

## 12. Five Year Works Program and Funding

### 12.1 Bikeway Budget

---

Council's proposed budget has a total capital expenditure of \$18.400 million over a five year works program, with the potential to increase match funding from SEQCNP with an additional \$18.126 million –

2009/10 - \$6.486M (\$3.250M GCCC Revenue & \$3.236M SEQCNP funding)

2010/11 - \$6.286M (\$3.150M GCCC Revenue & \$3.137M SEQCNP funding)

2011/12 - \$7.900M (\$4.0M GCCC Revenue & \$3.900M SEQCNP funding)

2012/13 - \$7.993M (\$4.0M GCCC Revenue & \$3.993M SEQCNP funding)

2013/14 - \$7.860M (\$4.0M GCCC Revenue & \$3.860M SEQCNP funding)

Combining the GCCC Revenue and the SEQCNP funding provides a substantial total five year budget of \$36.526 million for the bikeway projects.

#### **SEQ Infrastructure Plan and Program 2006 – 2026**

The SEQIPP has committed \$235 million over the next 20 years for regional cycling infrastructure under its *Cycle Network Program* (CNP). 60% of this funding will go to local governments on a dollar basis to build principal cycle facilities and critical missing links in the network.

The remaining 40% will be used for cycle infrastructure delivered through Queensland Government capital works projects. Primarily the funds will address key parts of the principal cycle network that will not be built in the foreseeable future through DMR's *Roads Implementation Program* (RIP).

Projects eligible for funding will:

- Accelerate the development of the principal cycle network
- Address missing links or barriers that represent significant obstacles to cycling
- Encourage best practice design and delivery
- Anticipate and support future use and demand based on mode share targets.

The CNP funding is managed by the Smart Travel Centre Queensland, Queensland Transport.

### 12.2 Works Program

---

#### **12.2.1 Principal, District and Neighbourhood Routes**

High priority routes identified by the study were investigated and costed to produce the Five Year Works Program. The selected bikeway routes were focussed on Council controlled roads - construction priorities for the State controlled network components are recommended in Section 11. A summary of the Five Year Works Program is provided in Table 12.1 and full program details are provided in Appendix C.

It is recommended that Council adopt Austroads and QT cycle notes guidelines for the design and construction of bicycle facilities in Gold Coast City, where practical.

**Table 12.1 Five Year Works Program**

Ref No.	Route Descriptor	Priority	2009/10	2010/11	2011/12	2012/13	2013/14
RG81	Kelly Ave Miami Onroad Bikeway	High		\$ 200,000			
RH41	Bike Counting Equipment	High	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
RH44	Central St Labrador Onrd Bway	High					
6961	Major Bikeways F'ward Planning	High	\$ 300,000	\$ 200,000	\$ 200,000		
R580	Darren Smith Memorial Coastal	High	\$ 170,000	\$ 170,000	\$ 170,000		
R579	Special Construction Fund- Var	High	\$ 150,000	\$ 150,000	\$ 150,000		
RA19	Contribs to MRD-Major Bikeways	High	\$ 95,000	\$ 95,000	\$ 95,000		
tba	Off Path Reconstruction	High	\$ 490,000				
tba	Miami links D69 D33	High	\$ 70,000				
tba	Education & Promotion	High	\$ 136,500				
RD80	FD09/10 Mirambeena Dr Pmpm Bwy	Low	\$ 281,000				
tba	Napper Rd - Stevens St missing links	High	\$ 167,500				
tba	Currumbin Valley School shared path	High	\$ 90,000				
tba	Worongary Rd - Gilston SS to Hinde Rd	Medium	\$ 450,000				
tba	Burleigh/Christine St, West Burleigh	Low	\$ 45,000				
tba	Activity Cres / Production, Molendinar	Low	\$ 76,000				
tba	Surfers Central Riverwalk - shared pathway	High	\$ 2,500,000	\$ 2,000,000	\$ 500,000		
T124	Arundal Dr to Olsen Ave (Napper Rd)	High	\$ 95,000				
N146	Wintergreen Dr to Smith St (Parklands Dr)	High	\$ 75,000				
N213	Wardoo St to Middleton St (Off Road)	High	\$ 45,000				
D126	Markeri St to Oceanic Dr (Rio Vista Blvd)	Medium	\$ 352,200				
T128	Brisbane Rd to Nind St (Frank St)	Medium	\$ 98,210				
D130	Bermuda St to Regensberg Close (Christine Ave)	Medium	\$ 292,000				
N247	Riverlinks Blvd	Medium	\$ 190,600				
D132	Ron Penhaligon to Bermuda St (Cottesloe Dr)	Medium	\$ 307,500				
N133	(SEQCNP) Thomas Dr, Stanhill Dr to Burra St	High		\$ 310,000			
N215	KP Park to Marine Pde (Los Angeles Esplanade)	High		\$ 490,000			
N204	Pacific Highway to McPhail Rd (Beattie Road)	High		\$ 480,000			
tba	(Ed & Promo) Smith St to Jackman to S'Port SS	High		\$ 180,000			
tba	Queen St Southport off-rd bikeway	High		\$ 52,000			

