

action so that an increase in the numbers of bicycle riders is not followed by an increase in bicycle-related road fatalities and injuries. To some extent, road safety research – often referred to as ‘safety in numbers’ – does indicate that more bike crashes is not an automatic corollary of more cycling; in fact, where there is a substantial mode transfer from motor vehicle driving to active travel, the individual risk to each pedestrian and cyclist is reduced [4].

However, the safety of cyclists remains a key concern for the NSW Government, and many of the activities in the *NSW BikePlan* have been designed to increase bicycle safety and promote greater awareness of cyclists’ safety among other road users. These activities include the following:

- supporting cycling courses that enhance on-road riding confidence and courtesy
- promoting activities that motivate cyclists to comply with the road rules
- promoting safe riding practices by training and racing cyclists
- conducting research into key cycling-related issues from which road safety messages and information can be developed
- promoting mutual respect among all road users via advertising campaigns, appropriate enforcement initiatives, and ongoing liaison with key road user industry associations and advocacy groups
- promoting the use of high-visibility safety equipment and clothing by cyclists, including helmet-wearing
- working with local councils to introduce lower speed limits where appropriate

- providing school communities with road safety resources and guidance that will help to develop safe riding skills and habits among children and promote confidence in their carers.

The *NSW BikePlan* is a whole-of-government initiative led by the Roads and Traffic Authority with partners including NSW Health, Transport NSW, Department of Environment, Climate Change and Water, Department of Planning, Department of Education and Training, Communities NSW – Sport and Recreation, Department of Premier and Cabinet, and the Premier’s Council for Active Living. With such strong cross-agency commitment, the NSW Government is confident it can provide a safe, enjoyable and effective cycling environment for the people of NSW.

For more information about the *NSW BikePlan*, visit http://www.rta.nsw.gov.au/hubpages/hub_greentravel.html?hlid=greentravel.

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Cycling safety in the Australian Capital Territory

by Peter Thompson, Project Manager at the ACT Department of Territory and Municipal Services

The ACT Government is keen to promote cycling because it improves accessibility, efficiency of the transport system, individual health and urban liveability, and it is important for tourism and the environment. While Canberra has some 2500 km of road, there are nearly 500 km of on-road cycle lanes and approximately 2000 km of off-road paths available for cyclists’ use.

Canberra is admired by communities around Australia as a city of off-road cycle paths, where tourists and visitors can ride in comfort and safety. In addition, Canberra now has an extensive on-road cycle network, which allows commuters to ride a more direct route to their destination.

The ACT Government’s support of cycling is based on the *ACT Sustainable Transport Plan*, which aims to increase the levels of cycling threefold throughout Canberra over the next 25 years. This is to be achieved by the provision of safe cycling routes for

all standards of cyclists, changing community attitudes, improving end-of-trip facilities, integrating transport modes and discouraging the use of private cars. The decision for a person to cycle to their destination is made easier if there is a safe route, travel time is shorter, and there is less of an impact on the hip pocket.

The safety of cyclists is a key issue in the provision of cycling programs and infrastructure. Often cyclists and road users become complaisant, and media safety campaigns are required to assist in the modification of community behaviour.

Key cycling safety issues

It is recognised that not all cyclists want to ride on off-road paths, and the ACT Government has made a significant investment in the provision of on-road cycle lanes that separate

the cyclists from the traffic. A cyclist travels at a much slower speed than most motor vehicles, and space must be provided so the cyclists can be separated from passing vehicles. The space provided must be a suitable surface kept free of debris if cyclists are going to continue to use these facilities. Often the most significant challenge is provision for the safe movement of cyclists through changes in path conditions – e.g., intersections, roundabouts, driveway crossings along on-road paths, and interchanges between on-road and off-road cyclist pathways.

The safety of cyclists is dependent on their visibility to motorists and other cyclists. Many cyclists travel before dawn and after dusk when visibility levels are at their lowest, putting cyclists at a very high risk. A further safety issue is that cyclists often share the cyclist path network with pedestrians, their dogs, mobility aids and other possibly less-experienced cyclists.

