Personal security and bicycle facilities

Purpose

This note provides information on practices that enhance the personal security on off-road bicycle facilities.

Safety and security on bike paths

There are two aspects to safety on off-road bicycle facilities. They are:
- the safety of users; and
- the safety of neighbouring residents.

Internationally recognised environmental design strategies have been developed to maximise the safety and security of both. But what is meant by "safe"?

A person needs to feel safe in an environment in order to participate in it. In a qualitative sense, a facility is considered "safe" if the user is free from a sense of personal threat. Safety can be quantitatively measured by examining the records of any criminal or dangerous behaviour that has occurred in or near the area. Property values surrounding a facility are also a guide to the perceived safety of a facility (see Reference 1 for further details on property values).

Aim

This series of notes is designed to assist planners and engineers to provide for cycling in their local area.

The Cycle Notes should be read in conjunction with:
- Guide to Traffic Engineering Practice, Part 14 - Bicycles (Austroads, 1999), and
- Queensland Manual of Uniform Traffic Control Devices, Part 9 Bicycle Facilities.

Contents

Creating a safe environment

It is good practice to create a safe and pleasant environment for cycling facilities rather than relying on enforcement after the cycling facilities are built. This note describes approaches to improving personal safety and security on bike paths by using the internationally recognised "Crime Prevention Through Environmental Design" principles and "Safety Audits". Both are promoted by Queensland Police Service (QPS).

Crime Prevention Through Environmental Design

Crime Prevention Through Environmental Design (CPTED, pronounced "sep-ted") is a method of using the built environment to reduce the incidence of crime. At the same time it aims to enhance the needs of bona fide users of the space and reduce their fear of crime. It is based on the idea that human environments can be designed to encourage desired behaviours. CPTED is one of several tools that can reduce crime risks in public spaces.

Figure 1
A safe bike facility

Local police are an important stakeholder in the design of new and existing bicycle facilities. They can often provide advice on CPTED design facilities.

CPTED is based on five major principles that can be applied to off-road bicycle facility design.

These principles are:
- natural surveillance
- territoriality
- activity
- access control
- maintenance.

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Personal security and bicycle facilities

Table 1:
Principles and strategies of CPTED in relation to bicycle facilities

Principle	Strategy
Natural surveillance	■ Ideally constructing off-road facilities near occupied buildings, roads, houses and other places of human activity, enhances natural surveillance. ■ Ensure that tunnels and underpasses are at least twice as wide as they are tall. ■ Ensure good sightlines are established and maintained for movement at consistent speed along the path. ■ Consider the position of noise walls. They may remove opportunities for natural surveillance. ■ When new foliage is to be planted, consider the effect maturation of the plants will have on sightlines. ■ Where possible, eliminate predictable paths such as stairways, passages or tunnels. ■ Where predictable paths cannot be avoided, use lighting or other means to enable users to see the end of predictable paths. This may include the provision of CCTV, emergency phones, duress alarms or security staff surveillance. ■ Ensure the design provides for escape routes or help. ■ Install and maintain well-designed lighting which evenly illuminates the area to prevent hiding places. ■ Lighting is to enable visibility of a human face at 15m. ■ Consider the provision of public telephones or call points, mobile phone coverage, and/or signs that state where the nearest emergency phone or 24 hour facility that has a phone can be found. This is particularly important in facilities that are not close to general human activity.
	Special note: *Paths in non-metropolitan areas or paths designed for wheelchair access may, through desire or necessity, take users away from natural surveillance. The last point regarding call points is very important in such environments.*
Territoriality	■ Install and maintain clear signs to encourage ownership and appropriate use of the facility. For example, signs that indicate the valid users of paths or provide information for tourists. ■ The socio-environment of the location (for example, its proximity to CBD) will influence the degree of application of these principles. Be aware that it takes thoughtful planning and design to develop a sense of ownership in some parts of a city. ■ Conduct a safety audit to gain input from users.
Activity	■ An environment that invites a variety of activity including play equipment and cycling and walking paths can increase neighbourhood surveillance and decrease crime. ■ Look at measures to address, remove or minimise any land use that raises safety concerns for users.
Access control	■ Suitable signs, landscaping, lighting and pavement styles will naturally control flow of pedestrian and bicycle traffic into and out of legitimate areas. ■ Signs must be readable from a distance of 20m, have a clear message and be appropriately placed. ■ Provision of facilities (eg. pay phones) to enable users to alert emergency services. ■ Local government has a duty of care to ensure people can contact emergency services especially in non-mobile phone areas. See comment above under Natural surveillance. ■ Ensure emergency vehicles can gain access to the length of the facility.
	Special notes: *Consultation with emergency service providers is necessary during the design stage of any off-road cycling facility. This can be done through the local ambulance committee.* *The Queensland Ambulance Service (QAS) operates and maintains a comprehensive GIS (Geographic Information System) for many areas. Providing the geocodes of the locations of off-road cycling facilities to QAS will enable them to accurately locate such facilities if their services are required.*
Maintenance	■ Good maintenance practice indicates the area is owned and cared for. ■ Provide "vandal proof" park furniture and lighting. ■ Remove graffiti within an acceptable time frame. ■ Ensure ownership of lighting is clear and who is to be contacted for maintenance is widely known.
AVOID	■ Long narrow sections of path in which a person could be isolated or trapped without an "escape route". See special notes above where such isolation is unavoidable or is desirable (eg. nature trails). ■ Graffiti makes users feel unsafe. Remove within 24 hours if possible or apply a sacrificial coating to surfaces that may be graffitied, which can be removed more easily. Community art programmes can develop murals on surfaces that may have otherwise been graffitied. ■ Potential hiding places need to be removed or avoided e.g. trees, shrubs, signs and solid fences. Install landscape with low shrubs or high branching trees.

