertiary education campuses. Will often choose the most direct route with minimal stop signs and delays. • They require specific end-of-trip facilities such as secure bike parking, showers and lockers. • Mainly travel on roads and generally have a high skill level. • Off-road paths that are shared are generally not favoured due to indirect route of paths and volume of pedestrian traffic. • Off-road paths are often not direct and as well maintained as on-road routes. Commuter cyclists require high speed routes that are adequately lit for night time travel.
Utility Cyclists (U)	• Routes radiating to shops, community centres and residential houses. • Generally these trips are short and they require quiet residential streets or off-road paths. • They require an extensive cohesive network that is supported by end-of-trip facilities such as secure bike parking and adequate street and path lighting. • Skill level for this type of cyclist varies.
School Cyclists (Sc) **Primary** **Secondary** **Tertiary**	• Safe bikeways radiating from school properties to surrounding residential properties. • Primary School students prefer off-road bikeways and footpaths to on-road bicycle lanes. • Quiet residential streets may be appropriate for this group. However secondary and tertiary students will utilise on-road routes as they are more direct and offer shorter travelling times. • Require wide paths and widened kerbside lanes. • Safe crossings and off-road shortcuts desirable. • Skill level of primary school cyclists is generally low with a lack of awareness of traffic environment. They also have poor peripheral vision and depth perception up to 12 years of age. • Secondary and tertiary school level cyclists have a sense of invulnerability and are reluctant to comply with traffic regulations. • Require concentrated traffic safety and bike skill education programs.
Recreational (R) & Touring Cyclist (T)	• Routes that have points of interest and varied landscapes. • Less comfortable cycling in heavy traffic, desire greater protection from traffic than commuter and sport cyclists. • Off-road routes desirable especially for less skilled recreational cyclist who ride occasionally. Recreational cycling can involve Mountain Biking where the cyclist is seeking a challenging path network with variable route options of extended length to points of interest. • Recreational cyclists mainly seek cycling environments, which are away from vehicle traffic and other disruptions. • Speed is not an important factor and time between destinations is more relaxed. • Weekends form peak riding period as do early morning and afternoon times on weekdays. • Normally ride between parks and on local access streets. • Require secure bike parking facilities.
Sports Cyclist (SP) (advanced)	• Prefer on-road routes that have a diversity of topography, circuit ride opportunities. • Road shoulder desirable and will tolerate medium to high level traffic volumes. • Will use all forms of road - Arterial to neighbourhood streets. • Speed generally averages 20-35km/h. • Weekends and weekday between 6am and 9am form peak riding periods. • Trip lengths can vary between 20-100km+. • Rest points and areas to purchase drinks and snacks desirable. Seating and bike parking areas desirable at major stop off points.

6.2. PEDESTRIAN CHARACTERISTICS AND NEEDS

A range of pedestrians use shared paths, footpaths, shopping precincts, main roads, local streets and bush trails across the Shire for recreational and transport purposes, similar to cyclists. It is difficult to classify pedestrians into one homogeneous group. However, it is important to note that every trip begins and ends as a pedestrian trip – whether walking to the letter box or across a car park to get to a car.

For the purpose of this strategy pedestrians include all non-vehicular modes of transport. This includes skateboards, in-line skates and roller-skates. Pedestrians - like cyclists, travel for a variety of reasons including:

- To and from work and school;
- Health and exercise;
- Errands and deliveries;
- Social visits and events;
- Multimodal trips (walking to a bus stop or railway station);
- Appointments; and
- Recreation.

All Redland Shire residents walk for both transport and recreation. Pedestrian use increases particularly in urban areas due to higher concentrations of origins and destination points.

The range of pedestrian characteristics for the groups identified is detailed in **Table 2**.

6.3. WALKING DISTANCES

Defining an acceptable walking distance for pedestrians is difficult due to local geography, land use patterns and climate conditions. The distance pedestrians will travel is largely dependant upon weather, time of day, mobility, purpose of trip and demographics.

Traditionally planners have striven to locate community facilities, local parks no more than 400 metres from the origin of travel. The majority of people prefer to walk shorter distances for commuting trips to shops and transit interchanges such as train stations and bus stops. Most people will walk longer distances for recreational trips and trip lengths can vary greatly from 20 minutes to 2.5 hours.

6.4. PEOPLE WITH DISABILITIES

Pedestrians also include people who have mobility difficulties and who utilise aids such as wheel chairs, walking aids or guide dogs for assistance. With such a broad range of users it is difficult for facilities to completely cater for the needs of each user group. Shared paths have increased in popularity with local government authorities over recent years and conflict between different users is increasingly apparent.

People with mobility difficulties have a range of functional support needs, which may restrict access, these include;

- Poor balance;
- Partial or complete loss of sight and/or hearing;
- Difficulty interpreting information eg. signage along shared paths;
- Stamina limitations;
- Difficulty moving head and bending/kneeling;
- Inability to use upper or lower extremities; and
- Extremes of size and weight.

Source: Sport and Recreation Victoria, 1996

The needs of pedestrians with a disability vary depending upon the type of disability and the level of impairment. The spatial requirements also vary depending upon their physical abilities and the type of assistive device they use. Elements that can assist movement for people with a disability include:

- Curb ramps;
- Tactile warnings;
- Easy to reach activation buttons;
- Audible warnings and message systems;
- Reduced path grades and cross slopes;
- Reduced roadway crossing distances
- Traffic calming; and
- Smooth surfaces and clear travel paths.

Source: Pedestrian Facilities Guidebook, 1997

6.5. PEDESTRIAN NEEDS

The importance of adequately providing wide smooth paths and walking surfaces to enhance safety and useability is apparent. It is important to consider the particular location and potential demand from various user groups when locating pedestrian facilities. Pedestrian needs are diverse and general needs include:

- Safe streets and walking areas;
- Good visibility;
- Comfort and shelter;
- Attractive and clean walking environments;
- Access to public transport; and
- Convenience and connectivity.

For some people, pedestrian travel is the primary mode of transportation. There are segments of the Redlands community who do not use or own a motor vehicle for a variety of reasons.

The needs of pedestrians vary depending upon age and mobility. Children and older pedestrians require a greater level of protection from motor vehicle traffic. The primary need for young pedestrians is adult supervision as their peripheral vision and depth perception is poor up until 12 years of age. Children, like the elderly, require assistance in negotiating vehicle traffic through good design elements such as:

- Reduced roadway crossing distances;
- Controlled crossing points;
- Refuge areas in road crossings;
- Traffic calming;
- Traffic signals and easy to read signs; and
- Handrails.

Source: Pedestrian Facilities Guidebook, 1997

In addition to adult supervision and street design elements, children also require appropriate education to improve their awareness of traffic and safety measures.

Table 2 Pedestrian Requirements and Characteristics.

Type of Pedestrian	Requirements / Characteristics
Walkers	• Walk for fitness purposes, mainly through parks on weekdays and at weekends normally early morning and afternoon/evening. • Tendency is for circuit trips leading from paths connecting houses to local parks and along main roads. May walk as part of organised group. • Flat to moderate grades required. • Walking speed averages 5km/h. Length of trips vary normally between 25-60 minute duration. • Drink fountains and rest points a desirable support facility.
Recreational	• Walk for fitness and relaxation. Walk weekly or daily. Require flat to moderate grades. • Walking speed averages 3km/h. • Normally require scenic pathways to parks and recreational facilities. • Tendency for circuit trips.
Joggers	• Utilise paths and roads for fitness purposes. • Peak activity mainly between 6am to 8am and 5pm to 9pm. Length of trip is normally 1-10km. • Require a flat even surface with good line of sight and path lighting for evening jogging. Speeds vary between 5-10km/h. Drink fountains desirable along park paths.
Elderly	• Walk mainly to shops/community centres/public transport interchanges/medical centres. Will walk throughout the week at varied times. • Low walking speed. Require flat terrain. • Trip length varies but normally between 0-1km in length. • Require level surfaces with easy access to public transport and shops. Wide paths desirable with safe crossing points and protection from vehicle traffic. • Rest areas and drinking fountains desirable along routes or at destination points. • May experience slowing of reflexes and poor vision and find crossing streets difficult.
Wheelchair users / people with mobility difficulties	• Require flat graded paths with smooth consistent surface. Paths need to be step-free with a firm stable surface. • Require easy access to public transport, shops / recreational centres. Paths need to be at least 2m wide to ensure safe passing from other path users. Good visibility with gradual corners required. • Access to buildings, car parking facilities etc needs to comply with State and Federal legislation. Signs and tactile markings along major routes and near buildings desirable to increase visibility and access. • Signs must be clear and at a suitable height. Require paths that are clear from obstructions. All doorways, gateways and openings must have a clear opening at least 850mm. • Where turnstile and bollards are used, alternative entrances at least 850mm wide should be provided. • Rest areas and drink fountains desirable.
Rollerbladers	• Trips predominantly for fun and fitness to and from parks. • Weekends are peak demand periods. Require smooth, consistent surface of low to moderate grade. Width 2m and greater desirable. • Trip lengths vary between 1-5km. Speed varies between 5-20km/h with faster speeds achieved on downhill gradients.
Skateboarders	• Trips predominantly for fun. • Utilise local paths and streets, pedestrian precincts and driveways. • Weekday afternoon periods peak time for activity. • Regular use of areas on a daily basis. • Access paths to and from skate parks. • Require smooth consistent surfaces with low to moderate grade.

7. WALKING AND BICYCLE RIDERSHIP IN THE REDLANDS

7.1. PRESENT SITUATION

Precise data on the number of people walking and cycling for commuting and recreational purposes in the Shire is very limited, highlighting the need to evaluate existing cycling and walking trip rates. However, a preliminary survey conducted as part of a *Council Recreation Facilities and Services Study* in 2003 indicated that walking was the top recreational activity in the Shire attracting a 47% participation rate, and cycling was the third most popular activity attracting a participation rate of 10.3%. These results support national statistics on recreational participation, which show that walking and cycling are popular forms of recreation within the community.

Despite the lack of travel survey data it is clear that non motorised travel activity is substantially less than motorised travel. Furthermore, community consultation highlights that cyclists and pedestrians face a range of barriers within the Shire, which in turn is having a significant impact on cycling and walking travel activity.

7.2. TRAVEL TO WORK

The 1996 and 2001 Household Census data provides the most reliable statistics on the mode of travel to work, but gives limited detail on walking and bicycle usage in terms of trip rates, specific locations and age levels.

Journey to work figures detailed in **Table 3** highlight the low participation rates by residents walking and cycling to work. As expected the private motor car is the dominant mode of transport. There have been no significant increases in non motorised transport modes within the census period.

Table 3 Mode of Travel to Work

Travel mode	1996 Percentage %	2001 Percentage %
Bicycle	0.57%	0.55%
Walking Only	1.89%	1.57%
Ferry	0.08%	0.07%
Train	2.38%	2.39%
Bus	2.04%	1.52%
Car as passenger	6.84%	6.15%
Car as driver	62.35%	63%

Source : ABS 1996 and 2001 Census Data

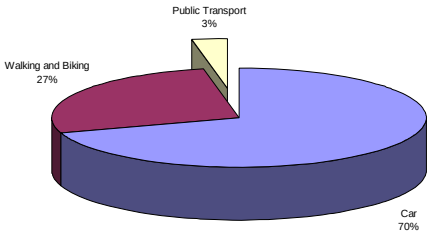
7.3. INTERNAL CYCLING AND WALKING TRIPS WITHIN REDLANDS

Figure 2 represents the modal share of internal trips within the Shire via car, public transport and cycling and walking.

Cycling and walking constitute a considerable portion of journeys made within the Shire (27%). As expected, internal car trips dominate modal share and reflect the community's reliance on private motor vehicle travel. However the portion of walking trips is probably under represented in the figures.

The majority of trips, whatever the primary mode of choice, begin and or finish with a walking component. It could be argued that the portion of internal walking trips is probably greater than the 27% represented.

Figure 2 Modal Share in Intra-Shire Trips



Source: 2000 Redlands Transportation Study

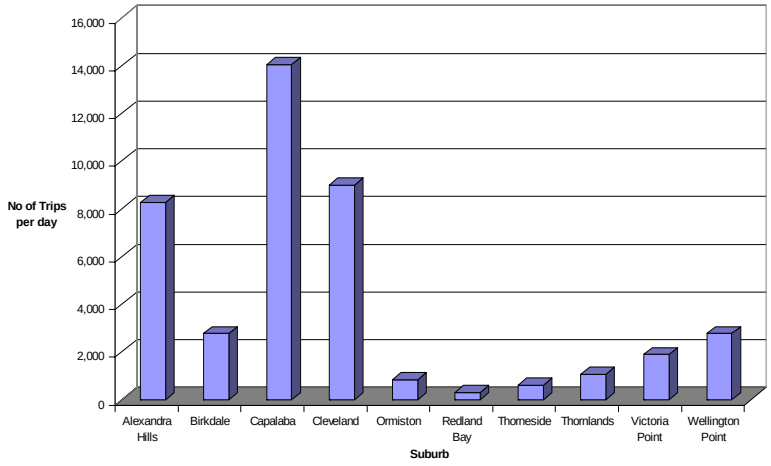
7.4. TRAVEL TO SCHOOL

The most active cyclists within the Shire, on a daily basis, are school children travelling to and from school. Participation rates for cycling to school are estimated at 12.3% compared to walking – 11.9% and travelling by car 56%. This compares to a state average of 4.5% for cycling and 16.2% for walking (*Qld Government, 2001 Census at School*). The average cycling time is between 10-40 minutes with walking trip times averaging 20 minutes.

7.5. WHERE ARE CYCLISTS AND PEDESTRIANS GOING?

Figure 3 details the distribution of trips for both cycling and walking within the Shire. As expected, the main centres of Cleveland, Capalaba and Alexandra Hills generate the majority of trips.

Figure 3 Walking and Bicycle Intra Shire Trip Generation Distribution



Source: Redlands Transportation Study Trip Matricies, 2000

8. BICYCLE AND PEDESTRIAN ACCIDENT DATA

Between 1 January 1995 and 31 December 2001, 129 non-fatal bike crashes were reported in Redland Shire. No fatalities have been recorded in this period. During this period a total of 112 pedestrian accidents were reported with nine fatalities. A breakdown of these statistics is shown in **Table 4** and **Table 5**.

Table 4 Bicycle Accidents, Redland Shire 1995 - 2001

Year	Fatalities	Hospitalised	Medical Treatment	Minor Injuries	Total Casualties
1995	-	3	2	4	9
1996	-	5	16	2	23
1997	-	9	10	3	22
1998	-	5	8	9	22
1999	-	2	2	2	6
2000	-	6	14	6	26
2001	-	8	8	5	21
Total	-	38	60	31	129
% Total	-	29%	47%	24%	

Source: Queensland Transport – 2001 Road Crash Database

Key bicycle crash findings include the following:

- 29% required hospitalisation;
- 47% required medical treatment;
- 55% of reported accidents occurred at an intersection;
- 88% of accidents involved males with 66% of accidents being represented by males under 19 years of age;
- 70% of reported accidents occurred in a 60km/hr zone (based on rates between 1997-2002);
- 79% of reported accidents occurred at an angle (based on rates between 1997-2002);
- 66% of reported accidents occurred where no traffic control was present;
- 68% of reported crashes occurred during peak periods (6am-9am and 3pm-6pm).

Table 5 Pedestrian Accidents Redland Shire, 1995 - 2001

Year	Fatalities	Hospitalised	Medical Treatment	Minor Injuries	Total Casualties
1995	3	7	7	3	20
1996	2	3	3	3	11
1997	2	6	7	4	19
1998	1	7	10	4	22
1999	1	7	4	5	17
2000	0	6	5	4	15
2001	0	2	3	3	8
Total	9	38	39	26	112
% Total	8%	34%	35%	23%	

Source: Queensland Transport – 2001 Road Crash Database

Key pedestrian casualty findings include the following:

- 9 fatalities have occurred during the review period.
- 62% of reported accidents and fatalities involved males.
- 27% of reported accidents involved people over 51 years of age
- The highest represented group are males and females 18 years and under with 35% of total casualties.

8.1. PROBLEM AREAS FOR CYCLISTS AND PEDESTRIANS

The following problem areas or 'black spots' were highlighted by crash statistics (Jan/1995 – Dec/2001) and community feedback submissions. These areas are not exclusive, some areas within the Shire pose a hazard to cyclists and pedestrians may not be represented.

Table 6 Top 4 Bicycle and Pedestrian Accident Locations – Redland Shire 1995 - 2001

Road / Intersection	Number of Bicycle Accidents	Number of Pedestrian Accidents
Finucane Rd	11	16
Redland Bay Rd (Capalaba)	9	16
Birkdale Rd	11	9
Cleveland Redland Bay Rd	8	5

Source: Queensland Transport – 2001 Road Crash Database

Figure 4 details the various cyclist and pedestrian accident locations across the Shire. Specific roads and intersections that were also identified as hazardous to cyclists and pedestrian movement through the community consultation process are detailed in **Table 7**.

Figure 4 Pedestrian and Bicycle Casualty Locations, Redland Shire 1995 - 2001

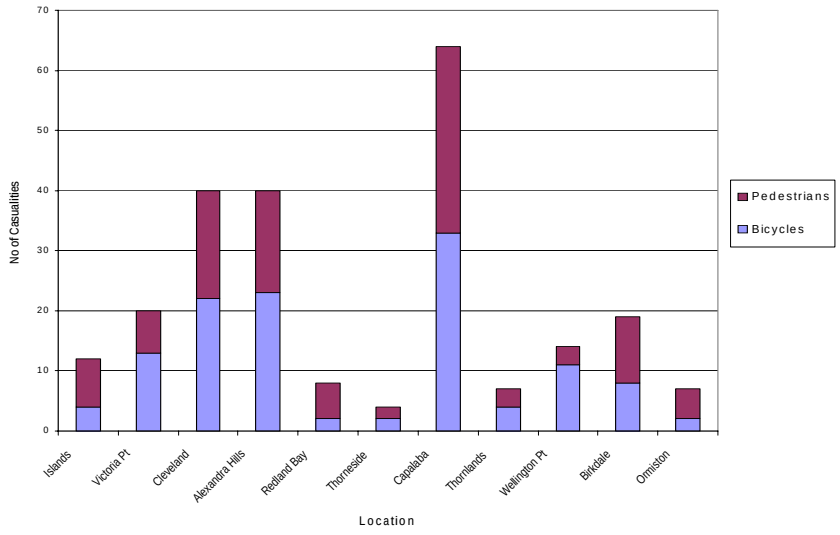


Table 7 Identified Hazardous Raod and Intersections

Road / Intersection	Type of Problems
Wellington St	Narrow road shoulder, poor road surface, high traffic volume, difficult intersections to negotiate at intersection with Russell Street roundabout.
Finucane Rd/ Shore St Roundabout	High traffic volume, inadequate crossing points for pedestrians and cyclists.
Sturgeon St	Narrow road shoulder, poor road surface, high traffic volume.
Rickertt Rd /Quarry Rd	Narrow road shoulder, poor road surface, high traffic volume.
East Coast Rd (North Stradbroke Is)	Narrow road shoulder, poor road surface, high traffic volume (sand mining trucks, tourist traffic).
Double Jump Rd	Narrow road shoulder, poor road surface.
Gordon Rd (Redland Bay)	Narrow road shoulder, poor road surface.
German Church Rd	Narrow road shoulder, poor road surface, quarry trucks.
Bloomfield St	No facilities for cyclists on road carriageway, high traffic volume, poor sight lines at zebra crossings, parking cars difficult to negotiate.
Middle St	No facilities for cyclists on road carriageway, high traffic volume, poor sight lines at zebra crossings, parking cars difficult to negotiate.
Cleveland Pt	Narrow road shoulder, poor road surface, high traffic volume on weekends.
Starkey St / Duncan St	Narrow road shoulder in parts, poor road surface.
Cleveland Redland Bay Rd / Boundary Rd (Roundabout)	Difficult northbound merge onto Cleveland Redland Bay Road, heavy traffic volume. No provision for cyclists or pedestrians.
Old Cleveland Rd East	No road shoulder in sections, difficult roundabouts to negotiate, heavy traffic volumes.
Mt Cotton Rd (Bridge Crossings)	Narrow road shoulder, poor road surface in critical sections, heavy vehicles, gravel and debris on carriageway.
Avalon Rd	Narrow road shoulder, gravel verges, gravel washouts onto road surface, off- road gravel trail not delineated clearly.
Moreton Bay Rd	No provision for cyclists on road carriageway, high traffic volume, lack of footpaths for pedestrians.
The Esplanade (Karragarra Is)	No provision for cyclists or pedestrians, blind corners.
Pt O'Halloran Rd (Southern end near Sewage Pump)	No provision for cyclists, narrow road shoulder.
Panorama Dr	High traffic volume, no specific provisions for road cyclists.
Capalaba / Redland Bay Rd	No provision for cyclists on road carriageway, footpath fragmented by driveways, poor pedestrian crossing points, busy environment.

Data Source: Community Consultation Surveys and 'Have Your Say' campaign

Providing safer road conditions for pedestrians and cyclists will require a joint effort between Council and other government agencies, and should include measures such as:

- Reducing the speed and volume of motorised transport.
- Creating road conditions which minimise the risk of fatal collisions between motorists and pedestrians and cyclists.
- Avoiding complex and confusing situations for cyclists and pedestrians at intersections.
- Supporting education measures which promote safe walking and cycling.
- Installing appropriate facilities for cyclists and pedestrians within and along the road carriageway.

Other measures involve education and enforcement strategies to modify user group behaviour and increase compliance with road rules and improve usage of facilities such as shared paths. The benefit of these measures is often only short term and requires constant modification and enforcement. Engineering measures, which focus on modifying the road environment and providing cyclists and pedestrians with their own space, is more effective in the long term.

The RCPS has adopted the approach that appropriate measures need to be built into the entire cycling and walking network rather than just focussing on specific crash locations. It is recommended that the three approaches of “shifting space, trading space and alternative space” as outlined in Bicycle Victoria booklet *“It Can be Done”* be used as a basis for the development of bicycle facilities in high traffic and high speed environments. The creation of pedestrian precincts and shared zones are recommended to encourage safe pedestrian activity and provide space for pedestrian movement.

The AUSTROADS *Guide to Traffic Engineering Practice* Part 13 Pedestrians and Part 14 Bicycles, provides practical guidelines and standards for uniform design construction and operation of facilities for pedestrians and cyclists. It is recommended that Council adopt these guidelines as a basis for improving walking and cycling safety.

9. COMMUNITY CONSULTATION

9.1. HOW THE STRATEGY WAS DEVELOPED

The community consultation phase of the RCPS was undertaken to research community attitudes on cycling and pedestrian related issues and needs. It was important to obtain comment from a broad cross section of the general public as well as cycling groups and other interested organisations. Relevant community feedback and data from the Redlands ILTP and South Moreton Bay Islands Transport Study, was also incorporated into the RCPS.

The process for community involvement in the development of the RCPS is shown in **Figure 5**. The consultation was carried out over a number of stages as follows:

Stage 1 - Call for Public Submissions and Media Coverage

In May 2001 the Bayside Bulletin featured an article publicising the RCPS and encouraged people to contact Council on cycling and pedestrian issues.

'The Have Your Say Campaign' was also undertaken between September and November 2001. This campaign coincided with Bike Week 2001. An advertisement was developed and published in three regional papers – Bayside Bulletin, Wynnum Herald and South East Advertiser. A feature article supported the advertisement in the Bayside Bulletin.

Response rate to the campaign was good with 34 received via e-mail and 36 written submissions. All submissions were considered in the context of the strategy and have been instrumental in developing key strategy actions.

Stage 2 - Community Surveys

In conjunction with the 'Have your Say Campaign' a range of surveys were developed to gather information and perceptions on cycling and walking within the Shire. A total of 96 Community Surveys were received. The consultation was further supported by surveys of Island water transport users, which had been undertaken as part of the South Moreton Bay Islands Transportation Study in September 2001. Questions in relation to cycling and walking were integrated into the Attitudinal Survey, over 900 responses were received over a one month period.

A further community survey was conducted in March 2001 prior to the commencement of the Strategy. This survey was concerned with the attitude of residents on North Stradbroke Island towards cycling and potential facility development to encourage greater cycling activity. Over 580 questionnaires were sent out to residents on the Island, 224 surveys were returned representing a 38% response rate.

Stage 3 - Stakeholder Meetings and Discussions

A number of meetings were held with selected groups and individuals during the study period. These included:

- School principals;
- Local BUG and Walking Group representatives;
- Queensland Transport and Local Transport Action Group representatives;
- Bicycle retailers;
- Mountain Bike Club representatives;

- Queensland Police Service representatives;
- Redlands Councillors;
- Redlands Council officers – Infrastructure Development, Land Use, Environmental; Planning, Community Planning; and
- Brisbane City Council/Gold Coast City Council Officers.

Stage 4 - Draft Plan Exhibition

Version 1 of the draft RCPS will be circulated internally for comment. A steering committee will be established and comment will be sought from:

- Council Officers
- Councillors
- RedBAC Members

Presentations will be made internally to detail key strategy objectives and review actions and general content and layout of the draft.

Stage 5 - Public Workshops

A further three Public Workshops are planned following completion of the draft RCPS, to obtain community feedback. In addition, key stakeholders will be invited to comment on the draft RCPS. The following workshop process is proposed:

- Workshop 1 will target community stakeholders including cycling and walking groups and other interested parties.
- Workshop 2 and 3 will involve Council and State Government agency representatives.

Stage 6 - Public Display of Draft Strategy

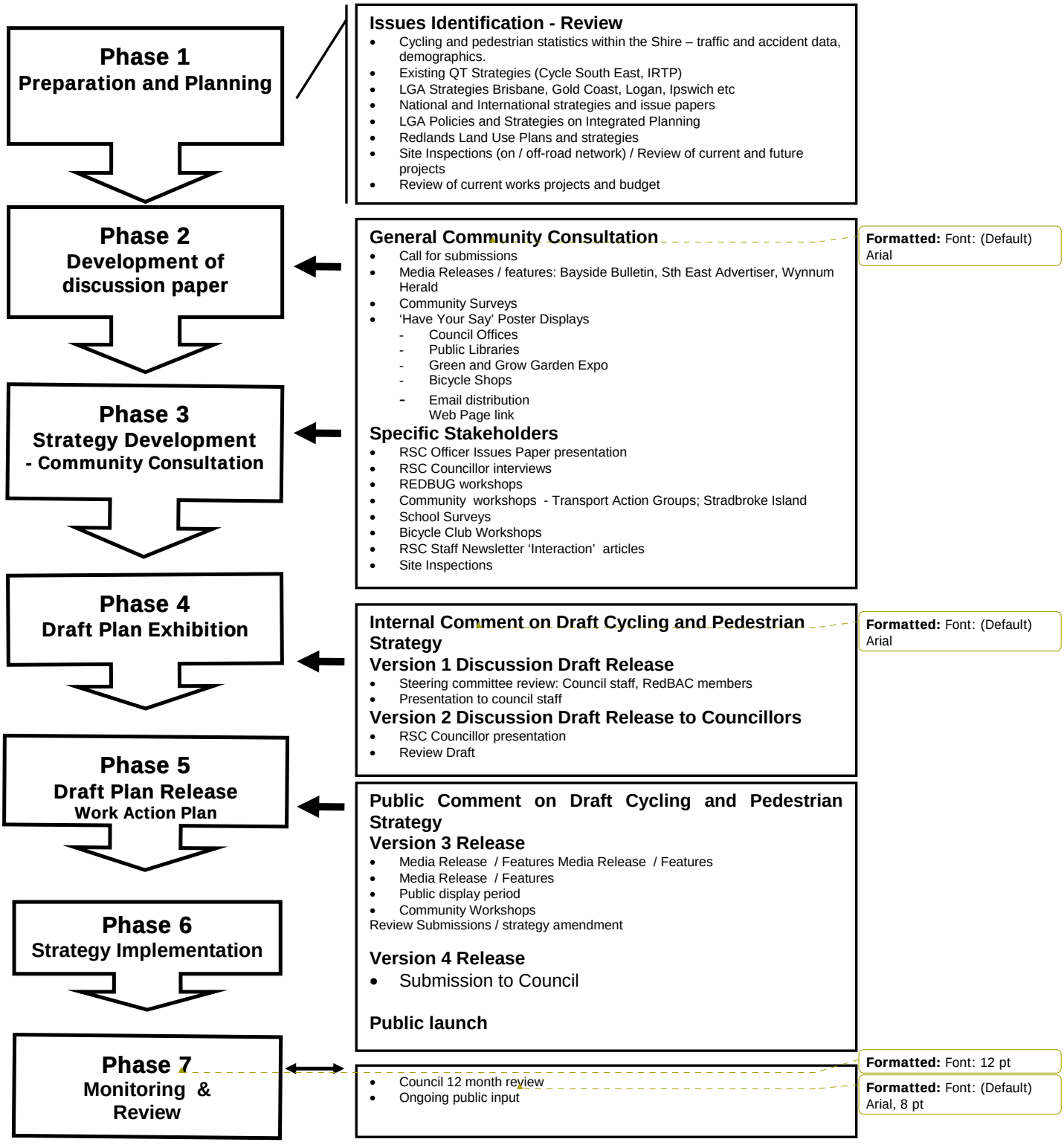
The Draft Strategy will be placed on display in Council and Public Buildings for a period of one month. It is anticipated that this will occur during November 2003. Comments received over this period will be reviewed and integrated into the final strategy document as appropriate.

Review of recent cycling and walking proposals

A review of recent cycling and walking proposals sent to Council over the past 12 months has also been undertaken. The majority of these proposals proposed specific cycling and walking links which were required to complete network connections.

A number of the proposals also raised concern over cyclist and pedestrian safety and the need for improved facilities to encourage safer cycling and walking.

Figure 5 Strategy Development Process



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10. EXISTING CONDITIONS FOR CYCLISTS AND PEDESTRIANS

It is important to define the existing cycling and walking conditions in order to establish measures in which to gauge the effectiveness of the RCPS.

10.1. SUMMARY OF EXISTING CONDITIONS WITHIN REDLANDS

Table 8 summarises the existing conditions within the Shire for walking and cycling. These conditions are based on the compilation of feedback from the first three stages of community consultation.

The conditions can be summarised into four main areas:

- Design and maintenance (existing road and path conditions);
- Safety (perceived danger by user to cycling both on and off-road);
- Network (existing network connections and facilities and future access concerns); and
- Attitudes (concern over safety and attitudes of motorists and other path users).

It should be noted that these conditions are not isolated to Redlands and are reflected in part in other local authorities.

Some of these conditions are the result of existing and past practices and it should be appreciated that provisions for cyclists and pedestrians is constantly changing and being improved. The present network is continually being upgraded and new connections are being established each year dependent upon budget allocations. Many issues are behavioural and require attention to raising awareness and providing education on appropriate use of the transport system.

Table 8 Existing Cycling and Walking Conditions

Current Condition	Associated Issues
Redlands cycling and walking network is predominantly off-road. Many paths have been provided at the request of the community and are based on minimum standards.	• Discontinuous off-road network radiating from schools and neighbourhood precincts • Varying path widths • Insufficient path width for people using wheelchairs, the elderly, people pushing prams and other path users • Lack of integration with multi-use gravel tracks in bushland areas • Inadequate path lighting along parkland paths for night usage • Inappropriate location of bollards that are poorly identified with warning signs, reflective paint and tape • Poor sight distances due to acute corners • Inadequate turning provisions • Poor signage which does not include intended use, rules and directions to other network connections • Difficult crossing facilities for mobility impaired people eg. left turn slip lanes, solid medians and roundabouts • Steep kerb ramps

Current Condition	Associated Issues
On-road cycling facilities such as designated bicycle lanes, bike boxes at intersections are not adequately considered in new road provisions and at intersection layouts. Transport Planning has focused predominantly on meeting the needs of car drivers.	• Lack of designated space along road carriageways and intersections. • Narrow paved shoulder . • Loss of lane width and shoulder width for cyclists on roads that have been upgraded. • No provision for road cyclists at roundabouts. • Busy intersections that have become difficult and dangerous to negotiate by cyclists and pedestrians. • Hazardous gully grates. • Narrow overpasses at bridges. • Lack of detector loops at signalised intersections that pick up cyclists. • Lack of route or directional signage detailing distances or connections to other paths and roads. • Inconsistent signage at path/road carriageway entrances/exists.
Maintenance on off-road paths and road shoulders is generally poor and not a high priority	• Poor pathway edges. • Vegetation intrusion reducing useable path surface. • Accumulation of path debris. • Damaged concrete and bitumen paths with uneven surfaces creating poor riding surfaces and trip/slip points. • Poor path drainage with accumulation of water and mud across path surfaces.
Limited consideration given to cyclists and pedestrians in residential and industrial sub-divisions	• Limited integration of cycling and pedestrian infrastructure in the lot layout and street network. • Lack of end of trip facilities such as secure bike parking, showers, change facilities at major attractions. • Poor visibility and crossing points across driveways. • Difficult wheelchair access at road crossings. • Steep cross fall on paths that match existing driveways. • Cul de sacs with limited pathway access to neighbouring streets.
Limited cycling and pedestrian information and education programs delivered to cyclists, pedestrians, professionals and the general community	• It is perceived that motorists generally have a poor attitude towards sharing the road with cyclists. • Some motorists do not understand the rules pertaining to giving way to pedestrians at zebra crossings. • Some cyclists and pedestrians do not obey road rules eg. ignore traffic lights, jay walk, do not wear helmets, do not use lights at night, use a bell to warn pedestrians and do not signal intentions. • Conflict between path users. General lack of understanding of who has legal right of way. • Cycling and walking are not perceived as viable modes of transport and are viewed as unsafe. • Cycling and walking are viewed by planners and engineers as forms of recreation not as a viable transport mode. • Belief that cyclists do not have a legitimate right to share the road and should not be provided with on road facilities. • Bicycle safety and education programs are provided in some schools but is generally provided on an ad hoc basis by limited interested service provider's external to education system. Bicycle safety is not part of the school curriculum. • Cycling skills courses for adult cyclist do not exist resulting in a varying skill and experience level. • Policing of cycling and pedestrian off road facilities is viewed as a high priority but is currently inadequate. • Some residents are concerned that the provision of access for cyclists and pedestrians near their property will increase the risk of crime. • Some residents believe that cyclists and pedestrians do not have a legitimate right to access areas near their property which is public space.

Source: Adapted from Toowoomba Cycling and Pedestrian Strategy, 2002

10.2. COMMUNITY NEEDS IDENTIFICATION

A summary of community priorities and needs for identified cyclist and pedestrian groups is detailed in **Table 9** and **Table 10.**

Table 9 Community Needs Identification - Cycling

User Group	Priorities / Needs
Primary School Cyclists	• Increase road / bicycle safety education. • Improve bicycle access to schools – preference for off-road paths. • Provide shared use paths along routes to schools. • Enforce speed limits and introduce bicycle friendly traffic calming measures around schools.
Secondary School Cyclists	• Improve bicycle access to schools. • Enforce speed limits and introduce bicycle friendly traffic calming measures around schools. • Enforce and educate students on wearing a helmet.
Utility Cyclists	• Improve bicycle access to Cleveland CBD (along Bloomfield St) and Capalaba Shopping Centre.
Commuter Cyclists	• Widen shoulder lanes: Wellington St, Rickertt/Quarry Rd, Sturgeon St, Starkey St, Delancey St, Old Cleveland Rd East. • Improve linkages to Redlands Hospital, Council Depot and Cleveland Industrial Estate via off-road network. • Install Bike Lanes: Finucane Rd, Cleveland/Redland Bay Rd. • Establish Commuter links between Redland Bay/Victoria Pt and Capalaba; Wellington Pt/Birkdale to Cleveland and Capalaba. • Improve 'squeeze point' at Hilliards Creek along Finucane Rd, Ross Creek, Tingalpa Creek (Rickertts Rd). • Investigate potential to increase bicycle storage facilities at railway stations. • Improve bicycle parking facilities at Island Ferry Terminals. • Improved end of trip facilities in shopping precinct areas. • Ensure all intersections provide adequately for cyclists - roundabouts, signalised intersections, T Intersections eg. Wellington St, Boundary Rd roundabout.
Recreational and Touring Cyclists	(a) North Stradbroke Island (Minjerribah) • Establish on and off-road link between Dunwich and Pt lookout (via East Coast Road). • Establish off road link between Pt Lookout and Amity Pt utilising Claytons Rd. • Establish on and off-road link between Dunwich and Amity Pt utilising Old Peat Mine Rd and East Coast Rd. • Establish cycle link between Dunwich and Brown Lake, Dunwich and Blue Lake. • Improve carriage of bicycles on local bus service. (b) South Moreton Bay Islands • Establish circular shared path on Karragarra Island (Esplanade road narrow, no footpaths, poor lighting and sight lines). • Establish Multi Use Heritage Trail on Macleay Island. • Improve shared path facilities to Russell Island shops. (c) Mainland • Provide continuous off-road shared path linking foreshore communities. • Provide shared path signage on high use paths to reduce conflict issues. • Provide public convenience facilities along major recreational paths eg Wilson Esplanade (Victoria Point). • Improve lighting along shared paths in parkland to enhance personal safety Improve access and safety for cyclists to Cleveland Point and Wellington Point (no separate cycle paths, high pedestrian activity, conflict with motor vehicles).
Sport Cyclists	• Improve conditions along major roads linking Shire townships by providing on-road bike lanes, bicycle provisions at intersections Main Rd near Nelson Rd and Railway bridge overpass, German Church Rd/Valley Way, Cleveland Redland Bay Rd, Sturgeon St, Double Jump Rd, Rickertts Rd, Mt Cotton Rd. • Improve road maintenance eg. regular removal of gravel, glass and other debris. • Improved road drainage grates that do not allow narrow tyres to go into grate openings.
Miscellaneous	• Establish Car Free day promotion and increase advertising on cycling and pedestrian issues. • Improved driver and cyclists education and awareness programs. • Concern over heavy traffic volumes and speed along major roads.