Ref No.	Route Descriptor	Priority	2009/10	2010/11	2011/12	2012/13	2013/14
tba	Ashmore Rd, Molendinar on road	Low		\$ 56,000			
tba	Parkwood Blvd / Henry Cotton - D32	Low		\$ 80,000			
tba	Salerno St/Via Roma on-rd bikeway	Low		\$ 40,000			
tba	Thomas Drv, Surfers Paradise on-rd bikeway	High		\$ 13,000			
tba	GC Hwy Surfers to Hooker Blvd	High		\$ 195,000			
D148	Firestone St to Southport Nerang Rd (Wardoo St)	High		\$ 130,000			
N333	Paradise Place to Rivers Dr (Oak Avenue)	High		\$ 5,000			
N303	Tallai Rd to Franklin Rd (Old Coach Rd)	High		\$ 25,000			
N103	John Kemp St to GC Highway (Macarthur Pde)	High		\$ 80,000			
N362	Wunburra Circle	High		\$ 65,000			
D117	Denawen St to PBC High (Tahiti Ave)	High		\$ 115,000			
T157	Silvabank Dr to Bermuda St (Christine Ave)	High		\$ 25,000			
N315	Green Bridge to Yodelay St (Tracey Cres)	High		\$ 5,000			
D168	Guineas Creek Rd (Guineas Creek Rd)	Medium		\$ 747,000			
D72	Christine Ave to Cottesloe Dr (University Dr)	Medium		\$ 368,250			
tba	(SEQCNP) Surf Pde, Broadbeach - Margaret Ave to Wharf Pde, on-road	Medium			\$ 51,000		
tba	(SEQCNP) Robina Pkway off road Boowaggan Rd to Gooding Dr	Medium			\$ 250,000		
tba	Green Heart Pk off road connections	High			\$ 500,000		
D165	Boowaggan Rd to Robina Parkway (Gooding Dr)	High			\$ 250,000		
tba	(Education & Promo) Racecourse Dr Bundall off-rd bikeway	Medium			\$ 138,000		
tba	(Education & Promo) Arundel Dr - on road	Medium			\$ 40,000		
tba	Currumbin Valley Rd on road bikeway	Medium			\$ 215,500	\$ 215,500	
tba	Ghilgai Rd, Merrimac onrd	Medium			\$ 235,000		
tba	Crombie Ave, Bundall - Racecourse Dr to Bundall Rd, on/off road	Medium			\$ 99,000		
N214	Southport Nerang Rd to Dandar Dr (Off Road)	High			\$ 95,000		
N137	High St to GC Highway (North St)	High			\$ 85,000		
D106	Laycock St to Breaker St (Esplanade)	High			\$ 105,000		
N233	Etna St to Rio Vista Blvd (Green Bridge)	High			\$ 2,500,000	\$ 2,500,000	
D142	Marine Pde to Margaret St (Nerang St)	High			\$ 330,000		
N334	Elkhorn Ave to River Dr (Riverview Pde)	High			\$ 5,000		
N127	Phillip Park (The Spit)	High			\$ 300,000		

