

# Cycle Notes 21

## Widths of Off-Road Shared Use Paths

Welcome to CYCLE NOTES No. 21. The purpose of CYCLE NOTES is to provide information on the design of bicycle facilities for engineers and planners.

CYCLE NOTES should be read in conjunction with:

- Austroads Guides to Traffic Management, Road Design and Road Safety.
- Australian Standard 1742.9, Manual of Uniform Traffic Control Devices, Part 9 Bicycle Facilities. VicRoads Traffic Engineering Manual Volumes 1 and 2.

### Introduction

This edition of *Cycle Notes* provides guidance on the capacity of shared use paths. In particular, it relates the widths of paths to the volume of cyclists and pedestrians who use the path.

Guidance is also provided on alternative approaches such as separating cyclists from pedestrians and using alternative routes.

### Shared Use Paths

Shared use paths connect people with places and connect people with spaces. Connecting people with places is about transport where getting to the destination is the primary focus.

Connecting people with spaces is about recreation and connecting people with nature where the journey and the experience of the setting are the primary objectives.

In this context, the natural landscape, the design of the path, the surface type and the meandering nature of the path are all critical to this experience.

Shared use paths should be designed to cater for the volumes of cyclists and pedestrians that use the path but they must also be designed in a way that is sensitive to the setting.

While design elements include path width, surface type and path alignment, this edition of cycle notes provides guidance on path width. This guidance is based on the relationship between the volumes of users and clearances between users.

### Passings and Meetings

When cyclists and pedestrians are using a shared path, they will often “meet” other cyclists and pedestrians travelling in the opposite direction or “pass” slower cyclists and pedestrians travelling in the same direction.

#### Delayed Passings

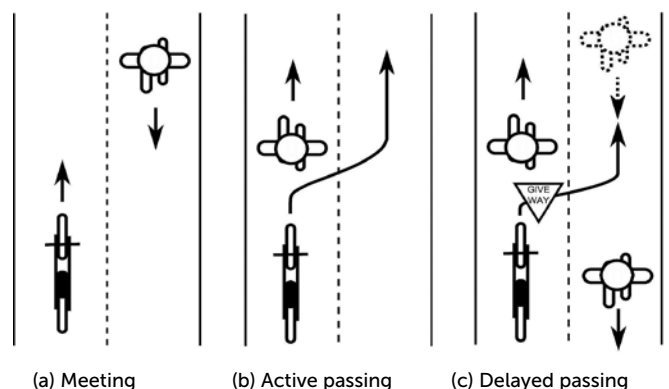
Delayed passings occur when faster cyclists must slow down to pass other path users travelling in the same direction. This usually occurs when a “passing” happens at the same time as a “meeting” and there is insufficient room for the faster cyclist to pass the slower path users.

The number of delayed passings that occur along a path is dependent upon the volume of path users, cyclist speed, direction of travel and path width.

In particular, the number of delayed passings increase significantly as the volume of pedestrians increase due to the speed differential between cyclists and pedestrians.



× Figure 1 – Off-road, shared use paths are common in Australia and provide maximum separation for cyclists from motor traffic.



× Figure 2 – Interactions of path users on shared use paths.

## Path Capacity Width Assessment

The following procedure can be followed to assess the capacity of existing paths, and determine whether they need to be widened to cater for existing usage or future growth. The procedure can also be used to determine the width of new paths. The assessment should be carried out for the 'design hour' of the path in question. The 'design hour' can be any particular hour during which it is most desirable to minimise delays for cyclists, which is usually (but not necessarily), the busiest period.

This procedure is based on existing paths. Where a new path is proposed, the same steps may be followed. However, a separate assessment must be undertaken to forecast user numbers, characteristics, directional split and the design hour.

### Step 1

#### Determine the 'design hour' for the path

The design hour is determined by the path manager. For a commuter path it may be the AM peak hour on a weekday in spring; for a recreational path it may be mid-afternoon on a weekend day in late summer.

The design hour may change for an existing path depending on the development of new bicycle infrastructure – e.g. a path may develop into a commuter path if a new bridge or link is built further 'downstream'. Furthermore, the design hour and associated usage may be different on various sections of a long path or trail.

### Step 2

#### Count the number of pedestrians and cyclists using the path and their direction of travel.

As well as counting path users during the 'design hour', extend the counts to include other times of day/week/year so as to reconfirm, or amend the appropriate design hour. If planning for future growth, cyclist and pedestrian volumes may be estimated based upon an assumed growth rate.

### Step 3

#### Determine the directional split of path users.

"Directional split" is an indication of the proportion of path users that are going in each direction during the design hour. This is calculated by dividing the numbers of path users going in each direction by the total number of path users.

Commuter paths might have a directional split of 90/10 (90 per cent of path users are going one way and 10 per cent are going the other way). Recreational paths are more likely to be closer to 50/50 split, where each direction is more evenly distributed between the two directions.

### Step 4

#### Select appropriate 'directional split' chart for assessment.

Select the chart (A or B) on page 3, that most closely represents the 'directional split' for the shared path.

Use Chart A for paths with heavy uni-directional flows (e.g. with a 90/10 directional path usage).