Table 10 Community Needs Identification - Pedestrians

User Group	Priorities/Needs
Walkers	• Improve path width on high use paths in parkland / foreshore areas. • Improved landscaping of foreshore parks, need to have more shade eg. Raby Bay, Thorneside. • Education required on appropriate path behaviour and the rights of cyclists and other path users.
Recreational	• Improve crossing points for pedestrians at busy roundabouts eg. Wellington St, Boundary Rd. • Provide adequate paths along foreshore. • Address vandalism along shared paths eg. damaged signs, seats. • Increase maintenance on paths to improve safety and enhance attractiveness of path for use.
Elderly	• Improved access to shopping precincts in Capalaba Park and Capalaba Central. • Difficulties experienced negotiating car parks at major shopping centres. • Lack of paths and poor connectivity to major shopping centres and local suburbs. • Lack of appropriate shelter and convenience facilities. • Improvement to footpath surfaces to remove raised edges and cracks. • Improved pedestrian crossings to shopping precincts across major roads eg. Birkdale Rd, Redland Bay Rd, Cambridge Rd, Bunker Rd, Colburn Ave. • Inadequate crossing signal times.
Wheelchair users / people with mobility difficulties	• Multiple access points along strip shopping difficult to negotiate. • Fast moving traffic difficult to negotiate. • Steep gradients and poor cross fall on paths eg Finucane Rd.
Miscellaneous	• Improve crossing points for school children along major roads. • Improve convenience to public transport nodes required. • Conflict with motorists not giving way at designated crossings. • Need to move away from car orientated development around shopping centres. • Poor connection to railway station and northern end of Bloomfield Street across Shore Street. • Improve safety measures for walking after dark eg lighting, clear sight lines, regular activity. • Fragmentation of neighbourhoods by major roads and heavy traffic travelling at high speeds.

Source: Adapted from Ipswich Cycle Strategy, 2000

11. TRIP GENERATORS AND ATTRACTORS

The Shire has a range of infrastructure and attractions which generate cyclist and pedestrian activity. The major generators and attractors for cycling and walking in the Shire include:

- Residential Areas;
- Commercial, Retail and Administration Centres;
- Educational Institutions;
- Sport, Recreation and Community Facilities;
- Public Transport Interchanges;
- North Stradbroke Island / Minjerribah; and
- Southern Moreton Bay Islands.

The strategy reflects the importance of these features and the proposed network will integrate with these features to increase cycling and walking activity.

12. ROAD NETWORK AND IMPLICATIONS FOR PEDESTRIAN AND CYCLING ACTIVITY

12.1. ROAD NETWORK

A well-developed network of roads is essential for the effective movement of cyclists and pedestrians within the Shire. The type and standard of pedestrian and cycle infrastructure within the road network is dependent upon the functional classification of roads. Roads within the Shire are classified in terms of their function as part of the development of a road hierarchy plan. The proposed road hierarchy has been classified in accordance with the *"Manual for Uniform Traffic Control Devices"* functional classification system.

The Functional Classification of roads within the Shire is detailed in **Table 11.**

Table 11 Functional Classification of Roads

Functional classifications	Design Speed km/h	Maximum Traffic Flow (vehicles per day)	General design characteristics for cyclists and pedestrians	Examples of Roads
Access Street	30-40	1000vpd	Typically no provisions provided for cyclists or pedestrians. Space is shared with motor vehicles.	Typically a short street such as a cul-de-sac. • Yarrow and Peel Courts, Cleveland • Mackay Court, Alexandra Hills
Collector	50	3000vpd	A 'branch' which connects to a major street or road. Footpaths or Shared Path on one side of road desirable or 1.5m wide bicycle lanes marked on carriageway.	• Wellington St,, Ormiston • Cumberland Dr, Alexandra Hills • Delancey St,, Ormiston • Marlborough Rd • Bay St
Trunk Collector	60	10,000vpd	Typically a 2 lane road with provision for a breakdown/parking land and bus set-down. Footpaths typically provided. Bikeways desirably provided on road verge but on existing road systems they may be incorporated in breakdown/parking lane (1.5m wide).	• Vienna Rd • Windermere Rd • Gordon Rd • South St • Long St • Old Cleveland Rd East, Wellington Point
Sub-Arterial	60	20,000vpd	Typically a two or four lane road (with 3.5m traffic lanes) divided or undivided, with provision for breakdown lane, bus set-down and bicycle lanes on the road verge. 2.0-2.5m Shared path facilities or footpath on both sides of road and/or 1.5m wide bicycle lanes marked on carriageway.	• Old Cleveland Rd East, Capalaba • Birkdale Rd, Birkdale • Main Rd, Wellington Pt • Mt Cotton Rd, Capalaba
Arterial	70-80	30,000vpd	Typically a four or six lane road (with 3.5m traffic lane) divided with provision for breakdown lane, bus set-down and bicycle lanes on the road verge. 2.0-2.5m Shared Path facilities desirable or 2.0m wide bicycle lanes marked on carriageway.	• Wellington St, Thornlands • Finucane Rd, Alexandra Hills • Moreton Bay Rd • Boundary Rd, Thornlands • Cleveland-Redland Bay Rd, Thornlands. • Mt Cotton Rd- Mt Cotton

Source: Transitional Planning Scheme Policy – Impact of Transportation Systems on Urban Amenity, Redland Shire Council, 2001

12.2. IMPLICATIONS OF ROAD CLASSIFICATION ON CYCLIST AND PEDESTRIAN PROVISIONS

Traffic Volumes

Traffic volumes have an important influence on the comfort and safety of a particular route for cyclists and pedestrians. Council utilises a range of traffic volume categories to assist with determining the functionality of a particular road (see **Table 12** Maximum Traffic Flow Categories).

Less than 3,000 vehicles per day (vpd) are considered low. Local Access and minor Collector Streets generally have low traffic volumes. AUSTROADS guidelines state the threshold for providing cycling facilities is 3,000 vpd. Where traffic volumes exceed 3,000 vpd, it is desirable to provide space for cyclists such as exclusive bike lanes, wide kerbside lanes, sealed shoulders or shared bicycle/parking lanes. For routes that form part of the strategic cycling and walking network, and provide primarily for school cyclists it is recommended that once traffic exceeds 3,000 vpd, off-road treatments be provided.

Traffic volume on the major arterial and sub arterial roads in the Shire has increased dramatically over the past three years. Some roads have experienced annual traffic growth in excess of an acceptable rate of 4% per year for a growing Shire**. Table 12** highlights the daily traffic on selected routes and annual growth rates.

Table 12 Annual Average Daily Traffic Counts and Growth Rates – Redland Shire

Road	Traffic Count 2000	Traffic Count 2001	% growth rate (2000 – 2001)
Rickertt Road	18,500	19,840	7.2%
Wellington Street	15,200	15,710	3.3%
Panorama Drive	12,600	13,300	5.5%
Main Road	9,600	10,650	10.9%
Old Cleveland Road East	14,100	14,500	2.8%
Sturgeon Street	15,900	16,100	1.2%
Vienna Road	11,800	12,300	4.2%
Windermere Road	8,800	9,150	4%
Benfer Road	6,000	6,700	11.6%

It can be expected that as vehicle volumes increase Shire roads will need to be upgraded to accommodate vehicle traffic demands. The upgrade of roads presents an opportunity to provide new on and off-road treatments. The growth in traffic volumes highlights the necessity to facilitate and encourage greater cycling and walking activity within the Shire to reduce increasing traffic congestion.

Arterial and Sub Arterial Roads

The provision of on-road bike lanes within the Shire is generally restricted to Trunk Collector and Sub Arterial Roads, the majority of which are controlled by the Department of Main Roads (DMR).

The provision for cyclists and pedestrians has generally been off-road through footpaths and shared paths. There are examples of on-road bicycle lanes, however their connectivity to an overall network is limited and there has been a reluctance to provide on-road facilities on these roads due to higher vehicle speeds and traffic volumes.

Many of the higher order roads have sealed shoulders and provide direct and convenient routes for experienced cyclists. Despite fast moving traffic, experienced cyclists are comfortable using these routes when cycle lanes or shoulder width are provided. Commuter cyclists generally avoid less direct routes as it increases travel time and use primary road links between major centres. Experienced cyclists will continue to use arterial and sub-arterial roads even though they may be more hazardous.

There is no doubt that Arterial and Sub Arterial roads and, in particular, intersections along these roads, pose a safety hazard to many cyclists and pedestrians due to traffic volume and speed. Designated cycling facilities could be integrated into these roads. While physical constraints may exist in terms of lateral road width, these obstacles should not be seen as a deterrent to improving the safety of these routes.

Current Council policy recognises the provision of bicycle lanes in breakdown and bus set-down lanes. Council specifies minimum road widths and reserves to provide both on and off-road facilities for pedestrians and cyclists on collector, trunk collector, sub arterial and arterial roads. It is essential that these policies and standards are adhered to in the development of design and works program. Plans for new or upgraded roads and intersection infrastructure must consider on and off-road cycling needs and pedestrian requirements for comfortable paths and crossing points.

Collector Streets

Collector Streets channel local traffic into Sub Arterial and Arterial roads. Collector Streets also connect smaller centres across the Shire. Council has classified a higher order form of Collector Street and recognises Trunk Collectors as gathering a greater volume of traffic, directing it into Arterial Roads. There are many examples of Collector and Trunk Collector streets within the Shire that would be suitable for on-road bicycle facilities to create an integrated on-road network, such as:

- Long Street;
- Delancey Street;
- Bay Street;
- Randall Road;
- Smith Street;
- Abelia Street;
- Bailey Road;
- Collingwood Road;
- Windermere Road;
- Allenby Road;
- Panorama Drive;
- Gordon Road; and
- Benfer Road.

Due to the lower traffic volumes and vehicle speed, Collector Streets are ideal for providing convenient on-road facilities for experienced commuter and sport cyclists.

12.3. LOCAL ACCESS STREETS

Local Access Streets service direct neighbourhoods. Generally provisions for cyclists and pedestrians are limited to sharing a footpath (if provided). There is often inadequate road reserve to provide for exclusive on-road cyclist facilities or even a concrete path alongside property boundaries.

Traffic speeds and volumes should allow for a safe cycling and walking environment, however there are many examples of cul-de-sac estate developments within the Shire that are congested and unsafe for cycling and pedestrian movement due to parked cars within the

narrow road reserve. These streets also have issues with inappropriate traffic speeds and Council is experiencing regular requests to install traffic calming to address 'hooning' and disregard for traffic regulations. Local streets are generally not attractive for commuter cyclists as they do not provide direct routes increasing travel time.

Local Access Streets often adjoin parkland or have easements that provide off-road linkages, which play an important role in formulising strategic linkages between residential areas. Many Local Access Streets are suitable for marking with route signage to provide consistency and connectivity to the overall network.

13. OPPORTUNITIES AND CONSTRAINTS FOR CYCLING AND WALKING ACTIVITY

A range of factors impact on the opportunities for increasing cycling and walking activity within the Shire and affect the level of trips made by bicycle or by walking.

The major opportunities this strategy presents include:

- The existing cycling and walking network which includes; footpaths, shared paths, off road multi use trails and on road cycle lanes provide a solid foundation to create integrated cycle and walking network for the Shire.
- Integration of on-road bikeways into future roadworks.
- The Shire has a generally flat landscape with minimal severe grades of extended length in major population areas.
- Coastline vistas and proximity to Brisbane City and Logan Shire make Redlands an attractive cycling and walking destination.
- Integration with adjoining Brisbane and Logan municipalities cycling and walking networks. The region is conducive for longer distance recreational cycling and walking routes that link Brisbane and Logan.
- Improving integration of cycling with public transport services including train, bus, ferry and barge services. A large commuting population travels daily to regional destinations, mainly Brisbane for work.
- Promoting Redlands as weekend tourist destination for cycling and walking. Ability to promote cultural and natural values.
- The region has significant east – west habitat corridors and linkages with Brisbane City and Logan, which are regionally significant and include Daisy Hill State Forest, Neville Lawrie Reserve and Venman Bushland National Park. These areas have high conservation value and provide opportunities for nature based tourism and recreation.
- Improving integration with Island public transport services eg. barge, bus and ferry.
- Creating unique Island Infrastructure for pedestrians and cyclists.
- Creating ‘car free’ island environments and develop a unique framework for sustainable transport initiatives.
- Developing bicycle hire services on both mainland and the Island communities for tourist activity.
- Using disused firebreaks as cycle and walking links between major townships including Point Lookout, Amity Point and Dunwich.
- Developing regional cycle events both recreational and competitive.

The major constraints include:

- Current land use patterns are constraining cycling and walking activity. Residential settlements are dispersed and are linked only by high speed traffic corridors.
- Auto oriented land use and reliance on motor vehicle for majority of trips travelling in and outside of the Shire.
- Loss of foreshore open space corridors due to previous development patterns make it difficult to form a continuous strategic recreational cycling and walking linkages along the Shires coastline.
- Lack of end of trip facilities (eg. showers, change room facilities and secure bike parking) at the majority of local business or for general community use.
- Personal security concerns for cyclists and pedestrians using facilities that are unlit in isolated areas.
- Bridge crossings and current intersection treatments that pose a barrier to bicycle and pedestrian movements.
- Travel distances on busy roads where no off-road link exists.
- Resistance from transport operators to carry bicycles eg. ferry and bus.
- Many roads on the Islands have no road shoulder or off-road provision deterring cycling and walking.
- Current speeds and traffic volumes on certain roads combined with a lack of facilities make them unsafe and not attractive for walking and cycling. eg. East Coast Road.
- Key roads are controlled by Main Roads which may affect funding and timing of road upgrades.
- Sand movement on North Stradbroke Island will impact on location and type of cycling and pedestrian infrastructure and ongoing maintenance.

PART B

THE STRATEGY

14. THE VISION FOR WALKING AND CYCLING IN THE REDLANDS

Our Vision:

The vision for cycling and walking in Redlands is:

"More cycling and walking more often"

The aims of the strategy:

The key aims within the framework of the vision are to:

- Create a community where people can walk and cycle safely and conveniently.
- Ensure that walking and cycling are integrated fully into the transportation network and that they are accepted and respected as key modes of transportation.
- Develop a comprehensive network of well-signed walking and cycling routes.
- Provide well-designed accessible walkways that allow for safe, enjoyable movement free from conflict with motor vehicles. Eliminate physical barriers to the movement of people with limitations.
- Ensure that bicycle parking and support facilities are conveniently located at businesses, institutions and Council offices.
- Ensure information about walking and cycling in the Redlands is extensively distributed in public places.
- Reduce traffic accidents and the severity of casualties.
- Achieve greater compliance from motorists, cyclists and pedestrians of traffic laws and the rights of each user group.

15. KEY STRATEGY PRINCIPLES

Redland Shire Council believes that providing pedestrian and cycling facilities is an integral part of the process for land use and transport planning and should not take place as an ancillary activity to designing for motor vehicles.

To develop a safe and friendly cycling and walking environment the following key principles are recognised by Council as essential. These principles are:

1. Cycling and walking are an integral part of any effective, efficient sustainable transport system in the Redlands. Provide for cycling in transport and urban development initiatives.

2. Cycling and walking is primarily a transport mode, linking major trip attractors and generators rather than purely a recreational activity.

3. Implement a hierarchy of solutions including traffic reduction, traffic calming, reallocation of road space and expansion of facilities.

4. Create safe cycling and walking environments from the outset to help overcome barriers to cycling and walking.

5. Every street is a cycle and walking street - plan to provide access, which is safe and convenient.

6. The design of facilities should consider the diverse needs of the most vulnerable pedestrians and cyclists eg the elderly, children and those with disabilities.

7. Education, encouragement and enforcement are needed, infrastructure alone will not provide a safe environment.

8. Provide a comprehensive network with linkages that integrates with other transport modes.

9. Recognise mountain bike riding in bushland areas as a legitimate form of outdoor recreation and develop practical solutions to achieve sustainable riding opportunities.

10. Accommodate cyclists and pedestrians on arterial roads and collector streets.

11. Provide appropriate route and end of trip facilities

16. TARGETING THE FUTURE

16.1. REGIONAL TARGET FOR CYCLING

The Integrated Cycle Strategy for South East Queensland, *Cycle South East,* states a target increase of cycling trips within South East Queensland from 2% (in 1999) to 8% by 2011. This is an increase in cycle trips from 140,000 to 945,000 per day.

The Redlands Integrated Local Transport Plan clearly identifies the importance of alternatives to private motor vehicle travel and has set the following overall targets for cycling and walking for all trips in the Shire.

	2005 Target	**2011 Target**
Cycling	7%	8%
Walking	13%	15%

16.2. REDLANDS CYCLING AND WALKING TARGETS

To measure progress in the implementation of the strategy and the achievement of objectives the following Shire targets are proposed:

Cycling Targets

Target 1 To increase cycling journeys to work from 0.57% to 4% by 2016 (Based on 1996 ABS Census)

Target 2 To increase cycling journeys to school from 12% to 18% by 2016 (Based on Qld Government Census at School data)

Target 3 To reduce the number of cyclists of injured by 50% by 2016

Target 4 To increase the level of on-road cycling facilities (per km of bike lanes) by 100%, which is consistent with and exceed national standards by 2016. (current km of bike lanes equals approx. 25.5km)

Walking Targets

Target 5 To increase the percentage of walking only trips to work from 1.89% to 5% by 2016 (based on 1996 ABS Census)

Target 6 To reduce the number of pedestrians injured by 50% by 2016

Target 7 To increase walking journeys to school from 12% to 20% by 2016 (Based on Qld Government Census at School data)

Target 8 To achieve a network of direct walkways that link townships, which are accessible to disabled people.

17. RCPS GOALS & OBJECTIVES

Strategy Goals

The goals for this strategy are:

1. **To increase the amount of walking and cycling in the Redlands.**

2. **To expand and integrate the Shire's network of footpaths and bikeways to facilitate walking and cycling as a viable transportation choice.**

It is within the context of the Community Plan that the above goals have been established. The following objectives have been identified to meet the goals and overall vision of the Cycling and Pedestrian Strategy.

Strategy Objectives

Objective 1 To provide integrated routes that facilitate walking and cycling as viable transport modes for work, recreational, shopping and educational trips.

Objective 2 To integrate cycling and walking into transport planning and delivery processes.

Objective 3 To provide high quality cycling and walking infrastructure which improve safety and convenience for pedestrians and cyclists.

Objective 4 To provide safe cycling and walking environments.

Objective 5 To increase the number of people cycling and walking.

Objective 6 To increase the knowledge and awareness of the benefits of cycling and walking.

Objective 7 To encourage responsible cyclist, pedestrian and motorist behaviour on the road network and off road paths.

Objective 8 To develop sustainable mountain bike opportunities within the Shire.

18. HOW ARE WE GOING TO GET THERE?

The Redlands Cycling and Pedestrian Strategy identifies key issues for cyclists and pedestrians. Actions have been developed to address the issues and will provide the foundations to achieve the objectives defined in Redlands Cycle and Pedestrian Strategy.

The actions are detailed under the following themes:

- Planning and Development;
- Transport Integration;
- Infrastructure;
- Safety;
- Encouragement;
- Information and Education;
- Enforcement; and
- Mountain Biking.

18.1. PRIORITISATION OF ACTIONS

Actions have been prioritised using the following criteria:

- Addresses public liability concerns and assist in reducing public risk
- Increases cycling and walking activity
- Is cost effective
- Integrates with other transport activities
- Integrates with other stakeholder activities
- Is required to enable staging of other works and
- Improves conditions for cyclists and pedestrians and meets needs of user groups

Actions in the strategy have been assigned the following priority levels:

Priority Period	**Timing**
Immediate	to be started in 2002 /2003
Short Term	to 2005
Medium Term	beyond 2006 up to 2010
Long Term	2010 up to 2016

RCPS ACTION PLAN

Planning and Development

Objective 1 To provide integrated cycling and walking routes that facilitate walking and cycling as viable transport modes for work, recreational, shopping and educational trips.

Actions - Planning and Development

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A1	Ensure Infrastructure Charging Plans under the *Integrated Planning Act* (IPA) include provisions for cyclists and pedestrians. Comment: Appropriate policies and development codes for reconfiguring a lot and new and other works is required. The current policy is being revisited in the Redlands Planning Scheme to address in detail the needs of cyclists and pedestrians. Areas to address include: • Path widths, surface finish, kerb ramps, clearances • Provision of regulatory, advisory and directional signage for paths and roads • Transition ramps between paths and roads • Provision for pathway networks • Connections to existing facilities • Public transport interchanges • On-road facilities and intersection treatments (eg. midblock treatments, pavement markings) • Cycle friendly traffic calming treatments • Placement of poles, barriers, trees and landscaping on paths and at intersections • Shower/change facilities • Secure bike parking facilities • Support facilities such as drinking fountains, shelters and toilets • Lighting and personal security provisions (CPTED) • Design of business driveways • Disability requirements (eg. tactile pavers, kerb ramps and pedestrian buttons)	RSC	Immediate	July 2003	N/A
A2	Prepare / update the inventory of pathways in the Shire and at the interface with other bordering Councils and include these in a detailed pathway and bikeway network plan. Analyse inventory and determine gaps in current network provision.	RSC	Immediate	June 2003	N/A
A3	Ensure open space network corridor opportunities are considered and integrated in cycle and walking network planning	RSC	Medium Term	Ongoing	N/A

Actions - Planning and Development

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A4	Evaluate the road network in terms of the adequacy of pedestrian facilities (signs, signals, refuge islands and other traffic control devices) to ensure that urban roads allow for safe pedestrian movements.	RSC	Short Term	June 2005	N/A
A5	Develop and implement mechanisms to ensure that all applications for development proposals meet the requirement of the Disability Discrimination Act and Australian Standards for Disabled Access.	RSC	Immediate	Ongoing	N/A
A6	Through the Redlands Planning Scheme ensure that the urban form supports walking as a mode of travel and that all new developments and subdivisions provide pathways in accordance with the pedestrian and cycle network plan.	RSC	Immediate	July 2003 (ongoing)	N/A
A7	Develop a plan to provide new and / or progressively improve pedestrian facilities in the Shire by adopting State and National standards and guidelines (eg. AUSTROAD, Guide to Traffic Engineering Practice, Part 13 – Pedestrians).	RSC	Medium Term	June 2004	N/A
A8	Adopt AUSTROADS Guide to Traffic Engineering Practices, Part 14-Bicycles and Queensland Manual of Uniform Traffic Control Devices, Part 9 Bicycle Facilities for Cycling.	RSC	Immediate	July 2003	N/A
A9	Develop cost proposal for the development of bikeways and walkways and work jointly with State Government for additional funding.	RSC (DMR) (SRQ)	Immediate	Ongoing	N/A
A10	Develop and adopt codes to ensure that the development plans and proposals require secure bicycle storage facilities at all major destinations (employment/school/shopping/social/recreational), railway and bus stations.	RSC	Immediate	July 2003	N/A
A11	Continue to fund the development of walkways and cycleways (on-road, as well as off-road) throughout the Shire.	RSC	Immediate	Ongoing	$20M until 2016
A12	Ensure all new school developments consider safe cycling and walking routes and linkages to the strategic network. Comment: Utilise Safe ST Program and investigate Travelsmart Schools Program	RSC (EQ) (QT)	Short Term	Ongoing	N/A
A13	Ensure all new shopping, housing, commercial and industrial developments provide opportunities for cycling and walking and integrate with roads, local streets and paths to form a comprehensive network.	RSC	Short Term	Ongoing	N/A

Transport Integration

Objective 2 To integrate cycling and walking into transport planning and delivery processes

Actions - Transport Integration

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A14	Ensure cycling is actively incorporated into the planning, design and construction of roads and major transport projects by developing policies that incorporate cycling and walking.	RSC	Immediate	Ongoing	N/A
A15	Encourage local area traffic management, which is cycling and walking friendly, by creating slower speed environments and ensure bike accessibility is not decreased or deterred as a result of such management.	RSC	Immediate	Ongoing	N/A
A16	Ensure all transport infrastructure planners and providers working for Redland Shire Council are aware of AUSTROADS Part 13 and 14 as minimal desirable guidelines for the safe design of cycle and pedestrian facilities.	RSC	Immediate	January 2003 (ongoing)	N/A
A17	Investigate the carrying of bikes on island barges and water taxis.	RSC QT	Short Term	June 2004	N/A
A18	Promote a trial of bikes on SMBI and NSI Water taxis through negotiation with water taxi operators.	RSC QT	Medium Term	February 2008	N/A
A19	Provide secure bike parking facilities at major bus and ferry transit centres. Eg. Capalaba, Cleveland, Victoria Point, Redland Bay Dunwich, Toondah Harbour, Macleay Is, Russell Is, Lamb Is, Coochiemudlo Is, Karragarra Is	RSC (QT)	Short Term	June 2005	$100,000
A20	Investigate the feasibility of establishing a bicycle station at Cleveland Railway Station.	RSC (QR)	Medium Term	February 2010	N/A
A21	Consult with Qld Rail and audit current bike parking facilities at stations. Determine demand for improved commuter facilities.	RSC (QR)	Short Term	June 2004	N/A

Actions - Transport Integration

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A22	Encourage public transport operators to increase patronage by bicycle riders. Comment: The carriage of bicycles on the NSI bus services and possible use of a trailer and bike rack is in need of further investigation, including the provision of specific time-tabled services that carry bicycles. The opportunities for the carriage of bicycles is high with growing demand and conflict from cyclists wishing to integrate with island Public Transport Current QR policy on bicycle carriage excludes bicycles in peak hour services. Review of these services is required.	RSC QR; QT; (National Bus Company); (Stradbroke Is Bus Company)	Medium Term	August 2004	N/A
A23	Investigate designs for improved integration of cycling facilities within bus routes and at interchanges along main roads to reduce conflict with cyclists.	RSC (QT, Bus Operators, DMR)	Long Term	July 2008 (ongoing)	$30,000 per bay
A24	Provide appropriate detail at transit interchanges and on the Council web site on the carriage of bicycles on barge and ferry services to North Stradbroke Island and South Moreton Bay Island Communities.	RSC	Medium Term	October 2006	N/A
A25	Review disabled access for ferries / barges and terminal facilities.	RSC (QT, Ferry/barge Operator)	Short Term	June 2005	N/A

Infrastructure

Objective 3 To provide high quality cycling and walking infrastructure which improve safety and convenience for pedestrians and cyclists.

Actions - Infrastructure

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A26	Initiate trials of infrastructure not included in AUSTROADS Part 13 and 14. Investigate the application of innovative on-road bicycle treatments such as bicycle 'head start' storage areas, raised bicycle lanes, bicycle boulevards, use of coloured pavement, cycle friendly roundabout treatments and markings to delineate paths through intersections and along road shoulders. (The objective of the treatments is to change the behaviour of motorists and/or cyclists and reduce conflicts between these modes)	RSC (DMR)	Immediate	October 2003	N/A
A27	Ensure all new shared paths comply with AUSTROADS Part 14 Design Guidelines.	RSC	Short Term	Ongoing	N/A
A28	Ensure cyclists are provided with safe facilities in new and upgraded roads along on-road cycling routes.	RSC (DMR)	Medium Term	Ongoing	N/A
A29	Progressively upgrade intersections and ensure that all new intersections are cycle and pedestrian friendly and include lane layouts and controls that allow a clear positioning for cycles.	RSC DMR	Long Term	Ongoing	N/A
A30	Ensure that relevant standards regarding the needs of people with disabilities are incorporated into the planning and design of new cycling and walking facilities	RSC	Immediate	Ongoing	N/A
A31	Develop secure bike parking facilities at major public centres. Provide secure all day bike parking facilities in major town centres such as Cleveland, Capalaba, Victoria Point, and Redland Bay Consider the provision of public shower and change facilities. Comments: At present no secure long term bike parking facilities exist for public use.	RSC, (Chamber of Commerce)	Medium Term	July 2008	$10,000 each
A32	Provide safe conditions for cyclists and pedestrians during the construction of new and upgraded cycling and pedestrian facilities.	RSC (DMR)	Immediate	Ongoing	N/A
A33	Liaise with surrounding local authorities to establish strategic on and off-road links. Eg. Rickertts Rd, Avalon Rd, Beenleigh Redland Bay Rd, Mt Cotton Rd, Old Cleveland Rd and through rail corridors	RSC (BCC, LCC, QT, QPWS)	Immediate	December 2002	N/A
A34	Investigate provision of cycle routes along existing and new bridges in line with Austroads Part 14 Guidelines. eg. Ross Creek Bridge, Epraprah Creek Bridge	RSC	Medium Term	July 2007	N/A

Actions - Infrastructure

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A35	Provide enhanced facilities for bike parking, storage showering and dressing facilities at existing Council Buildings eg. Main Council Chambers Doig St Cleveland Library Building Capalaba Library Building South St Depot Indigiscapes	RSC	Immediate	July 2003	$12,000 each
A36	Investigate measures and incentives to provide accessible and safe bike lockers / racks, shower and change facilities in existing workplaces, parking stations shopping centres and schools.	RSC	Medium Term	June 2005	N/A
A37	Audit current cycle route and directional signage provision in conjunction with DMR. Provide signage and printed logos on roads and at intersection points advising of nearby cycleways and approaching cycle crossing points	RSC (DMR)	Medium Term	October 2005	N/A
A38	Develop a signage plan for route identification. Incorporate cycleway and walkway signage with cultural and environmental heritage programs. Provide informational and directional signage on the cycle and walking network. Advertise signage scheme in Council notices and publications.	RSC	Short Term	January 2005	N/A
A39	Upgrade intersections to provide for cyclists by providing separate approach and holding lanes, accessible push buttons in kerbside lanes and right turn lane detector loops at signalised intersections.	RSC	Medium Term	Ongoing	N/A
A40	Ensure unkerbed roads are sealed and a lined shoulder is provided from an absolute minimum of 1.2 metres to 3.0 metres depending upon the number of cyclists and the speed and composition of motor traffic adjacent to the existing roadway. The surface should be comparable to that of the roadway. Investigations on the sealing of Bay Island roads to develop an integrated cycling network to continue.	RSC	Long Term	Ongoing	$100,000 per linear km (1.5m wide)
A41	Investigate the feasibility of an off-road facility to accommodate bicycle education and competitive cycling programs.	RSC (QT) (SRQ) (CG)	Medium Term	June 2008	N/A Refer to Action A67 & A69

Safety

Objective 4 To provide safe cycling and walking environments

Actions - Safety

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A42	Undertake an audit of existing shared paths and footpaths and develop a maintenance program to improve the safety of these facilities. Review signage, lighting, surface treatment, speed controls and implement CPTED design principles on shared paths.	RSC	Immediate	December 2003	$5,000 per year
A43	Investigate opportunities for state government funding to improve 'black spot ' locations for cyclists and pedestrians.	RSC (QT – Road safety section)	Short Term	Ongoing	N/A
A44	Provide safe and accessible bike routes and entries to schools. Utilise programs such as Safe Walking and Pedalling program and SafeST (Safe School Travel)	RSC (QT – Road Safety section) (DMR)☹EQ);(QPS)	Short Term	December 2005	Part of A56
A45	Initiate shared path pavement signage trial to improve behaviour between cyclists and pedestrians.	RSC	Immediate	June 2003	$1,500 per linear km
A46	Increase shared path width beyond minimum standards along high use commuting and recreational paths. Comment: Less path width = greater conflict	RSC	Immediate	Ongoing	N/A
A47	Continue the urban speed management program. Investigate the lowering of speed limits below 50km/h on residential streets with high cycling and pedestrian use.	RSC (QT)	Short Term	Ongoing	N/A

Actions - Safety

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A48	Continue implementation of traffic calming measures on neighbourhood streets and along major arterial roads within the Shire. Comments: Traffic Calming strategies and devices to be utilised include: • Reducing speed limits • Speed alert and enforcement programs • Vehicle restrictions • Speed tables and raised pedestrian crossings • Median Islands • Channelised Islands • Speed humps • Pavement treatments • Bike lanes – narrowing traffic lanes • Chicanes • Rumble strips • Street closures • Tree planting • Mixed vehicle and pedestrian traffic precincts • Perceptual design features – painted road surfaces, and signage • Advertising and education of appropriate use of treatment	RSC (DMR); (QT – Road Safety Unit);(QP)	Long Term	Ongoing	N/A
A49	Develop a 'hazard reporting system' to report maintenance issues on existing cycling and pedestrian infrastructure.	RSC	Short Term	June 2004	Part of A56
A50	Strengthen relationship with Qld Police Service to develop a safer cycling and walking environment. Re-establish police bike patrols and assist police in establishing regular bicycle patrol program.	RSC (QPS)	Medium Term	Ongoing	Part of A56
A51	Develop and maintain a database of cyclist and pedestrian related accidents in the Shire. Investigate QT Road Crash database as a source of police reported bicycle and pedestrian related accidents in the Shire.	RSC (QT)	Medium Term	June 2007 (ongoing)	N/A

Encouragement

Objective 5 To increase the number of people cycling and walking

Actions - Encouragement

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A52	Continue promotion and support of Heart Foundation 'Just Walk It' program, as a means to raise awareness on benefits from walking and to demonstrate how short trips of up to 30 minutes (or less than 2 km) duration to work or to school can be well fitted into ones daily routine.	RSC	Medium Term	Ongoing	$10,000 per year
A53	Develop and launch Bike Riding Benefit and Awareness programs in collaboration with REDBUG and RedBAC.	RSC	Medium Term	October 2007	Part of A55
A54	Implement TravelSmart Schools Program across Redlands Schools.	RSC (QT) (EQ)	Long Term	Ongoing	$60,000
A55	Continue the operation of the Redlands Bicycle Advisory Committee (RedBAC) to: • Monitor and manage the implementation of the Cycling and Pedestrian Strategy • Develop future initiatives • Facilitate ongoing community liaison • Promote cycling in the community eg. Bike Week – School Cycling Challenge, Ride to Work Challenge	RSC	Immediate	Ongoing	$10,000 per year
A56	To assist strategy implementation establish full-time Cycling and Pedestrian Co-ordinator position	RSC	Immediate	June 2003 –ongoing	$55,000 per year
A57	Implement a local communication strategy that promotes cycling and walking. • actively encourage and promote the benefits of cycling and walking • Print cycle and walking routes in local street directories and tourist maps	RSC	Short Term	June 2005 Part of RedBAC budget	Part of A55
A58	Develop regular 'Cycle to Work' & 'Walk to Work' programs. Provide advice to local businesses on how to improve and provide support facilities for employees to ride and walk to work. Comments: As part of program provides encouragement to commuters to cycle or walk to train stations.	RSC (PS) (QT)	Medium Term	November 2003 Part of RedBAC Budget	Part of A55

Actions - Encouragement

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A59	Develop advisory trail signage for multi-use bush trails. Provide education to local cycling, walking and horse riding groups on the etiquette of using off-road bush trails.	RSC	Short Term	June 2004	$200,000 (100 signs @ $200 each)
A60	Investigate the conduct of adult cycling courses to learn and develop appropriate bicycle handling skills.	RSC (CQ)	Medium Term	June 2004	Part of A56
A61	Investigate establishment of 'Walking Bus' program to local schools.	RSC (QT); (EQ)	Medium Term	December 2005	$15,000 per year
A62	Investigate the development of a bike pool for Council staff to reduce fleet vehicle trips and as a demonstration of the value of cycling as a mode of transport.	RSC (QT)	Medium Term	June 2005 (ongoing)	$10,000 10 bikes @$500 2 electric bikes @ $2,000 each
A63	Investigate the development of a community commuter facility to encourage bicycle and walking commuting to work. Investigate: Shower, changing facilities, bicycle storage, and clothes lockers and payment options for service.	RSC (Chamber of Commerce)	Long Term	June 2008	$250,000
A64	Initiate Tourist Promotion Program highlighting cycling and walking in the Shire.	RSC (Redlands Tourism)	Medium Term	October 2006	$10,000
A65	Foster the development of an alliances with local walking and cycling groups and advocates to promote the benefits of walking and cycling to the general community.	RSC (CQ);(CG)	Long Term	Ongoing	N/A
A66	Investigate the conduct of an annual premier cycle event in the Redlands and provide support to sporting and recreational clubs, private promoters and organisations eg. Road Criterium (Cleveland, Capalaba CBD), MTB Cross Country (North Stradbroke Island, Mt Cotton, Redland Bay), fun ride	RSC (CO);(CG);(QPS) (PS);(SRQ)	Long Term	April 2009	N/A
A67	Support the implementation of a Travelsmart Suburbs Redlands Program in conjunction with Queensland Transport	RSC QT	Short Term	Ongoing	Dependant upon suburb population

Information and Education

Objective 6 To increase the knowledge and awareness of the benefits of cycling and walking

Actions - Information and Education

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A68	RSC to develop and conduct cycle education program for primary school students 10+. The program should focus on bike handling skill development • Road safety • Path etiquette • Legal responsibilities • Bike maintenance	RSC (QT);(CG); (QPS);(EQ)	Short Term	June 2005	$30,000 per year
A69	RSC to provide training to planners and engineers in providing for cyclists, pedestrians and public transport use. Training to include field trips to review infrastructure provisions, updates on latest best practice and new standards.	RSC (QT- SCU)	Short Term	May 2006	N/A
A70	RSC to assist in promotion of adult cycle education program. The program should focus on bike handling skill development and more advanced road cycling techniques • Road safety • Legal responsibilities • Bike maintenance • Buying a bicycle	CG (RSC) (QT)	Medium Term	November 2004	$1,500 per year
A71	Conduct local communication campaign to promote awareness of safe sharing of shared paths and footpaths between all users. Advise of legal obligations and promote safe courteous and responsible shared use practices.	RSC	Short Term	March 2004	N/A
A72	To provide regular information to local media outlets on 'good news' stories and features concerning cycling and walking in the Shire. Comment: Stories to include detail of new bikeways and trail development, signage, line markings, budget allocations, events, personalities and encouragement programs	RSC	Immediate	Ongoing	N/A
A73	Develop and integrated cycling, walking and public transport route map. The map should include the specific location of on and off-road bikeways, off-road multi-use trails and main attractors, bus stops, railway stations, transit interchanges, bicycle locker locations.	RSC (CG);(QT);(QR)	Immediate	November 2003	$10,000
A74	Update heritage trail information and develop formal trail route and signage package.	RSC (Redlands Tourism) (CO)	Medium Term	December 2008	$15,000 100 signs @ $150 per sign

Actions - Information and Education

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A75	Develop Council web page link on cycling and walking in the Redlands Comment: Include information on safe cycling and walking, bikeway facilities, construction program, upcoming events, local clubs, rides and organised walks	RSC	Short Term	June 2003	N/A
A76	Implement cycling and walking safety education program in primary and high schools Provide information about local cycling and walking routes and activities on school websites as part of safety and encouragement program.	RSC (QT)	Medium Term	September 2006 (ongoing)	$5,000 per year

Enforcement

Objective 7 To encourage responsible cyclist, pedestrian and motorist behaviour on the road network and off-road paths.