The diversity of environments in which cyclists may find themselves requires a variety of design options for the infrastructure provider to utilise. It also requires cyclists to take a minimum level of responsibility in undertaking to ride on both on- and off-road facilities – i.e., wearing appropriate high-visibility clothing, helmet, etc.

Current activities

To address the current safety issues regarding cyclists, the ACT Government has undertaken a range of actions:

- Provision of on-road cycle lanes, which afford clearly defined and separated areas to the cyclists from the motorised traffic, as shown to the right of the left-turn lane in Figure 1.



Figure 1. Pialligo-Fairbairn intersection. (Photo copyright Pedal Power and reproduced with their permission)

- The on-road lane and its surface must be constructed and maintained to a high level of service – i.e., kept free of debris – if cyclists are going to continue to use the facilities provided. The Act Government has committed to maintaining their on-road cycle lanes by providing regular maintenance checks and regularly sweeping their on-road cycle lane facilities.

- A significant challenge for the ACT Government is the provision of safe environments for cyclists when path conditions change – for example, at intersections, roundabouts, driveway crossings along on-road paths, and interchanges between on-road and off-road cyclist pathways. One of the strategies the ACT Government has recently implemented to increase intersection safety for cyclists is the introduction of green pavement markings. This is shown in Figure 2, where the left lane in the foreground is green and continues straight ahead past the left turn lane for motorists.



Figure 2. Pialligo-Fairbairn intersection. (Photo copyright Pedal Power and reproduced with their permission)

- Another safety treatment utilised by the ACT Government is a restriction zone, which signals to the cyclist a change in path conditions, while also restricting entry to the pathway by motor vehicles. This is illustrated in Figure 3.



Figure 3. Cycleway constriction barriers at intersection of off-road cycleway with road

- As many cyclists travel before dawn and after dusk when visibility is low, they require added safety measures. Cyclists are required to have a functioning lighting system on their bike to enable greater visibility of them by other road users. The ACT Government has instigated a media safety campaign to emphasise the use of lights and wearing of

helmets. In conjunction with the media campaign, an enforcement campaign has been launched to assist in cyclist compliance with lighting and helmet use. The ‘Lights, helmets, action’ poster, as shown in Figure 4, was distributed to ACT bicycle shops and cafes in 2009 and 2010, and is also available for download from the Department of Territory and Municipal Services (TAMS) website [1].

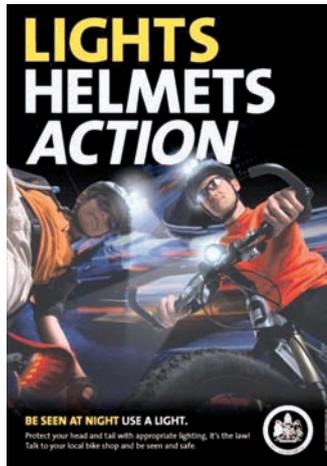


Figure 4. ‘Lights, helmets, action’ poster

- Cyclists predominantly use a shared path environment, whether it is an on-road cycle lane with motorised traffic or an off-road path shared with pedestrians. Each environment has its own requirements of the infrastructure and the cyclist using it. In an off-road shared path environment, the speeds are slower; however, a cyclist’s speed is faster than that of pedestrians and delineation assists where sight distance is limited. The ACT Government has included centrelines on cycle paths to aid the safety of all the path users, as shown in Figure 5.



Figure 5. Off-road cycle way centreline markings

- As cyclists are permitted to ride on footpaths in the ACT, the ACT Government has developed and installed a cyclist and pedestrian safety sign as a visual reminder to path users that they need to share the space and be mindful of other users. This is shown in Figure 6.



Figure 6. Cyclist and pedestrian safety sign

- The ACT Government has introduced a municipal road speed limit of 50km per hour, which has been supported by television and radio advertisements. This form of ‘invisible’ infrastructure costs virtually nothing, but provides a very high level of safety for all road users, pedestrians through to drivers of larger motorised vehicles.
- The ACT Government has developed design standards for urban infrastructure, *DS13 Pedestrian and Cycle Facilities* [2], to provide consistency in the development of cycleway infrastructure throughout the territory.
- The ACT Government has developed the *ACT Road Safety Strategy and Action Plans* [3], which maintain an ongoing focus on bicycle road safety issues.
- The TAMS website houses the guidelines, strategies, action plans, policies and promotional material that the ACT Government has developed regarding cycling within the territory [4]. All this information is freely available on the website for the community to look at and utilise as needed.