Ref No.	Route Descriptor	Priority	2009/10	2010/11	2011/12	2012/13	2013/14
D224	Slatyer St (Cammelia Ave to Ferry Rd)	High			\$ 40,000		
N153	Keith Hunt Park to Musgrave Ave	Medium			\$ 75,000		
N301	Ashmore Rd to Bundall Rd (Racecourse Dr)	Medium			\$ 227,000		
N354	Road from Brockman Way	Medium			\$ 55,000		
D200	Somerset Dr to Bonogin Way (Bonogin Rd)	Medium			\$ 125,000		
D131	Cheltenham Dr to Robina Prkwy (Scottsdale Dr)	Medium			\$ 164,000		
D149	Monterey Keys to Pacific Hwy (Oxenford Southport Road)	Medium			\$ 301,500		
D68	Collyer Quays to Robina Parkway (Off Road)	Medium			\$ 529,000		
tba	Biggera Waters to Kilmartin Esp	Medium				\$ 100,000	
N300	Akes Ave to Brighton Pde (Akes Ave)	High				\$ 5,000	
D137	Ferry Rd to Drury Ave (Benowa Rd)	High				\$ 95,000	
N238	Bridgewater Dr to Azzurra Dr (Bridge)	Medium				\$ 15,000	
N158	Hardys Dr to Somerset Dr (Hinterland Regional Prk)	Medium				\$ 195,000	
N159	Clover Hill Dr to Emerson Dr (Wyangun Valley)	Medium				\$ 205,000	
T139	Manchester Rd to Gooding Dr (Nerang Brdbch Rd)	Medium				\$ 6,000	
D195	Shiper Dr to Hope Island Rd (Dreamworld Prkwy)	Medium				\$ 60,000	
D139	Convention Ctr to Hooker Blvd (TE Peters Dr)	Medium				\$ 460,000	
N32	Ben Lexcen Pl to Markeri St (Ron Penhaligon Wy)	Medium				\$ 140,000	
N139	Sunshine Blvd to Oceanic Dr (Oceanic Dr)	Medium				\$ 62,400	
N237	Azzurra Dr to Cezaire Ave (Green Bridge)	Medium				\$ 101,700	
N346	Reedy Creek Rd to Christine Ave (Scottsdale Dr)	Medium				\$ 231,850	
N166	Norm Rix Prk to Musgrave Prk (Keith Hunt Prk)	Medium				\$ 350,000	
D233	Reedy Creek Rd to Christine Ave (Mattocks Rd)	Medium				\$ 24,000	
D163	Australia Ave to St Kilda Ave (GC Hwy & Cascade Grd)	Medium				\$ 105,000	
T158	Capri Bridge (Via Roma St)	Medium				\$ 35,000	
N217	Laycock St to Second Ave (Esplanade)	Medium				\$ 294,000	
N244	Tambourine Oxnfrd Rd to Oberon Wy (Riversdale Rd)	Medium				\$ 109,000	
N100	QLD Ave to Peerless Ave (Old Burleigh Rd)	Medium				\$ 173,200	
N227	Ferny Ave (Green Bridge)	Medium				\$ 2,500,000	\$ 2,500,000
D153	Signato Dr	Medium					\$ 113,750
N163	Trade Winds to Exsiting (Signato Dr)	Medium					\$ 19,500

Ref No.	Route Descriptor	Priority	2009/10	2010/11	2011/12	2012/13	2013/14
N373	RAB to Pacific Mwy (Tomewin St)	Medium					\$ 57,630
N343	Furlong to Monaco St (Rio Vista Blvd)	Medium					\$ 50,800
N344	Green Bridge to Via Roma St (Etna St)	Medium					\$ 3,300
D75	Christine Ave to Wedgebill Pde (Dunlin Dr)	Medium					\$ 58,000
N371	Pacific Pde to Karana St	Medium					\$ 9,300
N122	Salk Oval to GC Hwy (Thrower Dr)	Medium					\$ 66,200
N125	Currumbin Creek Rd to Michel St (Station St)	Medium					\$ 25,000
N130	Existing Path to Bundall Rd (Salerno St)	Medium					\$ 94,750
D172	Nerang Brdbch Rd to Boowaggan Rd (Robina Prkwy)	Medium					\$ 249,000
N45	Gooding Dr to Island Crt (Highfield Dr)	Medium					\$ 67,000
T135	Pacific Hwy to Thredbo Dr (Mudgeeraba Rd)	Medium					\$ 62,650
N345	Kingarry Crt to Gooding Dr (Ghilgair Rd)	Medium					\$ 112,350
D134	Markeri St to RTC Dr (Robina Prkwy)	Medium					\$ 675,000
D143	Seabeach Ave to GC Hwy (Markeri St)	Medium					\$ 370,750
N366	Margaret Ave to T.E Peters Dr (Sunshine Blvd)	Medium					\$ 27,200
D194	Old Coach Rd to Crystal Creek Rd (Ruffles Rd)	Medium					\$ 37,300
N138	Southport Nerang Rd to Numeralla Ave (Ashmore Rd)	Medium					\$ 69,000
N167	Parklands to Musgrave Park (Off Road)	Medium					\$ 131,250
N152	Olsen Ave to Hockey Club (Off Road)	Medium					\$ 206,500
N224	Ewan St to Price St (Off Road)	Medium					\$ 118,450
N184	Birt Ave to Cypress Ave (River Dr)	Medium					\$ 89,750
N232	Campbell St to Conifer St (Green Bridge) remaining 50% funds to be carried into 2014/15	Medium					\$ 2,500,000
T127	Olsen Ave to Jimmieson Ave (Usher Ave)	Medium					\$ 126,000
N304	Cypress Dr to end of Conifer Crt (Conifer Crt)	High					\$ 10,000
<b>TOTAL CAPITAL EXPENDITURE</b>			<b>\$ 6,486,510</b>	<b>\$ 6,286,250</b>	<b>\$ 7,900,000</b>	<b>\$ 7,992,650</b>	<b>\$ 7,860,430</b>