Actions – Enforcement

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A77	Review driver behaviour and compliance to speed limits in areas of high pedestrian and cycle activity and develop traffic management treatments	RSC (DMR) (QT) (QPS)	Medium Term	June 2009	N/A
A78	Initiate signage treatments that encourage safe sharing of shared paths	RSC	Short Term	October 2004	N/A
A79	Provide signage at existing and future bike parking facilities Inverted U shaped rails are used extensively throughout the Shire and are not obvious as bike parking rails. To advertise these facilities 'Bicycle Parking" signs should be installed.	RSC (QR) (QT)	Medium Term	December 2007	$10,000

Mountain Biking

Objective 8 To develop sustainable mountain bike opportunities within the Shire

Actions – Mountain Biking

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A80	Develop Mountain Bike Code of Conduct for the use of mountain bikes in Council reserves and parkland and deliver to MTB community and all trail users.	RSC (MTB Clubs) (Cycling Queensland) (Bushwalkers) (Horse riders)	Short Term	June 2004	N/A
A81	Undertake a detailed assessment of walking tracks and fire trails at each of the identified reserves available for mountain bike use.	RSC	Short Term	December 2003	N/A
A82	Actively involve mountain bikers in the management of preferred trails and trail maintenance	RSC (MTB Clubs)	Medium Term	June 2005	N/A
A83	Rehabilitate damaged trails.	RSC (MTB Clubs)	Medium Term	October 2004	N/A
A84	Produce trail development and maintenance standards based upon locally founded research for trail location, selection, building and management of trails.	RSC (QPWS) (MTB Clubs) (SRQ)	Short Term	June 2005	N/A
A85	Existing trails used for mountain bike riding are assessed for sustainability compliance and their use of design modified to achieve sustainability	RSC (MTB Clubs)	Short Term	June 2004	N/A
A86	Develop a system for trail classification and trail marking for MTB use in Redland Shire. Use markers to denote track grade/degree of difficulty	RSC (QPWS) (MTB Clubs) (State and national Cycling Organisations) (Local Government)	Short Term	September 2004	N/A
A87	Investigate potential of private land for MTB opportunities	RSC (Land owners)	Long Term	November 2008	N/A

Actions – Mountain Biking

Action No.	Strategic Action and comments	Responsibility (Supporting Agency)	Priority	Timing	Costing
A88	Develop and promote regional MTB trails as part of economic and tourism strategies.	RSC (Redlands Tourism)	Long Term	February 2005	N/A
A89	Investigate the establishment of a research program with universities to study the effects (environmental, social and economic) of MTB activity in Redland Shire	RSC (Universities)	Long Term	June 2005	N/A
A90	Develop a range of trail information, maps and promotional material for MTB riding in the Redlands Install information Boards at track head locations to inform users of distance, grade, code of behaviour and special management requirements.	RSC (QPWS) (MTB Clubs) (Cycling Queensland)	Short Term	October 2004	$10,000 (initial production)
A91	Identify sites for MTB competition for each discipline of mountain biking. Work with SRQ to investigate feasibility of joint funding for multi-use bushland trail construction	RSC (MTB Clubs) (Cycling Queensland) (QPWS) (SRQ)	Short Term	November 2004	N/A

Abbreviations:

RSC Redland Shire Council
DMR Department of Main Roads
QT Queensland Transport
SCU State Cycle Unit (Queensland Transport)
QR Queensland Rail
QPS Queensland Police Service
EQ Education Queensland
QPWS Queensland Parks and Wildlife Service
SRQ Sport and Recreation Qld (Dept of Communication, Information, Local Government Planning and Sport
CO Community Organisations
CG Cycling Groups
LCC Logan City Council
BCC Brisbane City Council
MTB MountainBike

PART C

NETWORK PLANNING STRATEGY

19. NETWORK PLANNING STRATEGY

A key component of the RCPS is the development of an integrated cycling and pedestrian network that caters for a broad range of users.

The planning for pedestrians and cyclists should not be limited to the provision of “cycle and pedestrian facilities”. It should be appreciated that pedestrians and cyclists utilise every street and every intersection. Therefore all streets must function safely and conveniently for pedestrian and cycle traffic, as well as other transport modes.

All traffic engineering and the provision of all transport infrastructure can have a beneficial or detrimental impact on the walking and cycling environment. The incorporation of pedestrian and cycling facilities into the design of all traffic engineering proposals produces benefits for all road users.

The creation of a safe, convenient, efficient and attractive transport system requires the provision of the following transport elements:

- Measures to reduce traffic volumes and/or speed in areas where there is significant potential to increase pedestrian and cycle use through reducing actual or perceived danger.
- Development of comprehensive local walking and cycling networks for individual neighbourhoods.
- A network of routes between townships that form the primary cycle network.
- Individual facilities to overcome major barriers to walking and cycling journeys across major roads, intersections, rivers, bridges, railway lines etc.
- Significant recreational routes.
- Integration of cycle and walking routes with other transport modes.

19.1. NETWORK PLANNING PRINCIPLES

The principles of cycle and pedestrian planning include the development of infrastructure, which is:

- Coherent;
- Direct;
- Attractive;
- Safe; and
- Comfortable.

The establishment of safe pedestrian precincts for window shopping, outdoor dining and the conduct of utility trips are essential components of the overall network. These precincts need to be incorporated into routes that lead to townships and other attractors across the Shire.

19.2. DEVELOPING A CYCLING AND PEDESTRIAN NETWORK

The development of a strategic cycle and pedestrian network for Redlands is based on a study of the different user groups, community feedback and identification of the major opportunities and constraints on the mainland and island communities.

In developing the network, consideration is given to providing safe, attractive and convenient access to key destinations across the Shire such as:

- Residential areas;
- Shopping centres;
- Employment locations;
- Schools and colleges;
- Community facilities eg. Libraries;
- Recreation and sport centres;
- Tourist locations;
- Hospitals and medical facilities and;
- Public transport nodes (railway, bus stations and ferry/barge interchanges).

The process of developing the network was developed with regard to:

- Cyclist and pedestrian groups within the Shire;
- Route opportunities and constraints;
- Route suitability; and
- Existing infrastructure eg. on-road bikeways, footpaths, road network, open space system.

Providing for each cycling group including commuter, recreational, school, touring, sport cyclists, as well as the vast range of pedestrians with specific facilities, is prohibitive considering present financial resources. A more viable option considered is the 'Twin Network' approach of creating a network that includes a:

- Primary Cycling and Pedestrian network; and
- Local Cycling and Pedestrian network.

The twin network approach takes into account the needs of the various groups of cyclists and pedestrians and provides a framework to facilitate cycling and walking movement across the entire Shire.

The proposed network is structured using a functional hierarchy and assumes that certain routes through urban and rural parts of the Shire will attract a different level and type of user. The "Twin Network" approach is summarised in **Table 13**.

Table 13 Redlands Strategic Cycling and Pedestrian Twin Network Components

PRIMARY CYCLING AND PEDESTRIAN NETWORK	
Network Type	**Network Component**
On-Road	Road Corridor linkages: • State controlled Arterial roads • Council controlled Arterial, Sub Arterial, Trunk Collector roads • Dedicated on-road routes primarily via bicycle lanes and which provide a framework to connect major centres Shire wide
Off-Road	Open space linkages includes: • Bushland Corridor Links eg. Koala Coast Bushland Trail • Coastal Corridor Links eg. Moreton Bay Cycleway - Santagiuliana Way Trail • Major Parkland Shared Path links to key centres eg. Cleveland Showground / Ross Creek Park • Road Corridor Links eg. Finucane Road, Cleveland Redland Bay Road, Shore Street • Strategic recreational and tourist routes
LOCAL CYCLING AND PEDESTRIAN NETWORK	
Network Type	**Network Component**
On-Road	• Local road corridor connections, dedicated and informal cycle routes via cycle lanes, bicycle awareness zones and cycle route signage • Connect urban residential areas and links to local catchments such as shopping areas, schools and employment centres
Off -Road	• Shared Paths connecting urban residential and township catchments to local facilities • Footpaths • Multi Use Trails in minor park land corridors

19.3. NETWORK COMPONENTS

To provide a comprehensive network for cycling and walking all roads, off road paths and public transport connections will need to be integrated to meet the needs of cyclists and pedestrians.

The proposed strategic network is based on the establishment of a Primary Cycle and Pedestrian Network, which is intended to service longer distance commuter and recreational trips and comprises of major/minor roads and paths. The Primary Network forms the backbone for East/West and North/South movements across the Shire.

To feed into the Primary Network, designated local routes are required to form a Local Cycle and Pedestrian Network. This network provides links, which are more suited to school, recreational and utility cyclists who are seeking a quieter experience.

19.4. ON-ROAD BIKEWAYS NETWORK

A network of on-road routes is proposed and detailed in **Table 14.** These routes detail the Primary Cycle Network which will form the higher order connections between destinations within the Shire. This road corridor network will provide connections between commercial, employment and residential areas.

A major emphasis of the Primary Network is to provide links to and from suburbs, work areas, public transport nodes such as bus, train, ferry and barge terminals.

The main routes that form the framework for the Primary On-Road Network include:

- Moreton Bay Rd;
- Old Cleveland Rd East;
- Birkdale Rd ;
- Quarry Rd / Rickertts Rd;
- Finucane Rd;
- Wellington Street
- Mt Cotton Rd;
- Cleveland / Redland Bay Rd;
- Redland Bay Rd;
- Boundary Rd; and
- Old Cleveland Rd East.

19.5. RCPS ON-ROAD CYCLE NETWORK MAP

Map 1 illustrates the proposed Strategic On-Road Cycle Network for Redlands. These are the desired routes for on-road cycle movement. This network will involve the installation of exclusive bicycle lanes, shared bicycle/parking lanes, bicycle awareness zones and widened shoulders and specific treatments at intersections. The aim of this network is to provide safe space for cyclists to travel on Shire roads mixing with higher speed traffic.

The network is designed to integrate with shared pathways and footpaths. The on-road network relies on the use of local streets, many of these linkages will not contain bicycle lanes but rather route signage to denote distances and connectivity to other facilities.

See **Appendix 1** for details on proposed facility provisions for road cyclists.

Map 1 Strategic On-Road Network Plan

Table 14 Primary Cycle and Pedestrian Network – On Road Linkages

Route selection	Route location	Primary End user	Controlling Authority
Capalaba - Cleveland	Finucane Rd (DMR), Shore St	C, SP, U	DMR / RSC
Birkdale - Capalaba	Birkdale Rd	C, SP, U	DMR
Victoria Point - Cleveland	Cleveland Redland Bay Rd, Bloomfield St	C, SP, T, R, U	DMR
Wellington Point - Cleveland	Main Rd, Old Cleveland Rd East, Sturgeon St, Gordon St	C, SP, U	RSC
Wellington Point - Cleveland	Main Rd, Old Cleveland Rd East, Sturgeon St East, Delancey St, Russell St, Waterloo St	C, SP, U	RSC
Alexandra Hills – Wellington Pt	Vienna Rd, Finucane Rd (DMR), Allenby Rd, Main Rd or McDonald Rd	C, SP, T, U	RSC / DMR
Ormiston - Cleveland	Wellington St, Sturgeon St, Gordon St	C, SP, T, R, U	RSC
Capalaba – Alexandra Hills	Redland Bay Rd (DMR), Windermere Rd, Vienna Rd	C, SP, U	RSC / DMR
Redland Bay - Bayview	German Church Rd	SP, T, C	RSC
Redland Bay, - Mt Cotton	Double Jump Rd, Mt Cotton Rd (DMR), Heinemann Rd	SP, T, C	RSC / DMR
Sheldon - Capalaba	Avalon Rd, Mt Cotton Rd (DMR), Ney Rd	SP, T, C	RSC / DMR
Victoria Pt - Sheldon	Cleveland Redland Bay Rd, Boundary Rd, Duncan Rd	SP, T	DMR / RSC
Victoria Pt -Mt Cotton	Bunker Rd, Double Jump Rd	SP, T	RSC
Dunwich, Amity Pt – Pt Lookout	East Coast Rd, Beehive Rd, Claytons Rd	T, R, C	DMR

Abbreviation Key:

C: Commuting Cyclists
SP: Sport Cyclists
T: Touring Cyclists
R: Recreational Cyclists
U: Utility Cyclists

DMR: Department of Main Roads
RSC: Redland Shire Council

19.6. PRIMARY OFF-ROAD NETWORK

The Primary Off-Road Network includes existing open space corridor links, such as parklands, powerline easements, railway reservations, watercourses and drainage reserves and existing bike paths and footpaths.

The Primary Network is broken into further levels and includes;

- Coastal Corridor Links;and
- Bushland Trail Links.

These links form a major recreational network. They have been included as part of the Primary Network for their regional strategic significance. These links provide access to more recreation and open space facilities for residents and visitors to Redland Shire.

Santaguiliana Way (Coastal Corridor Link)

A long term vision of Council has been the development of a strategic Moreton Bay coastal corridor link that will connect Cleveland with Victoria Point. In memory of the late Mayor, Eddie Santaguiliana, Council has embarked on the development of the Santaguiliana Memorial Way Trail. Construction of the trail commenced in June 2002 with plans to link the trail with existing cycling and walking facilities. The trail will consist of boardwalks and a shared 2.5m - 3.0m wide concrete path.

The trail will function as a major recreational tourist attraction and follows a route as close as possible to Moreton Bay. Planning is currently underway to link this trail with bayside suburbs in Brisbane City. Connections to the first stage of the development will be the next requirement.

The trail is a key component of a 150km 'Moreton Bay Cycleway' a joint project between four local authorities and will extend from Bribie Island through to Redland Bay.

The Koala Coast Bushland Trail Network

Redland Shire has already developed a significant regional trail network that links key bushland habitats between Mt Cotton and Thorneside.

The existing trails are used predominantly by horse riders, bushwalkers and mountain bikers and are constructed of compacted gravel and boardwalk. The Network offers a variety of outdoor and nature based recreation activities for both local and regional residents. The major requirement will be to provide connections to existing trails and improve signage and crossing points. Many of the trail access points have no formal facilities for public access and currently no specific network map exists to assist users navigate the current trails.

The Redland Shire Council component of the network comprises of approximately 600 hectares of bushland in five major parcels of bushland.
These are:

- Summit Street Bushland Reserve, Sheldon;
- Ford Road Conservation Area, Sheldon;
- Don and Christine Burnett Conservation Area, Priestdale;
- Emu Street Conservation Area, Sheldon and;
- Eastern Escarpment Conservation Area, Sheldon and Mount Cotton

The Network is also comprised of smaller pockets of Council bushland reserves and parkland that either have sealed maintenance tracks, formed compacted gravel trails or concrete paths.

A number of state government departments and local government authorities manage the parkland and bushland areas that form the Koala Coast Bushland Network. Council is currently working with Brisbane City and Logan City Councils to formalise cross border links through bushland reserves. It is anticipated that this trail will form part of a larger South East Queensland Regional Trails Network. Negotiations are currently underway to formalise the location of a crossing of Tingalpa Creek between Brisbane Koala Bushlands and Emu Street Conservation Area.

Construction of further trail linkages has already commenced, along with the installation of orientation and regulation signage.

19.7. RCPS PRIMARY OFF-ROAD CYCLING AND PEDESTRIAN MAP

Map 2 details the existing and proposed Primary Off-Road Cycling and Walking Network. This map denotes the major shared path network and gravel trails in bushland areas.

The development of this network will require the construction of new shared paths and trails and the upgrade of existing facilities to a higher standard of accessibility, convenience and comfort. This will include the widening of paths to a more suitable width in areas of high pedestrian and cycle movement, the improvement in riding and walking surfaces, crossing facilities and the removal of path barriers.

The network, which is designed to link with existing and proposed on-road facilities, will require extensive signing to inform of distances and directions to key destinations.

The Primary Off-Road Network is important in providing for the needs of commuter cyclists, and people wishing to undertake utility trips to shops. There are examples of existing off-road linkages that are direct and have suitable grades for comfortable cycling and walking. However many of the off road linkages are indirect and may not meet the full needs of commuter cyclist. The majority of links within the Off Road Network are more suited for recreational cycling and walking as well as providing a valuable linkages between neighbourhoods.

The strategic On-Road and Off-Road Network routes are comprised of four main components. These are detailed in the following table:

Strategic On and Off Road Network Components

Network Component	Location	Main Purpose	Main User
Trunk Routes	Road Corridors: Arterial, sub arterial roads, primarily state controlled	• Provide main framework to network • Link suburbs, townships, employment centres, public transport interchanges and education institutions • Provide direct and efficient access • Provide links to adjoining local government areas eg BCC, Logan	C, SP
Recreation / Tourist Routes	Road Corridors: Arterial, Sub arterial roads, Collector and Trunk Collector streets	• Provide opportunities for recreational and touring cycling through urban and rural parts of Redlands using existing road corridors. • Provide connections to surrounding shires	SP, T, R
Local Routes	Road Corridors: Sub Arterial, Trunk Collector, Collector and Local Access Streets	• Links to residential catchments • Lower order connections	U, R, C
Preliminary Routes	Road corridors / Open space corridors	• Provide strategic connections between suburbs and key attractors. • Require extensive investigation and consultation.	R, U, T

Key: C = Commuting Cyclists
SP = Sport Cyclists
T = Touring Cyclists
R = Recreational Cyclists
U = Utility Cyclists

Map 2 Strategic Off-Road Network Plan

INSERT
MAP 2

19.8. PRELIMINARY ROUTES

Preliminary routes have been identified across the Shire but require considerable investigation before being considered as a proposed cycling and walking route. A preliminary route is identified as being a significant strategic linkage but due to cost or tenure issues is viewed as a long term linkage for future consideration.

It is recognised that many of the key Primary Network linkages are State controlled roads. The responsibility for upgrade and maintenance of these roads lies with Department of Main Roads. Redland Shire Council will be required to negotiate any treatments to provide facilities.

These routes have been selected for their directness and convenience for commuter cyclists. Many of the roads identified have sealed shoulders and adequate riding space with a smooth riding surface. The key issue with many of these routes will be the retrofitting of cycling facilities to provide road space for cyclists. The main work required to create the Primary On-Road Cycle Network will be line marking of bicycle lanes according to AUSTROAD Part 14 Bicycle Guidelines.

19.9. SOUTHERN MORETON BAY ISLANDS CYCLING AND PEDESTRIAN NETWORK MAPS

The provision of cycling and pedestrian facilities on the Bay Islands and the development of network linkages are detailed further in the South Moreton Bay Islands Integrated Local Transport Plan.

GHD consultants and Island residents developed the proposed cycle routes. The routes have been located to service the largest number of residences on each Island and connect residents and visitors with activity nodes such as shops, public transport interchanges, schools and recreation parks.

Map 3 and **Map 4** detail cycle and pedestrian networks on the islands. The network components applied to the mainland also apply to the island communities.

Due to the nature of development on the islands the initiation of network routes is largely governed by the sealing of existing roads. The widening of road shoulders or the provision of a main spinal shared path on the Islands of Macleay, Russell and Lamb Island are seen as the key treatments that require prioritisation. Island residents have identified recreational and tourist routes on both Macleay and Russell Island. These routes require appropriate marking and signage to formalise a network plan.

19.10. NORTH STRADBROKE ISLAND CYCLING AND PEDESTRIAN NETWORK MAP

There has been strong support for pedestrian and cycle networks on North Stradbroke Island. The island is a popular tourist destination for touring cyclists and demand has come from Island community groups to reduce the demand on vehicular transport on and off the island.

However, there is strong opposition from key community groups on mainland cycling and pedestrian infrastructure particularly at Point Lookout. In order to form network connections extensive community consultation will be required.

Map 5 details the draft cycle and pedestrian network for North Stradbroke Island. The network components applied to the mainland also apply to the island communities.

The proposed cycle routes are located on existing roads and have been selected to connect residents to the attractors and generators on the island. The main connections involve formalising network routes between Dunwich, Amity Point and Point Lookout.

In terms of treatment, it is recommended that a widened shoulder would be suitable on the majority of sealed roads to cater for road cyclists on longer connections between townships and key attractors.

It is further recommended that unsealed four wheeled drive access tracks be hardened to cater for cyclists using Mountain Bikes or other suitable bicycle types that can cope with unsealed surfaces. These routes would provide visitors and island residents with looped connections through bushland areas and act as major tourist routes for the more experienced cyclist. The proposed route treatments also include adequate route signage to direct cyclists and warn four wheel drivers of the possible presence of cyclists on remote sections of track.

Due to the low volumes of traffic in the townships of Dunwich and Amity it is recommended that cyclists share existing roads. Some routes in townships may need shoulder sealing.

Pedestrian facilities also need to be upgraded in Dunwich, Amity Point and Point Lookout and the provision of a shared cycle and pedestrian path is required to provide for pedestrian tourist traffic particularly at Point Lookout.

19.11. EXISTING FACILITIES MAPS

Existing on and off-road cycling and pedestrian facilities are detailed in **Map 6.** It should be noted that Map 6 does not denote every concrete footpath on the mainland. Due to the scale of the map it is impossible to represent each concrete footpath. The map distinguishes between concrete footpaths and shared bicycle and pedestrian paths which are wider in width (generally 2metres wide and are signed).

Map 7 and Map 8 detail current on-road bicycle lanes and proposed on-road bicycle facilities. The proposed on-road bicycle facilities cover the full range of treatments such as painted lines and bicycle symbols through to bicycle route signage. The maps should be used in conjunction with the implementation program tables to determine the recommended treatment for each proposed route.

19.12. LAND USE PLANNING

Current land use approvals for residential and industrial sub divisions appear to have given moderate consideration to the integration of cycling and pedestrian infrastructure. A number of issues have arisen where inadequate space is unable to be found to provide facilities for both traffic calming, cyclists and pedestrians. Poor design and consideration of cyclists and pedestrian needs from the initial planning process will compromise Councils ability to provide best practice infrastructure to the community and develop a strategic Cycling and Walking Network.

Planning and designing for cyclists and pedestrians should not be at the expense of providing for motor vehicles. All planning in new developments should incorporate cycling and walking facilities into the street system. People riding bicycles and walking need to use the same facilities that provide access to motorists.

Council presently has a policy statement on the design and construction of bicycle and pedestrian routes in new residential developments. While this policy is encouraging, it does not cover the full range of infrastructure requirements needed to develop a comprehensive cycle and pedestrian route. An example of this is the inconsistency in facility designs across a range of developments. A broader policy statement/s on cycling and pedestrian infrastructure and planning provision is required to ensure a higher standard of facilities are provided to the community.

Land development plays an important role in providing an integrated cycling and walking network along local suburban streets, open space corridors to link residential areas with

community facilities. All future land development must ensure connections are created to the greater cycling and walking network.

Issues to address:

- Cycling and pedestrian matters must be prioritised and addressed within the approval process;
- A clear policy must be created within council on what is the minimum requirements to achieve best practice
- Council must insist that developers provide extensive cycling and walking facilities as per design codes.

19.13. SUBDIVISIONS

- It is essential that cycling and pedestrian infrastructure is integrated into the lot layout and street network.
- Cycling and pedestrian infrastructure should not be treated as an add-on but an integral part in the concept planning stage.
- Bikeways must not be relegated to off-road facilities. A street system must be developed that supports cycling and pedestrian activity.
- It is important to create direct, well graded links that accommodate a range of users and considers conflict issues.
- End of trip facilities such as those noted below should be incorporated into commercial developments for tenants and staff and within community facilities.
    - Secure Bicycle parking
    - Showers
    - Lockers
    - Change room facilities

Map 3 Macleay Island and Lamb Island Network Plan

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MAP
3

Map 4 Russell Island and Karragarra Island Network Plan

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MAP
4

Map 5 North Stradbroke Island Network Plan

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MAP
5

Map 6 Existing Cycling and Pedestrian Facilities Map

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MAP
6

Map 7 Existing On-road Bicycle Lanes

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MAP
7

Map 8 Proposed On-Road Cycling Facilities Map

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MAP
8

PART D

NETWORK DESIGN GUIDELINES

20. NETWORK DESIGN GUIDELINES

The most appropriate guidelines for the installation of cycling and pedestrian facilities are in *AUSTROADS* Part 13 - Pedestrians and Part 14 - Bicycles and the *Queensland Transport Manual for Uniform Traffic Control Devices (MUTCD).*

These publications provide a comprehensive set of design guidelines to assist engineers, planners and developers in the design, installation, construction and maintenance of bicycle and pedestrian facilities. However these guidelines do not cover every aspect of facility development and scope exists to improve upon and create treatments for individual locations based on sound design principles.

20.1. PRINCIPLES OF BICYCLE AND PEDESTRIAN FACILITY DESIGN

In order to accommodate the widest range of potential users on the road carriageway, off-road paths, and pedestrian precincts, the following key design principles should be adopted:

- Build for everyone and minimise resistance to travel. Streets have multiple uses that must be balanced.
- Create many linkages.
- Design footpaths that are comfortable and streets that are easy to cross: more path width = less conflict.
- Build green streets that are tree-lined - create boulevards.
- Provide for universal access.
- Build with proper scale and size, not just for cars.
- Appreciate the vulnerability of cyclists and pedestrians and build facilities that are safe.

Source: Crow, 1994

The aim of providing bicycle and pedestrian facilities is to encourage safe bicycle and pedestrian travel. The use of set design guidelines and standard treatments will ensure a high quality of design and achieve consistency across the network.

When designing facilities for both cycling and walking the following requirements need to be considered:

- A dedicated space to cycle or walk;
- A smooth surface;
- Speed maintenance;
- Adequate width to reduce conflict;
- Connectivity to overall network; and
- Information (signs of destinations and distances).

Source: Queensland Government Cycle Notes, 2002

20.2. TYPES OF FACILITIES

This strategy considers three main treatment categories:

- Off-Road Facilities (footpaths, shared paths, compacted gravel trails)
- On-Road facilities (wide curb lanes, bicycle lanes, paved shoulders and intersection enhancements)
  End of trip facilities (bicycle parking, showers and change-rooms).

In the development of the Redlands Strategic Cycling and Walking Network the following facility treatments are proposed.

Off-Road

- Shared Cycle Pedestrian Path
- Footpath
- Exclusive Cycle Path
- Compacted Gravel Multi-Use path
- Path Intersections

On-Road

- Exclusive Bicycle Lanes
- Peak Period Exclusive Bicycle lanes
- Bicycle Car Parking Lane
- Wide Kerbside Lane
- Advisory Treatments (Bicycle Awareness Zones; Bicycle Route)
- Sealed Shoulder Treatment

A summary of width requirements for each of the above treatments is detailed in **Table 15** and **Table 16.** These tables provide a summary of recommended treatments used along various routes in the network and provide Council with an indication of the desired facility widths.

Standard Treatment Drawings are detailed in **Appendix 1**. The application of the proposed treatments for each cycle and pedestrian route is indicative only. The final determination of each treatment should be subject to a detailed feasibility assessment of each route.

Planning Elements

When planning streets a range of design elements must be taken into consideration when integrating both on and off-road facilities into the street system. These elements include but are not limited to:

- Entrances
- Pavements and footpaths
- Steps
- Ramps
- Pedestrian crossings
- Lighting
- Temporary or permanent parking
- Bus stops
- Information

Source: Pedestrian Facilities Guidebook, 1997

Table 15 Recommended Off-Road Standard Treatments

Off-Road Treatment	Definition / Comments	Desirable Width (m)
Shared Cycle / Pedestrian Path	A shared path is the most common form of cycling and walking path treatment. The path is available for pedestrians as well as cyclists. Lines and pavement markings (see AUSTROADS Part 14) can be used to reduce conflict between path users. The width of the path treatments must be determined on an individual basis in accordance with AUSTROADS Part 14 Guidelines.	2.5 – 3.5
Footpath	A footpath is predominately for pedestrian use, but can be used by cyclists unless signed according to state legislation. This in effect makes the path shared. It is recommended that extra width be provided on designated footpaths to reduce conflict between pedestrians and cyclists.	2.0
Separated Cycle / Pedestrian Path	A separated path is where cyclists and pedestrians are required to use separate, designated areas. This type of path is predominately used in areas of high bicycle and pedestrian traffic. The path should be designed for two-way bicycle travel. The bicycle portion of the path should be an absolute minimum width of 2.5m and the adjacent pedestrian path should be an absolute minimum of 1.5 m wide.	5.0 2.5 – 3.0 (Bicycle Path) 1.5 – 2.0 (Pedestrian Path)
Shared Multi –Use Gravel Path	Gravel paths are predominately used in Council reserves and conservation areas where a hard sealed surface is not desirable for aesthetic reasons.	2.0 – 4.0
Exclusive Cycle Path	A path designated exclusively for cyclists. Used mainly alongside major arterial roads. The path is normally separated from the carriageway with a dividing verge.	2.5 – 3.0.

Table 16 Recommended On Road Standard Treatments

On-Road Treatment	Definition / Comments	Desirable Width (m)
Shared Cycle / Parking Lane (full line marking)	A shared cycle / car parking lane is the most desirable form of treatment if loss of car parking is unacceptable. Linemarking is used to delineate the parking area and the cycle lane. The ability to park vehicles adjacent to the kerbside is generally unaffected by the inclusion of bike lanes.	3.7 – 4.2
Shared Cycle / Parking Lane (partial line marking)	Partial linemarking is used to delineate the parking area and the cycle lane. The ability to park vehicles adjacent to the kerbside is generally unaffected by the inclusion of bike lanes.	3.7- 4.0
Bicycle Lanes with Indented Parking	This treatment improves safety for cyclists using the designated bicycle lane. It is conducive where on street parking is still required and loss of car parking space is unacceptable. This form of treatment may occur along strip shopping areas and continuous commercial developments.	4.0
Bicycle Awareness Zone "Bike Route" (signs only)	Is a treatment that indicates or advises road users of the potential presence of cyclists and of the location where cyclists may be expected to ride on the road. This treatment is in the form of bicycle route signage and route directions. It may be used where exclusive bicycle lanes are not required or cannot be installed. The use of bicycle route signage has no regulatory function	-
On Road Bicycle Awareness Zone (signs, linemarking and logos)	Is a treatment that indicates or advises road users of the potential presence of cyclists and of the location where cyclists may be expected to ride on the road. This treatment is in the form of yellow bicycle pavement symbol placed inside a white edge line. It may be used where exclusive bicycle lanes are not required or cannot be installed. The use of bicycle route signage logo's and linemarking has no regulatory function	-
Sealed Shoulders	This involves sealing the shoulder of a road that is unkerbed beyond the traffic lanes. This form of treatment is effectively an Exclusive Bicycle Lane if used in conjunction with pavement symbols and signs. Sealed shoulders can assist in reducing road edge maintenance and repair costs and improves safety for all road users.	1.5
Contra Flow Bicycle Lane	An exclusive bicycle lane on one side of a carriageway or one way street enabling cyclists to travel against the legal direction of travel. Such treatment can be used where space is limited for provision on a certain side of the carriageway due to hazardous or steep environments.	1.5
"Peak period" Exclusive Bicycle Lane	A "peak period" exclusive bicycle lane is an exclusive lane designated for cyclist during specific hours. Is provided in a clearway lane and car parking is permissible in this lane outside the peak period. The peak period hours must be clearly signed.	1.5
Exclusive Bicycle Lane	A lane created through the use of an 'edge- line', bicycle pavement symbols and bicycle signs. It is the preferred treatment for road cyclist and highlights the presence and rights of cyclists on the road	1.5

Note: The above widths are based on a speed environment of approximately 60km/h.

20.3. ON-ROAD CYCLIST PROVISION

The provision of on-road cycling facilities such as an exclusive bicycle lane or shared bicycle and parking lane requires a review of existing road functionality and cross section.

The provision of typical treatments which are detailed in **Table 15** requires finding space for bicycles on the road carriageway. A review of the existing road carriageways should be undertaken to determine which treatment may be suitable for each particular situation. It may be that a range of treatments are incorporated into a length of road in order to provide a connected bicycle facility.

The three main approaches in finding space to develop an overall cycling network include:

- Shifting space;
- Trading space;
- Finding alternative space.

To provide the necessary space required for bicycles, the following nine methods of finding space are recommended:

- Reduce width of traffic lanes;
- Seal shoulders;
- Indent car parking;
- Prohibit car parking;
- Use existing service roads;
- Widen road at median;
- Widen road at nature strip;
- Remove a traffic lane; and
- Provide a high standard “off-road” path.

Source: It Can Be Done, Bicycle Victoria

Bicycle Lanes

Bicycle lanes marked on carriageways provide cyclists with a designated riding area and can assist in reducing conflict between cyclists and motorists.

The main advantage is that the provision of bicycle lanes indicates to the motorist and the general public that cyclists could present on the roads and have a legitimate right to be sharing the space. The lanes also help to educate motorists on the rights cyclists have on using a road.

When should Bicycle Lanes be used?

The use of on-road bicycle lanes provides a greater sense of security and comfort to cyclists who decide to use roads rather than off-road shared paths and footpaths. The use of bicycle lanes is recommended under the following conditions:

- When traffic volumes are moderate to high eg. Arterial, Trunk Collector and Collector Streets (bicycle lanes should not normally be required on local access streets).
- Along streets where schools and recreational facilities are located adjoining an arterial or collector streets.
- At higher posted speed levels. On roads with posted speeds of 60km/h, 70km/h or 80km/h, bicycle lanes provide a greater degree of separation and help reduce potential conflicts
- At signalised intersections with moderate to high traffic volumes.
- At multi-lane and single lane roundabouts on roads with moderate to high traffic volumes.
- On roads with urban cross sections eg. kerb and channelling. Along rural roads sealed shoulders with appropriate route and warning signage are adequate.