Use Chart B for paths with a more even directional split, (e.g. 50/50 directional path usage). Also tend towards using Chart B for paths with 75/25 directional split, or paths with notable proportions of pedestrians, particularly with characteristics such as people with disabilities, groups, joggers, dog walkers or children.

### Step 5

#### Determine the appropriate path width for the number of pedestrians and cyclists.

Using the selected chart (A or B), locate the number of cyclists (either existing or forecast) along the bottom of the chart (x-axis), and do the same with the number of pedestrians (existing or forecast) on the left side (y-axis) of the chart.

The zone where these two figures intersect corresponds to the recommended path width, based on the number and type of path users, and their directional split, within the design hour of the path.

### Step 6

#### Check the results.

Use Table 1 to check the results from the charts on page 4. Consider the design measures for separating pedestrians and cyclists if the recommended path width is 4m or more.

### Chart A: Directional Split – 90/10

Paths that have a 90/10 directional split generally produce fewer delayed passings and therefore have a higher capacity within a given width, than paths with a 50/50 directional split. This is because the number of 'same time' passings and meetings are fewer when most path users are travelling in the same direction.

#### Example: Upfield Path, Brunswick (2009)

**Existing condition:** 2.2m wide shared use path

**Design hour:** Tuesday 8-9am, Spring

**Directional split:** 85/15

**Cyclist volume:** 200

**Pedestrian volume:** 120

**Pedestrian characteristics:** groups.

**Analysis:** The existing path width is inadequate for current volumes, with the recommended path width being 3m wide. Widening the path to this width would also cater for future growth in cyclist and pedestrian volumes.

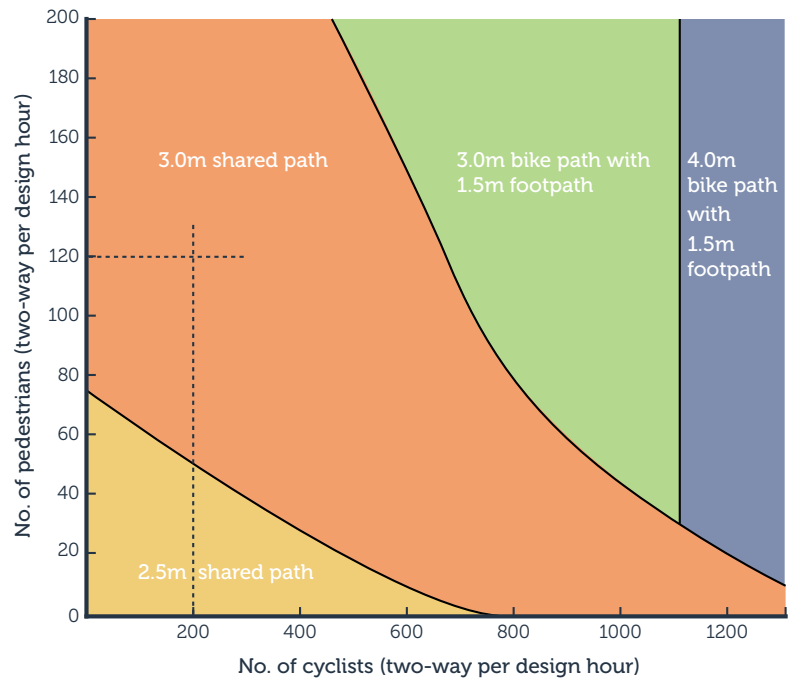


Chart A: Path with 90/10 directional split.

### Chart B: Directional Split – 50/50

Paths with closer to a 50/50 directional split produce more frequent delayed passings and have a lower capacity as a result. This is because the number of 'same time' passings and meetings are more frequent when the numbers of path users travelling in each direction are similar.

#### Example: Bay Trail, St Kilda (2009)

**Existing condition:** 2.5m wide bicycle path, 1.5m wide footpath.

**Design hour:** Saturday mid-afternoon, summer

**Directional split:** 54/46

**Cyclist volume:** 200

**Pedestrian volume:** 100

**Pedestrian characteristics:** groups, dog walkers.

**Analysis:** Existing path width is adequate for current demand, and has capacity for future growth pedestrians and cyclists.