<b>Grants</b>	\$ 3,236,510	\$ 3,136,250	\$ 3,900,000	\$ 3,992,650	\$ 3,860,430
<b>Revenue</b>	\$ 3,250,000	\$ 3,150,000	\$ 4,000,000	\$ 4,000,000	\$ 4,000,000
<b>Total</b>	<b>\$ 6,486,510</b>	<b>\$ 6,286,250</b>	<b>\$ 7,900,000</b>	<b>\$ 7,992,650</b>	<b>\$ 7,860,430</b>

All costings were produced based on past experience and examples from GCCC bicycle projects, which used the Council supplied unit rates. A provisional amount of 10% was allowed for all Year 1 and Year 2 projects, with a larger sum of 20% percent for Years 3, 4 and 5 to allow for cost changes and the greater uncertainty of these future program years.

Once costed, some adjustment of the program years for final bikeway sections was undertaken to achieve a balance between the available funds for each year. Further revision of budget years was undertaken in the final revision of this report to account for Gold Coast City Council commitments for the 2008/09 financial year.

Within the five year works program an allocation has been provided for the following:

- ongoing development of the Coastal Recreational Corridor, with specific projects budgeted and detailed for years 2, 3, 4 and 5; and
- a Special Construction Fund, to provide for various works identified during the site inspection and design phase (e.g. detailed design of for 'bicycle-friendly' intersection improvement works). Works to these intersections generally extend beyond bikeway construction and require detailed consideration of all traffic modes. A list of priority intersections is provided below in Table 12.2.

**Table 12.2 - Priority Intersections Requiring Feasibility / Detail Design**

No.	Intersection Description	Intersection Type
1	Ross Street / Ashmore Road (Ashmore)	Roundabout
2	Cheltenham Drive / Cottesloe Drive / Ron Penhaligon Way (Robina)	Roundabout
3	Gold Coast Highway / Marine Parade / Stevens Street (Southport)	Signalised
4	Burleigh Road / Gold Coast Highway / The Esplanade (Burleigh Heads)	Signalised
5	Bundall Road / Ashmore Road / Salerno Street (Bundall)	Signalised
6	Via Roma / Gold Coast Highway / Remembrance Drive (Surfers Paradise)	Signalised
7	Reedy Creek Road / Pacific Highway (Stephens)	Interchange
8	Oxley Drive / Columbus Drive (Hollywell )	Signalised
9	Gold Coast Springbrook Drive/ Somerset Drive/ Franklin Drive (Mudgeeraba)	Signalised
10	Elkhorn Avenue/ Thomas Drive/ Ferny Avenue (Surfers Paradise)	Signalised
11	Parklands Drive/ Smith Street	Signalised

### 12.2.2 *Bikeway Treatments*

GCCC generally use the following standard treatment types 1 to 7 for their bikeway routes:

- Treatment 1 - Off-road Shared Use Path
- Treatment 2 - On-road Shared Bicycle Car/Parking Lane (full line marking)
- Treatment 3 - On-road Shared Bicycle Car/Parking Lane marking
- Treatment 4 - On-road Shared Bicycle Car/Parking Lane (broken line marking and logos)
- Treatment 5 - On-road Shared Bicycle/Motor Vehicle Zone (signage and logos)
- Treatment 6 - On-road Bicycle Lane/Indented Parking Bay
- Treatment 7 - On-road Exclusive Bicycle Lane

Implementation examples and an Austroads Part 14 reference for each treatment are contained in Appendix E. The GCCC also utilise the Roads and traffic Authority (RTA) NSW Bicycle Guidelines as standard design treatments, some of which are also indicated in Appendix E.