These conditions do not exclude bicycle lanes at other opportunities and a range of factors can dictate whether a facility is provided or omitted.

Key elements of Bicycle Lanes

The minimum bicycle lane width in a 60km/h speed zone should be 1.5m wide. This accounts for the width of a bicycle and adequate lateral operating space of a cyclist to feel comfortable within the lane.

Bicycle lanes with a width of 1.2m or more are acceptable but preferably only used in constrained areas or in lower speed environments.

Where carriageway widths preclude an exclusive or Peak Period Bicycle Lane an Advisory Treatment is recommended which uses signage, logos and linemarking. This form of treatment is not regulatory and should be used only when all other options of finding space are exhausted or cost prohibitive. An example of a Bicycle Awareness Zone used in Brisbane City is shown in **Figure 6** and **Appendix 1**.

Bicycle lanes should be marked with a solid white line. Dashed or continuity lines should be used to permit bicycles and vehicles to enter or exit the bicycle lane.

Bicycle Lanes should be identified with a bicycle symbol painted on the road surface. Refer to MUTCD Part 9 Bicycle Facilities and AUSTROADS Part 14 for detailed use of bicycle lanes and symbols at intersections

Figure 6 Bicycle Awareness Zone

COLOURED BICYCLE LANES

The proper design and delineation of bicycle lanes at intersections is important in order to minimise conflict between cyclists and motor vehicles, particularly when turning across the path of cyclists at an intersection.

The use of coloured pavement (either painted or dyed) is a countermeasure in order to reduce conflicts and collisions at intersections and has proved to be effective in other countries. A number of studies conducted in Denmark, Sweden and Canada have demonstrated a decrease in conflicts between cyclists and motorists as well as reduced accident rates and injuries where painted bicycle lanes are used *(Hunter et al 2000).*

The use of paint to delineate paths through intersections for pedestrians and cyclist helps to define set movement patterns and improve traffic regulations and cyclist behaviour.

Examples of painted bicycle lanes are illustrated in **Figures 7** and **Figure 8**.

Figure 7 Green Bicycle Lane

Figure 8 Coloured Bicycle Land and Bus Lane

The recommended colour treatment at intersections and along mid block sections is green. This colour is currently used in NSW by the Road Traffic Authority, Brisbane City Council and in the UK by certain local government authorities.

While no standard exists within Australia, it is recommended that Council utilise green for the reason that red and earth colours are currently used in LATM's and Bus Lanes. Other colours such as blue, which have been widely used, fade quickly and are difficult to distinguish from asphalt in poor light conditions.

It is important that any form of colour material used is skid resistant and can be easily negotiated by cyclists without fear of losing traction when cornering.

The cost of treating surfaces is expensive and consideration should be given to 'stand up' areas at major Intersections and approaches to intersections. The current material used in Brisbane City Council trials is Calcined Bauxite. The grade used for bike lanes is a 1.5mm diameter bauxite stone, which is adhered to asphalt with an epoxy resin. The cosy for treatments is approximately $55sq/m.

Reflectors and Raised Pavement Markers

The practice of placing reflective markers inside a bicycle lane should be avoided. A reflector or raised pavement marker can deflect a bicycle wheel and cause a cyclist to lose control. If markers are required for motorists they should be installed on the motorists side of the linemarking and have a bevelled front edge.

Drainage Grates

It is important that drainage grates are bicycle friendly to ensure the cyclists wheel doesn't fall into the drainage grate slot. The most effective way to avoid drainage grate problems is to utilise drainage inlets flush in the kerb face. If a street surface grate is required, care must be taken to ensure the grate is flush with the road surface.

Slots in the grates should not run parallel to the kerb and the gap between slots must not allow a narrow tyred wheel to fall into the slot and get caught. Drainage grates are often slippery when wet and care must be taken to ensure the pavement around the grate is flush and not broken.

Drainage grates should be located away from pedestrian crossings and kerb ramps and away from the route of pedestrian travel. Preferably grates should be located on the upstream side of the crossing area to avoid excessive water flowing across the crossing area. Roads and gutters should be graded to direct water flow away from intersection corners and walking areas.

Bicycle Lane Surfaces

The surface for on-road bicycle lanes must be a smooth as possible with unbroken pavement edges. The majority of road bikes use narrow tyres with no suspension and any cracks, potholes and bumps in the riding surface pose a potential hazard. The surface of the bicycle lane should be provided at the same standard as the vehicle lanes.

The use of 'chip seal' to seal an asphalt surface is not desirable and should be avoided. This type of surface makes the road pavement irregular and uncomfortable and does not ensure the smooth rolling of a bicycle tyre as well as creating slippery conditions for turning cyclists. If roads have to be chip sealed they must be swept following chip seal operations.

Intersections

A detailed description of Intersection Treatments for Cyclists and Pedestrians is provided in AUSTROADS Guide to Traffic Engineering Practice Part 13 and 14. It is recommended that Council develop new intersection design solutions to resolve common intersection problems for cyclists and pedestrians. This section details the main issues for cyclists and pedestrians in particular on-road treatments at intersections and offers suitable design solutions and options.

20.4. BASIC PRINCIPLES

Intersections are areas of major conflict for both cyclists and pedestrians. It is essential that good intersection designs are created to ensure cyclists and pedestrians are not impeded in movement or conflict points are created.

For Cyclists

A 'bicycle friendly' intersection requires a sound understanding of the user, and the intersection must consider both on and off-road cyclist movement. There appears to have been some reluctance to find space for cyclists at intersections and to develop solutions for safe continuous cycle movement. Good design creates for predictable and visible movements.

- On-road bicycle lanes should be provided. It is preferable for the lanes to be marked and coloured to increase delineation with other line markings and where vehicles will cross them.

- Bicycle lanes should resume on the other side of the intersection where possible, to ensure continuity to a network connection.

For Pedestrians

- The path of travel should be direct with limited out of direction travel.
- There should be minimal interruptions to movement and pedestrians should not be required to deviate dramatically from their path of travel.
- Pavement transitions need to be free from obstructions and surfaces smooth.
- Pedestrian refuges should be used to decrease crossing distances and assist safe movement across busy intersections.
- Intersections that function well for pedestrians need to be compact.
- Intersection need to be friendly for people with mobility difficulties and at signalised intersections, pedestrian signal buttons should be clearly visible and within easy reach of the user.
- Motor vehicle movement needs to be significantly slowed or eliminated.

20.5. SIGNALISED INTERSECTIONS

Cyclists face a range of problems at signalised intersections including:

- Lack of detection of bicycles;
- Conflict with left turning vehicles;
- Negotiation of right turns;
- Lack of width when approaching, waiting and exiting the intersection;
- Debris build-up;
- Slippery surfaces through oil deposits, painted surfaces; and
- Lack of suitable crossovers onto median islands.

The provision of bicycle lanes at signalised intersections enhance cyclists' safety by providing a degree of separation from motor vehicles. The use of lanes also promotes the correct positioning of cyclists as well as warns motorists of their presence. If placed correctly, bicycle lanes can assist in minimising conflicts between cyclists and other road users.

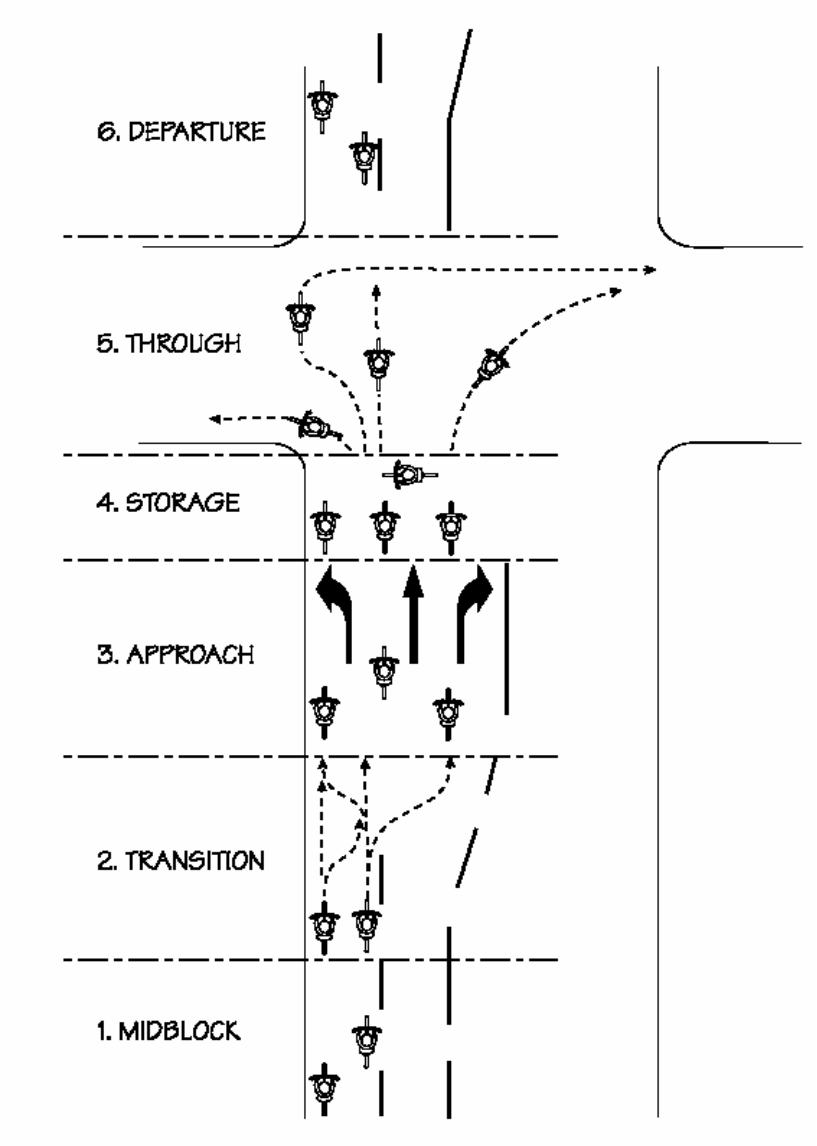
The provision for cyclists at intersections can be complex but the consideration of the various phases of movement that a cyclist takes through the intersection can assist in the provision of appropriate treatments to facilitate safe continuous movement.

Six elements of bicycle movement have been identified and developed by Cumming (1999) which can assist in the appropriate design of facilities and the meeting of cyclists needs at each part of the intersection. They include:

1. Midblock – bicycle position on the road.
2. Transition – from the midblock to the approach position.
3. Approach – position at the intersection.
4. Waiting – position of cyclists at the front of the traffic queue.
5. Through – movement of the cyclist across the intersection.
6. Departure – movement of the cyclist as they leave the intersection.

Figure 9 depicts the various elements and their effect on the movement of a cyclist. The objective for designers is to incorporate as many of these elements into an intersection design to accommodate the various movement patterns of a cyclist. The incorporation of these elements can be in the form of bicycle lanes approaching an intersection through to exclusive bicycle storage areas at the front of the traffic queue.

Figure 9 Cyclist Movement Elements through an Intersection



Source: Cumming, 1999

20.6. UN-SIGNALISED INTERSECTIONS

These type of intersections can be quite stressful for both cyclists and pedestrians and extra care is required to provide clear lines of site and adequate crossing points. Key areas of concern include:

- **Merging and Exit Lanes**
  Motorists often find it difficult to anticipate cyclists movements and often underestimate the speed a cyclist can travel through the intersection. Vehicles travelling at higher speeds create difficulties for both cyclists and pedestrians, which are slower moving. The use of on-road bicycle lanes and continuity lines can assist in raising awareness of the presence of cyclists across merging and exit points.

- **Off-Road Path Intersections**
  Austroads Part 14 deals with off-road path crossings in detail. The key design elements include:

    - providing short crossing distances across ramps at close to a right angle with the adjoining path
    - Improving sight distances
    - Providing a crossing in an area where traffic speeds are slower
    - Providing assistance to cyclists such as holding rails and adequate warning signage on approaching crossing areas

Roundabouts

The use of roundabouts to assist with traffic flow at intersections is an accepted road design practice. However, cyclists and pedestrians often find it difficult to negotiate roundabouts due to free flowing traffic streams and face conflicts across each approach and exit.

While roundabouts provide increased safety for motor vehicle travel, they are markedly less safe for cyclists than other forms of intersections. The majority of accidents are often due to the motorist not seeing or registering the presence of the bicycle rider.

There has been prolific use of roundabouts within the Shire and community consultation with cyclists clearly shows they cause many cyclists a large degree of stress. In particular, the larger multi-lane roundabouts that have higher traffic volumes and speeds and larger crossing areas. Pedestrians also find crossing multi-lane roundabouts difficult and refuge islands are generally required to assist with movement across the intersection.

The use of splitter islands to deflect the path of motor vehicles and slow their approach to the roundabout can assist pedestrians with the crossing of the intersection and provides a degree of protection and allows pedestrians to wait and cross once it is safe and a gap has opened up in the traffic.

The appropriate treatment of roundabouts for cyclists and pedestrians depends upon a range of factors including:

- Traffic volumes and speed.
- Roundabout geometry and degree of visibility.
- Number of traffic lanes and the approach roads.
- Type of routes approaching the roundabout e.g. on-road or off-road path.

When considering the needs of cyclists and pedestrians at roundabouts there are two approaches to improving safety conditions they involve:

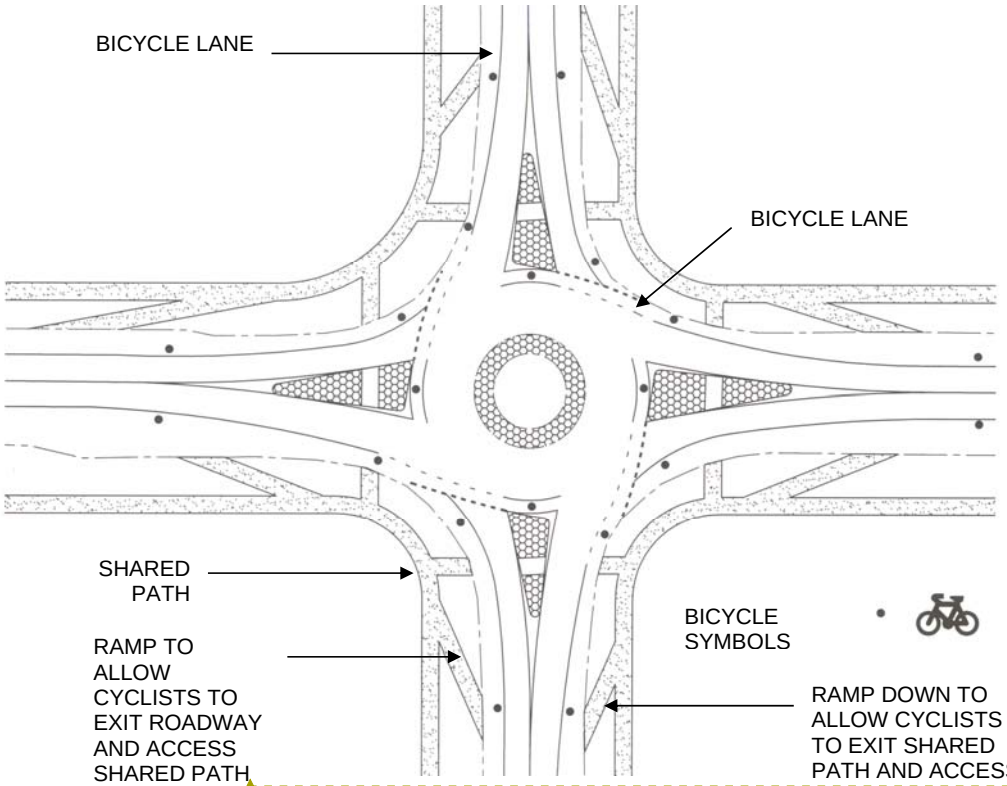
- Altering the geometry of the roundabout to slow motor traffic to improve safety for people on bicycles and pedestrians;

- Providing an alternative means of negotiating the intersection - either on a peripheral shared path, or a marked alternative on-road route or by reconsidering the roundabout treatment and replacing it with a signalised intersection.

The provision of an alternative off-road path that allows cyclists and pedestrians to cross at right angles to approaching and exiting vehicle traffic is important. The incorporation of pedestrian crossings into the roundabout design can further assist pedestrian movement.

It must be accepted that road cyclists will use roundabouts regardless and the solution to take bicycle traffic away from the intersection onto an off road path. The provision of on-road facilities at roundabouts is important to reduce conflict and provide space for road cyclists to enter and exit the roundabout safely on the carriageway. An example of a proposed roundabout treatment within the Shire is illustrated in **Figure 10.**

Figure 10 Proposed Roundabout Treatment



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20.7. LOCAL AREA TRAFFIC MANAGEMENT DEVICES (LATM'S)

The use of LATM's such as speed humps, raised platforms, roundabouts, and median islands to control vehicle access and speed is widespread across the Shire. The installation of these devices has been largely driven by the community to control excessive speed and reckless driving behaviour in local streets. Unfortunately the installation of these devices has created squeeze points for cyclists which are potentially hazardous.

The aim of traffic calming is to make the streets safer for pedestrians and cyclists and other motorists through managing aggressive driving as well as helping to enforce speed limits. In certain situations calming measures can reduce the number of vehicles accessing streets and give priority back to pedestrians and cyclists.

Traffic calming can be effective in making a street more 'bicycle and pedestrian friendly'. Dutch city planners have effectively designed streets in neighbourhoods that only allow cars to pass through these areas at walking pace. These streets allow limited parking and pedestrians have right of way over all other vehicles. Vehicle traffic is constrained to the point where the streets become unattractive for car use and the streets return to places where people can congregate, play and converse with their neighbours without fear of being struck by a car.

Unfortunately the use of LATM's has not been maximised in the Shire. Often the needs of pedestrians and cyclists are overlooked and the concept of traffic calming is directed from a car perspective.

LATM Design Principles

A residential traffic calming program is broad focussed and should be aimed at reducing:

- Traffic volumes;
- Vehicle noise;
- Visual impacts; and
- Traffic speed.

There are a multitude of traffic control devices, however the location of device and the type of treatment must consider the impact on cyclist and pedestrian movements and not just motor vehicles.

It is better for cyclists to have access alongside the calming device such as chicanes, median islands or pinch points than having to share the carriageway with motor vehicles. A common problem for cyclists is that vehicles will try and beat them to a squeeze point and drive very close to the cyclist. **Figure 11** illustrates a range of calming devices that integrate bicycle lanes that permit cyclists to pass through a diversion.

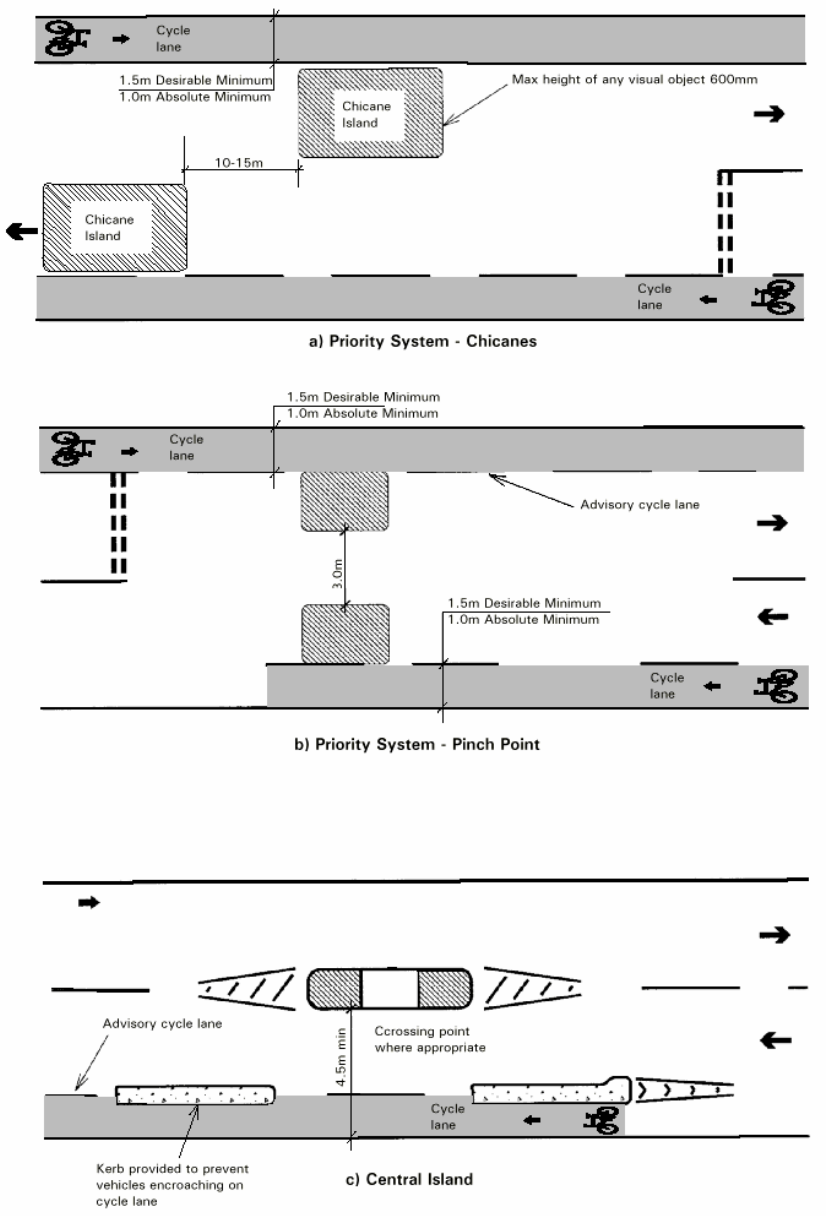
The following design issues should be considered when treating an area with LATM's devices:

- Placement of slowdown devices at the bottom of hills is potentially hazardous due to the momentum of cyclists as well as the inconvenience to climb out of the hill. Cyclists rely on their momentum to reduce the effort of climbing a hill.

- Abrupt changes in the level of the roadway e.g. steep speed humps can potentially cause a fall.

- A reduction in speed limits and application of a 30-40km/hr limits can assist in decreasing cyclist and pedestrian accident rates.

Figure 11 - Integrated 'Bicycle Friendly' LATM Options



Source: Cycing by Design

20.8. OFF ROAD PATH PROVISIONS

Surfacing

The selection of materials to construct a shared path or bikeway should focus on the following criteria:

- Long term durability;
- Safety;
- Accessibility;
- Cost and;
- Maintenance.

The majority of Council paths are constructed from reinforced concrete or crushed aggregate. Pedestrian precinct areas use a combination of concrete and clay pavers.

All rigid path and multi-use trail materials need to provide a smooth, stable and slip resistant surface. The materials used to construct the path should ideally blend into the surrounding environment. Paths in suburban areas should be concreted or consist of a hard surfaced material. Any path must be designed to meet the specific function of the path and whether or not vehicular traffic is expected. See **Appendix 2** for recommended design standards for rigid bikeways and shared path construction.

Current Council construction of concrete paths is largely dictated by cost, and innovative treatments for paths are rarely undertaken due to budget constraints. There are opportunities to improve the aesthetic appearance and longitudinal riding surface of paths through adopting new construction techniques.

It is recommended that Council trial new path construction techniques and surface finishes to enhance the streetscape and improve the riding surface. These new techniques include:

- The modification of expansion and contraction joints to include sealed and saw cut joints to improve surface finish, rider comfort and reduce maintenance.

- Increasing the spacing of contraction joints on straight sections of path once joints are sealed.

- The use of decorative concrete paving to enhance the aesthetics of paths and to improve the blending of paths through parkland, creek and coastal reserves. This may include the use of coloured pigments or oxides, stencilled or stamped patterned concrete or impressed decorative motifs.

- Ensuring the sub-grade is level and evenly compacted and dampened prior to concrete pouring.

Grades, Cross Slopes and Drainage

Grades

The grade on footpaths and shared paths should be kept to a minimum especially on extended inclines. Grades greater than 5%-7% are undesirable over an extended length, due to the difficulty experienced by most cyclists and pedestrians ascending, and the hazards of steep descents with inexperienced cyclists unable to control their speed.

Most shared paths must also meet the requirements of the *Disabilities Discrimination Act* (DDA). Slopes for paths and trails for people with a disability should not be steeper than 1:20, with a cross slope not greater than 1:40. The greater the cross slope the more difficult it becomes for people in a wheelchair or an electric scooter. For steeper slopes, paths must be ramped, with a maximum slope of 1:14.

Handrails should be considered on steep path descents and ascents preferably with intermediate platforms to serve as rest areas. A ramped path is preferable to steps to provide for universal access.

There may be situations where it is unavoidable for grades to exceed 5%. Short sections of a path may have to vary. In this situation the length of the grade should be as short as possible. A general guide on maximum grade lengths once they exceed 5% is detailed in **Table 17.**

Table 17 Recommended Maximum Grade Lengths for Paths

Grade Percent	Distance
5-6%	For up to 240m
7%	For up to 122m
8%	For up to 90m
9%	For up to 60m
10%	For up to 30m
11+%	For up to 15m

Source: Adapted from VDOT 1990.

Experienced road cyclists are more accepting of steep grades and the location of on-road facilities such as bicycle lanes along major roads with undulating terrain is acceptable.

On paved surfaces it is often necessary to increase the width of paths on steep ascents to provide for increased manoeuvrability for cyclists due to slower speeds.

Gravel Trail Grades

On compacted gravel trails in bushland areas grade considerations will greatly influence erosion control measures. As a general rule grades greater than 15% are unacceptable and will not be sustainable unless the ground is well stabilised. Trails that are aligned on steep grades will be more prone to erosion and maintenance unless the trail section is short and stable from erosive forces. Grades of 0% should not be created due to poor drainage. To achieve sustainable trail grades requires an understanding of topography, soil type, rainfall and usage rates.

Short changes in trail grade can assist in removing water off the trail. It is better to have a trail that gently changes direction and grade than to construct a straight trail which accentuates water flow. Careful trail construction is required to ensure water can be adequately diverted off the trail surface and sheet away. The aim should be to create a self cleaning trail that enables water and sediment to flow off the trail before it enters a creek system. It may be necessary to cut into the side of a slope in order to create a stable trail tread. This concept is detailed in **Figure 12** and **Figure 13.**

Figure 12 Trail Cross Section

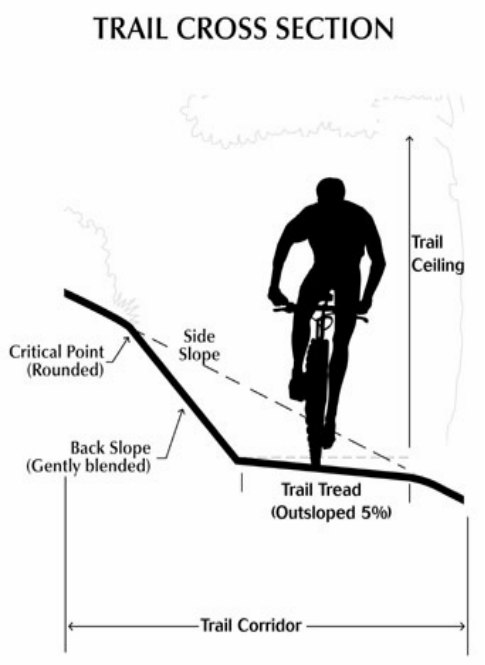
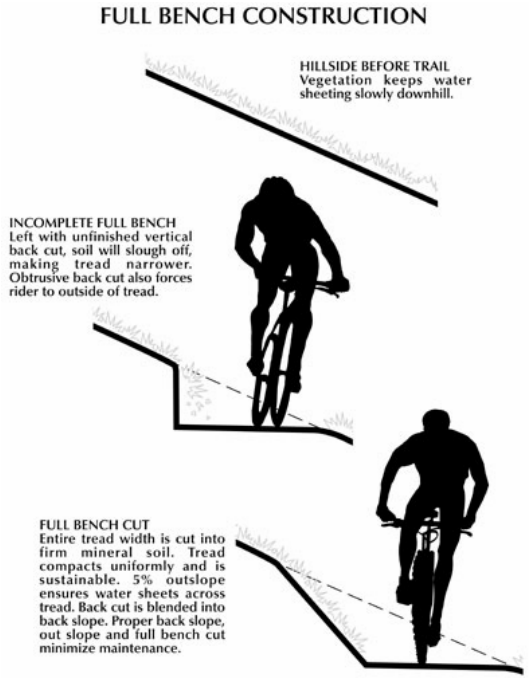


Figure 13 Trail Cross Section – Bench Construction



Source: Adapted from IMBA, Building Better Trail Guidelines 2001.

Drainage

A recommended cross slope of 2% is normally adequate to provide for drainage across a path. Sloping in one direction is preferable, and in bushland trails it is normal practice to outslope the path in the direction of the fall line. If there is no adequate fall, water will pond and create a hazard to path users.

The use of culverts, ditches or swales to control water runoff and protect water quality is recommended. Generally drainage grates are best located on the outside edge of a path and open swales on the uphill side to intercept waterflow.

Estuarine wetlands and floodplains are susceptible to erosion and protection of fragile vegetation and soils is essential. The use of boardwalks to protect wet areas is recommended. The Redlands Trails Manual provides extensive detail on drainage guidelines for unpaved trails as well as the construction of timber boardwalks. Readers are advised to refer to this design manual for trail formation procedures and specific guidelines on trail construction.

Path Accessibility

It is important that paths remain open and accessible to a range of path users. The level of accessibility may depend upon the setting. Some bushland trails may be more difficult to access along their entire length due to track conditions and topography. These trails should be graded to advise the user of the level of accessibility or the degree of difficulty a person may experience while using the trail eg. easy, moderate or challenging. It is generally accepted that paths in urban areas must be designed and constructed to provide easy access between schools, public buildings, transport interchanges, shops, parks and neighbourhoods. Design treatments that assist with improved access include:

- Path terminals free from obstructions such as restrictive slow down devices.
- Sufficient path width to accommodate all types of users with adequate passing, waiting and rest areas.
- Well designed access ramps and crossing points that comply with DDA requirements.
- Widening of paths at curve points and intersection junctions.
- Separation from vehicle traffic.
- Smooth surfacing.
- Removal of obstructive street furniture or utilities.
- Limited path grades.

Managing Motor Vehicle Access

The access of motor vehicles to pathways is a real concern for Council. A number of issues exist, which include:

- Damage to path surface that cannot support vehicle loads.
- Concern over the safety of path users being struck by a vehicle on the path.
- Issues with damage to parkland vegetation.

Motor vehicle access should be restricted to maintenance vehicles for periodic inspections, sweeping, repairs and access for emergency vehicles. The restriction of motor vehicles should not have undue impact on access for pedestrians, cyclists and wheelchair users.

The use of bollards and side slip rail entrances should be designed to allow for free movement of path users. The narrowing of concrete paths between 1.5m and 2m is sufficient to restrict vehicle access.

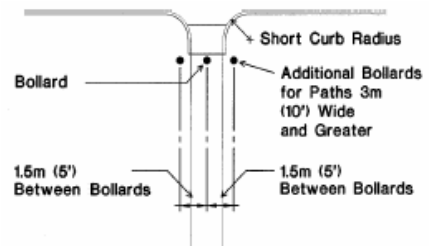
Bollard Design and Placement

As a general rule bollards should not be used in the centre of pathways as they constitute a hazard for cyclists. They should only be used if there is clear evidence of unauthorised and undesirable motor vehicle access and the device is effective at excluding such vehicles and not readily circumvented.

If bollards are to be placed at path entrances they need to be clearly delineated to increase visibility for pedestrians and cyclists. The use of linemarking to delineate the bollard is recommended, along with the painting of the bollard surface, and the use of retro-reflective tape.

It is important that bollards are evenly spaced to allow easy movement for cyclists, pedestrians, bicycle trailers and wheelchair users. The use of a centre bollard to divide a path is acceptable as long as it is clearly delineated and there is adequate path width to move either side of the bollard. **Figure 14** illustrates the recommended placement and spacing of bollards on a Shared Path.

Figure 14 - **Recommended Bollard Spacing**



Source: Adapted from Pedestrian Facilities Guidebook

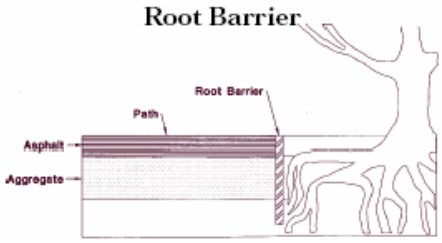
The use of Z chicane slowdown devices on paths in the Shire is extensive. However, these devices do not allow free movement of wheelchairs, recumbent bikes and bicycles with trailers. There are many examples of path users bypassing these devices and developing informal tracks around the chicane bars. They are not a current standard treatment device to restrict motor vehicles. There are other treatments just as effective, and allow for improved access for pedestrians, cyclists and people in wheelchairs. This treatment is not desirable, and Z Chicane devices should be progressively removed and replaced with a more appropriate treatment device. **Appendix 3** details standard Council treatments for path intersections and the use of bollards.

Vegetation and Landscaping

Vegetation encroachment onto paths and root intrusion must be controlled to prevent injuries to path users, and prevent the break-up of the path surface. Adequate clearances and sight distances must be maintained at driveways and intersections. It is important that pedestrians and cyclists are visible to motorist entering and exiting driveways.

Careful selection of tree species and appropriate spacing adjacent to paths is necessary to avoid long term maintenance problems and reduce risk to path users. Those tree species that have a tendency to raise and crack surrounding pavement areas should be avoided near pathways or a root barrier (see **Figure 15**), should be installed to prevent vegetation intrusion through the concrete path.

Figure 15 Example of Path Root Barrier Device



Source: Adapted from Pedestrian Facilities Guidebook

Recommendations

- Cut back vegetation to increase cyclist and pedestrian visibility, where appropriate, allowing at least 0.6m clearance between the edge of the path and the vegetation. Greater clearances should be provided to the inside of path curves.
- Plant trees and shrubs that will not intrude through pavement surface.
- Tall grasses should be mowed regularly to improve sight distances and expose potential path hazards. Grasses should be prevented from encroaching onto the path surface, thereby reducing functional path width.

Minimising Conflicts between Path Users

With the mixing of bicycles, pedestrians and wheeled recreational devices such as rollerblades and skateboards, conflict is bound to occur on busy paths. Conflict normally arises due to:

- Lack of defined space.
- Street furniture that reduces the amount of useable path space.
- Inconsiderate behaviour from different users, such as excessive speed or not giving way and blocking a path.
- Poor skills or erratic behaviour.

Source: Cycle Notes, Queensland Transport

Design treatments that can be used to minimise and reduce conflicts on shared paths and footpaths include:

- Widening the path to accommodate a higher number of users as per AUSTROAD Part 14 Guidelines.
- Allow for rest and passing areas and the widening of curves along paths.
- Placing poles, bins, benches away from the immediate edges of the path.
- Planting of low shrubs or trees with a high canopy.
- Ensuring horizontal and vertical alignments are adequate to provide clear lines of sight.
- Use of directional signage.
- Use of delineation and separation treatments.

- Signing and marking the path e.g. edge lines, centre lines, chevron marking around obstacles.
- Initiating bicycle speed limits.
- Use of coloured pavement treatments.
- Restricting access to the path from a particular user group.

20.9. NETWORK SIGNAGE AND LINEMARKING

The provision of directional and advisory signage is essential to provide a functional network of cycling and walking routes.

The use of signage helps to raise awareness of existing facilities and assists in promoting cycling and walking to the general community. Signage also plays a key role in educating motorists as to the legal rights of cyclists in sharing the roadway and people using shared paths on the etiquette of appropriate use. It is essential that on and off-road routes are legible in terms of a consistent form of signage, which details destinations, distances and directions.

Signage

It is proposed that a range of signage configurations be used throughout the Shire to accommodate the different cycling and walking environments. It is important that route linkages are integrated and continuous with street traffic areas and off-road paths.

Council has developed a signage strategy which incorporates route directional signage for on-road bikeways and off-road shared paths and multi-use trails in bushland areas. Refer to **Figure 16** for examples of network directional signage.

These signs should be utilised to:

- Define cycling and walking routes.
- Provide direction information and distances to destinations.
- Provide advice on multi-use trail etiquette.

The RCPS has been developed based on a network approach with key routes serving specific destinations. It is imperative that the whole network is comprehensively signed to assist locals and visitors to the Shire navigate their way through the network.

Route signs should be fixed to existing poles in order to minimise installation costs and avoid unnecessary cluttering of the streetscape. The use of Finger Board signs is recommended to minimise additional poles.

