



Improving urban bicycle transportation in NSW

BIKESydney and BIKEast's response to the
NSW Long Term Transport Master Plan
discussion paper

BIKEast

bike 
sydney.org



Background

BIKESydney and BIKEast represent the interests of people who ride bicycles in inner Sydney and Sydney's eastern suburbs. We are affiliated with Bicycle NSW.

We seek to develop a city:

- in which riding a bicycle is part of everyday life;
- that is vibrant, healthy, productive, creative and robust;
- that values community, mobility, health, wellbeing, social equity and sustainability, and
- where people of all ages can make easy choices to ride a bicycle, walk and take public transport.

In the past, the solution to transport congestion has been to build new roads or create new lanes on existing networks. Roads have taken priority in funding over other modes of transport.

The prioritisation of privately owned motor vehicles in transport planning and investment is an unsustainable cost to the NSW community. Our focus should be on prioritising the sustainable transport modes of walking, cycling and public transport and ensuring that these modes work together in supportive harmony. This needs to be consistently applied across the urban areas of NSW.



Executive Summary

This submission responds to specific questions raised in the NSW Government's Long Term Masterplan Discussion Paper. Our response focuses on the 10 key strategic questions proposed by the discussion paper that relate to active transport. These questions span the broad areas of Sydney Transport, Regional Transport, Freight and Funding.

In response to the key question relating to the priorities for investment in Sydney's transport infrastructure (Q5), we recommend five investment priorities:

- Urban bicycle network planning and development
- Demonstration and iconic projects
- Critical network links
- Expanding bicycle park 'n' ride
- Removing structural impediments

Transport planning and provision must recognise that the road reserve exists for the purpose of the mobility of people and freight, not the flow and storage of cars. We recommend that NSW adopts a transparent road operations and design management system similar to the SmartRoads approach adopted by Victoria.

In response to the questions relating to ways of encouraging cycling, walking and multi-modal journeys (Q 9 + 10) we recommend five strategies:

- Set targets to reduce private motor vehicle use for distances under 10km
- Make cycling connect to urban centres and between these centres
- Strengthen and improve cycling as a feeder mode to public transport
- Provide State leadership by planning for major urban bicycle networks and provide and maintain the key arteries of this system

- Remove the structural imbalances and system bias that hamper the development of bicycle transport

The significant funding imbalance between cycling and other transport modes must be addressed. Investment in high quality infrastructure results in more people cycling. NSW has the lowest levels of cycling participation in Australia the result of continual under investment and haphazard planning. We recommend an annual investment of \$72 million for five years to prioritise the construction of a high quality, connected network of bicycle infrastructure in the State's urban centres. This should be in addition to a commitment to secure 1% of roads expenditure for bicycle related infrastructure and to annually review that percentage of investment to match it to the cycling transport mode share.

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Introduction

Urban development and transport

From the 1920s onwards major Australian cities such as Sydney grew outwards from their 19th Century walking-distance cores into new suburbs built along a radial network of train and tram lines. In the post-World War II period the availability of cheap liquid fuels sparked a further and even larger suburban development this time based on the private motor vehicle.

Australia was quick to seize on the advent of bicycles from the late 1890's as it was an inexpensive, reliable and widely available form of transport for several decades - in the bush as well as in urban areas. Even Australian sport was dominated by bicycle events and much of our current city and rural road networks were in fact cycleways first.

In Australia, as in most other western nations, adult bicycle use went into decline from the 1950s with the growth of car-based travel in the rapidly growing suburbs. Up until 1970 nearly all NSW children walked or cycled to school. Nowadays most are driven.

In the 1970s a series of OPEC oil supply embargos of the USA, the Netherlands and other nations caused an international economic crisis resulting in a widespread re-evaluation of energy policy. Of the two nations most impacted by the crisis, only the Netherlands made changes to its transport and land use policies intended to produce a long-term shift away from a heavy reliance on motorised road-based transport.

While cycling rates in the United States continued to decline for the remainder of the 20th Century, cycling rates in the Netherlands began a steady long-term increase.

Throughout the remainder of the 20th Century other northern European nations have increased investment in cycling infrastructure and services. These countries have all experienced an increase in bicycle use and a resultant rise in mode share for cycling.

How does bicycle transport fit into the mix?

Cycling can make a major contribution to urban transport, to the general health of the community and to the liveability of our cities and towns. It can help to reduce road congestion by offering an alternative to the private motor vehicle particularly over distances of up to 10 kilometres.

The key to productive investments in cycling is to understand the mode and the way it interacts with other modes in the overall urban transport mix.

Firstly, cycling is essentially an urban vehicle designed to transport a single person over relatively short distances with remarkable efficiency. Technological advances in bicycle equipment and mechanics have improved the speed, hill climbing efficiency and gear-carrying capacity of the vehicle. Over shorter distances (up to 5 kilometres) trip times by bicycle are better than, or comparable to, other road based modes particularly in peak travel times.

Secondly, because of its small vehicle size the bicycle does not contribute to road congestion and can transport more people per hour per traffic lane-space than either cars or buses (see figure 1).

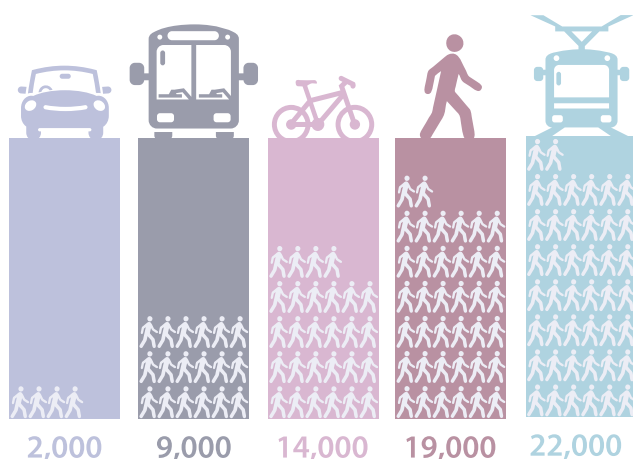
Thirdly, due to its small vehicle size, the storage of bicycles at the beginning or end of each trip is considerably less than for cars, making cycling an ideal feeder mode for rapid public transport. Above the one kilometre walking catchment and up to 5 kilometres cycling requires the same amount of physical effort as walking. The spatial requirement and cost of storage per bicycle at stations is far lower than for cars.

In order to realise the considerable people carrying and spatial benefits of the bicycle, certain factors need to be taken into account. First and foremost the general public have stated in numerous surveys and studies undertaken over the past decade that they place a high importance on their personal safety. For the majority, those who don't regularly cycle but are willing to take it up, the quality of cycle facilities and the degree of separation from motor traffic are their most important considerations.

The separation of cycle facilities from motor traffic is largely a spatial issue, not one of cost. The older parts of our cities have mostly been developed with narrow road corridors (typically 20 metres). This was not such an issue when road user volumes were light and speeds were low. During the early days of cycling, urban cyclists had little difficulty sharing road space with other modes.

The enormous spatial requirement for moving motor vehicles added to the large amount of space taken up by their storage on scarce public road space has squeezed cycling activity from our busiest roads and reduced the community's ability to freely cycle throughout the road network in relative safety. The way we allocate, manage and use space within the road corridor is the key not only to a successful bicycle transport system but to more liveable urban areas.

Figure 1 - People carrying capacity for transport modes



Number of people crossing a 3.5m wide space in an urban environment during a one-hour period.

Source: Ticket to the future: 3 Steps to Sustainable Mobility. UITP, International Association of Public Transport, Brussels, 2003, based on Botma & Pependrecht, Traffic operation of bicycle traffic, TU Delft, 1991.



Sydney Transport

In solving the transport problems in Sydney, what transport mode should be the first priority for new investment, bearing in mind the need for a socially equitable and environmentally sustainable transport sector? (Q4)

The current prioritisation of privately owned motor vehicles in transport planning and investment is an unsustainable cost to the NSW community.

The financial costs of car-dependency are considerable for individuals and households. An average car costs around \$6,000 a year to run in Sydney, one fifth of the minimum full time wage. When combined with high cost of housing, car dependent households already financially stressed can become highly vulnerable to rising petrol prices and inflation.

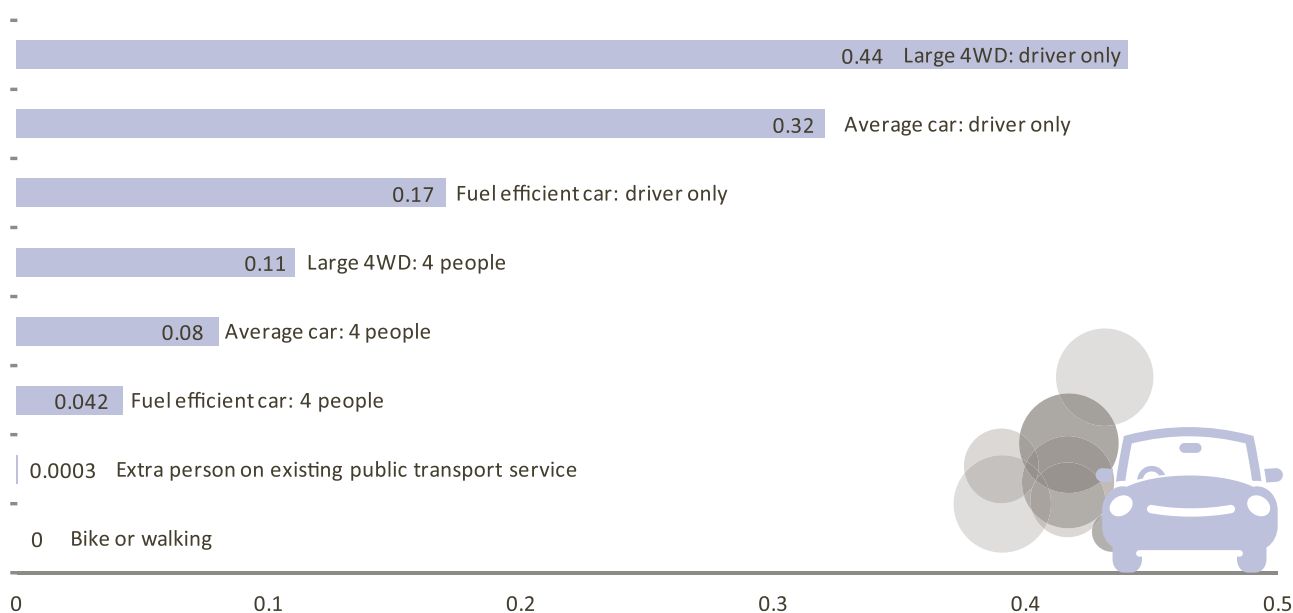
The environmental cost of a transport system that predominantly relies on car travel reduces liveability. Cars emit both greenhouse gases and other fine particulates. A significant proportion of transport emissions are from cars (see Figure 2).