## 12.3 External Funding Sources for Bicycle Facilities

---

To accelerate the implementation of the city's bicycle network, the use of funding from external sources would be beneficial. Available funding sources and schemes frequently change. Council presently receives funding through Queensland Transport, with other funding sources investigated for projects including the Veloway and Southport Bridge Widening. Key potential external revenue sources are as follows:

### 12.3.1 *Commonwealth*

#### ***Federal Road Safety Black Spot Program***

This program is aimed at reducing repeatable crashes and is part of a rolling program with projects subject to the approval of the Federal Minister for Transport. Total funding allocation for the years 2004 – 2009 have been publicised, with \$11.9M allocated to Queensland for 2008/09.

Funding is mainly available for the treatment of Black Spot sites, or road lengths, with a proven history of crashes. Project proposals must be able to demonstrate a benefit to cost ratio of at least 2:1.

For individual sites such as intersections, mid-block or short road sections, there has to be a history of at least three casualty crashes over a five year period. For lengths of road, there must be an average of 0.2 casualty crashes per kilometre of the length in question over five years; or the road length to be treated must be amongst the top 10% of sites a demonstrated higher crash rate than other roads in the region. The requirement of a history of crashes is necessary to ensure that those sites that have a recurrent problem are targeted for treatment. (E.g. Gold Coast Highway Southport to Palm Beach)

The AusLink Black Spot Program also recognises that there are road locations which could be considered as 'accidents waiting to happen'. Therefore, up to 20% of program funds may be used to treat sites where road traffic engineers have completed a Road Safety Audit and found that remedial work is necessary. This allows an opportunity for proactive safety works to be undertaken before casualties occur.

Black Spot schemes in the GCCC area for projects in the 2008/09 allocation are:-

- Gold Coast – Springbrook Road \$75,000
- Beaudesert – Nerang Road \$200,000
- Currumbin Creek – Tomewin Road, 3km road length \$250,000
- Oxenford – Coomera Gorge Road, 5km \$70,000
- Burleigh Connection Road, Ambassador Drive \$40,000
- Burleigh Connection Road, Mattocks Road \$40,000
- Southport – Burleigh Road \$20,000

The scheme is administered in Queensland by the Department of Main Roads

### **12.3.2 State**

#### **(1) Transport Infrastructure Development Scheme (TIDS)**

The Transport Infrastructure Development Scheme (TIDS) supports the local transport infrastructure needs of regional and rural communities throughout Queensland. TIDS funding allocations aim to:

- Develop bikeway networks.
- Support economically viable industry developments in regions (for example, tourism and freight in remote areas).
- Improve safety and traffic operations.
- Improve access to national parks, consistent with park management plans and other recreational areas.
- Improve bus set-down and parking facilities at schools

This scheme generally provides subsidies to local government for works on local government roads on a 50/50 funding basis. The scheme is administered in Queensland by Department of Main Roads.

#### **Cycle Network Program (CNP)**

The Cycle Network Program was established in 2006 to fund the development of cycling facilities throughout south east Queensland.

The Queensland Government allocated A\$556 million (in the [South East Queensland Infrastructure Plan and Program 2007–2026](#)) to be distributed over 20 years to develop a regional cycle network in south east Queensland. The main objective is to develop facilities that will encourage more sustainable transport modes, such as cycling, walking and the use of public transport.

Cycle Network Program funds will provide cycling infrastructure for transport and utility trips that connect to major attractors such as schools, universities, shopping complexes and workplaces.

Sixty per cent of program funds will be matched by local governments as capital grants for cycling projects while the remaining 40 per cent will fund cycling works associated with state-owned assets.

Funding is available to 8 local governments in south east Queensland and to state agencies to develop cycling facilities on state-owned assets. The Cycle Network Program 2008–09 funding is as follows:

- capital grants—A\$23.4 million
- capital works—A\$10.3 million.