Route Identification

It is intended that route identification for the cycling and walking network will comply with three main configurations;

1. On-Road Network
2. Off-Road Network (suburban routes)
3. Off-Road Network (conservation area routes)

On-Road Network

The on-road network for commuter, sport and touring cyclists will comply with Part 9 of the MUTCD standards and AUSTROAD Part 14 recommendations for bicycle route signage and will use a different colour coding to off-road routes through conservation areas. All on-road routes must comply with MUTCD requirements in regard to warning and advisory signs along a route such as bridge crossings, steep descents and bicycle crossing points. The sign posting of these routes should be different to those routes established in conservation areas. These signs will be the standard blue and white cyclist symbols on signs.

The use of stencilled pavement symbols along sealed shoulders, shared bicycle and parking lanes is recommended to denote the location of a facility and correct positioning along a road or through an intersection. The use of standard pavement signs will assist cyclists understand that a facility has been provided for them as well. There are few examples of special intersection treatments for cyclists in the Shire and it is important that all road users are aware of a new facility treatment.

Off-Road Network (Suburban routes)

These routes are defined as routes that traverse through more formed parkland such as drainage corridor easements e.g. Cleveland Showground and Ross Creek shared path. These routes also run parallel to roads and are more formed in nature. Cyclists and pedestrians can expect to negotiate sign posts, driveways and service covers, slowdown devices and defined crossing points with roads and local access streets. The use of regulatory signage as per MUTCD and AUSTROAD guidelines and standards will be necessary. Route marking signs will be similar to that used for the on-road network as many of the path intersections will join roads and local access streets.

The majority of the off-road network paths are either or proposed shared paths. It is essential that these paths be clearly signed to denote the path is shared to inform pedestrians and cyclists of their appropriate use. The use of pavement markings on off-road cycleways is encouraged to assist in reducing conflict issues between path users and advise path users of appropriate behaviour when sharing the path. The use of centre lines, arrows, pedestrian and bicycle standard symbols is recommended to highlight appropriate usage of the path.

Off-Road Network (Conservation routes)

Within conservation areas it is recommended that route signage for cycling and walking trails will differ to enhance integration with the surrounding environment. An adaption of standard MUTCD and AUSTROAD signs has been recommended that blends better with a bushland and coastal environment. These signs will be green as opposed to standard blue. It is important that distances and route directions in bushland areas are clearly marked to assist the user. It is envisaged that route-marking signs will accompany interpretative signage and behavioural sign on path etiquette.

Figure 16 - Directional Signage for Cycling and Pedestrian Network

Off-Road Network Signage – Parks and Conservation Areas

Route Markers – Finger Board Sign

Totem Sign

Train Courtesy Sign

Off-Road Network Signage – Suburban Routes

Route markers

Bicycle Parking

On-Road Network Signage – Suburban Routes

Route Marker

Route markers on Street Signs

End of trip facilities

Adequate end of trip facilities for cyclists are essential to encourage greater cycling in the community, especially commuting trips to work and shops. Necessary facilities include:

- Secure bicycle parking;
- Showers;
- Lockers; and
- Change facilities.

Showers and change facilities are important at places of work for employees who choose to cycle to work. Locker amenities are often required for commuter cyclists to store clothing and toiletries, which can be difficult to transport by bicycle over longer distances.

Facilities should be provided primarily at:

- Town centres;
- Neighbourhood shopping centres;
- Transit interchanges e.g. ferry, barge and bus terminals and train stations; and
- Community buildings e.g. libraries, council offices, recreation centres.

It is important that major developments incorporate appropriate bicycle parking and other end of trip facilities. This is essential if a modal shift towards cycling and walking is to occur.

Bicycle parking

A major concern of cyclists is the security of their bicycle while it is unattended. Secure bicycle parking facilities at destination points are essential to encourage greater cycling and reduce the incidence of bicycle theft. The current approach to parking facilities within the Shire has been for low security, outdoor on-street parking racks and rails. Bicycle parking facilities are classified according to security levels. There is a range of parking facilities from simple rails through to secure lockers or compounds. The type of parking facility provided is dependent on the level of security required and the number and range of bicycle to be accommodated.

AUSTROADS Part 14 provides guidance on the classification of facilities. The following security classifications are used to define parking facility provisions. Further details can be found in Australian Standard for Bicycle Parking Facilities AS2890.3. and Queensland Transport Bicycle Parking Facilities Cycle Note.

Security Class	Security Level	Description	Requirement
1	High	Individual bicycle locker	Commuter cyclist - long term parking at railways and bus stations.
2	Medium	Locked compound, enclosure or shelter	Regular commuter cyclists- employees, students which require secure longer term parking.
3	Low	Bicycle racks or rails	Shoppers, visitors to community facilities. Effective for short to medium term parking. If surveillance is provided may be suitable for longer term parking.

Guidance on the number and type of parking facilities required for different environments is detailed in Appendix 8.

Location

Bicycle parking facilities should meet the following criteria in order to be attractive to the user:

- Be highly visible to deter theft;
- Be easily accessible;
- Be well lit;
- Be safe for pedestrians; and
- Be of a type that can accommodate a range of bicycles.

Support Facilities for Cyclists and Pedestrians

Support facilities for cyclists and pedestrians should include:

- Shade structures and seating;
- Drinking fountains;
- Toilets; and
- Interpretative signage.

The frequency and location of these facilities will vary depending upon the type of route and the end users. Generally recreational and tourist routes through parks will require more facilities at regular spaced intervals. The provision of seating and shelters should be logically placed at scenic points of interest and at points where walkers may get weary, due to terrain or distance travelled. There are no set guidelines on the spacing of facilities, however the following suggested interval for facilities along paths is recommended:

Support Facility Frequency Guidelines

Facilities	Recreational Shared Paths	Commuter Paths
Seating	500m - 1km	5km
Shelter	2km	5km
Water fountains	1-2km	3-5km

Source: Adapted from Brisbane Bicycle Plan

Support facilities should be appropriately located near a path so as not to create a hazard from passing cyclists and pedestrians. Generally furniture should be set back at least 2m from the path edge. Overhead signs and roof clearances for shelters should be at least at a height of 2.5m due to the clearance requirements of an average cyclist mounted on their bicycle.
Garbage bins should be strategically located to keep an area clean and attractive but should not pose a hazard to path users.

Maintenance

The maintenance of cycling and pedestrian facilities is important, and a maintenance program should be incorporated into ongoing road, path and park projects.

Currently, Council's Operations and Maintenance Department carry out maintenance activities. Maintenance activities are divided between two work areas, Roads and Drainage for on-road issues and Parks Maintenance for off-road facilities in designated reserves. The difficulties with this arrangement are that no integrated maintenance schedule exists between both departments to manage the many maintenance responsibilities such as:

- Regular sweeping of on-road routes and off-road paths;
- Removing debris such as glass, and gravel from road shoulders or at intersections;
- Repairing broken asphalt, potholes and cracks in the road surface;
- Replacing drainage grates;
- Maintaining, installing and replacing signs;
- Removing overgrown vegetation from pavement edges;
- Trimming back grasses adjacent to path edges;
- Filling and grounding down raised path edges and expansion joints;
- Installing and repairing bicycle parking racks; and
- Maintaining pavement markings that have faded.

On-road facilities for cyclists are disjointed and cyclists who use Shire roads rely on regular maintenance of the entire road network surface. Community consultation and visual inspections of existing on-road facilities highlights that more regular sweeping and the removal of debris is required. A further difficulty is that the maintenance of state controlled roads is the responsibility of Main Roads and the periods between sweeping and debris regularly accumulates in the left hand margins of the road.

PART E

MOUNTAIN BIKING

21. MOUNTAIN BIKING

Mountain Biking is a popular outdoor recreation activity that appeals to a wide range of people of all ages. The bushland tracks in the Redlands are conducive for maountain biking and popular areas include Bay View Conservation Park, Karingal Scout Camp, Mt Cotton, Sheldon, North Stradbroke Island, Scribbly Gums Conservation Area and Hilliards Creek. At present no plans exist to manage mountain bike riding in the Shire. Many of the areas that are currently used by Mountain Bikers have high conservation values. Due to the proximity of Redlands to metropolitan Brisbane it is anticipated that mountain bike riding will continue to grow in popularity.

This section of the Redlands Cycling and Pedestrian Strategy details the needs of mountain bikers and provides solutions to ensure that opportunities are provided for sustainable mountain bike activities. It is recognised that Mountain Biking is a distinct activity from road cycling and general cycling on concrete paths and as such needs to be addressed as a separate strategy area. It is anticipated that this section of the strategy has greater relevance to Councils Parks and Conservation Group. However a co-ordinated planning approach between Council, QNPWS and neighbouring local authorities is required to manage mountain bike opportunities.

Current Council ordinances do not prohibit bicycle riding in Council Reserves, however Council can restrict access for a broad range of recreation activities if it is deemed that environmental damage is being caused by the activity.

The main issues with Mountain Biking can be categorised into three categories:

- Environmental
- Social
- Safety

In general the issue of Mountain Biking has not been adequately addressed within the Shire and the activity has not received the same level of scrutiny as motorised activities such as trail bike riding and four wheel driving. The Shire currently has a problem with motorised recreational access in Council owned reserves and significant environmental damage has been caused as a result of illegal access. Current impact of Mountain Biking on the environment appears minimal compared to motorised vehicles accessing Council reserves and social conflict between other track users does not appear to be a major issue.

Needs of Mountain Bikers

It is difficult to define the elements that attract cyclists to a particular area. Research conducted on mountain biker preferences during the development of the BCC Mountain Bike Strategy highlighted that mountain bikers prefer challenging tracks in a bush setting. The exploring of new areas, appreciating nature and exercise and fitness appear to be key motivations for riding. There is a high desire for narrow tracks that form linkages to main vehicle tracks to provide a variety of riding opportunities. The demand for cross-country style of trips is greater than riding in open farmland or within quarry areas. Generally mountain bikers prefer:

- Undulating routes;
- Native bushland settings;
- Smooth, fast open tracks (novice riders);
- Narrow single track with turns and obstacles (expert riders);

- Non encounters with motorised vehicles; and
- Extended ride opportunities 1 to 3 hours duration.

Like all outdoor groups there are specialisations within the activity. Different riders have different abilities and preferences; these groups can be differentiated in terms of their motivations, track preferences and riding style. Mountain bikers will travel reasonable distances to access suitable riding areas and consultation with local cyclists indicates that they regularly access areas outside of the Shire eg. Daisy Hill State Forest, Neville Lawrie Reserve, Don and Christine Burnett Conservation Park, Burbank Conservation Park, Karawatha Forest, Toohey Forest and Nerang State Forest. Public Transport is rarely used to access these sites and riders generally rely on private vehicles.

21.1. ENVIRONMENTAL IMPACTS

There is evidence of growing conflict between landowners as cyclists and some cyclists are engaging in activities, which may not be compatible with environmental values of the reserve. There is minimal data available on the exact impacts of mountain biking but anecdotal evidence suggests that mountain bikers do cause environmental damage on tracks, particularly on steep, loose terrain and during wet conditions where erosion is caused from skidding (over braking). Erosion effects are accentuated in areas of high speed and at corners or switchbacks. A track with reduced vegetation cover, which is on a slope and compacted is more likely to experience excessive erosion from water flow. Other alleged impacts include:

- Dust;
- Spread of weeds and pathogens eg. Phytophthora; and
- Habitat disturbance.

There are a range of track design techniques that can be used to minimise the effects of water flow erosion. These techniques are detailed in The International Mountain Bike Association's *Trail Development and Construction Manual for Mountain Biking*.

The degree of impact is primarily dependent upon the track surface, gradient and rider behaviour. The main variables that determine the degree of impact include:

- Vegetation Cover;
- Soil Type;
- Stone content;
- Drainage;
- Slope and width;
- Line of sight;
- Weather at time of riding;
- Tightness of corners;
- Number of users;
- Riding style; and
- Ability of riders.

Source: Wellington Regional Council Mountain Bike Policy

Certain soil types are more susceptible to erosion and consideration needs to be given to an area's ability to sustain cycling use. Fundamental concerns with mountain bikers is 'trail blazing' i.e. leaving a formed track and creating a new path. Other concerns include short cutting corners and side lining obstacles such as fallen trees that restrict access. Compaction and erosion on tracks appear to be greatest at the early stages of use and then negative impacts from additional use slow considerably. Impact is often accentuated by the resulting water run-off (Cessford, 1995). Detailed information is required on the physical impacts of Mountain Biking at specific

locations in order to develop an informed decision on the degree of the problem as well as develop effective management policies.

21.2. SOCIAL IMPACTS AND SAFETY CONCERNS

Population and residential expansion, combined with strong mountain bike sales in the retail sector have lead to projections of an increase in demand for bushland walking and cycle trails.

It is anticipated that increased use of multi-use trails by both pedestrians and cyclists will lead to increased conflict between walkers and mountain bikers. Conflict is largely due to:

- Walkers fear risk of injury from a collision with a speeding cyclist.
- Walkers feel the Mountain Bikers show little courtesy and can startle them.
- Mountain Bikers cause unmanageable environmental impacts.
- Mountain Biking is not a compatible activity in a bushland area
- Mountain Bikers do not care for the environment and do not have the same values as walkers.
- Walkers are hostile and do not understand Mountain Biking.

Discussions with the local mountain bike club, The Bayside Hillibillies Inc, suggest that current conflict between walkers and cyclists is minimal or non existent. This is largely due to mountain biker's chosing to ride on trails less frequented by walkers or motorised vehicles. The choice of riding times is also influenced by the likelihood of contact with other users who are perceived as incompatible. However this is an issue faced by other local authorities in South East Queensland.

The social impacts of Mountain Biking can be difficult to manage where interactions between walkers and cyclist is high. However, a number of techniques can be adopted to manage and reduce social conflict between users. These include:

- Providing information/education both on and off site.
- Working with clubs on appropriate rider behaviour.
- Improving trail design and track width to manage speed.
- Controlling traffic direction.
- Involving users in track management.
- Designating tracks for certain users.
- Restricting access and closing tracks at certain times.
- Conducting legal enforcement of regulations.

The management of users relies heavily on appropriate education and awareness of the activity and the needs of each user group. It is important to encourage riding styles that are appropriate for the setting and are socially and environmentally responsible.

While potential hazards exist for an accident between cyclists, walkers, horse riders and motorised vehicles on tracks, these risks are low compared to the risk of personal injury to the rider as a result of rider behaviour and interaction with the environment. Accidents in general occur where a rider places themselves in a position where their skill level does not match the challenge.

There is no doubt that real risk of injury does exist whilst Mountain Biking. The management of these risks relies on knowledge of the terrain and potential hazards as well as an appreciation of the activity. Due to the nature of the activity it is unrealistic to expect that every risk can be managed. Risk is a fundamental component of Mountain Biking whether it is real or perceived. It is a main attractor for the participant. However Council as a land manager needs to ensure that it has taken appropriate steps when carrying out work on tracks to avoid creating hazards for Mountain Bikers and walkers.

General hazards on tracks to be aware of include:

- Bridge crossings (sharp protrusions, slippery surfaces, track / bridge alignment differences).
- Steep drop-offs beside tracks.
- Fencing.
- Water bars and water control devices aligned too closely and built too steep at acute angles or the wrong materials.
- Path obstructions eg. bollards, boom gates, signage.
- Revegetation control methods.

Any work carried out on a track or the construction of a new track must assess the risk to potential users, regular maintenance checks of tracks is essential to identify hazards and initiate an appropriate maintenance response.

21.3. MANAGEMENT

Access

It is essential that Redland Shire Council adopt a proactive approach to managing Mountain Bike activity within the Shire. Measures must be developed to reduce conflict between other track users and protect reserve ecology.

The banning of Mountain Bikers from bushland areas is unlikely to work and compliance will be low unless enforcement is carried out by Council. Conversely the unrestricted use of bicycles in all reserve areas is unacceptable. It is recommended that a range of suitable areas be identified as suitable for Mountain Bike activity. It is important that Mountain Bike activities are not restricted to a single site. The promotion of a range of areas to cycle will assist in:

- Reducing impacts on sensitive 'no go' sites;
- Providing a greater range of riding opportunities.

The major decision that Council will have is whether Mountain Bikers should be allowed to access individual areas and tracks. The decision to allow access will need to be made on known social and environmental impacts of the activity. These same decisions will need to be made in relation to walking activity in a park area and should not be restricted to bicycle use. The three broad choices of action include:

- Accepting the impact and allow access;
- Manage or reduce the impacts and allow access;
- Remove the causes of the impacts (eg. mountain bikers) and prevent access.

It may be necessary to introduce appropriate by-laws to restrict Mountain Bike activity where there are serious safety concerns or unmanageable impacts. However, recognition should be given to the cost and practical difficulties in enforcement, before such an option is enacted.

Track Design

An understanding of track design options is essential to manage user impact and improve the enjoyment of the rider on tracks that have been designated for Mountain Bike activity.

Standardisation of tracks will not benefit users as different groups seek different experiences.

Anecdotal evidence suggests that track closures are unlikely to be met with a high rate of compliance if no education is provided on why track closures were warranted. The danger for

managers is that new tracks may appear that go through significant habitat areas and cause environmental damage.

Track Grade

The alignment of tracks on steep gradients poses the biggest management challenge. Tracks with steep gradients (+11 percent) over long distances are highly susceptible to erosion. Long, steep downhill grades should be avoided in any track network.

When cyclists ride down steep grades they may lock their brakes and skid and cause soil and rock displacement. This displacement can form ruts especially in wet or poorly drained soils. The ruts act as channels for the water and as the amount of water increases and the grade increases the ruts increase in size and carry more debris down the track. This can be avoided by aligning tracks across a slope rather than up and down the fall line along with installing water control devices.

Track gradients of between 2 and 6 degrees are desirable along the majority of their length. The inclusion of short steep climbs is acceptable and if used appropriately can be effective in controlling a rider's speed.

If a track must sustain steep grades of 11 - 15 degrees it is better to incorporate them into steep uphill sections rather than downhill sections. If these sections of track are required it is preferable to maintain them than re-route and construct an entire new section of track.

If sections of track exist that are over 15 degrees consideration should be given to closing, revegetating and re-routing the track to a more appropriate location.

The inclusion of turns and bends at regular intervals along the track can reduce sight distances and force a cyclist to apply the breaks more often and slow down to negotiate the turn. It is advisable to not have long straights with sharp hair pin bends. This form of turn increases the incidence of skidding and rutting due to the locking of breaks to make the tight turn. Turns on downhill sections of track need to be wide and sweep gradually.

Trail Surface

The upgrade of tracks to a smooth surface, which provides an easier walking and fire management environment, can have negative effects by accentuating conflict between track users. Smooth clear tracks allow a cyclist to increase their speed considerably. Leaving a track rough can encourage a cyclist to ride more slowly and requires greater attention to negotiate obstacles. The existence of rocks, bumps logs, roots, and gravel is effective in slowing down a rider's speed. These tracks are more attractive for experienced riders and can be used as part of a track network to disperse use.

The use of gravel in track construction can have drawbacks for cyclists and can pose a safety hazard if not layed appropriately with accompanying water control devices. Depending upon the composition of the gravel composite it can be susceptible to washout if it does not bed down well on the existing track surface. If placed to thick and not bedded down the gravel can create a dangerous riding environment and make traction very slippery. This can be accentuated on corners at the bottom of slopes.

Depending upon water flow rates, gravel can accumulate at the bottom and edge of corners and create a soft loose surface, which is difficult to negotiate. It is recommended that Council research and trial various treatments for a range of soil types.

The difficulty for managers is the requirement to meet track construction standards and provide for both walking and cycling activity. It may be necessary to designate rougher tracks as cycling only and have these tracks further from the main areas of pedestrian activity

The creation of a sustainable track system that can accommodate a range of users will require the use of a range of management techniques. The following options are advisable to minimise physical impacts on a track:

- Utilise water control devices eg. dirt or rubber water bars.
- Improve drainage eg. rock swales.
- Harden track surface.
- Use barriers where necessary to reduce speed.
- Bridges across creek and gully crossings.
- Widen tracks.
- Use wide switchbacks on corners.
- Follow contour lines to minimise erosion.
- Provide information to encourage appropriate use along the track.
- Use volunteers to manage impacts on a regular basis.
- Consider closure of illegal tracks.

Source: BCC Mountain Bike Strategy,1996 and Wellington Regional Council Mountain Bike Policy

Volunteer Management

The Shire has an effective volunteer Bushcare Group system operating. These groups are involved in a range of activities, but primarily assist Council staff in clearing weeds and replanting native vegetation, as well as looking after local wildlife. Volunteers are covered under Council's public liability insurance, and have established Volunteer Service Agreements. At present no volunteer track work program exists within the Shire.

It is recommended that Council investigate the establishment of a Volunteer Track Management Program to assist with the development and ongoing maintenance of a track system across the Shire. Local cyclists should be encouraged to volunteer to increase the degree of ownership and responsibility of the maintenance and use of the track.

Planning Framework

It is essential that a planning framework is developed in order to enable consistent decisions to be made on the management of mountain bike activity within Redland Shire reserves. It is necessary that a series of steps be developed in order to identify and make decisions on suitable riding areas and suitable tracks. The following steps are recommended as a process to make decisions on mountain bike activity.

Step 1 Inventory Development

- Develop an inventory of current and future bushland areas.
- Identify areas that are being used or are being considered for Mountain Biking
- Consult with local community groups, cyclists and other recreational groups on current use and suitability of each area.

Step 2 Individual Site Assessment

- Assess each site based on individual setting criteria.
- Determine the carrying capacity of the area to accommodate mountain bike activity.
- Assess rider preferences for setting attributes and experiences against the site
- Determine which type of rider can be accommodated eg. novice, intermediate, expert.

Step 3 Assessment of Impacts

- Assess the potential impacts of mountain bike activity on the site eg. environmental and social
- Determine whether the activity can be accommodated in particular areas or on specific tracks
- Assess safety and risk management issues

- Consider cost implications of impacts

Step 4 Identification of Suitable Sites

- Identify areas that can accommodate mountain bike activity and develop appropriate management framework to manage impacts eg. timing of access or prohibitions on specific tracks
- Determine areas where mountain bike activity should be prohibited or where access is limited.
- Determine actions for specific sites or tracks

Step 5 Ongoing Site Evaluation

- Evaluate impacts and specify management controls and ongoing actions to minimise existing problems
- Provide feedback mechanism and information on any alternations eg. track closures, educational and initiatives.

Source: Adapted from BCC Mountain Bike Strategy,1996

21.4. IDENTIFICATION OF SUITABLE SITES

The identification of suitable sites needs to be supported by a broad policy that recognises and encourages Mountain Biking as a legitimate form of outdoor recreation. The policy must be flexible to consider a range of opportunities and not confine the activity to a single area or form of track such as vehicle access. The provision for Mountain Biking will require regional co-operation, between local authorities, if, a broad range of opportunities are to be provided. Co-operation with other authorities will:

- Reduce overuse on local riding areas.
- Provide a greater mix of riding opportunities.
- Assist in obtaining compliance on no go areas.

21.5. IDENTIFICATION OF SETTING CRITERIA FOR INDIVIDUAL SITES

The selection of suitable and unsuitable sites for Mountain Biking should be based on a set of relevant criteria that reflect the requirements of the activity. The criteria in **Table 18** has been adopted by Brisbane City Council and used to identify sites within the Shire where mountain bike activity:

- Is unsuitable and no Mountain Bike activity should occur;
- Is tolerated but not outwardly promoted and use can be accommodated in a sustainable manner through appropriate management intervention;
- Is suitable and can be a sustainable activity with potential for increases in usage.

Competitive Mountain Biking

Competitive events have been conducted within the Shire on a limited basis.
Organised Mountain Bike events require a different level of management due to the nature of the various competitive disciplines. The major forms of competitive Mountain Biking include:

- Cross Country;
- Downhill;
- Dual;
- Observed Trials;
- Stage Races.

Competitive Mountain Biking has similar impacts to recreational usage however the size and scale of the event and the venue used will determine the severity of the impact on a natural area. The extra impacts that need to be managed include:

- Spectator impact through trampling vegetation, causing erosion on slopes and disturbing fauna
- Track use
- Car parking and auxiliary facilities
- Site closures

Different events will have varied impacts however it is generally accepted that the discipline of downhill is the most difficult to provide for due to the event course requirements and steep terrain. Due to event requirements not all areas will be able to cater for the needs of the various competition disciplines.

Competitive Site Identification

Competitive mountain bike events are currently being run at Karingal Scout Camp at Mount Cotton and on North Stradbroke Island. These events are a mixture of stage races, multi lap cross country and downhill events.

Previous sites include Don and Christine Burnett Conservation Area, which has hosted multi-lap cross country events for school students. All events are self funding and have potential to raise the profile of Redlands as a tourist destination. In particular the 'Straddie MTB Tour' conducted over the Queens Birthday weekend is emerging as a unique event and has potential to provide significant returns to local businesses.

There is potential to further cater for competitive mountain bike events within the Shire. A more detailed investigation and site assessment is required to identify further competition sites. Preliminary investigations have identified the following sites as being more suited to competitive Mountain Biking:

- Karingal Scout Camp and Eastern Escarpment Conservation Area;
- Kindilan and Days Road Conservation Area;
- Ford Road Conservation Area; and
- German Church Road Quarry.

A number of the above sites are privately owned and Council has co-operative arrangements in regard to activities conducted in neighbouring land.

A range of environmental and management issues need to be examined in more detail such as:

- Tenure;
- Access for cars and spectators;
- Risk management in the event of bush fires;
- Other natural disasters;
- Track layout;
- Conditions and issuing of approval;
- Enforcement of local laws;
- Monitoring;
- Responsibility for maintenance; and
- Event type and site capacities.

Event Management Strategies

Once suitable sites are identified a Site Management Plan should be developed to manage ongoing usage. The plan should detail the type and level of events that can be staged as well as strategies on how to manage impacts from the event.

The following strategies should be incorporated into a more detailed management plan for a competitive site.

Pre course inspection
- A detailed event description should be provided to Council prior to conduct of event.
- An inspection of the race site should be carried out with the promoter and Council officers prior to the event to assess the proposed course and event layout.

Insurance
- Adequate Public Liability and participant insurance coverage must be adequately demonstrated to the satisfaction of Council.
- Strategies on informing participants of the inherent risks associated with competitive events and how to conduct themselves at the site must be detailed.

Risk Management Plan
- Clubs and promoters must provide Organisational Guidelines on how they will manage risks associated with the event such as marshals, first aid, communications, course layout practices etc. Appropriate event management controls must be demonstrated.

Wet weather
- Events should not be conducted during or after periods of wet weather. The managing authority should determine the suitability of whether tracks should be used in wet conditions.

Event Threshold
- A maximum number of events per annum at each site should to be fixed. Any increase in this number should be monitored to ensure sustainable of the site. The number of events to be reviewed on an annual basis.

Recreational usage of the Site
- A policy on use outside of set event dates should be developed and monitored. Events tend to attract recreational usage from event participants. This use can potentially accentuate impacts on a site above those of set events.

Monitoring and Maintenance
- Appropriate monitoring regimes of the site in conjunction with the event co-ordinators are required. Baseline data on pre-existing conditions should be established prior to the conduct of events.
- Maintenance schedules and appropriate track rehabilitation techniques to be established between Council and event organisers.

Criteria for identifying Sites Unsuitable for Recreational Mountain Bike Riding in Redland Shire

CRITERIA	COMMENTS
1. Setting and track network	• Setting and track network does not meet the setting requirements and experience requirements of mountain bikers.
2. Vegetation and soils are sensitive to disturbance	• Substantial areas have vegetation protection orders with remnant understorey vegetation. • Soils are unstable and prone to erosion.
3. Wetlands	• Riding on tracks through wetland areas will cause unacceptable levels of turbidity and disturbance of waterbirds.
4. Steep slopes	• Sites which cannot accommodate tracks with slopes less than 120-150 degrees. • Sites that have slopes in excess of 150 for over 50% of the reserve area.
5. Reserve size	• Sites where the reserve size is less than 40ha and is unable to provide adequate track length. • Small reserve size does not preclude an area as a key linkage to adjoining reserves if is to accommodate a single access track.
6. Values	• Existing site values preclude recreational activity.
7. Existing recreation use	• Sites that are experiencing a high level of managed recreation use. • Sites which are likely to experience a high degree of conflict between track users.
8. Fauna	• Fauna exists which may be adversely affected by mountain biking activity.
9. Cultural or historic significance	• Sites which hold significant cultural and historical. • Value.
10. Existing management plans	• Sites that have an existing management plan which excludes mountain biking.

Source: Adapted from BCC Mountain Bike Strategy, 1996

Summary of Site assessments

The site assessment criteria were applied to a range of reserves under council control to determine their suitability for recreational mountain biking activity. Areas selected for assessment included those pieces of land identified as being significant in size to accommodate mountain bike activity e.g. greater than 30ha or where existing mountain bike activity was known to occur. The use of existing compacted gravel or concrete paths through bushland corridors by cyclists was deemed acceptable as these links were viewed as important strategic connections to form a cycling and walking network.

A summary of the assessments is detailed below

Redland Shire Recreational Mountain Bike Site / Track Assessment

Site	Approx. Size	Suitable	Unsuitable	Possible	Comments
Bayview Conservation Park	187 ha	✓			Co-ordination with QPWS required. Reviewed upon development of Management Plan
Bayview Estate		✓			Pending upon Development and Masterplan
Days Road Conservation Area	128 ha	✓			To be reviewed upon development of Management Plan.
Sandy Creek Conservation Area	70ha			✓	Depending upon firebreak assessment. Access may be restricted to fire trail only
Eastern Escarpment Conservation Area	105ha	✓			Use confined to existing formed gravel trails
Karingal Scout Camp				✓	Permission from Scout Association required. Site currently accommodates competitive mountain bike events
Don and Christine Burnett Conservation Area	50ha	✓			Co-ordination with KBCCA (Koala Bushland Co-ordinated Conservation Area) required
Ford Road Conservation Area	140ha	✓			Use confined to existing formed gravel trails
Emu Street Bushland Refuge	54 ha	✓			Use confined to existing formed gravel trails
Pt Halloran		✓			Use confined to existing formed gravel trails
Summit Street Reserve	33ha	✓			Use confined to existing formed gravel trails
Greater Glider Conservation Area (Redland Bay Road)	50ha	✓			Use confined to existing formed gravel trails
Scribbly Gums Conservation Area	83ha	✓			Use confined to existing formed gravel trails
McMillian Road Conservation Area	31ha	✓			Use confined to existing formed gravel trails
Hilliards Creek Conservation Corridor	48ha				Use confined to existing formed gravel trails

PART F

STRATEGY WORKS PROGRAM

22. THE WORKS PROGRAM

This section provides a summary of the recommended program of works to be undertaken as a result of consultations and investigations carried out for this strategy. The works program details a broad range of treatments that have been identified to develop an integrated cycling and walking network across the Shire.

Each individual section of the network will require specific assessment to determine suitability of each treatment and final costings. The design treatments specified may need to be modified for each specific location.

The following engineering treatments have been identified. Reference should be made to RSC Standard Treatment Drawings.

Treatment	Treatment Code	Description
1. Linemarking and Signs	**(L & S)**	This work will include painting; • dedicated bicycle lanes or shared bicycle parking lanes on road shoulders and erecting standard signs to identify the route • marking concrete paths with shared path signage. • marking Bicycle Awareness Zone on road shoulder
2. Construct Concrete Path	**(CP)**	This work involves constructing an off-road shared bicycle/pedestrian path.
3. Reconstruct Concrete Path	**(RCP)**	This work involves widening an existing path to form an off-road shared bicycle/pedestrian path.
4. Shoulder Sealing	**(SS)**	This work will include the widening of an existing road carriageway for particular sections of road. This work should be undertaken as part of road works and should not be considered a cost against bikeways.
5. Trail Construction	**(TC)**	This work involves the construction of compacted gravel trails and associated works such as signage landscaping and drainage. This work will primarily be carried out in bushland parks and reserves.
6. Install Signs	**(S)**	This work involves the installation of signs to denote a bike route, some line painting and occasional concrete work to improve existing signed routes.
7. Install Lighting	**(PL)**	This work involves the installation of path lighting.
8. Intersection Treatment	**(IT)**	This work involves the installation of Bicycle Lanes through signals and roundabouts and includes symbols, linemarking and possible pavement colouring in bicycle holding boxes.
9. Road Construction	**(RC)**	This work will include the installation of bicycle facilities when the road is constructed.

23. PRIORITIES AND COSTS

The prioritisation of works is divided into on and off-road projects. The works program identifies a range of treatment options and provides approximate costings for each project. The sequencing of projects has been guided by;

- The relevance of the route in the cycling and walking network. Priority has been given to the establishment of trunk routes as these will form the basis for the cycling and pedestrian network.
- Demonstrated need for the improvement such as reports of hazardous conditions along a corridor or at a crossing and / or high demand through community consultation processes
- Purpose of the route in regard to linking major trip destinations such as public transport interchanges, education facilities, shopping and commercial centres and recreation facilities
- Consistency and linkage to existing network infrastructure. The provision of "missing links" are given a higher priority.
- Ease of implementation.
- Cost effectiveness. Those projects that provide key network continuity and are easier to implement such as route signage and line-marking are given a higher priority

Implementation of projects is expected to take place over a number of years due to financial, organisational and physical constraints. It is essential that projects are undertaken in a logical progression to ensure network connections are relevant to the user. Priority should not be solely placed on establishing new facilities but the maintenance and upgrade of established infrastructure is essential to provide a safe network of connections.

The proposed projects have been prioritised according to a 15 year implementation program. The following priority classifications are used:

Priority	**Timing**
High - H	Undertake immediately and complete within 5 years.
Medium - M	Undertake within 5 years and complete within 10 years.
Low - L	Undertake within 10 years and complete within 15 years.

