

John Forester, M.S., P.E.
Cycling Transportation Engineer
Consulting Engineer, Expert Witness, and Educator in
Effective Cycling, Bicycles, Highways and Bikeways, Traffic Laws
7585 Church St., Lemon Grove, CA 91945-2306
619-644-5481 forester@johnforester.com

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Review of Planned Cycletrack for Bourke Street, Sydney, Australia

prepared for Friends of Bourke Street

1 Introduction

I have read the official pamphlet, report, inviting comment on the planned cycle track for Bourke St. Here are my comments. If you see any factual errors, please let me know, for I have had to make some assumptions.

I, and some of my associates, have had one short experience with such a design, in Montreal. When cycling in the opposite direction to the adjacent stream of motor traffic, it was frightening, with many intersection situations in which we had to exercise our expert skills to avoid car-bike collisions. That said, I consider the proposed design.

2 General Design and Purposes

The report states that the original kerbs will be retained in most places. It appears that the plan takes 1.4 m from each travel lane and moves that width to the side of the traveled way to provide the cycle track and its divider. The motives for this decision are given as:

- 1: To reduce accidents, thereby:
- 2: Increasing cycling by:
- 3: Making "all cyclists including children and the elderly feel safe and comfortable."

The design also produces another effect, which may be another motive:

- 4: It pleases motorists by moving bicycle traffic off the roadway, out of motorists' way.

3 Reducing Accidents

The city provides no justification for its claim that this design will reduce either accidents or accident rate incurred by cyclists. It apparently has made no effort to do so, obviously relying on the superstition that two-way urban cycle tracks, by moving bicycles out of the path of same-direction motor traffic, must make cycling much safer.

There is no such evidence anywhere in the world. The only major users of cycle tracks use only one-way tracks because they know that two-way tracks are much more dangerous than one-way tracks.

3.1 General Car-Bike Collision Statistics as Related to this Proposed Design

Even those major users of cycle tracks, the Netherlands and Denmark primarily, have had to make great and expensive changes to the traffic pattern merely in order to keep their cycle tracks as safe as normal roadways.

The reasons are easy to understand. The only functional advantage of cycle tracks or cycle lanes is that they move cyclists out of the way of same-direction motor traffic. However, same-direction motor traffic is the cause of only very few car-bike collisions; say 5%. (I think it is reasonable to believe that Australian statistics of car-bike collision are very similar to those in the USA, as given by the Cross report of 1976 and confirmed by later studies. I do not know of any such study of Australian traffic; if there is better evidence about Australia-

lian traffic, then its statistics should be used.) On a slow-traffic street such as Bourke, the proportion of car-bike collisions caused by same-direction motor traffic is probably considerably less.

Therefore, the proportion of car-bike collisions that it is possible for this cycle-track design to reduce is very small.

If only about 5% of car-bike collisions are caused by same-direction motor traffic, the causes of the other 95% must be elsewhere. That is, that 95% of car-bike collisions are caused by turning and crossing movements by either motorists or cyclists. The report specifically states that the design preserves all the existing locations where turning or crossing movements might be made. The assumption must be made that the pre-existing number of individual turning and crossing movements will continue to be made.

Therefore, at the very least, the pre-existing number of car-bike collisions caused by turning and crossing movements must be presumed to continue to occur.

The map in the report shows 38 intersections over the distance of the cycle track, 4.3 km, averaging about 120 meters between intersections. The number of driveways is not stated, but those shorten the distances between possible turning and crossing movements.

3.2 Safety of Two-Way Cycle Tracks

The presumption that 95% of the car-bike collisions will continue to occur is based on the assumption that each turning or crossing movement made will be no more dangerous with the cyclist on the cycle track than it was with the cyclist on the proper side of the roadway. This is a false assumption. As stated, the major users of cycle tracks use only one-way tracks because they have found that wrong-way cycling on cycle tracks produces several times the number of car-bike collisions as does the right-way cycling. Cycling on sidewalks (pavements) presents exactly the same collision situations as does cycling on cycle tracks; the relative positions of the motorists and the cyclists are identical. It is well known from American experience that wrong-way sidewalk (pavement) cycling is much more dangerous than right-way sidewalk cycling.

The likely doubling of the car-bike collisions caused by transferring half of the cyclists to the cycle track on the wrong side of the street amounts to an increase to 135% of the original number of collisions, without considering the other

dangers inherent in a one-way cycle track. In short, the two-way aspect of the proposed Bourke Street design proves that it will considerably increase car-bike collisions.