Local governments are invited to apply for grants to develop cycling facilities. An application is scored against five equally weighted selection criteria to determine its contribution towards the Queensland Government's objectives and priorities

Projects considered eligible for funding as part of this program include:

- cycling infrastructure where it provides a transport or utility function including but not limited to:
  - on-road cycle facilities including shoulder widening, line marking, lane and intersection reconfiguration, priority signalling
  - off-road shared use/exclusive use pathways
  - crossing provisions such as bridges, underpasses and at-grade treatments
  - directional and route signage
  - mid-trip and end-of-trip facilities
  - lighting of cycleways and bike lanes
- detailed planning and design of cycle infrastructure projects
- data collection for the purposes of monitoring and reporting on the performance of cycle infrastructure projects delivered as part of the Cycle Network Program
- land purchase as part of stand-alone cycling projects or larger infrastructure projects where it directly contributes to the acquisition of a critical cycling corridor linkage that cannot be achieved in any other way
- developing, improving and updating local cycle strategies and network plans, which will contribute to the outcomes of the Integrated Regional Cycle Network Plan.

## **(2) TIDS - SafeST Infrastructure Subsidy**

This scheme generally provides 50/50 contributions to projects improving access to schools and is administered in Queensland by the Department of Main Roads.

Project selection is based on the following:

- Crash history
- Assessed Risk
- Community Priority

This scheme is funded from revenue taken from camera detected offences in Queensland (estimated at \$10 million/year) and is aimed at improving traffic safety.

Project selection criteria consists of the following:

- Funding not to exceed \$500,000
- Projects must not be funded already by other sources
- Generally meets the minimum criteria for the Federal Road Safety Black Spot Program

However, the last criteria point may be relaxed, provided there has been at least one casualty accident and sufficient prioritised funds exist.

### 12.3.3 **Infrastructure Charges Plans**

There are a number of important issues that need to be considered in relation to an Infrastructure Charges Plan (ICP) for bikeways. While the Draft IPA Guidelines to Infrastructure Charging (4/98, June 1998) provides guidance as to the general principles for preparing ICPs, there several issues remain on which Council will need to make clear decisions.

Firstly, infrastructure charges represent only one mechanism for funding items such as bikeways. Other avenues include the introduction of differential rates or special rates or charges, general rates and infrastructure agreements. All these other avenues must be evaluated as part of an ICP.

All infrastructure charges can only be applied if Council has developed an ICP. Once an ICP has been adopted, it locks Council into a schedule of works identified in the ICP. Council is in fact committed to undertake this schedule of works, which can only be amended through a formal amendment process to the Planning Scheme. This effectively limits the discretionary income available to Council.

Another issue is the need to establish a clear nexus between the infrastructure item and the service received by those being charged. To achieve this for infrastructure items for open systems (such as bikeways and roads), a hierarchy is produced to enable differentiation between those items serving regional (or inter suburban), as apposed to local catchments. Different cost apportionment principles can then be applied to different levels of the hierarchy.

Whilst the principles are quite logical and seemingly simple, the difficulty comes in the delineation of catchment boundaries for the different levels of the hierarchy. Rarely are detailed usage models applied to bikeways, which can enable the level of use to be determined objectively. For this reason, it may be more appropriate to simply apportion the cost of all bikeways within a defined catchment equally across the development within that catchment. This approach works well in municipalities with relatively discrete communities.

One compromise approach may be to apportion the cost of all principal or “inter-suburban” bikeways across the entire City, and the remaining “collector” links (ie. district and neighbourhood routes) in the network on a suburb by suburb basis. A further issue is whether to apply the ICP to just greenfield development areas or to both greenfield *and* developed areas.

Some links in the bicycle network will form a dual use with either pathways or the road system. As these latter elements are defined as “development infrastructure” items, for which a separate ICP can be prepared, there will need to be some discounting factor in the proportion of cost which can be charged under a bikeways ICP to avoid “double dipping”. Alternatively, these items could be excluded from other infrastructure plans. Related to this, it may be more appropriate to limit the bikeway items included in an ICP to off-road links only, on the basis that on-road facilities could be picked up in the capital works program for roads and a separate ICP.

Finally, Council will need to develop an appropriate, achievable level of service for bikeways. It may not be economically feasible to achieve the desirable standards of construction recommended by Austroads. An explicit outcome of this study is to recommend levels of construction, which can provide an appropriate level of service at reasonable cost.