Our focus should be on prioritising the sustainable transport modes of walking, cycling and public transport and ensuring that these modes work together in supportive harmony. This needs to be consistently applied across the urban areas of NSW.

Active transport, such as walking and cycling, builds frequent physical activity into people's lifestyles which has health benefits in addition to positive social equity and environmental sustainability outcomes.

In areas where a high quality public transport service exists, all possible measures should be taken to ensure that access to, and integration with the sustainable modes is facilitated and improved.

Figure 2 - Greenhouse gas emissions from different forms of transport



Source: Australian Greenhouse Office, 2006

Recommendations

- Prioritise the sustainable transport modes of walking, cycling and public transport and ensuring that these modes work together in supportive harmony. This needs to be consistently applied across the urban areas of NSW.**

What do you consider to be the main priorities for investment in Sydney's transport infrastructure? (Q5)

Priority investments should be made in public transport and active transport.

In terms of public transport, the rail network should be expanded to create a web connecting Sydney's major centres across the radial network focused on the Sydney CBD.

We recommend five principal types of investment in bicycle transport.

- Urban bicycle network planning and development
- Demonstration and iconic projects
- Critical network links
- Expanding bicycle park 'n' ride
- Removing structural impediments

Urban bicycle network planning and development

Development of an environment that encourages bicycle transport requires the provision of a well planned, integrated, continuous and legible network of infrastructure. The linking of bicycle lanes (on road) and paths (off road) with residential areas, shops, schools, workplaces and recreational reserves is essential to the success of the network to encourage people to leave their cars at home for short trips.

Inner Sydney Regional Bicycle Network Plan

The City of Sydney is working with 14 councils to develop a cycleway network in excess of 284 kilometres stretching from Kogarah to Chatswood and from Rhodes to Watsons Bay. The proposed project is in addition to the City's current \$76 million works program to build 200km of cycleways in the City Centre and inner city villages by 2017.

This Inner City Regional Bicycle Network will provide access for 1.2 million people in 164 suburbs, across City of Sydney, Leichhardt, Ashfield, Marrickville, Rockdale, Canterbury, Canada Bay, Lane Cove, Willoughby, North Sydney, Mosman, Woollahra, Waverley, Randwick and Botany Bay. The City of Sydney is already building the first parts of the network as part of \$76 million, 200 kilometre cycleway network in the City of Sydney Local Government Area.

Figure 3 - Proposed Inner Sydney Regional Network

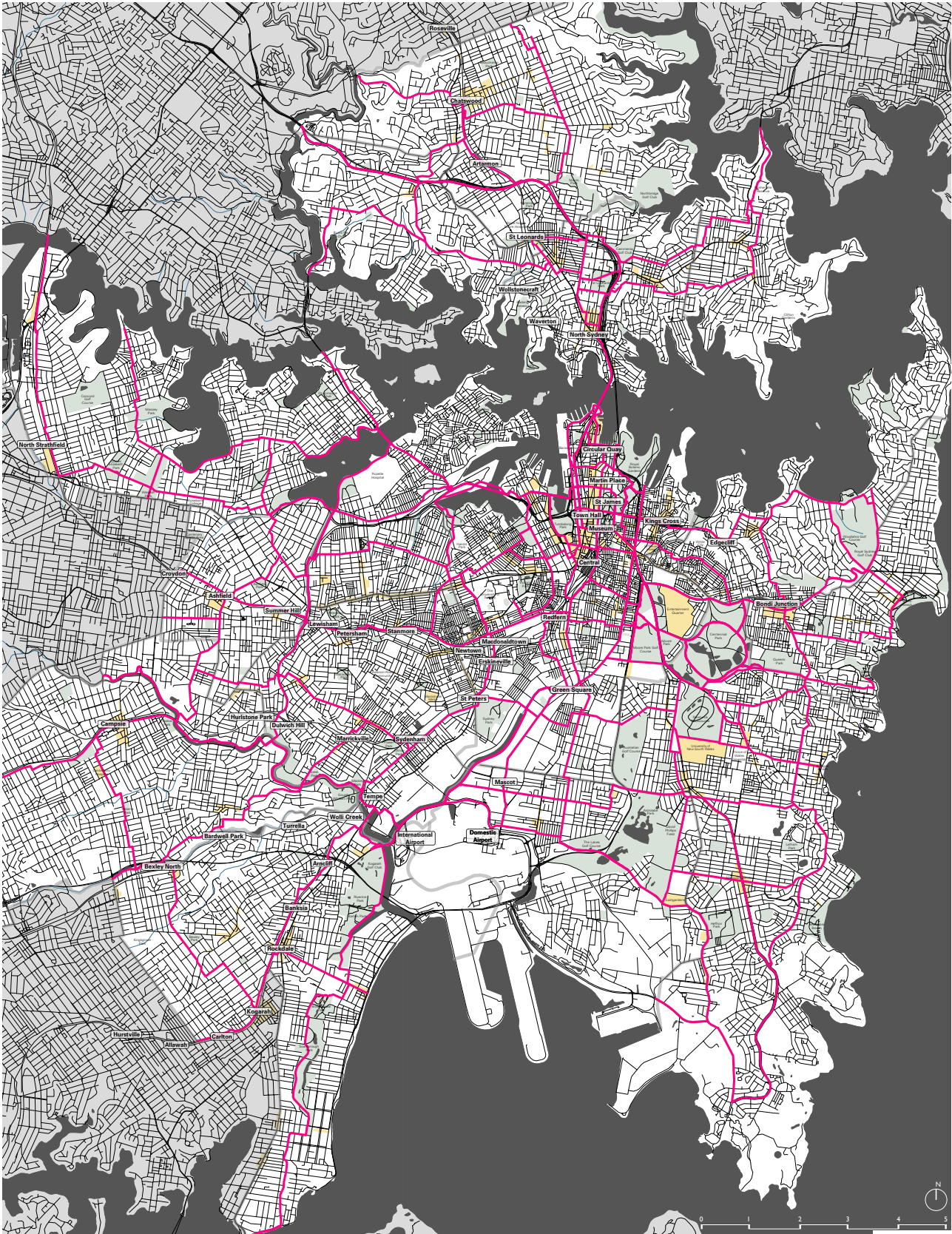


Figure 4 - Children ride to school on the City of Sydney's Bourke Street cycleway. *Source: City of Sydney*



In 2010, the City of Sydney commissioned independent research to quantify the economic benefits of the proposed Inner Sydney Regional Bike Network. The study by AECOM found the network would deliver at least \$506 million - or \$3.88 for every dollar spent - in net economic benefits over 30 years, and reduce Sydney's traffic congestion by 4.3 million car trips a year. The study forecasts a 66 per cent increase in bike trips by 2016 and a 71 per cent rise by 2026 if the 284 km network - spanning 15 council areas, 164 suburbs and a population of 1.2 million people - is built at a cost of \$179 million.

The development of convenient and connected bicycle networks is reliant on the cooperation of the many organisations involved and the formulation of a workable plan which clearly defines regional priorities and agency responsibilities. It is recommended that the City of Sydney project be supported and developed as a model for similar regional bicycle network plans in other regions of Sydney and investigated for Wollongong and Newcastle.

Demonstration and iconic projects

High profile, iconic projects are vitally important as they send a strong message to the community that cycling is for all the community, that governments want to make it an attractive and viable option and that it is possible to use bicycles for everyday transport. These types of projects should attract the support of a major funding program. A partnership and funding could be sought from the Commonwealth Government for this program.

Bourke Street cycleway, Surry Hills, Sydney

The City of Sydney as part of its cycle infrastructure program has recently constructed a dedicated, separated cycleway along Bourke Street from Sydney Harbour to Green Square. Bourke Street already provides a valuable north-south cycle link that connects with local and regional cycleways. The street upgrade increases safety and usability by separating cyclists from traffic, while providing footpath upgrades, increased street trees and more kerb plantings along the route.

Extensive community research conducted as part of the Sydney Bicycle Strategy produced a strong unequivocal preference for separated facilities. The City's Strategy aims to increase the cycling network to almost 200 kilometres. This includes 55 kilometres of separated cycleways and approximately 145 kilometres of cycleways, dedicated cycle lanes and shared zones. The strategy's aim is to increase cycling by 500 per cent in the city, by providing the infrastructure to make cycling a more safe and attractive choice.

Figure 5 - Meadowbank Bridge is a good example of how government agencies can work together to provide critical network links. Source: <http://macunihockey.org>



The Bourke Street bicycle route is one of the first fully separated bicycle paths in the City of Sydney. This style of bicycle path is to be rolled out across the City to ensure a network of safe cycle paths are available. The City is committed to providing safe and accessible cycling routes that can be used by people of all ages including children as a viable alternative transport option. This type of cycleway – separated from the traffic – is preferred by the community because it greatly increases safety for all cyclists and helps all traffic flow better when compared to a simple cycle lane marked upon the road surface.