Implementation Program

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
On	8	Alex. Hills	Abelia St	Finucane Rd	Bluebell St	0.775	L&S	Bicycle Awareness Zone	RSC	L	1973	$5,000	
On	8	Alex. Hills	Allenby Rd	Finucane Rd	Old Cleveland Rd East	2.01	L&S	Exclusive Bike Lane or Peak Period Bicycle Lane	RSC	M	2311	$14,000	On Road Ranking: 7
Off	8	Alex. Hills	Bailey Rd	Birkdale Rd	Existing Concrete path	0.2	CP	(northern side)	RSC	H	2226	$24,000	2.0m
On	7	Alex. Hills	Capalaba Victoria Point Rd	Old Cleveland Rd	Taylor Rd	7.7	L&S	Exclusive Bicycle Lane	DMR	M	-	-	DMR On Road Ranking: 8
On	8	Alex. Hills	Crotona Rd	Windemere Rd	Eastway Crt	1.7	L&S	Bicycle Awareness Zone “Bike Route”	RSC	L	2316	$10,000	
On	8	Alex. Hills	Crown Rd	William St	Prince of Wales Parade	0.735	L&S	Bicycle Awareness Zone “Bike Route”	RSC	L	2326	$5,000	
On	7	Alex. Hills	Cumberland Dr	Vienna Rd	Cambridge Dr	1.2	S	Bicycle Awareness Zone “Bike Route” Bicycle Awareness Zone 40%	RSC	M	2276	$2,000	
Off	7	Alex. Hills	Finucane Rd	McDonald Rd	Delancey St	1.5	CP / S	(northern side)	RSC	M	522	$225,000	2.5m
On	7	Alex. Hills	Finucane Rd (Cleveland/ Capalaba Rd)	Moreton Bay Rd	Shore St	5.1	L&S	Peak Period Bicycle Lane	DMR	M	-	-	DMR On Road Ranking: 7
On	7	Alex. Hills	Flinders St	McDonald Rd	Flinders St Shared Path	0.5	S	Bicycle Awareness Zone “Bike Route”	RSC	H	2224	$1,000	
On	7	Alex. Hills	Heffernan Rd	Vienna Rd	Sallows St	0.74	L&S	Bicycle Awareness Zone “Bike Route” Bicycle Awareness Zone 50%	RSC	M	2277	$5,000	
Off	7	Alex. Hills	Hilliards Creek Link	McDonald Rd	McMillan Rd	0.42	CP	(drainage corridor)	RSC	M	2251	$63,000	2.5m
Off	7	Alex. Hills	Hilliards Creek Link	Montgomery Dr	McDonald Rd	0.32	CP	(drainage corridor)	RSC	M	2252	$48,000	2.5m
Off	7	Alex. Hills	Hilliards Creek Link	Sturgeon St bridge	Montgomery Dr	1.2	CP	Via Doug Tiller Reserve	RSC	M	2253	$200,000	2.5m
Off	7	Alex. Hills	McDonald Rd	Flinders St	Finucane Rd	0.44	CP	western side, join to existing path at lights	RSC	M	870	$20,000	2.5m
On	7	Alex. Hills	McDonald Rd	Finucane Rd	McMillan Rd	0.5	SS / L&S	(Exclusive Cycle Lane) 70%Bicycle Awareness Zone 30%	RSC	M	2278	$4,000	
On	7	Alex. Hills	McMillan Rd	McDonald Rd	Robins Rd	0.74	S	Bicycle Awareness Zone “Bike Route”	RSC	M	2278	$2,000	
On	8	Alex. Hills	Prince of Wales Pde	Crown Rd	Allenby Rd	0.17	S	Bicycle Awareness Zone “Bike Route”	RSC	L	2326	$1,000	
Off	8	Alex. Hills	Randall Rd	Fullerton Rd	Old Cleveland Rd East		CP	2.0m	RSC	M	405	$46,000	Off Road Ranking: 15
Off	8	Alex. Hills	Randall Rd	Old Cleveland Rd East	Burbank Rd	0.44	CP	(eastern side)	RSC	M	497	$53,000	2.0m
On	7	Alex. Hills	Thirlmere Rd	Windemere Rd	Cumberland Dr	0.4	S	Bicycle Awareness Zone “Bike Route”	RSC	M	2276	$1,000	
On	8	Alex. Hills	William St	Randall Rd	Crown Rd	0.475	SS / S	Bicycle Awareness Zone “Bike Route”	RSC	L	2326	$4,000	
On	7	Alex. Hills	Winchester Rd	Vienna Rd	O'Gorman St	1.2	S	Bicycle Awareness Zone “Bike Route”	RSC	M	2277	$2,000	
On	7	Alex. Hills	Windemere Rd	Redland Bay Rd	Finucane Rd	1.8	L &S	(Exclusive Bicycle Lane 60%) Bicycle Awareness Zone 40%	RSC	H	2225	$13,000	
On	10	Birkdale	Agnes St	Queens Esplanade	Birkdale Rd	1.1	L&S	(Exclusive Bicycle Lane) 30% Bicycle Awareness Zone 70%	RSC	M	2280	$8,000	
On	10	Birkdale	Badgen Rd	Birkdale Rd	Collingwood Rd	1.05	L&S / SS	(Exclusive Bicycle Lane) 40% Bicycle Awareness Zone 60%	RSC	H	2229	$7,000	
Off	8	Birkdale	Bailey Rd	Lauren St	Nottinghill St	0.18	CP	(southern side)	RSC	M	2314	$22,000	2.0m
On	8	Birkdale	Bailey Rd	Old Cleveland Road East	Randall Rd	1.34	L &S	Exclusive Bicycle Lane	RSC	M	2314	$10,000	
On	10	Birkdale	Birdwood Rd	Marlborough Rd	Haig Rd	0.4	S	Bicycle Awareness Zone “Bike Route”	RSC	M	2312	$1,000	
On	10	Birkdale	Birkdale Rd	Quarry Rd	Main Rd	2.5	L&S	Exclusive Bicycle Lane	DMR	M	-	-	
On	10	Birkdale	Birkdale Rd Roundabout	Quarry Rd	Birkdale Rd		IT / L&S	Roundabout to Traffic Lights	DMR	L	-	-	
On	8	Birkdale	Collingwood Rd	Birkdale Rd	Haig Road	1.18	L&S	Bicycle Awareness Zone	RSC	M	2312	$8,000	
On	10	Birkdale	Dorsal Dr	Mary Pleasant Drive	Thomas St	3.69	L&S	(“Bike Route” 50%) Bicycle Awareness Zone 50%	RSC	M	2280	$25,000	
Off	1	Birkdale	E.G.W. Wood Sportsfield	Birkdale Road (existing path leading into Peterson Street	Shared Path at Northern end of Mindarie Crescent	0.3	CP	see EGW Wood master plan	RSC	M	2281	$45,000	2.5m
Off	8	Birkdale	Goodge Crt Park	Bailey Rd	Valantine Rd	0.52	CP		RSC	H	2227	$78,000	2.5m
On	10	Birkdale	Haig Rd	Birdwood Rd	Collingwood Rd	0.2	SS / S	Bicycle Awareness Zone “Bike Route”	RSC	M	2312	$1,000	
Off	10	Birkdale	Lachlan St Park	End Lachlan St	Bridge nr Railway easement	0.22	CP / L&S	3.0m	RSC	H	383	$30,000	Off Road Ranking: 17
On	10	Birkdale	Mary Pleasant Dr	Commodore Dr	Dorsal Dr	1.07	S	Bicycle Awareness Zone “ Bike Route”	RSC	M	2280	$2,000	
Off	10	Birkdale	Soverign Waters	End Bath Street	Soverign Waters Bridge		CP		RSC	H	1960	$60,000	2.5m
On	8	Birkdale	Spoonbill St	Collingwood Rd	Sunnybay Dr	0.15	S	Bicycle Awareness Zone “Bike Route”	RSC	M	2312	$1,000	
On	8	Birkdale	Sunnybay Dr	Spoonbill St	Francesca Ct	0.9	S	Bicycle Awareness Zone “Bike Route”	RSC	M	2312	$2,000	
Off	8	Birkdale	Surman St	Surman St (east)	Surman St (west	0.07	CP	(join path to existing bridge crossing link to playground near Goodge Ct)	RSC	H	2227	$11,000	2.5m

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
On	10	Birkdale	Thomas St	Cnr Bath St	Birkdale Rd	0.67	S	Bicycle Awareness Zone " Bike Route"	RSC	M	2280	$1,000	
Off	8	Birkdale	Valantine Park	Bailey Rd	Lawn Tce	0.9	CP	2.5m	RSC	H	505	$81,000	Off Road Ranking: 6
Off	8	Birkdale	Valantine Park	Mackay Crt path entrance	Finucane Rd	0.09	CP	(Nr Alex Hills Bus Stop)	RSC	H	505	$14,000	2.0m
On	8	Birkdale	Valantine Rd	Bailey Rd	Bluebell St	0.404	L&S	Bicycle Awareness Zone	RSC	L	1973	$4,000	
Off	8	Birkdale	Valantine Rd	Abelia St	Bailey Rd	0.4	CP	(western side)	RSC	M	1973	$48,000	2.0m
On	8	Birkdale	Valantine Rd	Bluebell St	Daveson Rd	0.732	L&S	(Exclusive Cycle Lane) 70% Bicycle Awareness Zone 30%	RSC	M	2313	$5,000	
Off	8	Birkdale	Valantine St	Cnr Daveson Rd	Abelia St	0.75	CP	(northern side)	RSC	M	2315	$90,000	2.0m
On	6	Capalaba	Coolnwynpin Way	Ney Rd	Cristilla Cl	1.13	L&S	Bicycle Awareness Zone "Bike Route"	RSC	H	2223	$8,000	
Off	6	Capalaba	Coolynwynpin Nature Refuge	Tipuana Dr	Korowal St Bikeway	0.29	TC		RSC	M	2308	$36,000	
Off	6	Capalaba	Coolynwynpin Nature Refuge	Mt Cotton Road	Tipuana Dr	1	TC		RSC	M	2308	$60,000	
On	9	Capalaba	Daveson Rd	Birkdale Rd	Lawn Terrace	0.49	L&S	Bicycle Awareness Zone	RSC	L	2313	$4,000	
Off	6	Capalaba	Indigiscapes Reserve	Lyndon Rd (near Honeymyrtle St)	Korowal St	0.5	TC		RSC	M	2309	$30,000	
On	9	Capalaba	Killarney Cr	Mt Cotton Rd (nth)	Mt Cotton Rd (sth)	1.3	L&S	Bicycle Awareness Zone "Bike Route" Bicycle Awareness Zone 50%	RSC	H	2228	$9,000	
Off	6	Capalaba	Korowal St	Indigiscapes Path	Lyndon Rd	0.2	CP		RSC	H	1906	$18,000	2.0m
On	9	Capalaba	Moreton Bay Rd	Finucane Road	Mt Cotton Road	1.2	L&S	Exclusive Bicycle Lane	DMR	H	-	-	MRD On Road Ranking: 5
On	6	Capalaba	Mount Cotton Rd	Degen Rd	Lyndon Rd	3.7	L&S	Exclusive Bicycle lane	DMR	M	-	-	
On	6	Capalaba	Ney Rd	Mount Cotton Rd	Degen Rd	1.341	SS / L&S	Exclusive Bicycle Lane	RSC	M	2310	$10,000	
On	9	Capalaba	Old Cleveland Rd	Tingalpa Crk Bridge	Finucane Rd	1.3	RC / L&S	Exclusive Bicycle Lane	DMR	M	-	-	DMR On Road Ranking: 9
On	9	Capalaba	Old Cleveland Rd East	Finucane Rd	Birkdale Rd	3.4	L&S	Peak Period Bicycle Lane	DMR	M	-	-	DMR On Road Ranking: 10
Off	9	Capalaba	Willard Rd	Finucane Rd	Daveson Rd	0.82	CP	(eastern side)	RSC	M	555	$100,000	2.0m
Off	2	Cleveland	Bay St	Waterloo St	Wellington St	0.6	CP / S	(Southern side)	RSC	M	421	$60,000	2.5m
On	2	Cleveland	Bay St	Bloomfield St	Wellington St	1.1	L&S	Shared Bicycle and Parking Lane	RSC	M	421	$7,000	
On	3	Cleveland	Beach St	Waterloo St	Goleby Esplanade	1.35	L&S	(Exclusive Bicycle Lane) 60% Bicycle Awareness Zone 40%	RSC	L	2284	$9,000	
Off	3	Cleveland	Beach St	Bloomfield St	Goleby Esplanade	0.98	CP / S	(Northern side)	RSC	M	2284	$112,000	2.0m
On	2	Cleveland	Bloomfield St	Queen St	South Street	2.3	L&S	Peak Period Bicycle lane	DMR	H	-	-	MRD On Road Ranking: 2
Off	2	Cleveland	Channel St South	Princess St	Southern end of Channel St South	0.345	CP / S	(western side)	RSC	M	2285	$52,000	2.0m
Off	2	Cleveland	Cross St	Shore St North	Shore St East	0.2	CP / S	(Eastern Side)	RSC	M	2259	$12,000	2.5m
Off	2	Cleveland	Delancey St south	Finucane Rd	Russell St & Wellington St	0.87	CP / S	(northern side)	RSC	M	2262	$131,000	2.0m
On	2	Cleveland	Delancey St south	Finucane Rd	Russell St	0.945	RC / L&S	(Exclusive Bicycle Lane)	RSC	H	1910	$0	On Road Ranking: 2
On	3	Cleveland	Enterprise St	Wellington St	South St	1	L&S	Bicycle Awareness Zone "Bike Route"	RSC	H	2237	$7,000	
Off	2	Cleveland	Fitzroy St	Long St	Henry Ziegenfusz Park	0.24	CP / S	(Eastern Side)	RSC	M	2286	$29,000	2.0m
On	3	Cleveland	Fitzroy St	Beach St	Long St	0.841	SS / L&S	(Exclusive Bicycle Lane) 20% Bicycle Awareness Zone 80%	RSC	M	2299	$6,000	
Off	2	Cleveland	GJ Walter Park	East end of Shore St east	Middle St (via park)	0.6	CP / S		RSC	M	2254	$110,000	3.0m
Off	2	Cleveland	Grandview Pub Carpark	Top carpark	Shore St East	0.1	TC	(sleeper Steps)	RSC	M	2287	$12,000	2.0m
Off	2	Cleveland	Henry Ziegenfusz Park	End Passage St	End Channel St via waterfront	0.5	CP / S	80m conc, 415m boardwalk	RSC	M	2319	$640,000	3.0m
Off	2	Cleveland	Island St	Cul de sac nr Henry Ziegenfusz Park	Eddie Santagiuliana Trail	0.07	CP / S		RSC	M	2266	$11,000	2.5m
On	2	Cleveland	Island St	Queen St	Kassandra St	1.17	SS / L&S	Bicycle Awareness Zone 70%	RSC	M	2288	$9,000	
Off	2	Cleveland	Linear Park	Ross Creek	Museum		CP	Replace AC path	RSC	M	1980	$190,000	2.5m
On	2	Cleveland	Long St	Passage St	Smith St	1.864	L&S	Bicycle Awareness Zone	RSC	M	533	$0	
Off	2	Cleveland	Longland St	Passage St	Channel St	0.22	CP / S	(northern side)	RSC	M	2267	$33,000	2.5m
Off	2	Cleveland	Longland St	Passage St	End Longland St	0.21	CP / S	(northern side)	RSC	M	2267	$31,000	2.5m
Off	2	Cleveland	Masthead Dr	Portsmouth Pl	Seacrest Crt	0.65	CP / L&S		RSC	M	2293	$117,000	3.0m

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
Off	2	Cleveland	Mergowie Dr	Bona Vista Crt	Smith St	0.515	CP	(northern side)	RSC	L	2321	$62,000	2.0m
On	2	Cleveland	Middle St	Passage St	Wynyard St	0.93	L&S / SS	Shared Bicycle and Parking Lane 30% Bicycle Awareness Zone 70%	RSC	H	2218	$10,000	
On	2	Cleveland	Middle St	Emmett Dr	Passage St	0.5	L&S	Bicycle Awareness Zone	RSC	M	2218	$4,000	
Off	2	Cleveland	Middle St	Passage St	Channel St	0.2	CP / S	(northern side)	RSC	M	2289	$24,000	2.0m
Off	2	Cleveland	Nandeebie Park	East end of Russell St east	Oyster Point Park via Nandeebie Park	0.47	CP / S		RSC	M	2257	$90,000	3.0m
Off	2	Cleveland	Oyster Point Park	Cnr Erobin & Princess Sts	End of Phelan St	0.26	CP / S	(Boardwalk required in sections)	RSC	L	2320	$190,000	3.0m
Off	2	Cleveland	Oyster Point Park	Entrance to Oyster Point Park	Loop	0.27	CP / S		RSC	M	2258	$45,000	3.0m
Off	2	Cleveland	Passage St	Cnr Middle St	Russel St	0.365	CP / S	(Eastern side)	RSC	M	493	$55,000	2.0m
Off	2	Cleveland	Passage St	Park at end Passage St	Princess St	0.32	CP / S		RSC	M	2264	$58,000	3.0m
Off	2	Cleveland	Princess St	Erobin St	Passage St	0.21	CP / S		RSC	M	2265	$38,000	3.0m
On	2	Cleveland	Princess St	Passage St	Bloomfield St	1.165	L&S	(Exclusive Cycle Lane) 70% Bicycle Awareness Zone 30%	RSC	M	2288	$9,000	
On	2	Cleveland	Queen St	Waterloo St	Wellington St	0.865	L&S	Bicycle Awareness Zone	RSC	H	2056	$3,000	On Road Ranking: 9
On	2	Cleveland	Queen St	Waterloo St	Wynyard St	0.43	L&S	Shared Bicycle and Parking Lane	RSC	H	2056	$4,000	On Road Ranking: 9
Off	2	Cleveland	Queen St	Fitzroy St	Island St	0.2	CP / S	(northern side)	RSC	M	2261	$24,000	2.0m
Off	2	Cleveland	Raby Bay Park Foreshore	End of existing path at Boat Channel	Loop back to existing path near Raby Bay Boulevard	0.65	CP / L&S	Park Loop	RSC	M	2290	$98,000	2.5-3.0
Off	2	Cleveland	Russell St	Island St	Erobin St	0.69	CP / S	(Northern side)	RSC	M	2268	$104,000	2.5m
Off	2	Cleveland	Shore St East	Wharf St	east end Shore St East	0.48	CP / S	(Northern side)	RSC	M	2260	$73,000	2.5m
On	2	Cleveland	Shore St North	Passage St	Cleveland Pt	2.15	L&S / SS	(Exclusive Bicycle Lane 50%) Bicycle Awareness Zone 50%	RSC	M	2291	$15,000	
Off	2	Cleveland	Shore Street West	Ross Creek	Cleveland Station	0.9	CP / L&S		RSC	M	2269	$165,000	2.5 – 3.0 m
Off	2	Cleveland	Smith St	Beach St	Bay St	0.4	CP / S	(Eastern side)	RSC	M	547	$60,000	2.5m
Off	2	Cleveland	Toondah Harbour	Queen St	Nandeebie Park	0.3	CP / S	(Boardwalk required in sections)	RSC	M	2256	$100,000	3.0m
Off	2	Cleveland	Waterloo St	Russell St Roundabout	Queen St		CP	(join to existing path)	RSC	H	2020	$14,000	2.0 – 2.5
On	3	Cleveland	Wellington St	Sturgeon St	Panorama Dr Intersection	4.8	RC / SS / L&S	(Exclusive Bicycle Lane) 80% Bicycle Awareness Zone 20%	RSC	H	660, 817, 1103, 1105, 1950	$0	On Road Ranking: 3
Off	3	Cleveland	Wellington St	Russell St	South St	2	CP / S	2.5m	RSC	M	2054	$160,000	Off Road Ranking: 5
On	2	Cleveland	Wellington St Roundabout	Russell St	Delancey St		IT / L&S	Roundabout to Traffic Lights	DMR	H	818	$45,000	Blackspot funding
On	2	Cleveland	Wellington St Roundabout	Finucane Rd	Shore St		IT / L&S	Roundabout to Traffic Lights	DMR	H	-	-	Main Roads
Off	2	Cleveland	Wharf St	GJ Walter Park	Queen St	0.4	CP / S	Realign K&C in carpark	RSC	M	2255	$67,000	3.0m
Off	2	Cleveland	Wharf St	Middle St	Shore St East	0.12	CP / S	(Eastern side)	RSC	M	2292	$18,000	2.0m
Off	2	Cleveland	Wynyard St	Shore Street	Middle Street		CP	(join to existing path)	RSC	H	509	$7,000	2.0 – 2.5m
Off	2d	Dunwich	Oxley Pde reserve	Helipad	Polka Pt beach	0.5	TC	(sleeper steps) or ramp	RSC	H	2247	$20,000	
Off	2d	Dunwich	Oxley Pde reserve	Opposite No. 18 Oxley Pde	Beach	0.2	TC	(sleeper steps)	RSC	M	2294	$8,000	
On	5k	Karragarra Is.	Sunset Strip	The Esplanade	Treasure Island Av	0.14	CP		RSC	M	2248	$84,000	2.5m
Off	5k	Karragarra Is.	The Esplanade	New Jetty and Pontoon	Sunset Strip	1.3	S / CP	(or SS)	RSC	H	2248	$300,000	2.5m
Off	5k	Karragarra Is.	The Esplanade	New Jetty and Pontoon	202 Esplanade	0.54	TC	(Boardwalk may be required)	RSC	M	2306	$25,000	
Off	5l	Lamb Is.	Lucas Dr	Ferry / Barge Terminal	Community Hall	1.25	CP	2.0m – 2.5 m	RSC	H	1231	$145,000	Off Road Ranking: 10
Off	5m	Macleay Is.	Kate St	High Central Rd Path & Wharf St	Pats Park	2.59	CP / S		RSC	M	1041	$395,000	2.0m
On	5m	Macleay Is.	Macleay Island Heritage Trail section a	Thomas St	High Central Rd	1.8	S		RSC	H	2220	$4,000	Lonicera Street
On	5m	Macleay Is.	Macleay Island Heritage Trail section a	Jetty / Barge Ramp - Brighton Rd	High Central Rd	0.36	S		RSC	H	2220	$1,000	Saltworks Route
On	5m	Macleay Is.	Macleay Island Heritage Trail section a	Junction Cliff Terrace & High Central Road	Western Rd	0.5	S / RC		RSC	H/L	2220	$1,000	Arboretum Route
On	5m	Macleay Is.	Macleay Island Heritage Trail section a	Cnr High Central Rd / Southsea Tce	Junction Cliff Tce & High Central Rd	0.265	S / RC		RSC	H/L	2220	$1,000	Saltworks Route
On	5m	Macleay Is.	Macleay Island Heritage Trail section a	Cnr Western Rd / Scarborough Rd	Thomas St	1.6	S / RC		RSC	H/M	2220	$3,000	Western Road

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
On	5m	Macleay Is.	Macleay Island Heritage Trail section b	High Central Rd	Charles Tce	0.6	S		RSC	H	2221	$2,000	Hamilton Pde
Off	5m	Macleay Is.	Macleay Island Heritage Trail section b	End Eagle St	Charles Tce	0.75	TC	(Boardwalk required)	RSC	H	2221	$375,000	Perrebinpa Point Wetlands
On	5m	Macleay Is.	Macleay Island Heritage Trail section b	Thomas St	Columbia St & Eagle St	0.6	S		RSC	H	2221	$1,000	Western Road
On	5m	Macleay Is.	Macleay Island Heritage Trail section b	Cnr Alexandra St	Tim Sheas Wetland	0.7	S / RC		RSC	H/M	2221	$2,000	Charles Tce
On	5m	Macleay Is.	Macleay Island Heritage Trail section b	End Alexander St	Charles Tce	0.365	S / RC		RSC	M/L	2221	$1,000	Alexandra Street
On	5m	Macleay Is.	Macleay Island Heritage Trail section c	Wharf St	Benowa St	0.5	S / RC		RSC	H	774	$0	Coast Road
Off	5m	Macleay Is.	Macleay Island Heritage Trail section c	Charles Tce	Sandpiper Pde	0.15	TC	(Boardwalk required)	RSC	H	2222	$75,000	Tim Shea Wetlands
On	5m	Macleay Is.	Macleay Island Heritage Trail section c	Kate St	Cnr Benowa and Kalara St	0.4	S / RC		RSC	H/M	2222	$1,000	Benowa St
On	5m	Macleay Is.	Macleay Island Heritage Trail section c	High Central Rd	End Wharf Street	0.4	S / RC		RSC	H/M	2222	$1,000	Campbell's Wharf Outlook
On	5m	Macleay Is.	Macleay Island Heritage Trail section c	Cnr Piccaninny St / Sandpiper Pde	Wharf St	0.9	S / RC		RSC	H/M	2222	$2,000	Coast Road
On	5m	Macleay Is.	Macleay Island Heritage Trail section c	Kate St	End Kalara St	0.36	S		RSC	M	2222	$1,000	Kalara Street
On	5m	Macleay Is.	Macleay Island Heritage Trail section c	High Central Rd	Piccaninny St	0.3	S / RC		RSC	M	2222	$1,000	Sandpiper Pde
On	5m	Macleay Is.	Macleay Island Heritage Trail section d	Whiting St	Pats Park	1	S		RSC	H	2242	$2,000	Coondooroopa Dr
On	5m	Macleay Is.	Macleay Island Heritage Trail section d	Kate St	Whiting St	0.5	S		RSC	H	2242	$1,000	Kim Cres
On	5m	Macleay Is.	Macleay Island Heritage Trail section d	Orana St	Tingara St	0.5	S		RSC	M	2242	$1,000	Attunga Street
Off	5m	Macleay Is.	Macleay Island Heritage Trail section d	Tingara St	Kim Cres	0.07	TC		RSC	M	2242	$5,000	Kim Crescent Link
On	5m	Macleay Is.	Macleay Island Heritage Trail section d	Kate St	Cnr Attunga St & Tingara St	0.33	S		RSC	M	2242	$1,000	Tingara St
On	5m	Macleay Is.	Macleay Island Heritage Trail section e	Cnr Ilya St & Mawarra St	Kate St	0.3	S		RSC	H	2243	$1,000	Oomool St
On	5m	Macleay Is.	Macleay Island Heritage Trail section e	Beelong St	Mawarra St	0.2	S / RC		RSC	H/M	2243	$1,000	Alkira St
On	5m	Macleay Is.	Macleay Island Heritage Trail section e	Beelong St	Coorong St	1.6	S / RC		RSC	H/M	2243	$3,000	Cows Bay Conservation Area
On	5m	Macleay Is.	Macleay Island Heritage Trail section e	Cnr Coorong St & Beelong St	Ilya St	0.45	S / RC		RSC	H/M	2243	$1,000	Mawarra St
On	5m	Macleay Is.	Macleay Island Heritage Trail section f	Koonawarra Pde	Kate St	0.4	S / RC		RSC	H/M	2244	$1,000	Baracoota St
On	5m	Macleay Is.	Macleay Island Heritage Trail section f	Kate St	Koonwarra Pde	0.3	S / RC		RSC	H/M	2244	$1,000	Kooberry St
On	5m	Macleay Is.	Macleay Island Heritage Trail section f	Kooberry St	Baracoota St	0.2	S / RC		RSC	H/M	2244	$1,000	Koonwarra Pde
On	5m	Macleay Is.	Macleay Island Heritage Trail section g	Eastern Rd	Waterside Dr	0.6	S / RC		RSC	H/M	2245	$1,000	Gordon Rd
On	5m	Macleay Is.	Macleay Island Heritage Trail section g	High Central Rd	Cnr Mel St & High Central Rd	0.65	S / RC		RSC	H/M	2245	$2,000	Pecan St
On	5m	Macleay Is.	Macleay Island Heritage Trail section g	Curlew St	Eastern Rd	0.9	S / RC		RSC	H/M	2245	$2,000	Timothy Street
On	5m	Macleay Is.	Macleay Island Heritage Trail section g	Waterside Dr	End Cotton Tree Av	0.2	S / RC		RSC	M	2245	$1,000	Corroboree Pl
On	5m	Macleay Is.	Macleay Island Heritage Trail section h	Calm Waters Cres	Pine Gate Pl	0.4	S / RC		RSC	H/L	2249	$1,000	Blue Bay Cres
On	5m	Macleay Is.	Macleay Island Heritage Trail section h	Keith St	Blue Vista St	1.74	S / RC		RSC	H/L	2249	$4,000	Causeway Dr
On	5m	Macleay Is.	Macleay Island Heritage Trail section i	Cnr Waterside Dr & Keith St	Scotts Rd	0.39	S		RSC	H	2250	$2,000	Francis Rd
On	5m	Macleay Is.	Macleay Island Heritage Trail section i	Cowes St	Brighton Rd	0.25	S		RSC	H	2250	$1,000	Scarborough Tce
On	5m	Macleay Is.	Macleay Island Heritage Trail section i	Cnr Alawa St	Hastings Tce	0.6	S / RC		RSC	H/L	2250	$1,000	Camena St
On	5m	Macleay Is.	Macleay Island Heritage Trail section i	High Central Rd	Alawa St	0.78	S / RC		RSC	H/L	2250	$2,000	Scotts Rd
On	5m	Macleay Is.	Macleay Island Heritage Trail section i	Cnr Hastings Tce	Scarborough Tce	0.2	S / RC		RSC	H/M	2250	$1,000	Cowes St
Off	6	Mt Cotton	Sanctuary Dr	End Sanctuary Dr	Sunrise Crt	0.32	TC		RSC	M	2323	$20,000	
Off	6	Mt Cotton	Sandy Creek Trail Link	Warren St	Internal fire break	N/A	TC		RSC	L	-	$0	
On/Off	2d	NSI	Dunwich to Blue Lake National Park	Brown Lake turnoff	Blue Lake National Park(Karboora walking Track)	4.4	RC / SS / S		RSC / CRL	L	2331	$440,000	
On	2d	NSI	Dunwich to Brown Lake Stage 2	Mallon Street	Mitchell Cres	0.5	CP	Along southern side of Mallon St	RSC / CRL	M	1230	$74,000	2.0m
On	2d	NSI	Dunwich to Brown Lake Stage 3	Mitchell Cres	Culdesac at Rainbow Cres	0.5	RC / CP	Follow road reserve to end of culdesac	RSC / CRL	M	2142	$185,000	2.0m
On	2d	NSI	Dunwich to Brown Lake Stage 4	Culdesac at Rainbow Cres	Illawong St	1.2	RC / CP	Utilise powerline easement parallel to roadway, apply roadbase to sand areas, track suitable for Mountain Bikes only	RSC / CRL	M	2143	$150,000	

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
On	2d	NSI	Dunwich to Brown Lake Stage 5	Illawong St	Brown Lake Conservation Area	1.5	TC	Utilise powerline easement parallel to roadway, apply roadbase to sand areas, track suitable for Mountain Bikes only	RSC / CRL	M	2144	$150,000	
On	2d	NSI	Dunwich to Fishermans Road causeway	Blue Lake National Park (Karboora walking Track)	Fisherman's rd Causeway	3.5	RC / SS / S		RSC	L	2332	$350,000	
On	2d	NSI	East Coast Road	Mitchell Cres (Dunwich)	Booran Street	21	SS / L&S	Contra Flow Bicycle Lane	DMR	H	-	-	MRD On Road Ranking: 3
On	2a	NSI	Fishermans Rd (Eastbound)	East Coast Rd	Main Beach	4.3	S		RSC	L	2330	$9,000	
On	2a	NSI	Fishermans Rd (southbound)	Main Beach turnoff	Fisherman's Rd causeway	7.1	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes	RSC	L	2330	$700,000	
On	2a	NSI	Peat Mine Road Stage 1	East Coast Rd turnoff	Amity	0.7	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes only	RSC	M	2158	$100,000	
On	2a	NSI	Peat Mine Road Stage 2	East Coast Rd turnoff	Amity	0.7	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes only	RSC	M	2159	$100,000	
On	2a	NSI	Peat Mine Road Stage 3	East Coast Rd turnoff	Amity	0.7	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes only	RSC	M	2160	$100,000	
On	2a	NSI	Peat Mine Road Stage 4	East Coast Rd turnoff	Amity	0.7	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes only	RSC	M	2161	$100,000	
On	2a	NSI	Peat Mine Road Stage 5	East Coast Rd turnoff	Amity	0.7	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes only	RSC	M	2162	$100,000	
On	2a	NSI	Peat Mine Road Stage 6	East Coast Rd turnoff	Amity	0.7	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes only	RSC	M	2163	$100,000	
On	2a	NSI	Peat Mine Road Stage 7	East Coast Rd turnoff	Amity	0.7	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes only	RSC	M	2164	$100,000	
On	2a	NSI	Point Lookout to Amity	Claytons Rd	Beehive Rd	5.4	RC / S	apply road base to sand areas, install drainage culverts Track suitable for Mountain Bikes only	RSC	H	2172	$10,000	
On	2a	NSI	Point Lookout to Amity	Cnr Claytons Rd / Beehive Rd	Amity	2.4	SS / S		RSC	H	291	$0	
On	1	Ormiston	Bainbridge St West	Wellington St	Francis St	0.957	S	Bicycle Awareness Zone " Bike Route"	RSC	M	1954	$0	
On	1	Ormiston	Gordon St	Cnr Wellington Street & Sturgeon Street	Shore Street	1.5	L&S	Peak Period Exclusive Bicycle Lane 90%Bicycle Awareness Zone 10%	RSC	M	2282	$11,000	
On	1	Ormiston	Nautilus Dr	Bainbridge Street East	Cleveland Railway Station	0.67	S	Bicycle Awareness Zone "Bike Route"	RSC	H	2217	$2,000	
Off	1	Ormiston	Northern Arterial Rd	Sturgeon St	Shore St	1.3	CP / S		RSC	L	552, 553	$195,000	2.5m
Off	1	Ormiston	Northern Hilliards Creek Link	Sturgeon St bridge	Dundas St West	0.36	CP / L & S		RSC	M	2283	$75,000	3.0m
On	1	Ormiston	Sleath St	Gordon St	Cowley St	0.75	S	Bicycle Awareness Zone "Bike Route"	RSC	M	2282	$2,000	
Off	1	Ormiston	Sturgeon St	Cnr Starkey St	Northern Arterial Rd	1.2	CP / L&S	2.5m-3.0m	RSC	H	2230	$216,000	Off Road Ranking: 9
On	1	Ormiston	Wellington St	Sturgeon St	McCartney St	1.76	L&S	Exclusive Bicycle Lane	RSC	M	2282	$13,000	
Off	2p	Pt Lookout	Adder Rock	Adder Rock camping ground	Southern end of Home beach to Adder Rock bathing area	0.5	TC	(sleeper steps – 450m) (Boardwalk – 50m)	RSC	H	2232	$43,000	
Off	2p	Pt Lookout	Bambara St	Bambara St	Samarinda walk	0.3	TC	(sleeper steps)	RSC	H	2233	$11,000	
Off	2p	Pt Lookout	Bambara St easement	East Coast Rd	Timbin Rd	0.6	TC	(sleeper steps)	RSC	M	2295	$24,000	
Off	2p	Pt Lookout	Billa St	Billa St (nth end)	East Coast Rd	0.2	TC / S	(sleeper steps)	RSC	M	2296	$8,000	
Off	2p	Pt Lookout	Cylinder Beach	Cnr East Coast Rd & Booran St	Cylinder Beach Rangers Hut	0.125	TC / S	(sleeper steps)	RSC	M	2297	$5,000	
Off	2p	Pt Lookout	East Coast Rd	Claytons Rd	Cylinder Beach turnoff Mooloomba Rd	2.5	CP		RSC	L	2322	$300,000	Widen existing CP from 1.2m to 2.5m
Off	2p	Pt Lookout	Frenchmans Walk	Frenchmans stairs	Sand Blow	0.6	TC	(sleeper steps)	RSC	L	2333	$36,000	
Off	2p	Pt Lookout	Headlands Park	Headlands Park	North Gorge	0.15	TC	(sleeper steps	RSC	H	2234	$6,000	
Off	2p	Pt Lookout	Home Beach	Stradbroke Is Pub	Home Beach	0.2	TC	(sleeper steps)	RSC	H	2232	$7,000	
Off	2p	Pt Lookout	Karboora Dr	Park	Link from Karboora Dr through park to Yarrong Rd	0.1	CP		RSC	M	2049	$20,000	2.0m