## 12.4 Bikeway Maintenance

The costing of bikeway maintenance activities has been categorised into on-road and off-road sections, with the estimated average frequency of required activities tabulated according to section hierarchy. The maintenance activities and frequencies are listed below in Table 12.4.

Note that maintenance activities for bikeways are divided over a number of branches within Council (i.e. Roads Infrastructure and Traffic Operations Departments).

**Table 12.4 - Maintenance Activities and Frequency**

Activity	Trunk Frequency	District Frequency	Neighb'd Frequency	Comments
Repaint lines	2 yr	3 yr	NA	On-road Only
Repaint Symbols	2 yr	3 yr	7 yr	
Sign Repair/ Replacement	5 yr	5 yr	5 yr	
Sweeping	6/ yr	3/ yr	2/ yr	Off-road Only
Clearing Vegetation	1 yr	1 yr	3 yr	
Safety Audits	1 yr	2 yr	5 yr	Off-road Only
Pavement Repairs	5 yr	7 yr	10 yr	Off-road Only

## 13. References

Bauman, A. (2004). The health benefits of physical activity in the older adults-epidemiological approaches to the evidence. *Exercise and physical activity in older people* , 1-24.

Econtech Pty. Ltd. (2007). *Economic modelling of the net costs associated with non-participation in sport and physical activity*. Australia: Econtech .

Gold Coast City Council. (1998). *Gold Coast City Transport Plan*. Gold Coast: Gold Coast City Council.

Gold Coast City Council. (2007, January 08). Gold Coast Planning Scheme Version 1.1. Gold Coast, Queensland, Australia.

Gutteridge Haskins & Davey Pty Ltd. (2001). *Gold Coast City Council Bicycle Network Operational Plan*. Gold Coast: Gold Coast City Council.

Hahn, A., & Craythorn, E. (1994). Inactivity and physical activity in two regional centres. *Health Promotion Journal of Australia*, Vol. 4 , 43-45.

Kelley, G. A., & Kelley, K. S. (2001). Aerobic exercise and resting blood pressure in older adults: meta-analytic review of randomized, control trials. *Journal of Gerontology: Series A: Biological Science and Medical Science*, Vol. 56 , 298-303.

Kelley, G. A., Kelley, K. A., & Tran, Z. V. (2001). Aerobic exercise and resting blood pressure: a meta-analytic review of randomized, control trials. *Preventative Cardiology* , 73-80.

Kelley, G. A., Kelley, K. A., & Tran, Z. V. (2001). Walking and resting blood pressure in older adults: meta-analysis. *Preventative Medicine*, Vol. 33 , 120-127.

Litman, T., & Fitzroy, S. (2003). *Safe Travels: Evaluating Mobility Management Traffic Safety Impacts*. Retrieved 2005, from Victoria Transport Policy Institute:  
<http://www.vtpi.org/safetrav.pdf>

Queensland Transport. (2003). *Queensland Cycle Strategy*. Brisbane: Queensland Government.

Queensland Transport. (2001). *Transport 2007: An action plan for South East Queensland*. Brisbane: Queensland Government.

Redland Shire Council. (2004). *Redlands Cycling and Pedestrian Strategy*. Brisbane: Redland Shire Council.

Saris, W. H., Blair, S. N., van Baak, M. A., Eaton, S. B., Davies, P. S., Di Petro, L., et al. (2003). How much physical activity is enough to prevent unhealthy weight gain? *IASO 1st Stock Conference*, (pp. 4,101).

Telfer, B., Rissel, C., Bindon, J., & Bosch, T. (2006). Encouraging cycling through a pilot cycling proficiency training program among adults in Sydney. *Journal of Science and Medicine in Sport*, Vol. 9 , 151-156.

Wennberg, P., Lindahl, B., Hallmans, G., Messner, T., Weinehall, L., Johansson, L., et al. (2006). The effects of commuting activity and occupational and leisure time physical activity on risk of myocardial infarction. *European Journal of Cardiovascular Prevention & Rehabilitation*, Vol. 13 , 924-930.

World Health Organisation. (2004). *Young people's health in context: Health behaviour in school aged children study: international report from 2001/2002 survey*. Copenhagen: World Health Organisation Regional Office for Europe.