Bike counts at key intersections show bike trips have increased in areas where the network has been built. Counts undertaken by the City of Sydney in March 2010 and March 2011 show that at:

- Bourke Road / Gardeners Road (Alexandria) bike rider numbers have risen from 51 to 178 in the AM period, a 249% increase; and
- Bourke Street / Phelps Street (Surry Hills) bike rider numbers have risen from 99 to 262 in the PM period, a 165% increase.

Critical network links

A program to specifically fix important missing links and to bridge gaps in the bicycle and pedestrian network will provide effective investment. This type of project opens up large areas of the active transport network by closing network gaps and bridging difficult barriers. A bridge over a creek will often shorten a route so that it now becomes an achievable route option rather than a lengthy deviation. Barriers can be natural (e.g. waterways; very steep hills) or constructed (e.g. major roads; rail lines; major intersections with inadequate crossings for cyclists and walkers; or, building developments lacking permeability or ease of access for cyclists and pedestrians). Solutions can often be simple, such as the reconfiguration of an intersection layout and associated traffic signal operations, or may require major work, such as a bridge or overpass.

Existing examples

Pymont Bridge, Sydney. The opening up of this bridge to cyclists made it possible for residents of Sydney's Inner West to safely and comfortably access the CBD and City North areas. The construction of adjacent cycleway facilities along Kent and King Streets has now closed an important network gap by linking the Pymont Bridge route to the Harbour Bridge.

Meadowbank Bridge, Rhodes. This disused railway bridge was converted to use by walkers and cyclists and provides an important link across the Parramatta River. Bridges and large engineering projects such as these are usually very costly. To make such important linkages it is often preferable to partner with other government agencies. The Meadowbank Bridge is a good example of this. Seed funding from the Department of Planning provided for the necessary feasibility investigations and encouragement for State Rail (the bridge owner) to undertake the conversion, and the RMS to complete the approach works to connect the converted bridge to the existing bicycle and local street networks.

Potential projects

A program to specifically fix important missing links and to bridge gaps in the bicycle and pedestrian network provides very good value for money. A successful project will make available far greater segments of the active transport network than the actual length of the link project itself. Projects should consider walking as well as cycling. Examples include:

HarbourLink: HarbourLink would provide a 3km missing link between the Sydney Harbour Bridge to Naremburn. The proposal would connect to the 7.5km long SUP (shared user path / cycleway) from Naremburn via Epping Rd (Lane Cove) through to North Ryde. It would remove the need for bicycle riders to climb the Harbour Bridge steps. Every hour during the morning peak around 800 people on bicycles ride across the Sydney Harbour Bridge.



Figure 6 - HarbourLink concept map.

Source:sydneyharbourlink.com. Map by Renelt Belic Design

Figure 7 - City West Cycle Link concept map. Source: *bikesydney.org*



City West Cycle Link: The City West Cycle Link (CWCL) will make cycling from the inner west to the CBD accessible to all. The proposed link would provide a flat, completely off-road cycleway, linking the proposed GreenWay, and existing Bay Run cycle path to the Anzac Bridge. The proposed route, running along the light rail corridor, avoids the traffic, “car door” lanes, 21 intersections and 45 vertical metres of climbing of the current Lilyfield Rd route and will make this route appealing to new riders and families.

Expanding bicycle park ‘n’ ride

Public transport cannot function effectively without some other method of transport before and after transit. Very few public transport patrons live right at their origin stop, or travel to a destination adjacent to their final stop or station. Currently the Sydney rail transport network is fed largely by walkers and some feeder bus routes. Bus routes reach out into areas not otherwise served by rail and though some services are coordinated with the rail system the connection is neither seamless nor fully reliable. Many rail stations have car-parks which are expensive to construct and require large areas of space. Along with ‘kiss-and-ride’ drop-off zones, car-parks at stations generate increased local traffic congestion. To encourage use of the bicycle as an alternative travel option, it is essential to provide safe access and facilities for bicycle riders at railway stations and other public transport hubs.

Though the bicycle is ideally suited for shorter trips of up to 10km, the use of the bicycle in conjunction with public transport can greatly extend the range and length of trips. Bike ‘n’ ride schemes aim to improve the connection between cycling and public transport by:

- Improving bicycle network access to railway stations (usually within a 5km radius);
- Improving and extending (long term and short term) bicycle parking provision at railway stations and selected high volume bus stops; and,
- Improving station accessibility and rider and walker safety around station entrances in conjunction with Council traffic calming and station access programs.

Existing example

In Perth, WA, the Public Transport Authority (PTA) has developed a sophisticated set of initiatives which are designed to improve links between cycling and public transport. Jim Krynen who heads the PTA’s Cycling Integration Unit is responsible for the installation of bicycle parking facilities at stations including lockers, racks and cages. Additionally Krynen has brought about a cultural shift at the PTA which has broadened the perspective of bus and railway staff to encompass cycling in public transport promotion, processes and policies. As a result of staff programs, more staff at the PTA (including train drivers) cycle to work than ever before.

Figure 8 - Prioritised bicycle parking at public transport interchange, Perth. *Source: Australian Bicycle Council*



The Perth electric rail network is extensive and growing and the PTA actively markets bike 'n' ride to its patrons and potential customers. The importance of the Western Australian program is that the Authority sees a real need to attract cyclists as well as walkers to its service. Critical to the success of any bike 'n' ride program is that it needs to be fully integrated within the public transport operator so that deeper connections within the organisation can be developed, as the WA initiatives demonstrate. Councils and external agencies are generally willing to assist with land and local access projects once the transport operator has identified the local station project(s).

Removing structural impediments

If bicycle transport is to develop with the full respect and cooperation of the entire community, user behaviour issues need to be addressed with well-directed behavioural campaigns to support the necessary infrastructure improvements.

This section concentrates on the need to remove key structural or regulatory barriers and behavioural impediments to cycling. Each of the following barriers and impediments to greater cycling will need the support of the transport agencies to ensure that regulatory changes are made to rectify each issue.

Separated facilities

The general public, as recent surveys reveal, express a strong preference for cycling on well-designed facilities which are removed from other classes of vehicles. This is particularly important for the large numbers of people who are not confident, fit and assertive and who are unable to safely share vehicle road space or use quick moving travel lanes.

Road designers and engineers have a limited palette of facility designs which can be used to develop bicycle transport networks in urban and rural environments.

Though most off-road paths built in NSW are shared paths, the NSW and Australian road rules do not treat cyclists in the same way as pedestrians. It may be possible to design and build a pedestrian route with full operational priority for walkers along its entire length, but it is not currently permissible to do this for cyclists.

The problem lies in the rule which requires that motorists, who turn into or out of a side street which enters a priority road, give way to pedestrians who cross the mouth of the side street. There is no similar rule which requires vehicles to give way to bicycles. This means that even if cyclists are using an off-road shared or segregated path along a priority road, at every side street their cycleway loses its priority.

Figure 9- Separated bicycle and pedestrian crossing, Tokyo, Japan. *Source:BIKESydney*



Under these circumstances experienced riders will usually prefer to use the roadway because the off-road cycleway offers a very poor level of service. In European countries separated cycle track facilities are usually located off-road in an area between the vehicle lane or parking and the pedestrians' path. Motorists who approach a turnoff are often seen waiting for the cyclist to cross the mouth of the side street before they make their turn. In Australia the current situation is ambiguous at best, dangerous at worst. Existing road rules ignore the legitimate travel needs of large numbers in the community who wish to take up cycling, but who do not wish to do this on roads shared with fast moving traffic.

Priority cycle crossings

Pedestrian amenity and safety is enhanced at busy intersections and mid-street path crossings by the use of zebra crossings. Unless there is a constant flow of pedestrians along their desire line, this type of facility usually has a far less disruptive impact on vehicular flow than a signalised foot crossing. For designers and authorities building bicycle network facilities there is no unsignalised priority crossing which can be used for a shared path as cyclists are prohibited from riding across a Zebra crossing.

In situations where shared paths cross roadways mid-block it is not desirable to use a zebra crossing as this type of facility is clearly identified and associated with one type of user (i.e. the pedestrian) to the exclusion of the other (the cyclist). In addition to the clear need for a regulated priority crossing for cyclists, there is also a need for a type of hybrid or combined crossing for both pedestrians and cyclists using shared paths.

Parking

In the older parts of our major cities which were originally developed around walking and public transport, the proliferation of free on-street parking has created major problems for the way we manage our streets and roads. Whereas the roads in older suburbs were originally designed mainly for the movement of people and their goods, car owning members of the community now expect these streets to serve as storage places for their private property (their cars).

The parking 'problem' impacts directly on governments' ability to provide high quality bicycle network facilities either on- or off-road because the proximity to moving traffic and opening car doors creates a major hazard to cyclists. In overseas cities where the negative impact of unrestrained and free on-street parking has been

recognised, a number of remedial measures have been taken ranging from:

- public education campaigns on safe and responsible street parking;
- public education campaigns on the benefits of life without a car;
- car share programs;
- parking charges which channel the funds raised into community facilities in the local area (such as street beautification, street tree planting, footpath widening); and
- the removal of a small percentage of parking places each year on an ongoing basis. (Copenhagen owes the revitalisation of its old city centre in part to its council's policy of removing 3% of on-street parking each year over a thirty year period. This policy has converted car parks back into town squares for people, promoted active transport and greatly reduced traffic congestion and pollution.)

Speed

It is far easier to integrate active transport into existing urban areas if the speed limit is reduced to a level that is more compatible with these modes. The reduction of the general urban speed limit to 50 km/h is a major achievement, but speeds as high as this are still highly dangerous to pedestrians and cyclists. A 2006 UK study found clear evidence that speed reductions significantly increase safety levels and people's propensity to walk and cycle.

In residential areas of northern European cities and towns, the 30km/h precinct is common and widely accepted by the community.