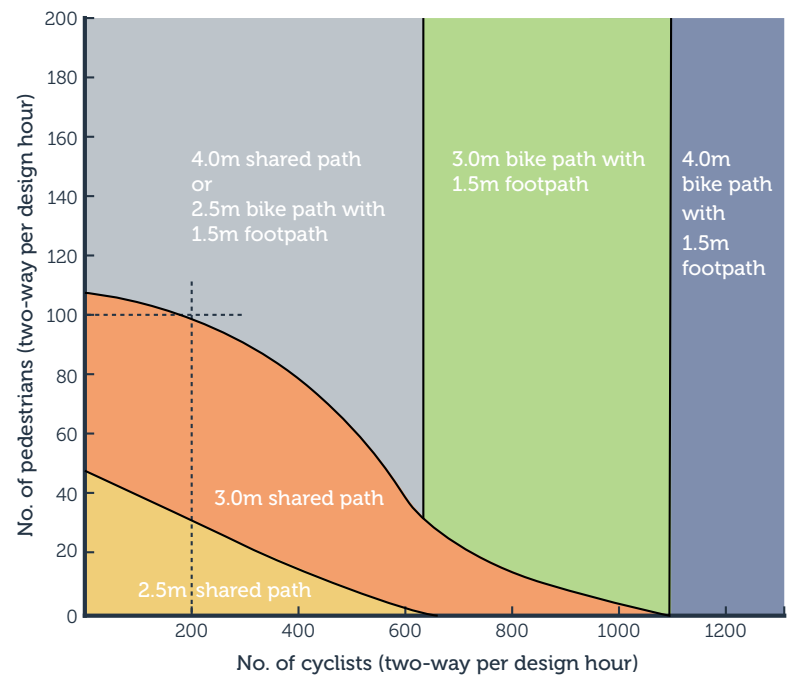


Chart B: Path with 50/50 directional split.



✓ Effective separation of path users requires the use of contrasting surfaces rather than linemarking

Table 1 - Summary of Path Widths

Width of Path	Type of Path	Guidelines for Appropriate Use
2.0 m	Local access only Regional paths such as rail trails.	Paths at this width are adequate for pedestrians, but only cater for one cyclist or person in a wheelchair at a time. If a meeting or a passing occurs between a cyclist and another user, one of the users may need to move off the path.  This width may be acceptable on paths that are less than 500m in length where cyclist volumes are less than 20 cyclists per hour. They are not suitable for new paths on the Principal Bicycle Network or the Metropolitan Trail Network.
2.5 m	Recreational and regional commuter paths	Paths at this width are also adequate for pedestrians and can accommodate low volumes of cyclists. This width allows a clearance of 0.5m between path users when passings or meetings occur. If a passing occurs at the same time as a meeting and a cyclist is involved, one of the users may need to move off the path.  This width may be acceptable on paths that carry less than 600 cyclists per hour or paths that carry less than 40 pedestrians per hour as shown in charts A and B.
3.0 m	Recreational and urban commuter paths At these widths it is assumed that passings and meetings between path users is frequent,	Paths at this width can accommodate higher volumes of cyclists and pedestrians. This width allows a clearance of 1.0m between path users when passings or meetings occur. It also allows passings and meetings to occur simultaneously without the need for users to move off the path.  In most circumstances, new shared use paths should be 3.0m wide, especially for new paths on the Principal Bicycle Network or the Metropolitan Trail Network.
3.5m	that bicycle speeds exceed 25 km/h and that a more diverse range of users is present such as older people and family groups.	A 3.5m path provides increased clearances between path users and, as a result, provides a higher level of service for paths users. However, 3.5m wide paths do not reduce the number of delayed passings for cyclists.  In addition, 3.5m wide paths may be inappropriate for their setting in terms of their visual and physical impact on the landscape, especially if they are constructed from concrete or asphalt.
4.0 m	For these reasons, these paths need to be wider to provide higher clearances between path users.	Paths at this width can accommodate very high volumes of cyclists and pedestrians and will allow simultaneous passings to occur in both directions.  However, if there is sufficient space for a 4.0m wide shared path, the provision of a 1.5m wide path for pedestrians and a 2.5m wide path for cyclists may provide a better outcome for all path users.  In addition, 4.0m wide paths may also be inappropriate for their setting in terms of their visual and physical impact on the landscape, especially if they are constructed from concrete or asphalt.

### Separating Cyclists from Pedestrians

Separating cyclists from pedestrians significantly increases the capacity of shared use paths and improves amenity for pedestrians.

One of the keys to effective separation is making it clear to users which path is for pedestrians and which is for cyclists. Depending on the location, the setting and the width available, this can be achieved by physical separation and/or using contrasting surface materials. Such an approach can also be reinforced through signing and linemarking to make it clearer as to where pedestrians and cyclists should travel.

#### Physical Separation

Physical separation can be achieved by building the paths on different alignments some distance apart. The separation can be highlighted by a median strip of grass or gravel, rows of bushes, trees or a fence with a safe and appropriate clearance.

In areas where space is limited, separation can also be highlighted by the use of a cobblestone or flagstone strip or a spoon drain.

#### Contrasting Surface Materials

Cyclists tend to prefer paths with asphalt or concrete surfaces because they provide a smoother ride. Whereas, gravel, cobblestone, timber boards and paved surfaces tend to be more easily recognised as footpaths and are more likely to be used by pedestrians.

Gravel surfaces can also be favoured for shared use paths in natural settings where the colour, feel and sound of the path enhances the connection between users and the setting. However, gravel paths may present difficulties for people using wheel chairs or other aids such as walking frames.

#### Signing and Linemarking

On many paths, signing and linemarking can be used to encourage more co-operative behaviour between cyclist and pedestrians. For example, the provision of a centre line and bicycle/pedestrian symbols can encourage path users to keep to the left. For more guidance on signing and linemarking, please refer to Cycle Notes 10 - Shared Paths Behavioural Signs.

For further information please phone 13 11 71 or visit [vicroads.vic.gov.au](http://vicroads.vic.gov.au)