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
Off	2p	Pt Lookout	Quarry to Deadmans	Quarry at end of Cutter St	Deadmans Beach	0.15	TC	(sleeper steps)	RSC	H	2246	$7,000	
Off	2p	Pt Lookout	Samarinda Dr	Waller Ct	Cnr Bimba St & Samarinda Dr	0.3	TC / S	(sleeper steps)	RSC	H	2235	$11,000	
Off	2p	Pt Lookout	Samarinda Dr	Bimba St	Kennedy Dr	0.75	TC / S	(sleeper steps)	RSC	H	2235	$30,000	
Off	2p	Pt Lookout	Tramican St	No. 72 Tramican St	Ambulance Station	0.3	TC / S	(sleeper steps)	RSC	L	2334	$18,000	
Off	2p	Pt Lookout	Whale watch Towers	Whale watch Tower Path	Quarry	0.5	TC	(sleeper steps)	RSC	H	2236	$20,000	
Off	2p	Pt Lookout	Whale watch walk	Timbin Rd	Whale watch walk	0.15	TC	(sleeper steps)	RSC	H	2236	$6,000	
Off	2p	Pt Lookout	Whale Watch Walk	Existing Whale watch Trail	Sand Blow	0.45	TC	(sleeper steps)	RSC	M	2298	$16,000	
On	5	Redland Bay	Anita Street	Cleveland Redland Bay Rd	Fairway Drive	0.34	S	Bicycle Awareness Zone “Bike Route”	RSC	H	2239	$1,000	
On	5	Redland Bay	Banana St	Meissner Rd	Weinam St	0.36	L&S	Bicycle Awareness Zone	RSC	M	2305	$3,000	
On	5	Redland Bay	Beenleigh Redland Bay Rd (Shire Boundary)	German Church Rd	Longland Rd	8.3	S	Bike Route	DMR	M	-	-	
On	5	Redland Bay	Broadwater Ter	North St	Esplanade	0.6	S	Bicycle Awareness Zone “Bike Route”	RSC	H	2239	$1,000	
On	5	Redland Bay	Broadwater Ter	Main St/Boundary St	Cnr Meissner Rd / Moores Rd	1.575	SS / L&S	(Exclusive Bicycle Lane 50%) Bicycle Awareness Zone 50%	RSC	M	2305	$11,000	
Off	5	Redland Bay	Charlie Buckler Memorial Sportground	Terrier Crt	Carolyn Place footbridge		CP	2.5m	RSC	M	2044	$87,000	Off Road Ranking: 8
Off	5	Redland Bay	Charlie Buckler Memorial Sportground	Carolyn Place footbridge	Boundary Rd		CP		RSC	M	2044	$0	2.5m
On	5	Redland Bay	Collins St	School of Arts Rd	Torquay Rd	0.89	SS / S		RSC	M	1821	$2,000	
Off	5	Redland Bay	Fairway Dr	Buggy Pl	Anita St	0.39	CP	2m	RSC	L	2215	$47,000	
On	5	Redland Bay	German Church Rd	Gordon Rd	Cleveland Redland Bay Rd	0.9	SS / S	Bicycle Awareness Zone “Bike Route”	RSC	M	1213	$2,000	
On	5	Redland Bay	Gordon Rd	Main St	Moores Rd	0.81	L&S / SS / S	Exclusive Bicycle Lane 60% Bicycle Awareness Zone 40%	RSC	H	1223	-	Redland Bay Arterial Roads Upgrading
On	5	Redland Bay	Gordon Rd	Cleveland Redland Bay Rd	Main St	1.14	L&S / SS	(Exclusive Bicycle Lane 50%) Bicycle Awareness Zone 50%	RSC	M	1220	-	Redland Bay Arterial Roads Upgrading
Off	5	Redland Bay	Jump St	Continuation of Shared Path along Cleveland Redland Bay Rd	Marjorie Buckler Ave via Jump St and Charlie Buckler Park	0.5	CP	(join to existing path)	RSC	H	2219	$75,000	2.0-2.5m
On	5	Redland Bay	Main St	Boundary St	Gordon Rd	1.277	L&S	(Exclusive Bicycle Lane) 40% Bicycle Awareness Zone 60%	RSC	H	2239	$9,000	
On	5	Redland Bay	Main St	North St	Boundary Rd	0.645	L&S	Bicycle Awareness Zone	RSC	M	2305	$5,000	
Off	5	Redland Bay	Meissner St	Weinam Creek marina	Moores Rd via Government Rd	0.43	CP / S	(Boardwalk required in sections)	RSC	M	2275	$90,000	3.0m
On	5	Redland Bay	Meissner St	Moores Rd	Banana St	0.48	SS / L&S	Exclusive Bicycle Lane	RSC	M	2305	$4,000	
Off	5	Redland Bay	North St	Pinelands Cct park	Main St	0.34	CP	3m	RSC	H	2122	$70,000	
Off	5	Redland Bay	North Street	Main St	Broadwater Terrace		CP	2.5m	RSC	H	2008	$108,000	Off Road Ranking: 14
Off	5	Redland Bay	Orchard Beach Foreshore	Cnr The Boulevard & Bartlett Tce	Moores Rd	0.275	CP / L & S		RSC	H	2240	$50,000	3.0m
On	5	Redland Bay	Peel Street	Main Street	Broadwater Terrace	0.7	S	Bicycle Awareness Zone “Bike Route”	RSC	L	2305	$2,000	
On	5	Redland Bay	Penrose Av	Anita Street	Terrier Crt	0.3	S	Bicycle Awareness Zone “Bike Route”	RSC	M	2304	$1,000	
On	5	Redland Bay	Queen St	Gordon Rd	School of Arts Rd	0.7	SS / S	Bicycle Awareness Zone “Bike Route”	RSC	H	1218	-	Redland Bay Arterial Roads Upgrading
Off	5	Redland Bay	Redland Bay Foreshore	North Street	Boundary St	0.75	CP / L&S		RSC	H		$0	
Off	5	Redland Bay	Redland Bay Foreshore	End Boundary St	End Peel St & The Esplanade	0.7	CP / S		RSC	H	2241	$126,000	3.0m
On	5	Redland Bay	School of Arts Rd	German Church Rd	Collins St	2	SS / S	Bicycle Awareness Zone “Bike Route”	RSC	H	1217	-	Redland Bay Arterial Roads Upgrading
On	5	Redland Bay	Serpentine Creek Rd	Torquay Rd	Cleveland Redland Bay Rd	1	SS / S	Bicycle Awareness Zone “Bike Route”	RSC	M	1823	-	Redland Bay Arterial Roads Upgrading
On	5	Redland Bay	Terrier Crt	End Penrose Crt	Entrance to Charlie Buckler Sportsground	0.9	S	Bicycle Awareness Zone “Bike Route”	RSC	M	2304	$1,000	
Off	5	Redland Bay	The Esplanade	Peel St	Weinam Creek marina	0.75	CP / S		RSC	M	2274	$135,000	3.0m
Off	5	Redland Bay	Torquay Rd	McWilliam Rd	End Torquay Rd	0.25	CP / S		RSC	M	2272	$45,000	3.0m
On	5r	Russell Is.	Centre Rd	Minjerribah Rd	Glendale Rd	4	SS / S		RSC	M	2307	$8,000	
On	5r	Russell Is.	Channel St	Lau St	High St	1.02	S		RSC	L	2337	$2,000	
On	5r	Russell Is.	Crescent Dr	Glendale Rd	The Boulevarde		SS / S		RSC	L	2338	$2,000	

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
On	5r	Russell Is.	Glendale Rd	Centre Rd	Crescent Dr	0.75	SS / S		RSC	L	2338	$2,000	
Off	5r	Russell Is.	High Central Rd	Ferry / Barge Terminal	Jackson Rd	1.58	CP / S	2.5m	RSC	H	1869	$70,000	Off Road Ranking: 19 (Fern Tce to Jackson Rd)
On	5r	Russell Is.	High St	Borrows St	Minjerriba Rd	1.4	SS / S		RSC	M	2307	$3,000	
On	5r	Russell Is.	Jackson Rd	High St	Lau Rd	1.02	SS / S		RSC	L	2337	$2,000	
On	5r	Russell Is.	Lau St	Jackson Rd	Channel St	0.23	S / RC		RSC	L	2337	$1,000	
On	5r	Russell Is.	Minjerribah Rd	High St	Centre Rd	0.56	SS / S		RSC	M	2307	$1,000	
On	6	Sheldon	Avalon Rd	Mt Cotton Rd	Ford Rd	5.85	SS / S	(Bike Route)	RSC	M	2324	$12,000	
On	6	Sheldon	Mount Cotton Rd	Lyndon Rd	Beenleigh Redland Bay Rd	9	S	Bike Route	DMR	L	-	-	
On	6	Sheldon	Mt Cotton / Broadwater Rd (Shire Border)	Taylor Rd, Duncan Rd	Mt Cotton Rd	4.3	S	Bike Route	DMR	L	-	-	
Off	6	Sheldon	Taylor Rd	Duncan Rd	Sheldon College	0.65	CP		RSC	M	2325	$78,000	2.0m
On	10	Thorneside	Mooroondu Rd	John St	Thorne Rd	1.4	L&S	Bicycle Awareness Zone	RSC	L	2317	$11,000	
On	10	Thorneside	Quarry Rd / Rickertts Rd	Tinglalpa Ck Bridge	Birkdale Rd roundabout	2.5	SS / L & S		RSC /BCC	H	161, 647	$0	On Road Ranking: 4 Off Road Ranking: 4
Off	10	Thorneside	Queens Esplanade	Beth Boyd Park	End Commodore Dr	1.76	RCP / L&S		RSC	H	2098	$115,000	2.5m – 3.0m
On	10	Thorneside	Queens Esplanade	John St	Mary Pleasant Dr	1.34	SS / S	Bicycle Awareness Zone " Bike Route"	RSC	M	2280	$2,000	
On	10	Thorneside	Queens Esplanade (loop)	Helen St	Cnr John St & Mooroondu Rd	1.26	L&S	Bicycle Awareness Zone " Bike Route"	RSC	L	2317	$10,000	
Off	10	Thorneside	Rickertts Rd	Tingalpa Crk Bridge	Thorneside Rd	0.84	CP	2.5-3.0	RSC	H	986	$200,000	Off Road Ranking: 3
On	10	Thorneside	Thorneside Rd	Quarry Rd	Helen St	1.19	L&S	Bicycle Awareness Zone	RSC	M	2279	$9,000	
On	4	Thornlands	Beveridge Rd	Cleveland Redland Bay Rd	End Beveridge Rd	1.29	S	Bicycle Awareness Zone "Bike Route"	RSC	L	2193	$0	
On	3	Thornlands	Boundary Rd	Panorama Dr	Cleveland Redland Bay Road	3.3	L&S	Exclusive Bicycle Lane	DMR	L	-	-	
Off	3	Thornlands	Boundary Rd	Cnr Dinwoodie Rd	Junction Cleveland Redland Bay Rd & Boundary Rd	1.185	CP		RSC	M	2300	$143,000	2.0m
On	3	Thornlands	Boundary Rd (Redland Bay Rd)	Panorama Dr	Taylor Rd	1.5	L&S	Shared Bicycle Car Parking Lane 50% Exclusive Bicycle lane 50%	DMR	L	-	-	
On	3	Thornlands	Cleveland Redland Bay Rd	South St	Boundary Rd	4	L&S	Exclusive Bicycle Lane	DMR	H	-	-	MRD On Road Ranking: 4
On	3	Thornlands	Cleveland Redland Bay Rd Roundabout	Boundary Rd	Colburn Ave		IT / L&S		DMR	H	-	-	Main Roads
Off	3	Thornlands	Cleveland Redland Bay Road	Pinklands	Beveridge Rd		CP	2m wide	DMR	H	1090	$81,000	Off Road Ranking: 2
Off	3	Thornlands	Crystal Waters Park	Lake View Dr	Vintage Dr	2.05	CP / L&S	2.5-3.0	RSC	M	2270	$308,000	Off Road Ranking: 11
Off	3	Thornlands	Dinwoodie Rd	Lake Sherrin Retirement Village	Cleveland Redland Bay Rd	1.03	CP		RSC	L	2327	$125,000	2.0m
On	3	Thornlands	Moselle Dr	Ziegenfusz Rd	Panorama Dr	0.9	S	Bicycle Awareness Zone "Bike Route"	RSC	M	2301	$2,000	
Off	3	Thornlands	Panorama Dr	Cnr Ziegenfusz Rd	Wellington St	0.75	CP	(eastern side)	RSC	L	2328	$90,000	2.0m
Off	3	Thornlands	Panorama Dr	Ziegenfusz Rd	Boundary Road	0.53	CP	(eastern side)	RSC	L	2328	$64,000	2.0m
On	3	Thornlands	Panorama Dr	Wellington St	Bloomfield St		L&S	Exclusive Bike Lane or Peak Period Bicycle Lane	RSC	M	2301	$7,000	
On	3	Thornlands	Panorama Dr	Wellington St Intersection	Boundary Rd	1.4	RC/ SS/ L&S	(Exclusive Bicycle Lane)	RSC	M	2301	$10,000	
On	3	Thornlands	Thornlands Rd	Cleveland Redland Bay Rd	Moreton St	1.29	L&S	Bicycle Awareness Zone 50% " Bike Route" 50%	RSC	H	2238	$9,000	
Off	3	Thornlands	Trundle Rd	Korsman Dr	Boundary Rd	0.13	CP		RSC	L	2335	$16,000	2.0m
Off	3	Thornlands	Wellington St	Cnr Panorama Dr	South St	0.75	CP	(eastern side)	RSC	L	2328	$90,000	2.0m
Off	3	Thornlands	William Stewart Park	Vintage Dr	Cleveland Redland Bay Rd	0.3	CP / L&S		RSC	M	2302	$45,000	2.5-3.0
Off	3	Thornlands	Woodlands Dr	Boundary Rd	Nazarene Theological College	0.4	CP		RSC	L	2336	$48,000	2.0m
Off	3	Thornlands	Ziegenfusz Rd	Cnr Moselle Dr	Panorama Dr	0.4	CP	(northern side)	RSC	L	2329	$60,000	2.5m
Off	3	Thornlands	Ziegenfusz Rd	Cleveland Redland Bay Rd	Carmel College	0.3	CP	(southern side)	RSC	M	2271	$54,000	3.0m
On	3	Thornlands	Ziegenfusz Rd	Panorama Dr	Cleveland Redland Bay Rd	1.735	L&S / SS	(Exclusive Cycle Lane) 70% Bicycle Awareness Zone 30%	RSC	M	2271	$12,000	
Off	4	Victoria Pt	Albert St	Cnr Egret Dr & Albert St	Pt Halloran Rd	0.11	CP	2m	RSC	M	2198	$14,000	
Off	4	Victoria Pt	Albert St	Albert St & Wilson Esplanade	Egret Drive	0.2	CP	2m	RSC	M	2198	$24,000	
Off	4	Victoria Pt	Aspect Dr nature link	Concrete Path nr No 4 Cameron Crt	Concrete Path - Fodder Forest link	0.3	CP	3m	RSC	H	2189	$54,000	

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
On	4	Victoria Pt	Benfer Rd	Cleveland Redland Bay Rd	Colburn Av	2	L&S	Bicycle Awareness Zone	RSC	H	2057	$10,000	On Road Ranking: 10
Off	4	Victoria Pt	Benfer Rd	Junction Cleveland Redland Bay Rd	Schmidt St	0.82	CP	2m	RSC	M	2206	$99,000	
Off	4	Victoria Pt	Beveridge Rd Linkage to Cameron Crt Park	Bridge (xv)	Concrete Path nr No 4 Cameron Crt)	0.15	CP & BW	3m		H	396	$125,000	
Off	4	Victoria Pt	Beveridge Rd Linkage to Cameron Crt Park	End Beveridge Rd	Bridge (xv)	0.25	CP	3m	RSC	M	2193	$450,000	
Off	4	Victoria Pt	Beveridge Rd Linkage to Cameron Crt Park	Bridge	Bridge	0.35	CP	3m	RSC	M	2194	$113,000	Bridge
Off	4	Victoria Pt	Clay Gully Link	End Strachan St	Benfer Rd via St Andrews Ct	0.44	CP	2m	RSC	M	2203	$82,000	Add. 160m - 3m wide
Off	4	Victoria Pt	Cleveland Redland Bay Rd	Continuation of path along Cleveland Redland Bay Road			CP	(north bound) nr Victoria Point State High	RSC	H	2150	$26,000	Off Road Ranking: 12
Off	4	Victoria Pt	Cleveland Redland Bay Rd	Victoria Point SHS	seal existing gravel path 'missing section'	0.21	CP	2m	DMR	H	2150	$26,000	Main Roads
Off	4	Victoria Pt	Cleveland Redland Bay Rd 'School Link'	Colburn Av	Beveridge Rd - Faith Lutheran school	0.96	CP	3m		H	2059	$324,000	Bridge across creeks
On	4	Victoria Pt	Colburn Ave	Cleveland Redland Bay Rd	Benfer Road	2.3	SS / L&S	Exclusive Bicycle Lane	DMR	H	-	-	MRD On Road Ranking: 6
Off	4	Victoria Pt	Egret Dr	Albert St	Pt Halloran Rd	0.61	CP	2m	RSC	M	2199	$74,000	
Off	4	Victoria Pt	Fir St Frontage Path	(Fir St) nr 49 Schmidt St	End Strachan Rd	0.51	CP	3m	RSC	M	2202	$134,000	
Off	4	Victoria Pt	Glen Road Wetlands Link	End Thompson Espl Nr Ret. Village	Glen Rd	0.56	CP & BW	3m	RSC	M	441	$620,000	
Off	4	Victoria Pt	Illidge Rd / School Rd	Orana St	end of School Rd (north of Regency Dr)	0.82	CP & BW	2.5m	RSC	M	2195	$150,000	
Off	4	Victoria Pt	Intrepid Dr	Bunker Rd	Creekside Circuit East via Appollo Ct	0.96	CP	2-3m	RSC	L	2212	$207,000	Add. 180m - 3m wide
Off	4	Victoria Pt	Intrepid Drive Bushland Refuge	Creekside Cct	Luke St via Epraprah Ck	0.27	CP & BW	3m	RSC	L	2213	$293,000	
Off	4	Victoria Pt	Lakefield Dr	Cnr Pt Halloran Rd	Cnr Orana St & Lakefield Dr	0.5	CP	2m	RSC	H	2187	$60,000	
Off	4	Victoria Pt	Lambert Crt Link	Aspect Drive Nature Link Path	Lambert Crt	0.13	CP	2.5m	RSC	M	2207	$20,000	
Off	4	Victoria Pt	Les Moore Park Link	Wilson Esplanade Foreshore Path	Albert St	0.23	CP	2.5m	RSC	H	2197	$35,000	
On	4	Victoria Pt	Link Rd	Colburn Avenue	Bangalow Rd	0.795	L&S	Bicycle Awareness Zone	RSC	M	2273	$6,000	
Off	4	Victoria Pt	Magnolia Pde	Sycamore Pde	Waratah Ave	0.51	CP	2m	RSC	M	486	$62,000	
Off	4	Victoria Pt	Magnolia Pde	Cleveland Redland Bay Rd	Driftwood St	0.17	CP	2m	RSC	M	2205	$21,000	
Off	4	Victoria Pt	Matthew St	Glen Rd	Robin Pde	0.07	CP	2.5m	RSC	M	2200	$11,000	
Off	4	Victoria Pt	Orana Esplanade	Top of Pt Halloran Rd	Pt Halloran Conservation Area at Orana St	0.88	CP	2.5m	RSC	H	2186	$1,320,000	Through tidal area
Off	4	Victoria Pt	Orana Esplanade (Foreshore Path)	End Pt Halloran Rd	Existing CP	0.8	CP	2.5m	RSC	H	2188	$102,000	Follow ex. Gravel track
Off	4	Victoria Pt	Orana St	Pt Halloran Rd	Orana Esplanade	0.25	CP	2m	RSC	M	2196	$30,000	
On	4	Victoria Pt	Poinciana Ave	Benfer Rd	Magnolia Pde	0.7	S	Bicycle Awareness Zone “Bike Route”	RSC	L	2303	$2,000	
Off	4	Victoria Pt	Pt Halloran Rd	Orana Esplanade	Cnr Tipplers St	0.24	CP	2m	RSC	H	496	$28,000	
Off	4	Victoria Pt	Pt Halloran Rd	Cnr Tipplers St	Daysland St	2.14	CP	2m	RSC	H	496	$257,000	
Off	4	Victoria Pt	Pt Halloran Rd	Orana Esplanade	Cnr Lakefield Drv & Pt Halloran Rd	0.5	CP	2.5m	RSC	M	2191	$75,000	
Off	4	Victoria Pt	Pt Halloran Rd	Lakefield Drive	Orana St	0.2	CP	2.5m	RSC	M	2192	$30,000	
Off	4	Victoria Pt	Robin Pde Park	Robin Pde	Road Reserve (Fir St) nr 49 Schmidt St	0.56	CP	3m	RSC	M	2201	$101,000	
Off	4	Victoria Pt	Salford Park	Simon St	End Thompson Espl Nr Ret. Village (xxiii)	0.54	CP	3m	RSC	H	2214	$98,000	Widen existing path
On	4	Victoria Pt	Sycamore Pde	Link Rd	Magnolia Pde	1.73	S	Bicycle Awareness Zone “Bike Route”	RSC	L	2204	$0	
Off	4	Victoria Pt	Sycamore Pde	Chestnut Cres (east end loop)	Link Rd	0.74	CP	2m	RSC	M	2204	$89,000	
Off	4	Victoria Pt	Sycamore Pde	Magnolia Pde	Chestnut Cres (east end loop)	0.84	CP	2m	RSC	M	2204	$101,000	
Off	4	Victoria Pt	Sycamore Pde	Magnolia Pde	Link Rd	1.61	CP	2m	RSC	M	503	$194,000	
Off	4	Victoria Pt	Thompson Esplanade (in W.H.Yeo Pk)	end Thompson Esplanade	Simon St (xlvi)	0.38	CP	3m	RSC	H	2190	$69,000	
On	4	Victoria Pt	Thompson St	Colburn Av	Eagle St	0.3	L&S	Exclusive Bicycle Lane	RSC	M	462	$0	
Off	4	Victoria Pt	Victoria Pt Foreshore Link stage 1	Wilson St	Victoria Pt Reserve via waterfront	0.4	BW	3m	RSC	L	2208	$720,000	
Off	4	Victoria Pt	Victoria Pt Foreshore Link stage 2	Victoria Pt Reserve	Toilet Block	0.24	CP	3m	RSC	L	2209	$44,000	

On Road/ Off Road	Div.	Suburb	Route	From	To	Length	Treatment	Treatment Comments	Resp.	Priority	Max. No.	Cost (out of Bikeways / Footpaths)	Comments
Off	4	Victoria Pt	Victoria Pt Foreshore Link stage 3	Cnr Masters Av	Edinburgh St	0.69	CP & BW	3m	RSC	L	2210	$740,000	
Off	4	Victoria Pt	Victoria Pt Foreshore Link stage 4	Edinburgh St	Tranquil Waters Retirement Village Path	0.51	CP	3m	RSC	L	2211	$92,000	
Off	4	Victoria Pt	Victoria Pt to Redland Bay	End of Strachan Rd	Buggy Pl	0.3	BW	3m	RSC	L	2216	$550,000	Bridge required
Off	4	Victoria Pt	Warnick Crt Link	End Warnick Crt	Fodder Forest	0.05	CP	3m	RSC	H	2189	$9,000	
On	4	Victoria Pt	Wilson St	Colburn Avenue	Wilson Esplanade	0.15	S	Bicycle Awareness Zone “Bike Route”	RSC	H	507	$22,000	
Off	4	Victoria Pt	Wilson St	Wilson Esplanade Foreshore Path	Colburn Av	0.18	CP	2m	RSC	H	507	$22,000	
Off	1	Wellington Pt	Duncan St	Starkey St	Oak St	0.7	CP/ L&S	2.5-3.0	RSC	L	2318	$150,000	Off Road Ranking: 16
On	1	Wellington Pt	Main Rd	Christina St	Wellington Pt Carpark	2	SS / L&S	(Exclusive Bicycle Lane) 60% Bicycle Awareness Zone 40%	RSC	H	318, 319, 320	$0	On Road Ranking: 8
On	1	Wellington Pt	Main Rd	Old Cleveland Rd East	Birkdale Rd	2.6	SS / L&S	Exclusive Bicycle Lane 60% Bicycle Awareness Zone 40%	RSC	M	2055	$13,000	On Road Ranking: 5
On	1	Wellington Pt	Marlborough Rd	Main Rd	Hardy Rd	0.956	L&S / SS	(Exclusive Cycle Lane) 70% Bicycle Awareness Zone 30%	RSC	H	234	$0	
Off	1	Wellington Pt	Northern Hilliards Creek Link	Cnr Station St & Fernbourne Rd	Cnr Duncan St & Starkey St	0.5	CP / L&S	2.5-3.0 (along rail easement)	RSC	H	2231	$90,000	Off Road Ranking: 20
Off	1	Wellington Pt	Northern Hilliards Creek Link	Cnr Duncan St & Starkey St	Junction Northern Arterial Rd & Sturgeon St	3	CP / L&S		RSC	M	2263	$540,000	2.5-3.0
On	1	Wellington Pt	Starkey St / Duncan St	Main Rd	Sturgeon St	1.8	L&S / SS	(Exclusive Bicycle Lane 50%)Bicycle Awareness Zone 50%	RSC	H	1082	$0	On Road Ranking: 6
Off	1	Wellington Pt	Station St	Fernbourne Rd	Main Rd shared path	0.4	CP / S		RSC	M	548	$60,000	2.5m
On	1	Wellington Pt	Sturgeon St	Cnr Sturgeon St / Starkey St	Wellington St	1.3	L&S / SS	Exclusive Bike Lane 70%Bicycle Awareness Zone 30%	RSC	H	1987, 1988, 1989	$0	On Road Ranking: 1
Off	1	Wellington Pt	Wellington Point	Christina St	Wellington Pt Carpark	2	CP / L&S	2.0m – 2.5 m	RSC	H	318	$0	Off Road Ranking: 7

END OF TRIP FACILITY UPGRADES

Location	Type	Cost	Agency	Priority	Rank
Main Council Chambers Cleveland	Lockers, Class 2 Secure Bicycle Parking Compound, shower upgrade	$10,000 (parking) $5,000 (lockers) $15,000 (Shower upgrade)	RSC	H	1
South Street Depot	Lockers, Class 2 Secure Bicycle Parking Compound	$10,000 (parking and lockers	RSC	H	2
Cleveland Library	Class 3 Bicycle Parking / S	$1,500	RSC	H	3
Capalaba Library	Class 3 Bicycle Parking / S	$1,500	RSC	H	4
Toondah Harbour	Class 1-2 Bicycle Parking / S	$10,000	RSC (QT)	H	5
Capalaba Bus Intechange	Class 1 and 3 Bicycle Parking / S	$4,500	RSC (QT)	H	6
Weinam Creek Ferry Terminal	Class 1 and 3 Bicycle Parking / S	$10,500	RSC (QT)	H	7
Macleay Island Terminal	Class 1 and 3 Bicycle Parking / S	$10,000	RSC (QT)	H	8
Russell Island Terminal	Class 1 and 3 Bicycle Parking / S	$10,000	RSC (QT)	H	9
Lamb Island Terminal	Class 1 and 3 Bicycle Parking / S	$10,000	RSC (QT)	H	10
Council Chambers Library Building	Lockers, Class 1- 2 Secure Bicycle Parking Compound	$5,000	RSC	M	11
Victoria Point Terminal	Class 1 and 3 Bicycle Parking / S	$10,500	RSC (QT)	M	12
Dunwich Ferry Terminal	Class 1 and 3 Bicycle Parking / S	$15,000	RSC (QT)	M	13
Karragarra Island Terminal	Class 1 and 3 Bicycle Parking / S	$5,000	RSC (QT)	M	14
Coochiemudlo Island	Class 1 and 3 Bicycle Parking / S	$10,500	RSC (QT)	M	15
Donald Simpson Centre	Class 3 Bicycle Parking	$1, 500	RSC	M	16

Total **$145,500**

S: Denotes Bicycle Parking Signage

On-Road Cycling Infrastructure – Implementation Program

I**ntersections**

Description	Section From	Section To	Length (KM	Treatment	Cost	Agency	
Wellington St Roundabout	Finucane Rd	Shore St		IT / L&S Roundabout to Traffic Lights	-	DMR	H
Wellington St Roundabout	Russell St	Delancey St		IT / L&S Roundabout to TrafficLights	-	RSC	H
Birkdale Rd Roundabout	Quarry Rd	Birkdale Rd		IT / L&S Roundabout to Traffic LIghts	-	DMR	L
Cleveland Redland Bay Rd Roundabout	Boundary Rd	Colburn Ave		IT / L&S	-	DMR	H
Shore St Roundabouts	Waterloo St	Passage St		IT / L&S	-	RSC	H
Allenby Rd Roundabout	Cnr Montgomery Dr	McDonald Rd		IT / L&S	-	RSC	L
Main Rd Roundabouts	Crossley Dr	Duncan St		IT / L&S	-	RSC	M

24. PRIORITISATION AND FUNDING

It is expected that Council will play the primary role in resourcing, developing, implementing and monitoring the identified actions and strategy works program.

There is an implicit need for direct funding to be maintained by Council to implement the Strategy and maintain current facilities to a high standard. It is appreciated that Council will be unable to accomplish all of the network requirements over the short term and that the establishment of a comprehensive cycling and walking network will require a 10 – 16 year planning horizon, especially for on-road linkages that require co-ordination with Queensland Transport, Main Roads Department.

Council's current prioritisation of capital works for bikeways and footpaths needs to be amended to ensure projects are completed in a sequential manner and appropriate co-ordination is achieved. The difficulty faced by Council is that the rapid growth in the Shire is making it difficult to time projects and to establish network linkages in a logical manner. The establishment of many off-road recreational and neighbourhood links is dependent upon housing lot developments being approved and established on green space areas.

NETWORK DEVELOPMENT

A review of Council capital works from the past three years indicates limited provision for on-road cycling facilities such as widening existing roads to accommodate cyclist, marking existing shoulders as dedicated bicycle lanes or shared lanes.

To create a truly integrated transportation network it is essential that Council allocate funds toward providing on-road facilities. Opportunities currently exist to mark on-road bikeways linking key centres within the Shire by marking road shoulders with a white line (where one does not exist) adding bicycle logos and directional signage to provide a suitable cycling facility.

The option of reprioritising off-road paths and assigning bikeway funding towards on-road facilities is strongly recommended. The advantage of marking on-road facilities is the benefit of connecting key centres at a lower cost than building purpose built off-road facilities as well as catering for a broad category of cyclists who currently use our existing road network and have received limited formal provisions.

A key objective of the Redlands ILTP is to affect a modal shift in travelling mode, this is best achieved by establishing a major commuter network followed by recreational and neighbourhood linkages. It is recommended that budget allocation for on-road facilities be integrated with Council's road works program. Every road works project, which involves shoulder sealing, resurfacing, line-marking or new road construction should consider appropriate integration of cyclist facilities.

24.1. RECOMMENDED NETWORK PRIORITISATION

1. On-Road Commuter;
2. Off-Road Recreational;
3. School;
4. Local Neighbourhood.

The Top Ten priority On-Road linkages for Council and State controlled roads are detailed in Table 18 and Table 19. These proposed routes are offered as a preliminary guide only to implementation of the main cycling and walking network. It is expected that regular reviews will be conducted to assess viability of proposed treatments.

The prioritisation of these network connections has been guided by:

- The relevance of the route in the cycling and walking network. Priority has been given to the establishment of trunk routes as these will form the basis for the cycling and pedestrian network.
- Demonstrated need for improvements, such as reports of hazardous conditions along a corridor or at a crossing and / or high demand through community consultation processes.
- Purpose of the route in regard to linking major trip destinations such as public transport interchanges, education facilities, shopping and commercial centres and recreation facilities.
- Consistency and linkage to existing network infrastructure. The provision of "missing links" is given a higher priority.
- Ease of implementation.
- Cost effectiveness. Those projects that provide key network continuity and are easier to implement such as route signage and line-marking are given a higher priority.

Implementation of projects is expected to take place over a number of years due to financial, organisational and physical constraints. It is essential that projects be undertaken in a logical progression to ensure network connections are relevant to the user. Priority should not be solely placed on establishing new facilities but the maintenance and upgrade of established infrastructure is essential to provide a safe network of connections.

Table 18 Implementation Priorities – On-Road Routes (RSC Controlled Roads)

Rank	Route	Section From	Section To
1	Sturgeon St	Cnr Sturgeon St & Starkey St	Wellington St
2	Delancey St South	Finucane Rd	Russell St
3	Wellington St	Russell St	South St
4	Quarry Rd	Tingalpa Ck Bridge	Birkdale Rd Roundabout
5	Main Rd	Old Cleveland Rd East	Birkdale Rd
6	Allenby Rd	Finucane Rd	Old Cleveland Rd East
7	Main Rd	Christina St	Wellington Pt car park
8	Queen St	Waterloo St	Wynyard St
9	Benfer Rd	Cleveland Redland Bay Rd	Colburn Av
10	Windemere Rd	Finucane Rd	Redland Bay Rd

Table 19 Implementation Priorities: On-Road Routes (Main Roads Controlled Roads)

Rank	Route	Section From	Section To
1	Cleveland Redland Bay Rd	Colburn Av	Beveridge Rd
2	Bloomfield Street	Queen St	South St
3	East Coast Rd	Mitchell Crescent, Dunwich	Booran St
4	Cleveland Redland Bay Rd	South St	Beveridge Rd
5	Old Cleveland Rd	Tingalpa Crk Bridge	Finucane Rd
6	Colburn Av	Cleveland Redland Bay Rd	Benfer Rd
7	Finucane Rd	Moreton Bay Rd	Shore St
8	Capalaba Victoria Pt Rd	Old Cleveland Rd	Vienna Rd
9	Moreton Bay Rd	Finucane Rd	Mt Cotton Rd
10	Old Cleveland Rd East	Finucane Rd	Birkdale Rd

The prioritisation of Off-Road routes is detailed in **Table 20.** The implementation and timing of these routes is likely to be determined by Main Roads and is dependent to an extent upon the upgrade of the road corridor.

Table 20 Implementation Priorities – Off-Road Routes

Rank	Route	Section From	Section To
1	*Cleveland Redland Bay Rd	Colburn Av	Beveridge Rd
2	*Cleveland Redland Bay Rd	Pinklands	Beveridge Rd
3	Rickertts Rd	Tingalpa Creek Bridge	Thorneside Rd
4	Quarry Rd	Clive Rd	Rosewood St
5	Wellington St	Russell St	South St
6	Valantine Park Link	Bailey Rd	End Lawn Tce
7	Wellington Point	Christina St	Wellington Point carpark
8	Charlie Buckler Reserve	Terrier Crt	Boundary Rd via Carolyn Place Footbridge
9	Sturgeon St	Cnr Starkey St	Northern Arterial Rd
10	Lucas Drive, Lamb Island	Ferry Terminal	Community Hall
11	Crystal Waters Park	End Lake View Dr	Vintage Dr
12	*Cleveland Redland Bay Rd	Victoria Point High School	Koala Park Shopping Centre
13	Eprapah Ck	End Apollo Crt	Luke St
14	North St	Main St	Broadwater Tce
15	Randall Rd	Fulleton Rd	Old Cleveland Rd East
16	Duncan St	Duncan St	Oak St
17	Lachlan St Park	End Lachlan St	Burbank Railway Station
18	Quarry Rd	Clive Rd	Rosewood St
19	High Central Rd, Macleay Is	Kate St	Beelong St
20	Northern Hilliards Creek Link (along rail easement)	Cnr Station St & Fernbourne Rd	Cnr Duncan St & Starkey St

** Denotes Main Roads Controlled Roads*

24.2. END OF TRIP FACILITIES

The provision of end of trip facilities at transit interchanges particularly at ferry and bus terminals needs to undertaken immediately. Prioritisation should be given to:

- Transit terminals – ferry, barge, bus;
- Employment Centres – Council Buildings, Shopping Centres; and
- Community Centres.

Council needs to take a lead role in ensuring all employment facilities provide adequate support facilities such as bicycle racks, shower, change area and lockers. Refer to End of Trip Facilities upgrade table for prioritisation and staging of facilities.

24.3. EDUCATION AND ENCOURAGEMENT PROGRAMS

Currently Council conducts a successful Bike Week program through the Redland Bicycle Advisory Committee – RedBAC, which focuses on a 'Ride to School' and 'Ride to Work' Campaign for Council staff. However similar programs are required to increase the level of walking within the Shire for short trips.

The lack of bicycle safety education for school students both primary and secondary is of concern and priority should be given to supporting Queensland Transport in developing a revised Bicycle Safety Education Program based on Bike Ed throughout Redlands primary and secondary schools. This support will require extra resources to co-ordinate and implement a comprehensive Bike Ed program.

It is recommended that emphasis be placed on cyclists and pedestrian education, and cyclist, pedestrian and motorist behaviour. It is recommended that a broader encouragement program be conducted when new facilities are developed and regular updates and information is provided to the community on new facilities and current programs.

Council should co-ordinate with RedBAC and other key agencies to ensure education and encouragement programs and funding is consistent. The recommended prioritisation of encouragement and education programs is detailed in **Table 21.**

Table 21 Education and Encouragement Program Prioritisation

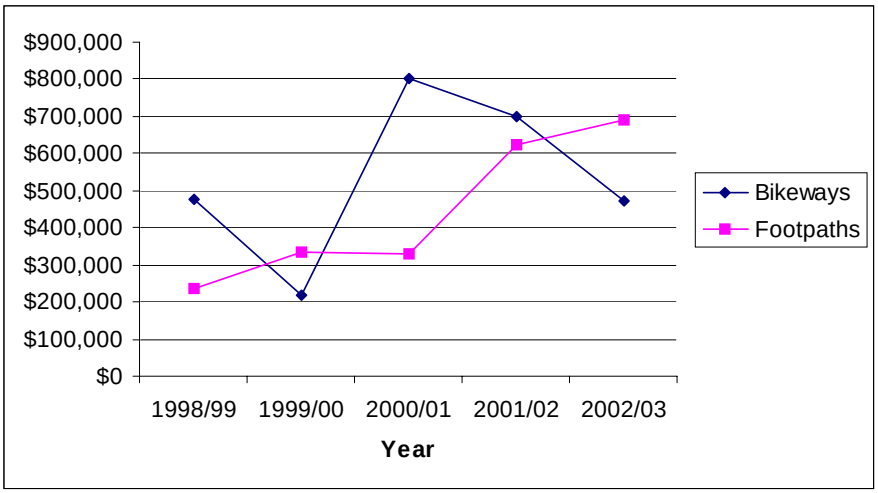
Rank	Action No	Program Activity	New Program / Activity (Yes / No)
1	A72, A89	Revised Cycling and Pedestrian Map Production	No
2	A66	Travel Smart Suburbs Program	Yes
3	A67	Primary School Bicycle Education Program	Yes
4	A69	Adult Cycle Education Program	Yes
5	A59	Trail Signage program	Yes
6	A64	Tourist Promotion Program	Yes
7	A62	Council Bike Pool	Yes
8	A58	Cycle and Walk to Work Program	Yes
9	A53, A70	Bike Riding Benefit and Awareness Program	Yes
10	A80	Mountain Bike Code of Conduct development & delivery	Yes
11	A52	Just Walk it Program	No
12	A66	Conduct of annual premier cycling event	Yes
13	A63	Development of community commuter facility	Yes

25. RCPS FUNDING

25.1. CAPITAL WORKS PROGRAM

Redland Shire Council through Councils recurrent Bikeways and Footpath Capital Works Program managed primarily provides funds for bikeways and footpaths in Redlands by Infrastructure Development Group. Council has budgeted between $200,000 - $800,000 annually over the past five years for Bikeway and Footpath development. **Figure 17** details the level of funding allocations between 1998 and 2003 for each infrastructure program area.

