

## **Shared Paths – minor investments for major gains**

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### **Abstract**

In recent years, the use of shared bicycle / pedestrian paths has grown in popularity as the community seeks a healthier lifestyle and increased sustainable travel options. Unfortunately, numerous serious incidents have also occurred on some of these paths.

It is obviously desirable to identify existing hazards on shared paths before incidents occur. This can be done by undertaking an 'Existing Conditions' safety audit. These hazards can then be rated to ensure the highest priority actions are undertaken first.

O'Brien Traffic has completed a large number of 'Existing Condition' safety audits for shared paths. The most recent project included inspections of 8.5 kilometres of shared path for a Council in the Greater Melbourne area. Audits were conducted by engineers who are not only accredited (VicRoads) road safety auditors, but also experienced cyclists.

This paper:

- outlines the steps in an effective 'existing conditions' shared path audit;
- identifies shared path hazards that consistently show up in the audit process;
- identifies the options (a large number that are relatively low cost) to treat these hazards; and
- provides guidance on how shared path hazards can be prioritised.

In many cases, cost-effective solutions can be provided to treat existing hazards on shared bicycle / pedestrian paths before incidents occur.

### **Keywords**

Shared Paths, Safety Audit, Pedestrians, Cyclists

### **Introduction**

Various cycling and walking strategies across Australia aim to encourage increased use of these modes. For example, the National Cycling Strategy 2011-2016 aims to double the number of people cycling in Australia by 2016 (AustRoads, 2010).

Australian Cycling Participation 2011 found that in a typical week around 18% of Australians ride a bicycle for transport and recreation with around 3.6 million people riding for recreation, leisure or sport and 1.2 million people making at least one transport journey (AustRoads, 2011).

In 2006, the percentage of the working population that walked only to work on Census Day ranged between 4 – 14% across all States in Australia (Bartley Consulting, 2008).

As these travel modes are further encouraged, the challenge is to manage the space that these modes require.

Shared paths have been increasingly used as an option to cater for walking and cycling. Shared use paths connect people with places and connect people with spaces (VicRoads, 2011). Shared paths can be used for a variety of purposes including recreation, local access and providing links between higher speed on-road paths or bicycle paths (AustRoads, 2009).

Although a central casualty crash database is not readily available to analysis incidents on shared paths, anecdotal information, recent court cases and community feedback indicates that safety issues do exist on some of these paths. The National Cycling Strategy identifies safety concerns as a barrier that limits the uptake of cycling in Australia.

If sustainable travel options are to increase in Australia, the safety of the facilities catering for these modes needs to improve. A key method to improve safety on shared paths is the safety audit process.

This paper examines the steps required to undertake an effective shared path audit. The hazards that are consistently identified through the audit process will be discussed with suggested options to treat the hazards outlined.

## **Method**

O'Brien Traffic has undertaken numerous safety audits for shared paths in Metropolitan Melbourne including a recent project for 8.5 kms of paths in a municipality located in the south-eastern suburbs. The majority of the shared paths were located within recreational reserves however the remaining locations were situated in linear parks that provided commuting opportunities for cyclists and walkers.

### **What is a Safety Audit?**

A Safety Audit is a formalised process to:

- identify potential safety problems for users and others; and
- ensure that measures to eliminate or reduce the problems are fully considered.

In terms of shared paths, safety audits can be undertaken at the following stages:

- Feasibility Stage;
- Preliminary Design;
- Detailed Design;

- Pre-opening (or Post-opening);
- Existing Conditions.

The audits recently undertaken were existing condition audits.

## **Process**

For the recent safety audits undertaken, Council officers had a clear mandate to undertake safety audits for shared paths. An action of the Council's Sustainable Transport Strategy was to undertake a safety audit for at least one shared path per year with the outcomes fed into future capital works programs.

The following steps were found to provide a clear and effective process:

1. Use an audit team to identify issues. At least one of the team members should have a good knowledge of relevant standards and guidelines (as well as experience in cycling).
2. Meet with the client (e.g. local Council) to identify useful 'local knowledge' regarding crash history and safety concerns raised by the community.
3. Review information provided by the client before the inspection is undertaken. The information may include aerial photography, plans of the shared paths, policies / planning documents relating the area that the shared path is within (e.g. masterplan documents, off-leash dog walking policies) and user type and volumes.
4. Inspect the shared path on at least two different occasions based on information provided by the client when issues may be occurring (e.g. peak times, off-peak times, during a sporting event, evening).
5. Travel along the path via bicycle and foot. Ensure that intersecting pathways and activity generators (such as playgrounds) that may interact with the shared path are also inspected. Photographs and accurately locating hazards are key pieces of information.
6. Prepare the report and assign the risk associated with hazards identified.

The client should provide a written response to the audit findings. As with Road Safety Audits, the client is under no obligation to accept all the audit recommendations. However, where a recommendation is not accepted, the reasons should be stated (and signed off at an appropriate level within the organisation).

It is noted that these steps are similar to the Draft Shared Path Audit Guidelines prepared by VicRoads in March 2012.

## Results

The issues that were continually identified through the audit process are summarised as follows:

### Path Width

The AustRoads Guide indicates that the desirable minimum widths of shared paths range from 2.5 metres (local access path) to 3.5 metres (recreational path). Greater widths may be required depending on user groups, numbers and speeds.