A similar problem with excessive speed also exists on NSW's many shared paths. There is a current tendency within the Australian cycling community for some cyclists to ride at a rapid pace, regardless of the prevailing conditions. The lack of separated facilities (for walkers and cyclists) has produced a situation where at certain times of the day (journey to work peak times) the speed difference between cyclists and walkers approaches the speed difference between cyclists and cars using adjacent roadways.

If active transport is to develop with the full respect and cooperation of the entire community, user behaviour issues need to be addressed with well-directed behavioural campaigns and the necessary infrastructure improvements.

Recommendations

2. **Prioritise investments in public transport and active transport.**
3. **Support and develop the City of Sydney's Inner City Regional Bicycle Network as a model for regional bicycle network plans in other areas of Sydney and investigated for Wollongong and Newcastle.**
4. **Seek partnerships and funding from the Commonwealth Government for a program of demonstration and iconic projects.**
5. **Implement a program to identify and fix important missing links and bridge gaps in the bicycle and pedestrian network.**
6. **Implement a comprehensive Bike 'n' Ride scheme which provide safe access and facilities for bicycle riders at railway stations and other public transport hubs**
7. **Review the road rules to remove impediments to cycling and walking.**
8. **Design and regulate a priority road crossing for cyclists and a combined crossing for pedestrians and cyclists using shared paths.**
9. **Develop and implement a range of strategies to reduce on street car parking to promote active transport and reduce traffic congestion and pollution.**
10. **Reduce the general urban speed limit to 30km per hour.**

How can the road network be better utilised and enhanced? (Q6)

In the past, the solution to transport congestion has been to build new roads or create new lanes on existing networks. Roads have taken priority in funding over other modes of transport. An efficient road network is integral to city structure and functioning, as well as an essential part of the national freight network. When well planned and designed, roads can support cycling, effective bus transit and light rail options. However where the road system is not integrated within a broader transport and land-use plan, international and domestic evidence suggests that new roads are not a solution to congestion. In some cases it can even worsen the problem .

Transport planning and provision must recognise that the road reserve exists for the purpose of the mobility of people and freight, not the flow and storage of cars. Too much of the available capacity of the network is devoted to the carriage, and worse, storage of cars - a highly inefficient use of the available public resource.

We recommend that NSW adopts a transparent road operations and design management system.

VicRoads SmartRoads

VicRoads' SmartRoads manages competing interests for limited road space by giving priority use of the road to different transport modes at particular times of the day.

All road users continue to have access to all roads. However, certain routes are managed to work better for cars while others are managed for public transport, cyclists and pedestrians. The approach ensures that decisions about the operation of the road network support land use and transport planning and better consider the effects on the surrounding community, key activity centres and the environment.

SmartRoads uses a set of guiding principles to establish the priority use of roads by transport mode, time, and place of activity. These priority movements are then assigned to arterial roads across the network forming SmartRoads Network Operating Plan.

The program is being implemented gradually across Melbourne. The changes will involve more effective use of traffic lights to allow extra time for trams and buses, reduced delays for pedestrians, and improved

Figure10 - Greater Melbourne Road User Hierarchy

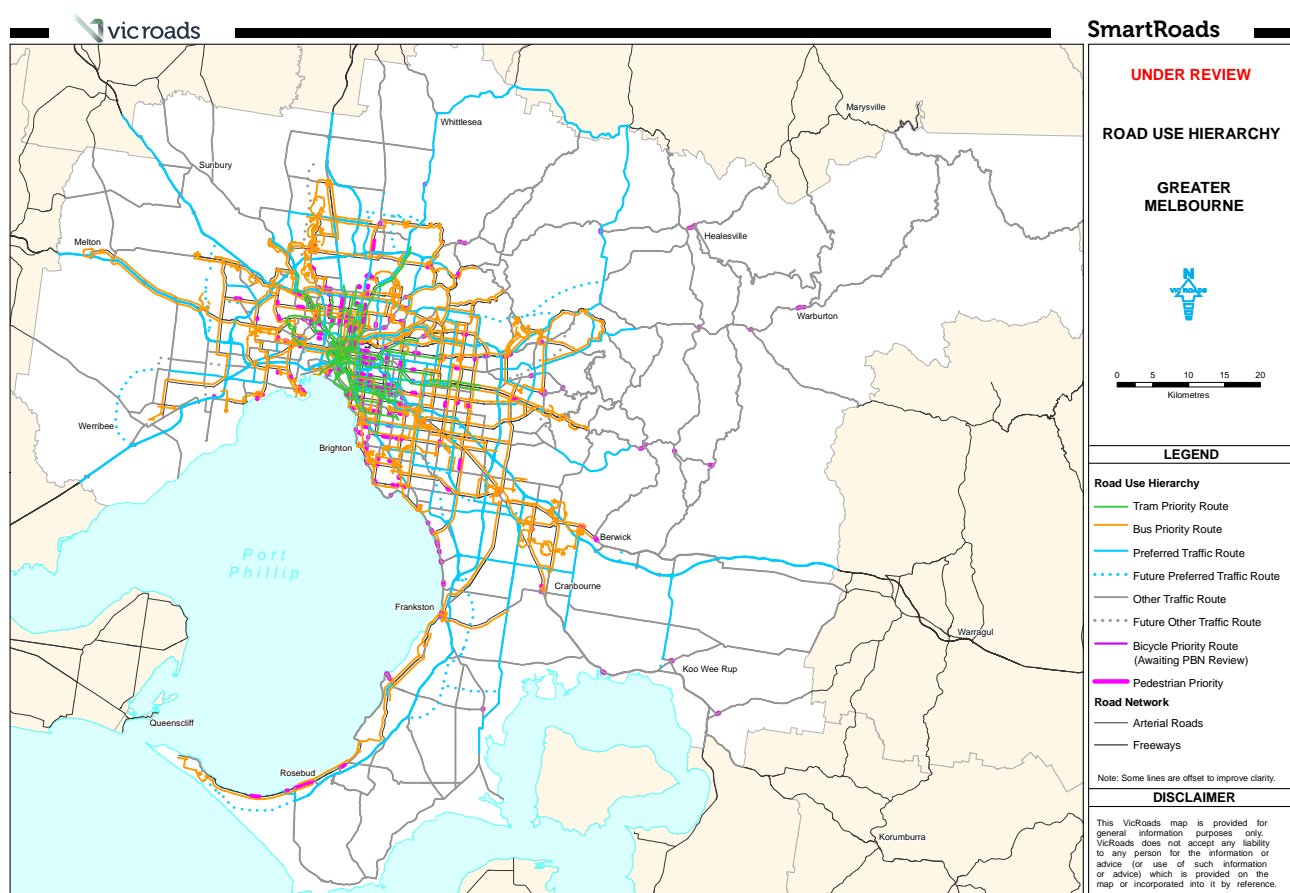
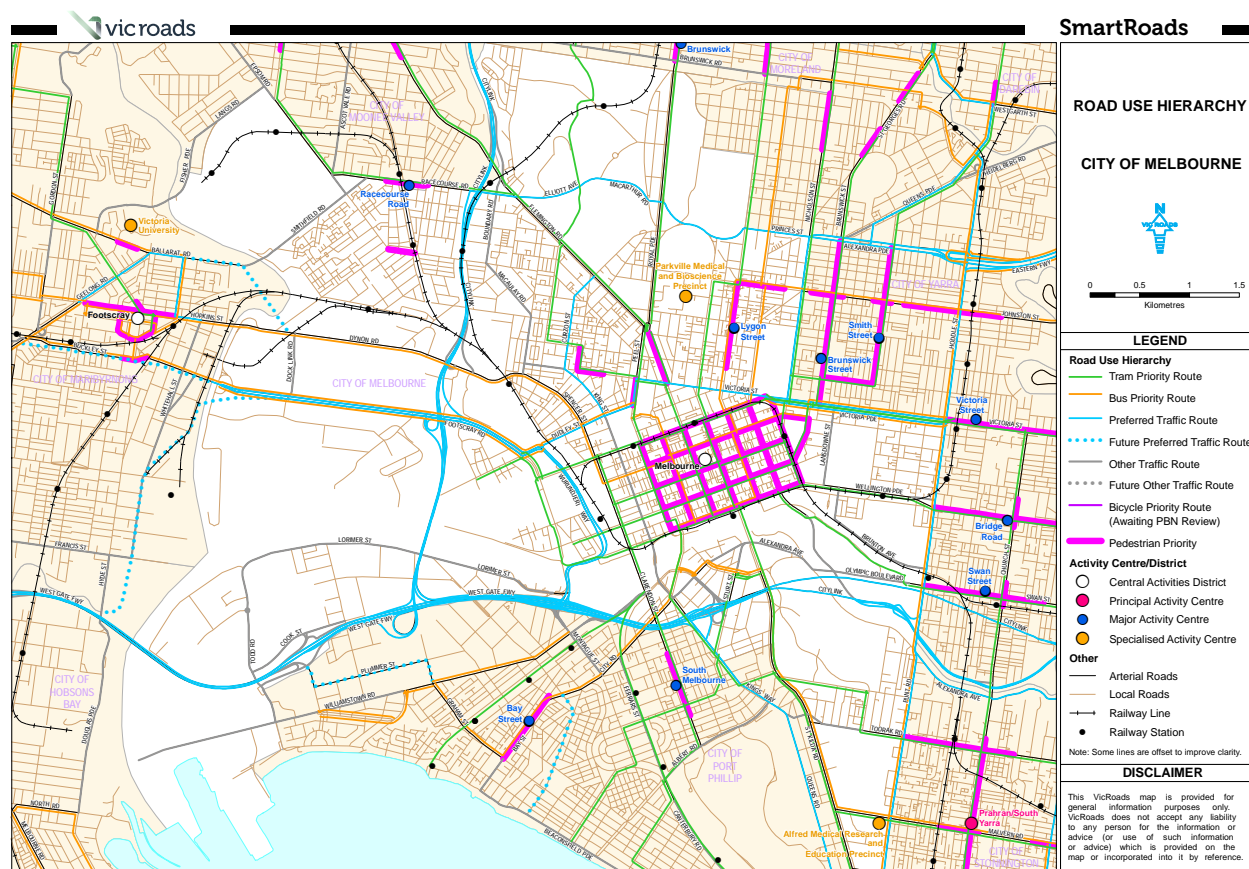


Figure 11 - Melbourne Road User Hierarchy shows how pedestrians have been recognised as the priority users of the road network in Melbourne's CBD.



co-ordination to assist with traffic flow. VicRoads advises that road users can also expect to see a change in the nature of trips and travel, with public transport, walking and cycling being recognised as increasingly important transport modes.