Future plans

The ACT Government is always looking at ways to improve the safety of cyclists and keeps a keen eye on developments around Australia and the world. Improved cyclist safety is gained by separating cyclists from motor vehicles, and a Copenhagen treatment (a physically separated, on-grade and on-road cycleway treatment) has been considered but not yet been implemented on any project in Canberra.

Speed limits in municipal areas have been reduced to 50 km per hour over the past 10 years, and consideration could be given to further speed reductions in selected areas or throughout the network. This would be consistent with what is happening in other jurisdictions and around the world.

Off-road cycle paths at night provide risk with the increase of cyclists. The provision of some form of lighting on curves and other high use areas will need to be investigated to increase safety.

While a variety of safety measures, both intangible and tangible, have been introduced to the territory by the ACT Government over the past 10 years to increase cyclist safety and encourage yet more cyclists to utilise the infrastructure, more is still planned.

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Cycling safety in Victoria

by staff of VicRoads, compiled by Juliet Reid, Project Manager, Cyclist and Pedestrian Safety

The Victorian Government is currently making a substantial investment of an additional \$115 million over 12 years towards cycling infrastructure in support of the *Victorian Cycling Strategy* [1], which was launched in March 2009. The strategy has a vision for cycling as a safe, readily available, convenient and preferred transport option for Victorians. It aims to develop and improve bike paths, lanes and other facilities, as well as running campaigns to promote road rules around bicycles and the shared use of Victoria's roads.

Improving cooperation between cyclists and other road users is a key element in increasing road safety for cyclists. The *Victorian Cycling Strategy* includes a priority action to reduce conflicts and risks for cyclists, in the short term, by:

- clarifying the road rules and communicating them more effectively to road users
- building positive attitudes and mutual respect between cyclists and other road users
- developing a guide for local communities to help them conduct bicycle safety campaigns and activities
- conducting a traffic compliance campaign around road rules related to bicycles.

A strong commitment has been made towards road safety with the state government's *Arrive Alive: Victoria's Road Safety Strategy 2008-2017* [2] aiming to drive down the road toll by 30 per cent by 2017. This includes comprehensive measures to improve the safety of cyclists on Victorian roads.

Key issues for cycling safety

The key road safety issues to be addressed include the following:

- **Education and awareness.** There is a need for relationship building among all road users, in particular for improved recognition of cyclists as legitimate road users.
- **Speed limits.** Studies [3] show that lower speed limits significantly improve safety for cyclists.
- **Infrastructure.** Cycling facilities can be improved to encourage other road users to give cyclists plenty of space on roads or to separate cyclists from other road users.

- **Vehicle safety.** Vehicle design can be improved to reduce the severity of injuries sustained by cyclists in collisions with other vehicles.

Current activities relating to cycling safety

Victoria has many activities in place or in the planning stages to improve cycling safety. They are described below.

Cycle network

The Principal Bicycle Network (PBN) is a VicRoads network of cycle routes that provide access to key destinations within the Melbourne metropolitan area. The PBN is one of a number of cycling networks that make up the cycling infrastructure of metropolitan Melbourne.

A review of the PBN is underway to investigate new cycle routes with consideration given to cyclists' preferred travel routes and the SmartRoads planning tool. The review focuses on targeting inexperienced cyclists who may be more cautious road users. There is also an increased emphasis on separating cyclists from motor vehicles where possible, as well as minimising on-road dangers by taking measures such as reducing traffic speeds.

Space for cyclists

VicRoads recently endorsed profile line marking, which can be placed on the outer edge of a cycle lane to remind drivers to keep clear. Trials in inner Melbourne successfully enhanced cyclist safety [4] and led to an increased use of these locations.

Safer paths

VicRoads is preparing guidelines for new and existing off-road paths. The guidelines will determine the optimum widths of the paths according to volume of cyclist and pedestrian traffic.

Cyclist crashes

VicRoads recently commissioned a study entitled *Factors in Cyclist Casualty Crashes in Victoria* [5]. Analysis of police crash