Shared paths that are too narrow reduce the lateral distance between users. This may result in collisions between users. A narrow path also reduces the ability of a cyclist to safely pass a slower user (i.e. slower cyclist or pedestrian) leading to loss of control.

Options to address this hazard include:

- Widen the path;
- Separate users (i.e. provide an alternative pedestrian path or bicycle route);
- Use linemarking or signage to identify a narrow section of path.

### Clearances (horizontal and vertical)

Obstacles (such as poles, seats and trees) situated too close the edge of shared paths creates a hazard for users (particularly cyclists). This can result in collisions with the obstacle or reducing visibility between cyclists and other users entering the shared path. Overhead obstructions (such as trees, signs and bridges) also pose a hazard for shared path users.

The AustRoads Guide indicates that an absolute minimum of 0.5 metres of lateral clearance to potential hazards is required whereas AS1742.2-2009 requires a 2.5 metre vertical clearance.

Options to address these hazards include:

- Remove the obstacle;
- Relocate lateral obstacle at least 0.5 metres (preferably beyond 1.0 metre);
- Relocate the vertical obstacle at least 2.5 metres;
- Use linemarking / signage to direct users away from the lateral obstacle.

### Obstacles within the path

The obstacle that was consistently identified as a hazard was bollards or similar 'end of path' treatments used to prevent unauthorised entry to the shared path (and recreational reserve). Poorly designed treatments include those that reduce the width of useable path, are difficult to see in reduced light or are unexpected.

Other obstacles within the path included service access pits (which were not flush with the path surface), height differences between path sections and gravel or tan bark from adjacent paths or gardens. This can result in cyclists losing control or pedestrians tripping.

The AustRoads Guide provides guidance for the design of terminal treatments. The surface of paths should be kept clear and well maintained.

Options to address these hazards include:

- Remove the obstacle;
- Use linemarking / signage / reflective materials to raise awareness of the obstacle;
- Use linemarking / signage to direct users around the obstacle;
- Reconstruct the terminal treatment to separate entering and exit users using landscaping;
- Use crashworthy fencing to provide the terminal treatment;
- Ensure paths are continually inspected to ensure debris does not pose a hazard;
- Relocate service pits;
- Reconstruct / build up service pits to ensure a flush surface.

#### Alignment (horizontal and vertical)

A key issue identified with horizontal alignment of the shared paths was the resultant reduction in sight distance between users and upcoming hazards. Embankments, vegetation and tight bends were found to be the main contributors to the hazard. Shared paths that are too steep (inappropriate vertical alignment) can result in loss of control while crests can significantly reduce sight distance between users.

The AustRoads Guide provides guidance regarding shared path alignment, sight distances and gradients.

Options to address these hazards include:

- Reconstruct the hazardous horizontal and vertical curves;
- Widen the shared path to improve sight distance (for horizontal curves);
- Remove obstacles such as embankments and vegetation to improve sight distance around horizontal curves;
- Use linemarking / signage to raise awareness of the horizontal alignment;
- Ensure significant clearance from hazards on the side of the path is provided.

#### Intersections

Where path intersection priority is not clear, confusion between users can occur. Also intersections with a “Y” arrangement (rather than a perpendicular “T” arrangement) can impact sight distances between users.

Options to address these hazards include:

- Reconstruct the intersection;
- Implement linemarking to reinforce the priority;
- Remove vegetation (or other obstacles) to maximise sight distances.

### User Mix

The AustRoads Guide states:

“A significant issue associated with shared use paths is the variety of users who display various characteristics that can lead to conflict between them. These characteristics include differences in speed, space requirements, user expectations (as some users expect exclusive or priority use) and predictability (e.g. cyclists, pedestrians, walking dogs, roller bladders and skateboard riders).”

The audits identified that hazards occurred when unexpected users used the paths. This included ‘off-leash’ dogs, children associated with playgrounds adjacent to paths and spectators associated with sporting ovals adjacent to paths.

Options to address these hazards include:

- Revisit off-leash policies in the vicinity of shared paths;
- Raise awareness of unexpected users such as children associated with playgrounds via signage;
- Alter the route of the shared path to increase the separation between the unexpected users.

It is noted that a large number of recommendations can be implemented at a relatively low cost. However, the earlier a project can be audited (preferably within the development or design stages), inherent problems can be addressed which has the following benefits:

- Reduces the risk of crash occurrence;
- Reduces the severity of crashes;
- Reduces re-design time; and
- Reduces costly remedial works.

### Conclusion

A barrier to sustainable transport options (such as walking and cycling) being taken up by the community is safety concerns. If these options are to increase in Australia, the safety of the facilities catering for these modes (such as shared paths) need to improve. Undertaking safety audits is an important method to improve safety on shared paths.

Through numerous audits undertaken by O’Brien Traffic, the key issues identified on shared paths can be summarised as follows:

- Path Width;
- Clearances (horizontal and vertical);
- Obstacles within the path;
- Alignment (horizontal and vertical);
- Intersections;
- User Mix.

Many of the safety issues identified can be treated for a relatively low cost. However, the benefits of auditing a shared path at the development and design stage provides an opportunity to eliminate inherent problems thus reducing the overall cost to the community by reducing trauma, re-design costs and/or remedial works.

### **References**

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