Adopting a SmartRoads approach would ensure that projects designed to improve the road network for motorists do not negatively impact on other road users. This would include the Federal Government funded Black Spot and Nation Building Projects. These projects and state funded projects that rectify pinch points on the road network frequently fail to recognise the needs of people walking or riding a bicycle and negatively impact on their experience of the network by narrowing bicycle lanes and footpaths, adding travel distance to journeys, and increasing waiting times at traffic lights.

A SmartRoads approach would also enable a systemic review of the traffic signalisation in Sydney. The wait time and phasing of the lights for people walking and cycling in Sydney is frequently designed to enable the flow of motor vehicles, to the detriment of all other users.

Recommendations

- 11. Adopt a transparent road operations and design management system similar to the SmartRoads approach adopted by Victoria.**
- 12. Review traffic signalisation in Sydney to identify and rectify impediments to cycling and walking.**

Encouraging cycling, walking and multi modal journeys (Q9 + 10)

To increase the value and contribution of cycling to the NSW transport task, we recommend a five-pronged approach:

1. Set targets to reduce private motor vehicle use for distances under 10km
2. Make cycling connect to urban centres and between these centres
3. Strengthen and improve cycling as a feeder mode to public transport
4. Provide State leadership by planning for major urban bicycle networks and provide and maintain the key arteries of this system
5. Remove the structural imbalances and system bias that hamper the development of bicycle transport

Set targets to reduce private motor vehicle use for distances under 10km

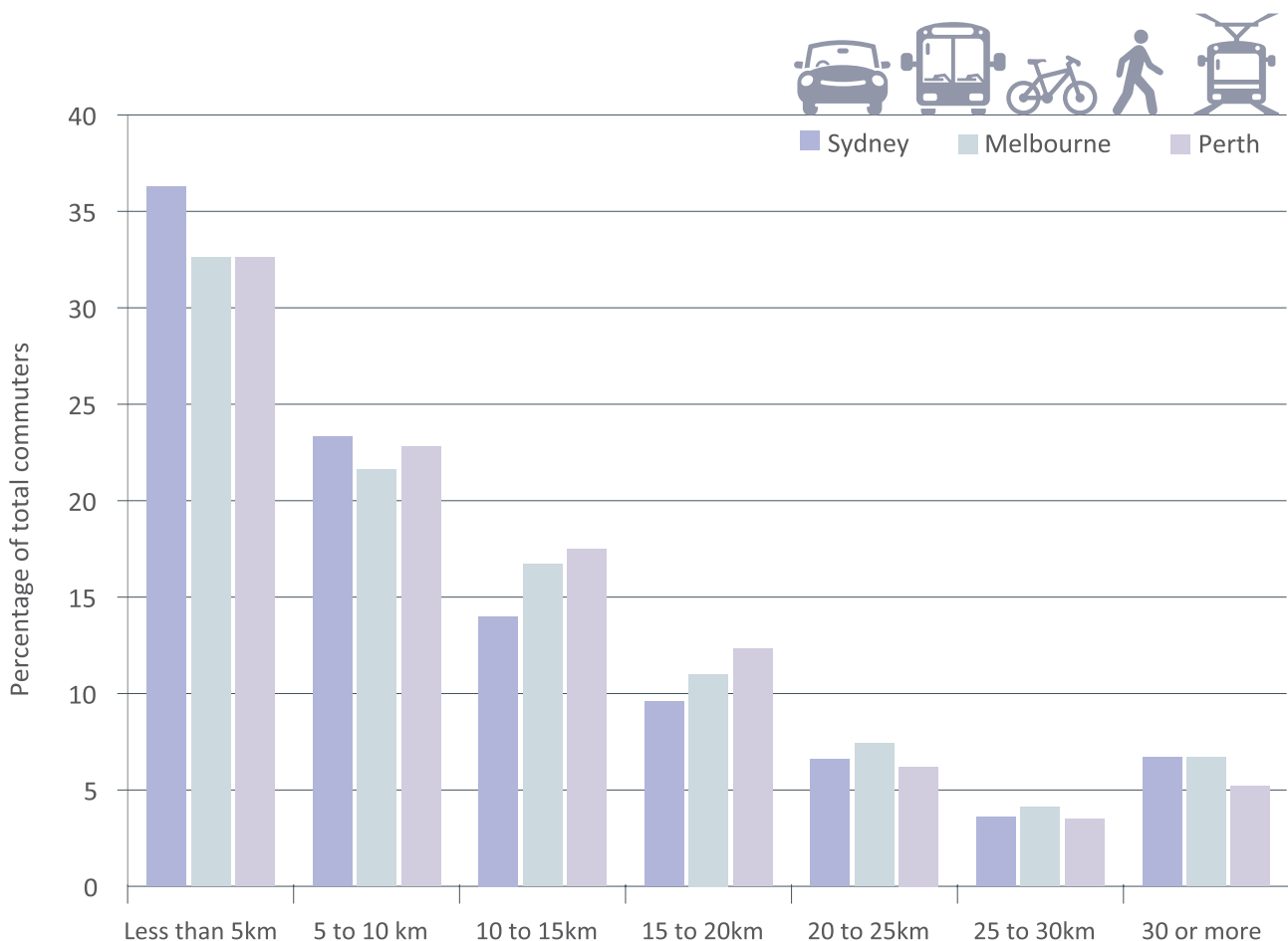
The Government must take integrated action to reduce the use of private motor vehicles and to encourage the use of active transport for journeys under 10 kilometres.

In Australia the use of motor vehicles for all trips is very high with 70% of all journeys under five kilometres and 81% of all journeys five to 10 kilometres taken by car. More than half of the journeys to work in Sydney are under 10 km with more than 35% under 5km (see figure 12).

There are significant opportunities to reduce the use of cars for short journeys and the Masterplan should adopt and promotes targets to by 2020 to:

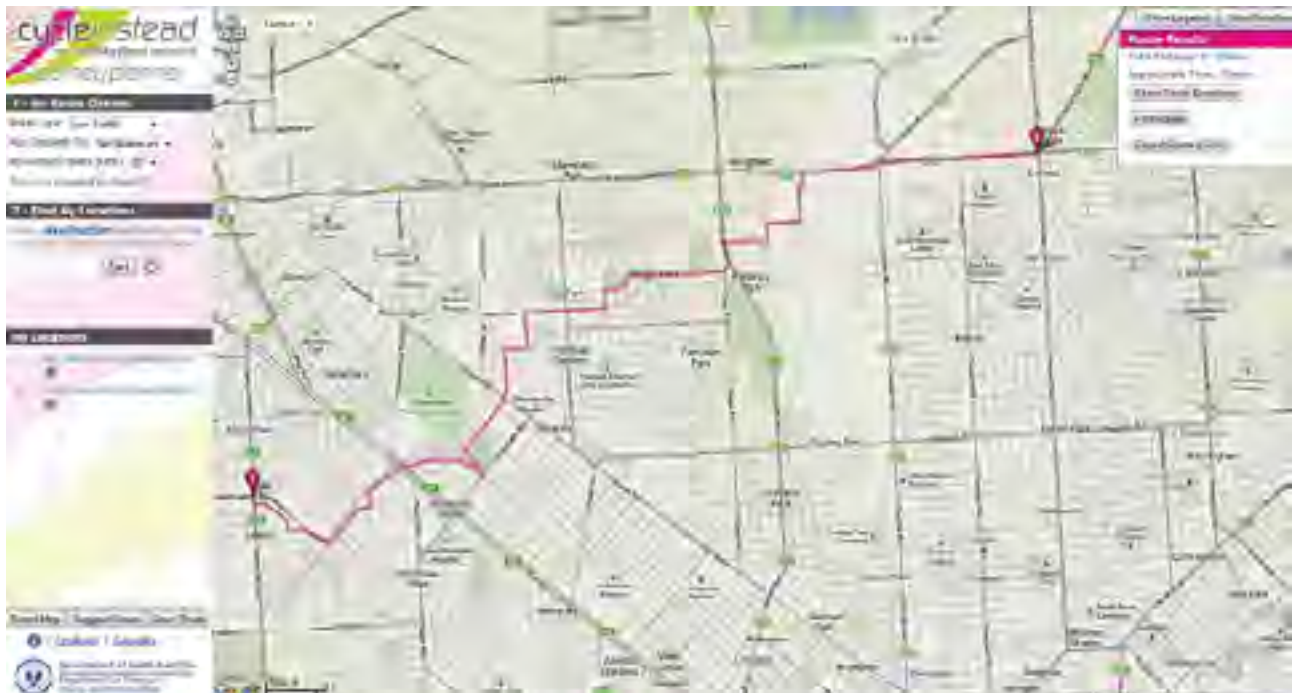
- Reduce by two thirds the number of journeys undertaken by car drivers and passengers for trips under two kilometres

Figure 12 - Comparison of distance travelled to work in Sydney, Melbourne and Perth



Source: BITRE analysis of ABS census of population and Housing (2006)

Figure 13 - Adelaide's Cycle Instead Journey Planner allows riders to choose a variety of options that take into consideration fitness and confidence levels, road conditions and speed of travel.



- Reduce by half the number of journeys undertaken by car drivers and passengers for trips between two to five kilometres
- Reduce by one third the number of journeys undertaken by car drivers and passengers between five to 10 kilometres.