On-road facilities

Where these principles cannot be successfully applied in an off-road environment, on-road facilities for cycling may be preferred. Facilities on or beside roads frequently have better natural surveillance and lighting than off-road paths. Maintenance of these facilities can be easier than for off-road paths by including it as part of the road maintenance.

Providing both an on- and off-road facility in the same corridor gives options for riders of different abilities. It also creates a lighted night time cycle route if the off-road path cannot be lit.

Safety audits

The QPS has a comprehensive safety audit program. This is aimed at community security and the personal safety of users. It is not the safety audit process as described in Appendix A of *Guide to Traffic Engineering Practice, Part 14 - Bicycles* (Austroads, 1999). Police safety audits aim to reduce the opportunities for crime in public places. They allow users of the space to provide accurate and useful information to planners and designers. Police safety audits give the community a say about what contributes to their feelings of safety and therefore, encourage better use of public space.

Figure 2
Well-designed underpass–clear sightlines and no place to hide

The aims of these safety audits are to:
- identify possible crime sites in public space;
- address crime-related safety concerns by making recommendations to appropriate authorities and owners of space directed at removing or reducing opportunities for crime; and
- enable the community to monitor the implementation of recommendations made.

For the full details on conducting a safety audit, see www.police.qld.gov.au.

Security Improvement Program (SIP)

Grants may be available under the Security Improvement Program to provide a subsidy of up to 50 per cent to local governments for expenditure on security measures in existing public places. These could be for items such as surveillance equipment, lighting, emergency phones and modifications to public facilities. See reference 5 for more information.

Safety and security issues for property owners

Property owners next to planned bike paths may express concern about the impact a bike path might have on their property. In most instances, this concern has focused on crime, loud parties, vandalism and other undesirable activities that people fear a new path might bring to their neighbourhood.

Local governments often receive complaints from residents living near existing off-road facilities regarding increased crime. Local governments are then charged with the responsibility of addressing these concerns while still providing the best possible facilities for bicycle riding and walking.

There is evidence, both locally and internationally, to indicate that bike paths that are well designed, using CPTED principles are less likely to create new opportunities for crime. While one reaction to residents' complaints is to close down the facility, this may not provide the best solution and may result in an ill-defined, dangerous area that is not owned by the community.

Personal security and bicycle facilities

It may also cause a loss of public space by absorbing the land into adjacent land titles.

Alternatively, inspecting the site prior to construction and determining and addressing the concerns of local residents will result in an improved facility that has higher levels of use and decreased undesirable behaviour.

The websites listed in the References section present research that addresses the concerns of residents about the impact of such facilities on property values. Well-designed facilities that clearly demonstrate pride of ownership and safety become community assets that can make property bordering them more desirable.

Case study: Brisbane's Riverside Expressway

The bike path under the Riverside Expressway in Brisbane was the site of an attack on a cyclist in 1999. As a result of this attack, a CPTED based audit was undertaken and improvements to the safety and security of the facility implemented. This facility has experienced increased use and less serious incidents since. The following diagrams show before and after photos of the site demonstrating the effect of better lighting, bright colours and signage.

Figure 3
Before the CPTED audit (day time)

Figure 4
After the CPTED audit (night time)

Other references

1. This list of websites provide results of research into the impact that bike paths (trails in the US) have on communities that border them, i.e. in terms of crime, safety and amenity.
    http://www.dot.state.ia.us/trails/EconHandbook/EffectsfTrailsPropVal.html
    http://www.nps.gov/pwro/rtca/econindx.htm
    http://www.car-free.org/mpath/mp_res2.htm
    http://www.bonneville-trail.org
    http://www.unomaha.edu/~greer/trails/ (the .ppt file)

2. More information on Crime Prevention Through Environmental Design in Australia is available on the Web at http://www.apc.cpted.org/home.htm. This is the website for the Asia/Pacific Chapter of CPTED International. This contains links to international CPTED sites as well as to the **6th Annual CPTED Conference 2001** held in **Brisbane in September 2001.** It contains abstracts of papers accepted for presentation at the conference submitted from Australia and internationally.

3. Other information from the US on Crime Prevention Through Environmental Design is available at the (US) National Crime Prevention Council's Web site, **http://www.ncpc.org/cptedben.htm**

4. More information on Safety Audits is provided at the Queensland Police Service Web site **http://www.police.qld.gov.au/pr/program/audit/intro.htm**

5. For information on the Security Improvement Program see the Queensland Department of Local Government and Planning site **http://www.dcilgp.qld.gov.au**

6. Examples of local government design guidelines using principles of CPTED are available at the web site of the City of Tempe, Arizona **http://www.tempe.gov/tdsi/planning/cpted/**