Figure 17 RSC Infrastructure Capital Works Allocations Bikeways & Footpaths 1998-2003



The funding allocations under the Bikeways and Footpath Capital Works Program vary from year to year. Major projects such as off-road path linkages over 1km in length can consume over a quarter to a third of Council's annual bikeways budget. The main funding under this program has been for concrete footpaths and shared cycling and pedestrian paths. Whilst the works program is divided into bikeways and footpaths the bikeways constructed are not exclusive to cyclists and are mainly an extension of the pedestrian network. These exclusive funding programs do not include streetscape upgrades that Council undertake which directly benefit pedestrians and cyclist. Recent streetscape projects at Middle St, Queen St, Noleen St and Redland Bay have seen investments from Council in the order of $1.9 million dollars.

Many of the recommended measures to implement the Primary On-Road Cycling Network involve: the sealing of shoulders, painting the road pavement with bicycle symbols and installing route directional signage. These works have a significant affect on improving conditions for cyclists and do not generally appear in the bikeways capital works program, as a result the level of expenditure on infrastructure for cyclists is considerably greater than the specified amounts in the bikeways capital works program budget.

The recurrent bikeway and footpath budget is only one of the funding sources available to Council to implement the Cycling and Pedestrian network. Other funds for bikeways and footpaths are obtained through:

- Developers constructing paths and other works required under their development permits
- Approved Main Roads projects e.g. Coolynwynpin Cycling and Pedestrian Bridge
- TIDS (Transport Infrastructure Development Scheme)
- Council's Environmental Management Trails Development Program in Conservation Reserves and Parks
- Local Government Development Program (LGDP);(Sport and Recreation Queensland)

The current funding through TIDS is approximately $40,000 - $50,000. This funding is directly incorporated into the Bikeways and Footpath Capital Works Program Budget.

The LGDP funding program supports recreation planning, participation initiatives and facility development such as cycleways, walkways and walking trails. Funding is provided for specific projects with equal contributions from local government. This source of funding has not been accessed by Redland Shire Council to date, to support cycling and walking projects. Future funding applications under this program to support cycling and walking capital works projects is strongly recommended.

The level of funding for trails projects undertaken by Environmental Management Group for the construction of gravel trails and concrete path development in parks and reserves plays an important role in the overall cycling and pedestrian network development. Current funding levels for projects such as Capalaba Regional Park and the Santagiuliana Memorial Trail are approximately $350,000 (2002/03 period). Smaller funding allocations in the region of between $60,000-$80,000 have been made to construct a range of minor trails projects such as timber boardwalks, steps and gravel trails throughout parks and reserves.

RCPS Funding Mix

The current funding allocations are primarily focussed on cycling and pedestrian infrastructure provision. However, Council has also invested significant funds into the employment of a Cycling and Pedestrian Co-ordinator as well as support the activities of the Redlands Bicycle Advisory Committee. These investments have had a marked affect in changing the culture particularly within Council on the importance of cycling and walking in the "transport mix". If changes are to be made to travel demand behaviour, investment will be required in a range of areas other than infrastructure to effectively encourage the community to use alternatives to motor vehicle travel. If cycling and walking are to be seen as viable transport modes and increases in participation made then investment in all strategy areas such as education and encouragement programs as detailed in the strategy actions will be necessary.

The funding requirements to implement this strategy need to be dispersed between a range of program areas including:

- Infrastructure;
- Route Identification;
- Education/ Encouragement initiatives;
- Safety initiatives;
- Transport Integration;

The primary funding areas for cycling and pedestrian infrastructure within Council currently reside with Infrastructure Development and Environmental Management Group budget programs. The funding mix within each division must be rationalised to achieve the best outcome in terms of achieving a comprehensive cycling and walking network, both on and off-road across the hire.

RCPS Infrastructure Cost Estimates

A summary of cost estimates for strategic on and off road cycling and pedestrian infrastructure investment for identified network linkages is detailed in **Table 22.**

Table 22. **RCPS Infrastructure Cost Estimates**

Facility	Estimated Cost ($)
End of Trip Facilities	145,500
On-road (RSC controlled Roads)	8,224,910
On-road (DMR controlled roads)	4,588,324
Off-road (mainland)	10,292,500
Off-road (South Moreton Bay Islands)	1,227,000
Off-road (North Stradbroke Is)	426,872
Total	**24,905,106**

Recurrent Bikeways and Footpath Capital Works Program

The recommended funding mix for the Bikeways and Footpath Capital Works Program managed by Infrastructure Development Group over the next five years is detailed in **Table 23.** The funding mix is based on an annual allocation of $1.2m for bikeway and footpath development:

Table 23. **Recommended Funding Mix for Bikeway and Footpath**

Capital Works Budget 2003-2008

Strategy Area		% allocation	Annual Average ($000)
Infrastructure (Network Development)	On-Road facilities	50%	600
	Off-Road facilities	30%	360
	Minor off Road facilities (footpath network)	16%	192
	Signage of existing routes (on and off-road)	2%	24
	End of trip facilities	2%	24
		100%	1.2m
		Total over 5 yrs	6m

Budget allocations towards road upgrades play a significant role in improving the bikeway network through the sealing of shoulders and the improvement of road surfaces. Despite the above recommendation for budget allocation towards on-road facilities the upgrading of any road within the Shire should consider cyclists and pedestrians. These upgrades should include and integrate appropriate provisions for cyclists and pedestrians. The use of the Bikeway and Footpath Capital Works Budget for on-road facilities should not be used exclusively for shoulder widening and resurfacing which primarily benefits private motor vehicles. This budget allocation should be viewed as additional to the broader improvement to the cycle network.

Environmental Management Trails Development Program

The continued allocation of funds for trail development under Environmental Management is strongly recommended to ensure cycling and pedestrian facilities, which, are more recreation based, are progressively developed. There are similarities within both programs. The recommended funding mix allocation for the Trails Development Program is based on a yearly allocation of approximately $300,000. **Table 24** details the recommended budget allocations for the next five years.

Table 24

Recommended Funding Mix for Environmental Management: Trail Development Program 2003-2008.

Strategy Area	Priority Works	% allocation	Annual Average ($000)
Infrastructure (Network Development)	Santagiuliana Memorial Trail	50%	150,000
	Koala Coast Bushland Trail	30%	90,000
	Minor off-road facilities (gravel/concrete path network, boardwalk)	15%	45,000
	Signage of existing routes and trails	5%	15,000
		100%	$300,000
		Total over 5 yrs	1.5m

Prioritisation of capital works under the Environmental Management Trail Development Program should be given to completing the Santaguiliana Memorial Trail and the Koala Coast Bushland Trail Network. These two projects form the backbone of the recreational trail network in the Shire. The percentage of funding to both these projects may be varied depending upon land acquisition and the synchronisation of development that will affect further linkages being completed.

Non Capital Works Budget Items

Budget allocations will be required to other program areas to implement other cycling and pedestrian activities. Recommended funding allocations to undertake strategy actions are detailed in **Table 25**.

Table 25 Recommended Funding Allocations for Strategy Activity Areas 2003 – 2008

Strategy Area	Program / Activity	Estimated Cost (per annum)	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	Total
Education	Primary School Bicycle Education Program	$30,000		*	*	*	*	*	$150,000
	Adult Cycle Education Program	$1,500		*	*	*	*	*	$7,500
Encouragement	Cycling and Pedestrian Co-ordinator	$58,000	*	*	*	*	*	*	$348,000
	Travel Smart Suburbs Program	$150,000		*	*	*	*		$600,000
	Travel Smart Schools Program	$60,000				*	*	*	$180,000
	Redland Bicycle Advisory Committee	$10,000	*	*	*	*	*	*	$60,000
	Council Bike Pool	$10,000			*		*		$20,000
	Just Walk It Program	$10,000	*	*	*	*	*	*	$60,000
	Tourist Promotion Program	$10,000			*		*		$20,000
	Community Commuter Facility	$250,000						*	$250,000
Information	Cycling and Pedestrian Map Production	$10,000	*		*		*		$30,000
			$88,000	$259,500	$289,500	$319,500	$349,500	$319,500	
	Total for all actions (2003-2008)	$1,725,500							

Note: The Travel Smart Suburbs Program is a key action of the Redlands ILTP. Funding for this program is through the ILTP implementation program.

RCPS Investment Strategy

In order to implement the cycling and network plan consistent funding levels for bikeways and footpaths will need to be maintained over the next 10-15 years in order to develop a comprehensive and coherent network of on and off- road linkages. It is estimated that funding allocations should be maintained between $400,000 - $600,000 annually for both footpath and bikeway construction over the next five (5) years, to have a major impact on achieving network linkages.

A review will be required during this period to determine which routes still require completion and estimated costs for completion. **Table 26** details the recommended investment required to meet proposed strategy capital works and non-capital works items. The current investment in non-capital works items is considerably lower than the recommended annual average. However, Council's funding of a designated Cycling and Pedestrian Officer and the Redlands Bicycle Advisory Committee is an effective investment to meet key strategy objectives and actions.

Table 26 RCPS Investment Strategy 2001-2016

Strategy	**Annual Average ($) 2001- 2016**	**Total 2001-2016 ($m)**
Capital Works (Infrastructure)	1.2m	18m
Capital Works (Environmental Management)	300,000	4.5m
Non Capital Works	350,000	5.25m
Total	**1.85m**	**27.25**

Key recommendations

- The recurrent bikeways and footpath budget allocation be maintained at current funding levels for a further five years and reviewed.
- The funding mix for bikeway and footpath capital works be amended as per strategy recommendations.
- Increased allocation must be directed to on-road bicycle facilities installation.
- Increased allocation to be directed to non capital works areas such as safety, education and encouragement programs to increase and promote greater cycling and walking activity.
- Allocation be given to upgrading and installing end of trip facilities at key transit interchanges.
- Priority allocation be given to installing on and off-road route signage on existing facilities to improve route identification.

Maintenance of Facilities

A further area of funding consideration is path and road maintenance. Consultation conducted as part of this strategy highlighted community concern regarding the level of maintenance undertaken by Council on footpaths, shared paths and roads.

The maintenance of infrastructure over its life is often overlooked and the current recurrent bikeways and footpath capital works budget does not factor in repair or replacement of damaged paths, or other treatments such as, line-marking and widening of existing facilities. There are many examples of paths that are in a poor state of repair due to tree root intrusion or cracking from vehicle compaction or general poor construction techniques. It is essential that the full cost of maintaining an asset, such as a footpath is built into funding allocations.

The life expectancy of facilities such as paths and bicycle lanes is dependent upon a range of variables such as original construction methods, usage and external factors such as vegetation intrusion and vehicle damage. Generally a concrete footpath if properly constructed should have a lifespan of 40-50 years.

Maintenance of a new path in the absence of external damage to the path should normally be required within a five year period to address minor maintenance issues. The entire network requires maintenance on an ongoing basis and adequate funds need to be allocated to address minor maintenance problems before they escalate. There has been no major maintenance program undertaken by Council and issues are usually addressed on an ad-hoc demand basis to fix high risk problems.

Inspections of current network facilities highlights the need to inject considerable funding into a maintenance risk reduction program on all paths over the next two to three years. It is estimated that approximately $200,000 to $300,000 should be budgeted to address existing network maintenance problems.

Maintenance of footpaths and shared paths is undertaken by Operations and Maintenance.

Key recommendations

- A percentage of funding is allocated to conduct regular path audits to develop a maintenance program budget for on and off-road cycling and pedestrian facilities.

- Each cycling and pedestrian capital works project is costed in terms of reasonable maintenance during its lifespan and a budget allocation is made accordingly.

26. STRATEGY MONITORING AND REVIEW

Regular monitoring of the Redlands Cycling and Pedestrian Strategy is required to ensure the Plan is being implemented and objectives are being met to gauge whether the level of cycling and walking has increased in the Shire. It is also important to measure how the environment for cycling and walking has been improved or degraded. The performance of the Strategy should be measured against whether Actions are being implemented and the route plan is being executed effectively.

The challenge for Council as the lead agency to implement the strategy will be to embrace the planning concepts contained in this document and for all key stakeholders to work together to achieve strategy objectives. The role of the Redlands Bicycle Advisory Committee (RedBAC) will be to monitor the progress of the actions by all the agencies involved and provide strategic direction on cycling issues.

The Bicycle User Group (REDBUG) will be required to monitor the progress of works from a users perspective and bring this to the attention of RedBAC and Council in general.
Liaison will need to be established with neighbouring local authorities to ensure strategic on and off-road connections are being implemented.

In order to measure progress on delivering objectives and actions detailed in the strategy the following performance indicators have been set in **Table 27** and **Table 28** These indicators can be benchmarked and used to assess and help define targets for implementation activities. For some indicators data is currently limited and will need to be collected to set a baseline position for future monitoring.

Table 27 details the overall strategy performance indicators. It is felt that if the strategy is successful overall increases in journeys to school and work will be key indicators of the success of the strategy. Furthermore the achievement of the Strategic performance Indicator targets requires the implementation of a broad range of actions from a range of strategy areas. This broad approach will also measure the effectiveness of local council policies across a range of council areas that affect cycling and pedestrian activities.

Table 27 RCPS Strategic Performance Indicators

Strategy Goal	Key Performance Indicators	Target	Monitoring Source
"To increase the amount of walking and cycling in the Redlands"	% share of trips (a) Journeys to work (b) Journeys to school	To increase the share of cyclists journeys to work from 0.57% to 4% by 2016 To increase the percentage of walking only trips to work from 1.89% to 5% by 2016 To increase the share of cycling journeys to school from 12% to 18% by 2016 To increase the share of walking journeys to school from 12% to 20% by 2016	• ABS Census data. • Household Travel Surveys • Qld Government Census at School data • RSC school travel surveys

Table 28 RCPS Performance Indicators and Strategy Review

Theme	Strategy Objective	Key Performance Indicators	Target	Current Position	Monitoring Source
Planning and Development	To provide integrated cycling and walking routes that facilitate walking and cycling as viable transport modes for work, recreational, shopping and educational trips.	a) 100% compliance with cycling and pedestrian planning codes	100% of all Development Applications provide for cycling and pedestrian requirements and meet desired standards and guidelines	Data not currently available.	RSC research on: Development Applications Community satisfaction levels
Transport Integration	To integrate cycling and walking into the transport planning and delivery processes.	b) Number of transit interchanges with bicycle parking facilities	To have provided secure, convenient and well marked bicycle parking, both short and long term at Toondah Harbour, Weinman Creek and Victoria Point transit interchanges by 2011	Bicycle parking facilities do not exist at Toondah Harbour. Limited short term facilities at Weinman Creek and Victoria Point.	Qld Rail asset management system Travel surveys RSC asset management systems
Infrastructure	To provide high quality cycling and walking infrastructure, which improve safety and convenience for pedestrians and cyclists.	c) Kms: Off-road paths d) Kms: On-road bicycle facilities e) No bicycle parking racks	To increase the level of on-road cycling facilities (per km of bicycle lanes) by 100% by 2016. To achieve a network of direct walkways that link townships, which are accessible to disabled people To increase the level of bicycle parking facilities by 30% by 2016. To improve satisfaction levels with cycling and pedestrian	In 2003 26km's of on-road cycling facilities. Complete data on end of trip facilities Shire wide not currently available.	RSC asset management systems RSC research

Table 28 RCPS Performance Indicators and Strategy Review (Continued)

Theme	Strategy Objective	Key Performance Indicators	Target	Current Position	Monitoring Source
Safety	To provide safe cycling and walking environments	a) Pedestrian Fatalities b) Cyclist Injuries	To achieve a reduction of 50% in the number of pedestrians killed and seriously injured by 2011 To achieve a reduction of 50% in the number of cyclists injured by 2011	Total of 9 pedestrian fatalities between 1995-2001 and 103 non fatalities Total of 129 non fatal bicycle accidents between 1995-2001	QT Road Crash database
Encouragement	To increase the number of people walking and cycling	a) Cycling and Pedestrian Co-ordinator Position b) Production of local access map c) Travelsmart School Program	To maintain ongoing Cycling and Pedestrian Co-ordinator position to implement RCPS To develop and distribute official cycling and walking map for Redland Shire by 2004 To have at least 3 schools participating in the Travelsmart Schools Program by 2006 with a further 3 schools per consecutive year	Cycling and Pedestrian Co-ordinator position based on 12mth contract. Cycling and Walking map placed on RSC website in pdf format Currently no schools participating in Travelsmart Schools program	

Table 28 RCPS Performance Indicators and Strategy Review (Continued)

Theme	Strategy Objective	Key Performance Indicators	Target	Current Position	Monitoring Source
Information and Education	To increase the knowledge and awareness of the benefits of cycling and walking.	a) N^{o} Bicycle Education Courses b) Demand for integrated cycling walking and public transport maps	To conduct cycle education program for school students in 25% of schools by 2007 To develop, promote and distribute integrated cycling, walking and public transport maps and update as required.	No Bicycle Education programs currently conducted.	RSC
Enforcement	To encourage responsible cyclist, pedestrian and motorist behaviour on the road network and off-road paths	a) Increased school student cycle helmet usage b) Compliance with shared path signage	To increase use of cycle helmets by 1% per annum for school students in Redland Shire. To increase compliance with shared path signage	Data on helmet use not currently available.	QPS infringement data RSC research
Mountain Biking	To develop sustainable mountain bike opportunities within the Shire that meet the needs of Mountain Bikers	a) Mountain Bike competition venues b) Designated areas for recreational Mountain Bike activity	To establish two (2) Mountain Bike competition sites by 2005 To have designated areas for recreational Mountain Bike riding by 2004	No officially recognised MTB competition sites exist. Defined and properly maintained recreational Mountain Bike areas do not exist.	RSC

The following actions are recommended to assist with the monitoring of the strategy

Actions - Monitoring

Action No.	**Strategic Action and comments**	**Responsibility (Supporting Agency)**	**Priority**	**Timing**	**Costing**
A92	Develop a monitoring and review program and establish benchmarks of performance measures needed to achieve strategy objectives	RSC	Immediate	June 2003	N/A
A93	Conduct regular reviews of capital works programs relevant to achievement of Cycling and Pedestrian Strategy	RSC (DMR) (QT)	Short Term	ongoing	N/A
A94	Report Annually to RSC on implementation of Actions needed to achieve objectives and targets of the Redlands Cycling and Pedestrian Strategy	RSC	Short Term	ongoing	N/A
A95	Conduct data collection on trip rates for cycling and walking along major shared paths and bikeways	RSC (QT)	Medium Term	August 2004	$20,000
A96	Develop a community feedback program to obtain comment on strategy implementation	RSC	Short Term	April 2004	N/A

At present limited data exists on current bicycle or walking participation across the Shire. It is important that specific measures on cycling and walking growth are obtained to assess the impact of facilities being provided or programs conducted to encourage greater cycling and walking. It is recommended that counts be undertaken along key shared paths and along on road cycle lanes to develop a more detailed picture of cycle and walking usage of facilities.

Other qualitative measures such as a community feedback form or phone in survey could be undertaken to assess community satisfaction levels regarding cycling and walking routes and facilities.

The process established to review the Strategy needs to be dynamic and elements of the strategy should be adjusted to keep abreast of changes in the standard of facility provision.
It is recommended that the strategy be reviewed every three years to ensure the Actions and Network Plan routes are being achieved and implemented.

It is proposed that the Cycling and Pedestrian Co-ordinator in conjunction with the Bicycle Advisory Committee undertake the subsequent reviews of the Strategy. Council must ensure that it continues to engage with the public, community groups and key stakeholders on the ongoing implementation of the strategy. It is recommended that the Council website be used as a key tool to advise on the strategy implementation.

27. CONCLUSION AND MAJOR RECOMMENDATIONS

Conclusion

The conditions for cyclists and pedestrians in Redland Shire need to be improved if Council seeks to encourage more cycling and walking trips. The greatest threat to a friendly cycling and walking environment in the Shire is increased population growth and sustained land use patterns that favour motor vehicle travel. It is essential that Council along with other agencies manage land use patterns and the accessibility of communities for cycling and walking, if motor vehicle trips are to be contained or reduced. It is important that cyclists and pedestrians are able to travel safely and efficiently throughout the Shire in order to encourage greater non-motorised activity. It is not acceptable that people with a disability cannot travel without encountering barriers and that cycling and walking, two desirable and efficient modes of travel, have been made difficult and uncomfortable.

Council as the lead agency in cycling and pedestrian provision has a responsibility and the opportunity to make a difference to the cycle and pedestrian friendliness of Redland Shire. There are sufficient details available in order to create a cycling and pedestrian friendly environment. Council has the ability to improve conditions for cyclists and pedestrians to make them safer modes of travel as well as promote cycling and walking as the more desirable travel choice within the Shire.

This Strategy provides Council with a framework to improve cycling and walking as a form of transport and recreation in the Shire. It supports a number of strategies at Local, State and National Governments level including the Redlands Integrated Local Transport Plan, Cycle South East and Australia Cycling. This document identifies the key actions and network planning process that need to be undertaken to develop a comprehensive cycling and walking network.

The major recommendations arising from this strategy are:

- Cycling and walking must be recognised as important transport modes. All traffic engineering and road planning design must cater for cycle and pedestrian movement.
- Council should adopt the set targets for cycling and walking.
- Encourage land use and transportation development that accommodates pedestrians and cyclists.
- Council should adopt the proposed Strategy Action Plans.
- Council should adopt in principle the proposed Cycling and Walking Network Plans.
- Council should obtain and allocate sufficient funding to implement the Redlands Cycling and Pedestrian Strategy Actions.
- Council should allocate sufficient funding to implement the Network Plan and Works Program over a 16 year period and continue allocation of between $400,000 - $600,000 for the next five years until 2008.
- Council invests in information, encouragement and education programs to support travel behaviour initiatives
- Streets are designed for all modes of transportation. Parking supply is reduced or managed using methods that encourage walking and cycling.

- Provide a connected system of pedestrian and cycling routes in urban and rural areas that enhance pedestrian and cyclists mobility through a complete system of interconnected roads, local streets and off road paths.

- Connections are provided between popular destination on major roads, between dead end streets or cul-de-sacs and through open spaces to provide convenient access for pedestrians and cyclists.

- That all road and bikeway construction, upgrading and maintenance in Redland Shire where appropriate conforms to AUSTROADS " Guide to Traffic Engineering Practice: Part 14 – Bicycles" to achieve high quality and consistency in facility design for cyclists.

- That barriers to pedestrian travel in particular those people with a disability are removed and consideration is given to pedestrian needs in all transportation facilities.

- The management and co-ordination of the Cycling and Pedestrian Strategy should be integrated with the Redlands ITLP and South Moreton Bay Island Transport Strategy.

- The Co-ordination of Strategy objectives and actions should be undertaken by a Council officer to manage the implementation of the strategy on a day to day basis.

- When planning and designing shared paths Council will consider anticipated future demand and
- make provisions for widening the path beyond AUSTROADS Part 14 desirable minimum widths. All paths should be of adequate width and sight distance, accessible grade and alignment and be well drained.

- That Council undertake a maintenance audit of its existing footpaths and shared paths and establish a maintenance schedule to frequently clean and repair facilities.

- All new commercial developments and community facilities must provide secure bike parking facilities, shower and change facilities for customers and employees / tenants. The need for end of trip facilities must be assessed when planning permit applications for new buildings are being evaluated.

- Pedestrian and cyclist facilities should be well delineated, signed and marked.

- Council review its seasonal street sweeping schedule to ensure attention is given to the needs of cyclists along road shoulders and at intersections. Council should incorporate the

- All future planning for subdivisions within the shire integrate fully cycling and pedestrian infrastructure within the land development process.

- Council undertake a review of policy statements pertaining to cyclists and pedestrians and develop revised statements that provide fully for safe cycling and pedestrian infrastructure.

- Council should require the provision of suitable bicycle parking and change facilities at commercial / community centres and transit interchanges.

- Council should monitor the success of the implementation of the Redlands Cycling and Pedestrian Strategy and implement reviews where necessary.

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GLOSSARY OF TERMS

Alignment	The layout of a trail in horizontal and vertical planes (bends, curves, uphill and downhill)
Arterial Road	A major road intended primarily for motor vehicle traffic to use to travel into, out of, and through a particular area.
Auto dependence	High levels of per capita automobile travel, automobile oriented land use patterns and reduced transport alternatives.
Bicycle Awareness Zone	A treatment used to define a street or road for cycle use, and is signed with a yellow bicycle symbol and white edge line. Has no regulatory function.
Bicycle Facility	Any facility provided for the benefit of cyclists, including On-road Bicycle Lanes, sections of roadway that are defined as a Cycle Route or Bicycle parking facilities.
Bicycle Lane	A part of the roadway allocated for cycle use. Is usually signed with a white bicycle symbol and a white edge line. Has a regulatory function and is designated for bicycle use only.
Bicycle Station	A centralised integrated end of trip facility for commuter cyclists that incorporates bicycle parking and change facilities.
Bicycle Trip	A one-way trip made by a bicycle.
Biodiversity	The variety of life forms: the different plants: animals and micro-organisms, the genes they contain and the ecosystems they form part of.
Blackspot	A location where one or more accidents involving a cyclists or pedestrian has occurred. Information for identifying accident locations is taken from Queensland Transport Crash Stats Data.
Bollard	A post or similar obstruction that prevents the passage of vehicles; the spacing of bollards usually allows the passage of bicycles and pedestrians.
Central Business District (CBD)	Central Business District; a traditional town area usually characterised by established businesses fronting the street, footpaths, slow traffic speeds and on street parking. An area of intense commercial activity at the centre of most cities and towns.
Chip Seal	A thin asphalt surface treatment used to waterproof and improve the wearing surface of a roadway.
Collector Road	A road intended to provide circulation within a particular area intended to carry traffic between local streets and arterial roads or from local street to local street. Traffic volumes are lower than arterial roads. See “arterial road above”.
Cross Section	A diagrammatic representation of a road profile at right angles to the centreline of the road.

Cul-de-Sac	A street closed at one end that is enlarged to provide turn around space for a motor vehicle.
Cycle Friendly	Describing an environment that is pleasant, safe and accessible for people to cycle, designed with an understanding of cycle movement; specifically offering convenient space for travel, high quality facilities for Bicycle use, smooth riding surfaces free of debris, low traffic volumes and speed and good lighting.
Cycle Route	A route chosen and followed by cyclists from a trip's departure to destination.
Cycleway	That portion of road, street or public path set aside for exclusive use by cyclists.
Daily Trips	The number of trips made by a person or people in a household during a typical day.
Design Envelope	The width and height required for safe passage of a cyclist or pedestrian as measured in a vertical and horizontal plane.
Drainage Swale	A shallow, grassy drainage channel that accommodates surface water run off. Used on streets without curb and channelling.
End of Trip Facility	Bicycle facilities at cyclists' origins and destinations. These include bicycle parking facilities (racks, lockers or compound) showers and change rooms.
Erosion	The natural process of wearing down and removal of rock and soil by wind and water. Trail erosion can be accelerated by a combination of trail users, water and gravity.
Facility	A physical feature provided for cyclists and pedestrians such as bicycle lanes, concrete paths, signs or pedestrian crossings.
Fall Line	The direction water flows down a hill. Refers to the path of least resistance.
Fire Trail	A dirt road used by four wheeled vehicles usually for maintenance or for fire fighting vehicles.
Generator	A building or other development that attracts a significant number of trips, such as a shopping centre, school or leisure centre.
Grade	A measure of the steepness of a road, concrete path or gravel trail, expressed in a ratio of vertical rise per horizontal distance, usually in percent; e.g. 10 percent grade equals 10m of rise over 100m horizontal distance.
Infrastructure (Transport)	Fixed facilities (such as roads, signs, lighting and traffic lights) needed for transport services.
Integration	A range of approaches which combines bicycle traffic with motorised traffic. This approach considers bicycles as vehicles with similar rights and responsibilities as motorised vehicles.
Kerb Ramp (or Pram Ramp)	An area of a footpath, usually at an intersection, that allows for easy access/transition for wheelchairs, strollers and other wheeled devices between the footpath and the street.

Key Centres	Locations of major employment growth through office, retail, community services, leisure and cultural facilities and government services, facilities and infrastructure.
Land Use	The type and pattern of development in an area or on a specific site
Local Area Traffic Management	The process of planning and controlling the usage of streets within a local residential area to achieve goals, determined by affected parties, for the improvement of the residential environment.
Local Street	A road intended to provide access to individual properties, such as houses. Not intended to carry through traffic. Traffic volumes and speeds are low.
Loop Detector	A wire buried in the street and connected to a traffic signal allowing the signal to sense the presence of vehicle traffic.
Median	A physical barrier, or a solid pavement marking that separates the opposing traffic lanes of a divided roadway.
Mode	A means of travel such as a motor vehicle, train, bus, bicycle or walking. More than one mode may be used in a single trip.
Multi Use Path	A path separated from Motor Vehicle Traffic used by cyclists, pedestrians, joggers, horse riders and other non motorised vehicles.
Off-Road Facility	A specific cycle or pedestrian facility that is not situated within the roadway.
On-Road facility	A specific cycle or pedestrian facility that is situated within the roadway.
Open Space	Land and or/water area which is predominately undeveloped set aside for the purpose of providing recreational opportunities, conserving valuable natural resources, and structuring urban development and form.
Outslope	The natural outward slope of a hill or trail surface, where water will sheet across rather than remain trapped on the trail.
Parking Lane	An auxiliary lane primarily for the parking of vehicles.
Pavement Markings	Painted or applied lines or symbols placed on a roadway or a path surface for regulating, guiding or warning traffic.
Pedestrian Friendly	Describing an environment that is pleasant, inviting and safe for people to walk; specifically offering street amenities such as plantings and furniture, good lighting, easy visual and physical access to buildings and diverse activities.
Pedestrian Precinct	Describing and environment that has been designed and set aside for pedestrians. The aim of the precinct is to improve safety, accessibility and comfort of pedestrians, usually found in commercial / retail precincts.
Primary Cycle and Pedestrian Network	A higher order system of formalised cycle routes and off-road paths indicated by Council that provide for direct access routes across the shire or major recreational linkages in open space corridors.
Public Transport Interchange	A place where passengers gain access to public transport or to transfer from one public transport vehicle to another.

Recreational Trip	A cycle or walking trip for pleasure/or exercise, that may not be made for the purpose of travelling to a specific destination.
Roadway (carriageway)	The sealed portion of road space devoted for the movement of vehicles, inclusive of shoulders and auxiliary lanes
Shared Path	An Off Road Path provided for the exclusive use of pedestrians, cyclists and other non motorised vehicles.
Shoulder	The sealed or unsealed area between the edge of the roadway and the property line; provided for pedestrians, cyclists, emergency use by vehicles and for lateral support of base and surface courses.
Single-track	A narrow trail wide enough for one person or bike. Highly desired by intermediate and experienced Mountain Bikers for the riding experience it provides.
Stop Bar	A pointed strip across a traffic lane to indicate where vehicles should stop at a stop sign or a traffic signal.
TIDS (Transport Infrastructure Development Scheme)	A Department of Main Roads funding scheme that provide 50/50 funding to local governments for the development of cycle infrastructure.
T-Intersection	The meeting of two streets, usually perpendicular, where one of the streets does not continue through; approximately resembling the letter “t”.
Transport System	Infrastructure, services and equipment to provide for the movement of people and freight.
Traffic Island	A defined area within a roadway, usually at an intersection, from which traffic is intended to be excluded, and which is used for control of vehicular movements and for pedestrian refuge.
Traffic Lane	A lane designated for singe vehicle traffic determined by road design, signs and markings.
Traffic Volume	The given number of vehicles that pass a given point for a given amount of time (hour, day, year).
Trip	A one way journey by an individual using any mode of transport.
Trunk Collector	A street connecting the internal street network serving residential development with the external arterial road network.
Utility Trips	A non commuting or recreational trip. These include shopping trips, personal errands, entertainment and social trips. See Trip above.
Walkway	A transportation facility built for use by pedestrians including persons in wheelchairs. Walkways include footpaths.

Appendix 1

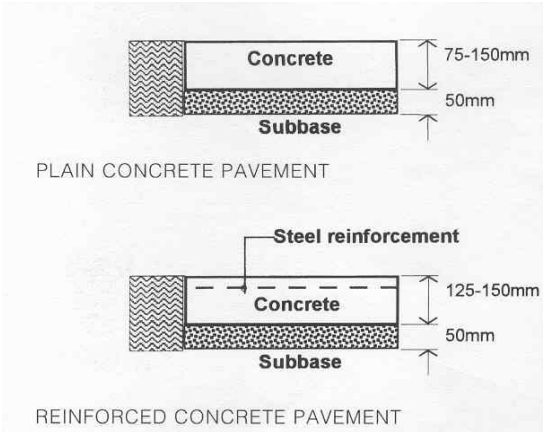
Standard Treatment Drawings

Appendix 2

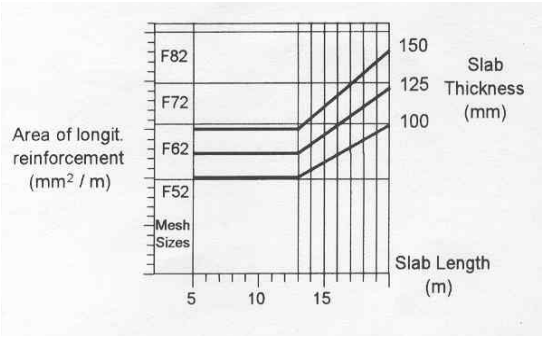
Design Recommendations for Concrete Path Construction

CONCRETE PAVEMENT DESIGN RECOMMENDATIONS

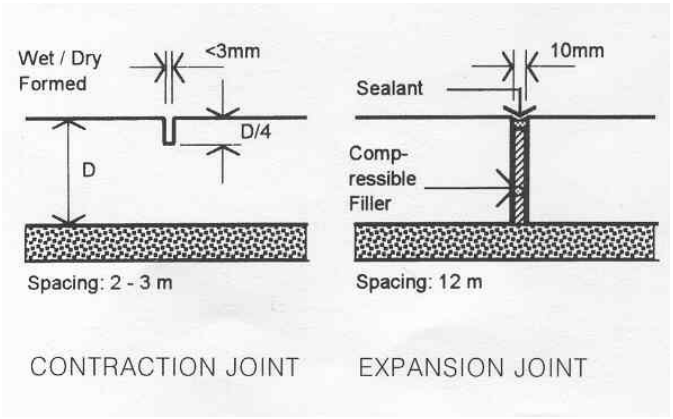
Typical thicknesses for plain and reinforced concrete



Reinforcement design chart for jointed reinforced



Typical Contraction and expansion joints



Source: Road Note, June 1999. *Cycleways: Design and Construction*. Cement and Concrete Association of Australia.

Appendix 3

Bollard Standard Treatments

Appendix 4

Cycling and Pedestrian Accident Location Map

28. ON AND FUNDING

It is expected that Council will play the primary role in resourcing, developing, implementing and monitoring the identified actions and strategy works program.

There is an implicit need for direct funding to be maintained by Council to implement the Strategy and maintain current facilities to a high standard. It is appreciated that Council will be unable to accomplish all of the network requirements over the short term and that the establishment of a comprehensive cycling and walking network will require a 10 – 16 year planning horizon, especially for on-road linkages that require co-ordination with Queensland Transport, Main Roads Department.

Council's current prioritisation of capital works for bikeways and footpaths needs to be amended to ensure projects are completed in a sequential manner and appropriate co-ordination is achieved. The difficulty faced by Council is that the rapid growth in the Shire is making it difficult to time projects and to establish network linkages in a logical manner. The establishment of many off-road recreational and neighbourhood links is dependent upon housing lot developments being approved and established on green space areas.

NETWORK DEVELOPMENT

A review of Council capital works from the past three years indicates limited provision for on-road cycling facilities such as widening existing roads to accommodate cyclist, marking existing shoulders as dedicated bicycle lanes or shared lanes.

To create a truly integrated transportation network it is essential that Council allocate funds toward providing on-road facilities. Opportunities currently exist to mark on-road bikeways linking key centres within the Shire by marking road shoulders with a white line (where one does not exist) adding bicycle logos and directional signage to provide a suitable cycling facility.

The option of reprioritising off-road paths and assigning bikeway funding towards on-road facilities is strongly recommended. The advantage of marking on-road facilities is the benefit of connecting key centres at a lower cost than building purpose built off-road facilities as well as catering for a broad category of cyclists who currently use our existing road network and have received limited formal provisions.

A key objective of the Redlands ILTP is to affect a modal shift in travelling mode, this is best achieved by establishing a major commuter network followed by recreational and neighbourhood linkages. It is recommended that budget allocation for on-road