Infrastructure will be the key to meeting these targets but encouragement, education and promotion should also be incorporated into the Masterplan. In particular the Masterplan should include programs that:

- Enable children to cycle in their neighbourhoods and encourage them to ride to school with skills programs, parking provisions and local traffic calming. Driving to school should be actively discouraged.
- Provide cycling skills to adults and children, particularly programs that target under-represented groups such as women and older people.
- Provide high quality maps of the cycle network across the Greater Sydney Metropolitan Region and an online route finding service.

The online Cycle Instead Journey Planner developed by the Department of Transport, Planning and Infrastructure in South Australia generates cycling routes using Adelaide's Bikedirect network of main roads, bike lanes, local streets, off-road paths and some unsealed paths.

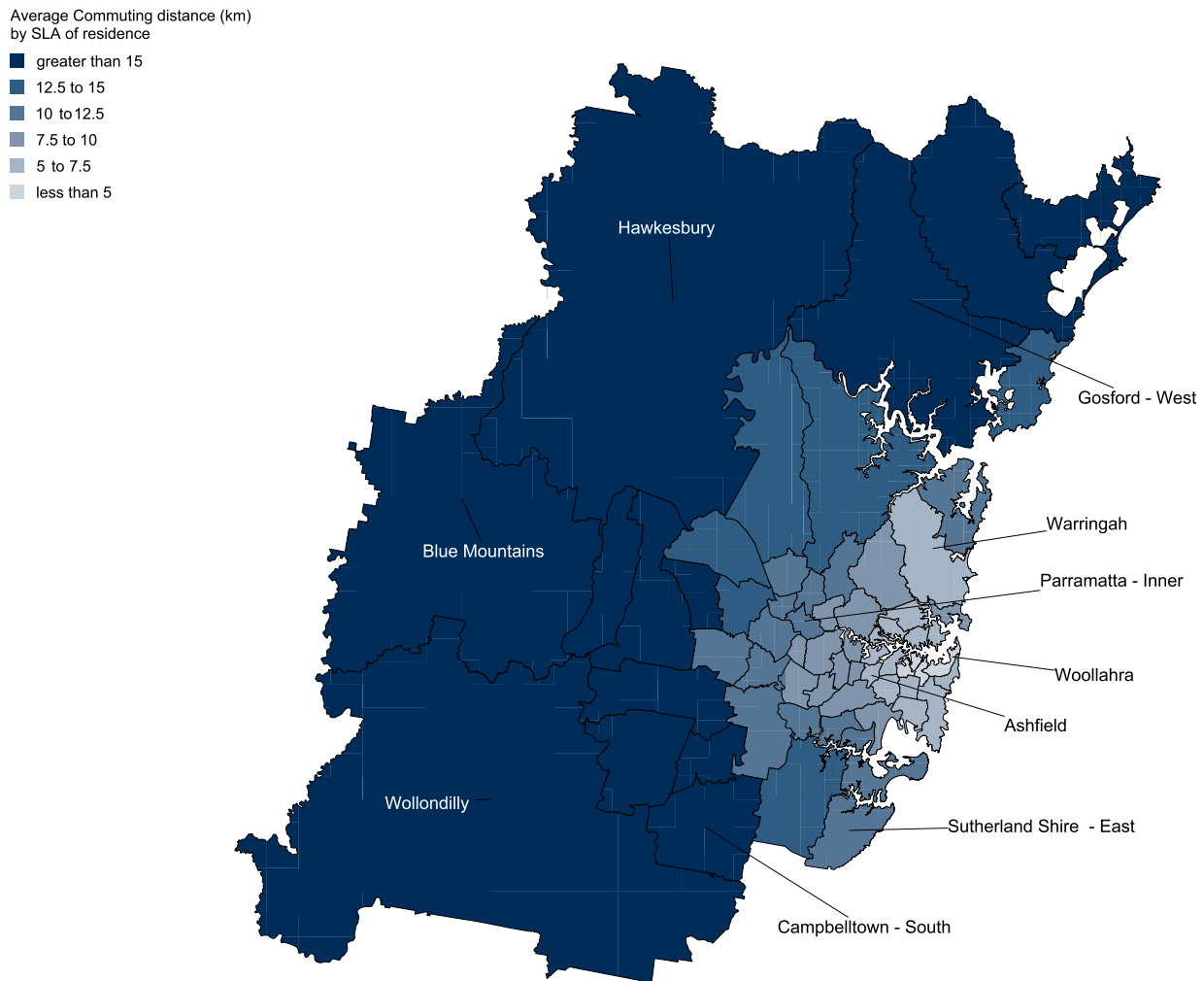
This interactive tool allows riders to choose a variety of options that take into consideration fitness and confidence levels, road conditions and speed of travel.

Make cycling connect to urban centres and between these centres

The best value for public money starts with the things which work and aims to spread those to other areas where they are sure to work as well. Cycling works best over shorter distances of up to 10km and in denser urban environments where spatial requirements are more acute. Rather than investing in expensive facilities in sparsely populated and remote areas it is of far greater benefit to the community to build and improve cycle infrastructure in areas where cycling is already an established and growing transport activity.

During the past two decades NSW Government investment in cycling has been modest and poorly directed. Under the administration of Labor Minister Carl Scully, the then Roads and Traffic Authority built and funded the construction of many kilometres of off-road shared paths in and around the minister's electorate in Western Sydney. The average commuting distance to work in Western Sydney is greater than 15 km (see figure 14). A 2010 study found that in spite of the millions invested these shared paths, usage rates had not greatly increased within the area. Only those NSW

Figure 14 - Average commuting distance to place of work in Sydney



Source: BITRE (2010) analysis of ABS Census of Population and Housing 2006 data

urban centres where cycling is already showing high usage rates or has strong potential for improvement should be targeted for investment.

Recent leadership by the City of Sydney provides a useful example of how transport-focussed cycling networks could be developed more successfully.

During 2009-10 the City of Sydney embarked on the development of a regional bicycle network plan to coordinate the networks planned by the 14 surrounding local councils and the Roads and Maritime Service, create a framework for prioritising and funding bikeplan works, and provide a structure for further efforts necessary to implement the works.

At present, Sydney's bicycle network is fragmented and disjointed. The lack of a well-connected cycling network forces cyclists to mix with general traffic, leading to

conflicts with larger, heavier and faster moving vehicles. Safety concerns arising from this danger discourages many individuals from considering cycling as a travel option.

In the past local councils and the RMS have tended to act independently by developing routes within their boundaries or in relation to localised priorities. This project is an attempt by councils to work cooperatively to develop a working bicycle network across a densely populated part of Sydney. The project is important for the councils in that it allows their networks to develop and function across the region, rather than in isolation. It is also important for the RMS which in recent years has under-resourced the development of its important State Bicycle Routes and has largely planned them from top down, often lacking integration with local and regional cycling trip needs.

The development of convenient and connected bicycle networks is reliant on the cooperation of the many organisations involved and the formulation of a workable plan which clearly defines regional priorities and agency responsibilities. It is recommended that the City of Sydney project be supported and developed as a model for similar regional bicycle network plans in other regions of Sydney.

Bicycle transport does not require vast amounts of expensive infrastructure such as motorways or tunnels but it does require operating space. All transport modes require operating space and those which have their own right of way, such as trains and some trams, function best of all.

Strengthen and improve cycling as a feeder mode to public transport

A major impediment to access to the rail system is the unplanned and unprovided nature of bicycle access to City Rail stations and once there, a lack of well-located cycle parking facilities. The NSW authority Railcorp, and its agencies City Rail and Country Link, show little interest in 'cycle and ride' (dual mode) travel. An example of this lack of interest is the recently opened Epping to Chatswood rail line which includes only very few poorly sited bicycle racks near the line's five stations – a token effort at best. At Wolli Creek Station, an interchange for the Airport, Illawarra and South Coast lines, there is no bicycle parking. The current 'toaster' racks preferred by State Rail are poorly designed and do not provide easy secure parking.

There is currently poor access for cyclists to many stations. A NSW Transport Masterplan should aim to implement and improve a Cycle 'n' Ride system by:

- providing coherent and consistent connections with bicycle network routes within the vicinity of each station;
- ensuring all adjacent major arterial roads (60km/h speed limit and above) provide a shared footpath route alternative;
- providing smooth transitions from off-road paths to on-road lanes;
- ensuring routes are well lit, so as to improve levels of usage and personal safety;
- ensuring routes are consistently and thoroughly sign posted;

- ensuring access is improved for the catchment of about 5km from stations (feeder routes to the network need to be reasonably fine-grained as they provide for relatively shorter trips. This sub-network should be on a grid of less than about 250m);
- providing safe crossing points for cyclists on all major arterials adjacent to station entrances; and,
- providing adequate parking facilities at stations in conjunction with the NSW Government.

The aim of Cycle 'n' Ride is to make it possible for people to access public transport from further away than walking. Cycle 'n' Ride should also be available to bus travellers on selected Bus Rapid Transit routes. Cycle 'n' Ride bus passengers will tend to access services which offer the best connection to their destination such as express services and those with a high service frequency.

As the installation of Cycle 'n' Ride facilities also involves a cost and must be effectively marketed it is desirable to locate facilities at route hubs and at suburban centres where a number of routes cross or connect so that there are multiple advantages in cycling to that point.

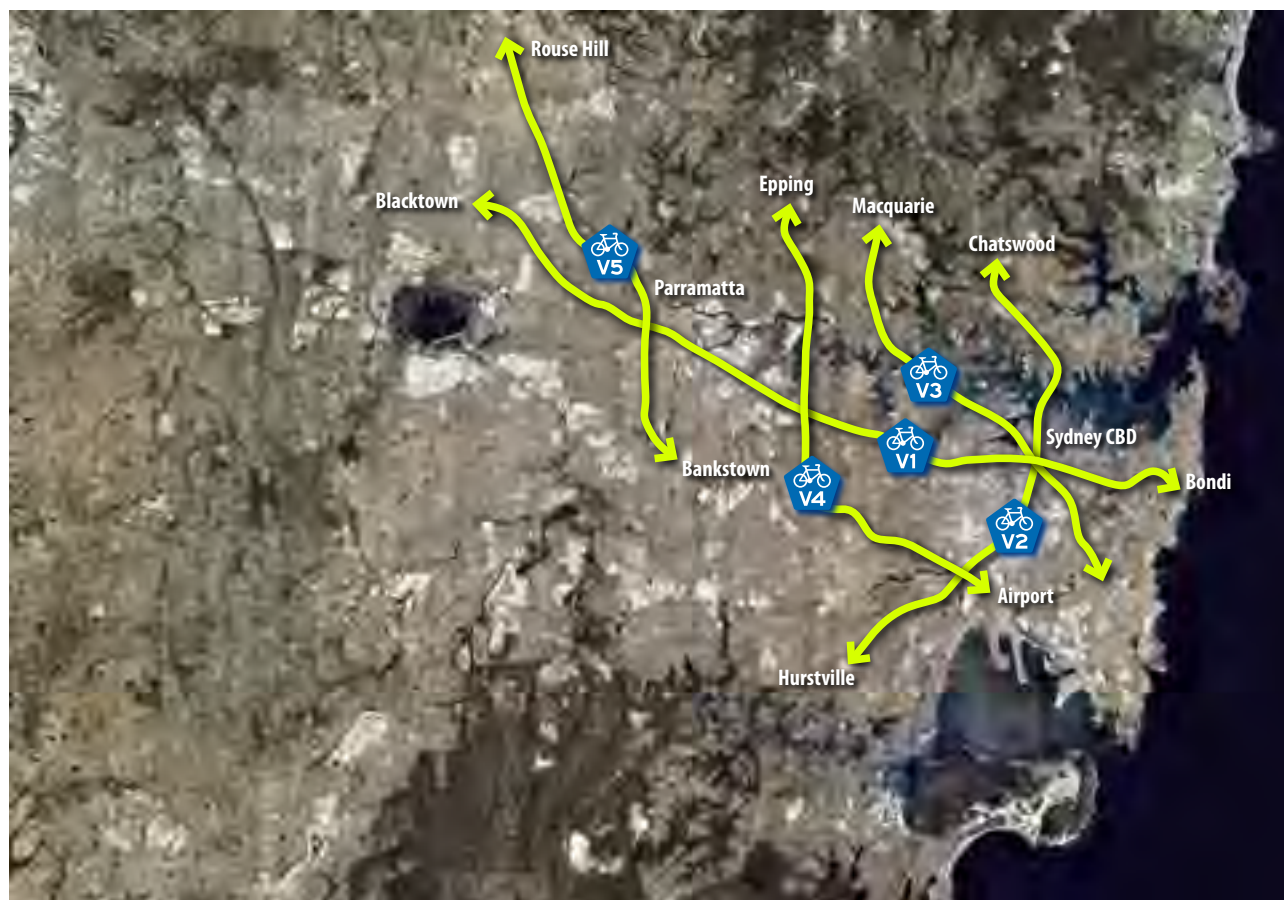
Provide regional leadership by planning for major urban bicycle networks and provide and maintain the key arteries of this system

Because the NSW and Federal Governments have in the past considered cycling a local government issue, all areas of Sydney suffer from inconsistencies in facility design and implementation and major route discontinuities at council boundaries. Sydney lacks high (metro-wide) and medium (regional) level planning of cycling networks.

To rectify the lack of coherency in bicycle networks we recommend that Transport NSW undertake full responsibility for the planning of principal cycle networks for major NSW urban areas. This type of planning has been underway in Queensland during the past decade and is the responsibility of the department of Transport and Main Roads.

The Roads and Maritime Service would be charged with the responsibility of building and maintaining a limited network of high quality veloways (the bicycle version of the urban motorway system) designed to provide safe, and quick access between major centres within the Sydney urban area.

Figure15 - Proposed Sydney Veloways



The Veloways would be connected to regional routes which could be a combination of separated and on-road lanes. The regional routes would in turn connect to local routes which would largely consist of traffic calmed residential streets.

The Roads and Maritime Service is in an ideal position to undertake this important role in the development of a connected and functioning regional bicycle system as it retains consent authority over the NSW road system and coordinates the on-going development of regional and local roads through regional and local government traffic committees and administers the 50/50 funding program for bicycle infrastructure and a system of grants and road funding programs.

The 50/50 funding must be strategically allocated to projects which progress the transport network plan.

Directional and wayfinding signage is a critical element of any transport system. Every transport system needs directional/wayfinding signage to help the users navigate the network and to make full use of the system's

infrastructure. We are all so used to the signage systems which are integrated into airports and railway stations along with the ubiquitous big green highway signs, that we often forget how dysfunctional these transport systems would become without their accompanying signage. Bicycle network signage currently lacks coordination and consistency between local councils and government agencies throughout major urban regions. To apply a coordinated and consistent approach and delivery of cycle network signage the Roads and Maritime Service needs to provide greater involvement and leadership to this vital issue.

Remove the structural imbalances and system bias that hamper the development of bicycle transport

The current management and provision of the road-based transport system favours and prioritises vehicles over people. Furthermore the movement of vehicles is prioritised ahead of spatial and place-based considerations which results in a road-based transport system which fragments and isolates urban habitation.

Traffic calming in its short history in NSW has been the domain of the engineers, building layer upon layer of past practice with little attention given to understanding user behaviour. Political leaders have traditionally been self-styled road traffic experts who have been remarkably sensitive to the opinions of the tabloid media. This situation has contributed to the degradation of the urban cycling environment and a lack of respect in all road users.

Roads and Maritime Services operates and controls traffic signals in NSW. The Roads and Maritime Services Traffic Signals section actively resists the introduction of bicycle lanes and advance stop boxes at signalised intersections. There are few examples of cycle provision at signalised intersections in Sydney in contrast to Brisbane and Melbourne where these treatments are common.

Invest in specialist staff and staff development

More specialist staff are required to undertake planning and design for active transport. The Roads and Maritime Services and local councils have very few specialist staff who are expert in cycling matters. In the consultancy world these people are similarly rare due to the lack of projects needed to retain and develop specialist staff. All Australian cities and towns suffer from succeeding generations of engineers and planners trained in the predict, plan and provide model for happy motoring. Cycling unfortunately is hardly on their 'radar screens' and every attempt should be made by government to provide education, training and good policy examples to bring knowledge and expertise up to the demands of current policy.

Active Transport policy and implementation staff need to be embedded in a range of government departments to ensure there is integrated planning and delivery. This includes:

- NSW Department of Planning and Infrastructure
- NSW Transport
- Roads and Maritime Services
- RailCorp
- State Transit Authority of NSW
- Department of Education and Communities
- Area Health Services
- NSW Police
- Sydney Ferries
- Office of Environment and Heritage
- Sydney Harbour Foreshore Authority

We recommend that the Premier's Council for Active Living be integrated into the Department of Planning and Infrastructure or Transport NSW. Active Living should be core to the planning and design of our cities, suburbs and towns. If the Council is to remain separate from these agencies, the Council should be provided with review powers over proposed residential, recreation and road developments and projects and staffed and funded appropriately.

We also recommend that Local Traffic Committees and Regional Traffic Committees include representatives with urban design, health and active transport expertise. The recommendations of the Local Traffic Committees frequently impede rather than support improvements to bicycle and pedestrian networks despite these being encouraged by a numerous Government planning and design guidelines. This may require amendments to the legislation which establishes and empowers these bodies.

Reforming Governance Structures

The road governance system requires reform to ensure transparent regulation, clearly defined responsibilities, streamlined decision-making and strategic investment. The current system is complex and ineffectual from the point of creating environments that encourage walking and cycling. Under the current system the:

- Federal Government provides guidance on planning, design and operation of roads and allocates funds to the States
- NSW administers legislation which regulates safety and efficiency of transport on roads and road related areas and has regulatory and financial arrangements with the 152 local councils in the State
- Commonwealth and state endorsed guidelines provide planning and design advice about creating road and other environments that encourage walking and cycling, but they are only advisory.

Recommendations

13. The Masterplan should adopt and promote targets to by 2020 to:

- Reduce by two thirds the number of journeys undertaken by car drivers and passengers for trips under two kilometres
- Reduce by half the number of journeys undertaken by car drivers and passengers for trips between two to five kilometres
- Reduce by one third the number of journeys undertaken by car drivers and passengers between five to 10 kilometres.

14. In addition to infrastructure programs and investment, the Masterplan should include programs that: enable children to cycle in their neighbourhoods and encourage them to ride to school; provide cycling skills to adults and children; and provide high quality maps of the cycle network across the Greater Sydney Metropolitan Region and an online route finding service.

15. Target investment in the NSW urban centres where cycling is already showing high usage rates or has strong potential for improvement.

16. Implement and improve a Cycle 'n' Ride system to integrate cycling and public transport.

17. Transport NSW to undertake full responsibility for the planning of principal cycle networks for major NSW urban areas.

18. Roads and Maritime Services build and maintain a limited network of high quality veloways (the bicycle version of the urban motorway system) designed to provide safe, and quick access between major centres within the Sydney urban area.

19. Allocate 50/50 funding to projects which progress the transport network plan.

20. Lead a coordinated and consistent approach to the delivery of cycle network signage.

21. Provide education, training and good policy examples to bring knowledge and expertise up to the demands of current policy.

22. Embed active transport policy and implementation staff in government departments involved in transport, health and planning to ensure there is integrated planning and delivery of policy and projects.

23. The Premier's Council for Active Living be provided with review powers over proposed residential, recreation and road developments and staffed and funded appropriately.

24. Local Traffic Committees and Regional Traffic Committees include representatives with urban design, health and active transport expertise.

25. Reform the road governance system to ensure transparent regulation, clearly defined responsibilities, streamlined decision-making and strategic investment.

Figure16 - The Airport Drive Shared path (marked in blue) skirts the airport and is separated from it by multi-laned high-speed roads with no direct controlled crossing points. The quality of the cycle facility is greatly diminished by its poor connectivity for staff and visitors.



Planning for Sydney Airport and Port Botany (Q 11)

Sydney Airport is Australia's busiest airport servicing 31 million passengers in 2006/07. Passenger levels are expected to grow to 68 million by 2023/24.

Sydney Airport is a major employment generator. The airport provides direct employment (full-time and part-time jobs) of 75,580. in 2006-07. The number of jobs directly and indirectly associated with Sydney Airport is estimated to rise to more than 338,000 by 2015/16, up by 64%. Many of these jobs and economic benefits will be generated locally in the areas around the Airport.

A high quality regional bicycle route runs along Airport Drive skirting the airport. This route connects to Olympic Park to the west and has the potential to seamlessly connect to routes leading to the CBD to the north and to Cronulla to the south. It has huge potential to provide active transport infrastructure for staff and passengers commuting to the airport but is currently disconnected

from the airport. The International Terminal is currently accessed by people riding bicycles via a dirt track at the back of a car park. There is no safe access to the Domestic Terminal.

Recommendations

- 26. A high short-term priority of the Masterplan should be to link the three regional bicycle routes leading to the airport and provide safe access to both the International and Domestic Terminals.**
- 27. As with other multi-modal transport hubs, the Airport should supply short and long term secure parking and end of trip facilities for staff and travellers.**



Regional Transport

What are the key transport objectives for your region? (Q13)

Active transport is not just a Sydney opportunity. Transport within regional urban centres is frequently suitable for active transport modes such as walking and cycling. In fact, the Australian Cycling Participation Survey 2011 found higher levels of cycling participation in regional NSW where 20% of the population cycles in a typical week, in comparison to 11% in Sydney. The survey also found higher levels of cycling for transport in regional NSW than in the Sydney Metropolitan area.

Bicycle transport between regional centres is frequently limited by lack of road choice. Higher speed roads between regional centres must cater for bicycle riders with the minimum provision of wide, well maintained road shoulders.

Recommendations

- 28. Support local councils to prepare and deliver active transport strategies that prioritise walking and cycling in regional cities.
- 29. As a minimum provide wide, well maintained road shoulders on higher speed roads between regional cities to enable active transport.

Figure17 - Trains across Europe, the UK and USA allow easy carriage of bicycles.



In what form can CountryLink best serve the needs of the regions over the long term? (Q15)

To enable regional multi-modal transport CountryLink needs to provide easy carriage of bicycles. The current requirement to box bicycles makes it impractical to incorporate bicycle transport with CountryLink services. We understand that many CountryLink trains have bicycle racks in the luggage compartment. We recommend that the requirement for bicycles to be boxed be immediately revoked and the use of the racks be implemented.

Allowing easy access of bicycles onto County Link Trains should also be seen as a tourism opportunity. NSW has yet to capitalise on the economic potential of cycle tourism which is currently estimated to generate \$362 million for the Victorian economy.

Recommendations

30. Immediately revoke the requirement for bicycles to be boxed on CountryLink Trains.



How can the NSW Government best support an efficient freight system as well as meeting community expectations for safety and amenity in residential areas? (Q18)

Heavy vehicle safety is a continuing concern for all road users. A research report by Austroads in 2010 found that a doubling of the road freight task from present levels would result in approximately 290 additional deaths and 6,500 additional serious injuries per year. Increasing the number of heavy vehicles on urban roads must be managed to ensure trucks and cyclists and pedestrians are not sharing the same road space.

Recommendations

31. Prioritise subsidies for the movement of freight by rail and remove subsidies for road freight.
32. To improve the safety of the freight task, in addition to the programs being pursued by industry, road authorities and enforcement agencies:
 - Encourage businesses to accommodate a wider range of pick-up and delivery times to avoid conflict with other road users
 - Encourage new in-vehicle safety technologies roadway departure warning and collision avoidance
 - Improve the training, selection and management of drivers
 - Collect and disseminate information on the relative safety of different truck models in relation to different travel modes.



How much would people be prepared to pay for further investment in the transport system and what would be the expectation flowing from these investments? (Q20)

Investment Levels

There is a significant funding imbalance between cycling and other transport modes. Research published by the Cycling Promotion Fund shows the investment levels between the states and NSW has the lowest investment level so far the jurisdictions. The transport mode share of cycling in major NSW centres is currently around 1% of all trips but less than a tenth of 1% the road budget is devoted to cycling infrastructure.

Investment in high quality infrastructure results in more people cycling. In the Netherlands, where around 27% of all journeys are made by bicycle, 25 Euros per person per year is invested in cycling (97% of that investment is in infrastructure). In Denmark, where the mode share of cycling is around 18%, 16 Euros per person per year is invested in cycling.

The National Cycling Strategy, which was signed off by all state government roads ministers in 2010 aims to double the number of people cycling in Australia by 2016. NSW has the lowest levels of cycling participation in Australia the result of continual under investment and haphazard planning.

Table 1: Three Australian cities compared

Item	Sydney	Melbourne	Brisbane
Metro area size	12,144.6 km ²	8,806 km ²	5,904.8 km ²
Population	4,399,722	3,892,419	1,945,639
Local government	38 councils	31 councils	1 council
Rail transport	Run by state government	Privatised. Administered by state government	Run by state government
Bus/tram systems	Run by state government and private companies	Privatised. Administered by state government	Run by city and private companies
PT structure	Poor intermodality	Intermodal system	Intermodal system for SEQ
Major roads and traffic signals	State government controls motorways, main roads and traffic signals	State government controls motorways, main roads and traffic signals	State government controls motorways, council controls all other roads and traffic signals
Cycle network planning	No metro-wide or regional planning	Metro plan for main routes only	Metro-wide and regional planning
Regional cycle network – planning and construction	Local government responsibility. State government develops some routes on state roads	State government in conjunction with local councils	City in conjunction with state government
Local cycle network	Local government responsibility. Some state government funding	Local government responsibility. Some state government funding	City
Roads spending per capita for State	\$447.58	\$239.58	\$405.32
Cycle funding per capita for State	\$1.29	\$3.89	\$3.16
Percentage of population that rides a bicycle in a typical week	11%	18%	17.4%

The short term investment in cycling infrastructure needs to reflect the long term lack of investment and go some way to catch up with the state's responsibilities to delivering the National Cycling Strategy's aims.

With 7.23 million people living in NSW we recommend an annual investment of \$72 million for five years to prioritise the construction of a high quality, connected network of bicycle infrastructure in the State's urban centres. This should be in addition to a commitment to secure 1% of roads expenditure for bicycle related infrastructure and to annually review that percentage of investment to match it to the cycling transport mode share.

Investment structures

The State provides local government grants, subsidies and matched grants for a variety of road-related works. The grants invest in works to improve road safety, traffic efficiency, safety near schools, and pedestrian and bicycle facilities.

The funding streams require review and rationalisation to ensure investment is working towards higher strategic aims. For example, the Government has allocated \$13 million to fast track the roll-out of school zone flashing lights across NSW to reinforce speed limits around schools. A more strategic approach would have been to use this investment to go towards the provision of safe walking and cycling connections to the schools from their catchments.

All road-related works whether construction of new roads, road upgrade or maintenance should incorporate provision of or improvements to walking and cycling accessibility. The discussion paper states that about 40% of transport infrastructure funds are used to maintain and upgrade the State's road network. This must include maintenance and upgrades for active transport. This should be in addition to the funding programs specifically dedicated to improving pedestrian and cycle facilities some of which may be off-road.

The developer contributions system should also be rationalised to ensure that the contributions enhance the public domain and provide walking and cycling connections from private developments to existing networks.

Methods of calculating the benefits of active transport are now available. (*Evaluation of the costs and benefits to the community of financial investment in cycling programs and projects in New South Wales* (RTA & DECC, April 2009) and *NSW Walking Strategy: Assessing the Economic Benefits of Walking* (pwc for PCAL and DECCW) These should be promoted and adopted in producing the cost-benefit analyses of transport investment proposals. Transport proposals should assess health and environmental impacts of increased walking and cycling and recognise a consistent value for time saved for all network users (do not value the time of people in cars differently to people walking and cycling). .

Investment Return

A recent study of cycling investment in the City of Sydney and the surrounding region found that each dollar invested in high quality cycling infrastructure could generate an economic return of \$3.88 in congestion, health and environmental benefits compared with an average of \$2 return for roads.

Investment in good quality, connected infrastructure will deliver economic and social returns via:

- Health benefits resulting in reduced public health care costs for inactivity and obesity and improved individual wellbeing
- Congestion benefits for all road and public transport users and result in productivity savings

- Infrastructure longevity benefits, replacing motor vehicles with bicycles can add years to the life of infrastructure which can result in savings of billions of dollars
- Air quality benefits which can impact on health and carbon emission costs.

Recommendations

- 33. An annual investment of \$72 million for five years to prioritise the construction of a high quality, connected network of bicycle infrastructure in the State's urban centres. This should be in addition to a commitment to secure 1% of roads expenditure for bicycle related infrastructure and to annually review that percentage of investment to match it to the cycling transport mode share.**
- 34. Review and rationalise funding streams to ensure investment is working towards higher strategic aims.**
- 35. All road-related works whether construction of new roads, road upgrade or maintenance should incorporate provision of or improvements to walking and cycling accessibility.**
- 36. Rationalise the developer contributions system to ensure that the contributions enhance the public domain and provide walking and cycling connections from private developments to existing networks.**
- 37. Consistent cost-benefit analyses should be applied to all transport investment proposals. Transport proposals should assess health and environmental impacts and recognise a consistent value for time saved for all network users.**



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