3.3 Safety of One-Way Cycle Tracks

This section starts with the same presumption as the previous section, but limited to one-way cycle tracks, such as those used in the Netherlands and Denmark. The presumption that 95% of the car-bike collisions will continue to occur is based on the assumption that each turning or crossing movement made will be no more dangerous with the cyclist on a one-way cycle track than it was with the cyclist on the roadway.

This assumption is also false. When the cyclist is on a cycle track, he is positioned so that motorists crossing the track, either to enter the roadway or to leave it, are less likely to observe his presence than if he were properly on the roadway. Such motorists look out for traffic where they expect to see it, on the roadway and moving in the proper direction. They tend to assume that traffic on the cycle track is like pedestrian traffic, because that is the more familiar situation, and to act accordingly.

The situation is particularly acute when the motorist is making a left turn (All turns will be described as done in Australia with left-side driving.), because then he has to look both forwards and backwards. There are also problems about motorist right turns. It is not really necessary herein to provide an analysis of these problems, beyond indicating their significance and the methods take to avoid their hazards.

To avoid the hazards presented by these problems, the nations who are major users of cycle tracks have had to adopt the following measures.

- 1: Practically all intersections must be signalized.
- 2: Motorist right turns to be permitted only when made during a protected right-turn signal phase which also stops cyclist through traffic.
- 3: Motorist left turns to be permitted only when permitted by a left-turn signal phase which also stops cyclist through traffic
- 4: Cyclist right turns to be permitted only when permitted by a cyclist right-turn signal phase.
- 5: Signalling equipment must possess sufficient signal phases to support these and similar movement limitations.
- 6: Intersection design must provide sufficient lanes for storage of motor vehicles during red

phases.

- 7: They all have nationwide and lifetime educational programs to teach both motorists and cyclists how to operate in their more complicated and more dangerous systems.

These are the precautions that the major users of cycle tracks have found necessary to keep cycle tracks reasonably safe. Even though they take these precautions, their cycle tracks are not particularly safe. The latest Danish report shows that their cycle tracks, with all these precautions, reduce the probability of a cyclist being involved in a car-bike collision by 8%, while increasing the probability that a motorist will be involved in a car-bike collision by 20%. This apparent anomaly is produced by changes in traffic volumes, but it does indicate that traffic problems still exist with one-way cycle tracks despite the precautionary measures undertaken.

The USA does not install the collision countermeasures typical of the Netherlands and Denmark, and, therefore, its national guide for bicycling facilities (AASHTO's Guide for Bicycle Facilities) specifically recommends not using cycle tracks (called sidepaths) where intersections and driveways are frequent.

3.4 Traffic Safety Measures in the Bourke Street Plan

Bourke Street contains many locations where car-bike collision prevention measures should be taken: 38 intersections and an unknown number of driveways. However, the Bourke Street plan provides for none of the collision prevention measures that the major users of one-way cycle tracks have found necessary to keep their cycle tracks reasonably safe.

3.5 Safety Conclusions

It must be concluded that the Bourke Street plan for a two-way cycle track without the safety measures taken by nations who use one-way cycle tracks is most likely to increase car-bike collisions to a significant extent.

4 Purposes Other Than Safety

Cyclist safety is the whole basis for the ostensible justification of the Bourke Street project. Even though there is no reasonable expectation of greater cyclist safety, these other justifications, more nearly excuses, need to be

considered.

4.1 Satisfying Motorists

The prevalent superstition that putting cyclists on a cycle track will make cycling much safer is comforting to motorists. It provides a marvelous justification, although it is only an excuse, for moving cyclists aside and out of motorists' way and concern. That this thought may well be a significant motivation for the project must be considered by those evaluating the project.

4.2 Satisfying Cyclists

The entire purpose of the project is based on making "all cyclists including children and the elderly feel safe and comfortable." The whole value of the project is based on the concept that unless this occurs, there will be no increase in bicycle transportation.

4.2.1 The Safety Illusion

As demonstrated above, it is an illusion to expect that cycle tracks installed as in the proposed Bourke Street project will make cycling safer. It is more likely that such tracks will make cycling more dangerous. It is the ethical duty of government to inform its citizens of the truth about safety matters and to act in accordance with reasonable safety criteria.

4.2.2 The Comfort Factor

It is well known that most cyclists (and in this respect I know of no significant differences between American and Australian cyclists) feel much more comfortable when allowed to ride in facilities that protect them from same-direction motor traffic. It is necessary to consider the sources of this feeling of comfort.

- 1: They believe that same-direction motor traffic is the greatest danger to cyclists, so that using the roadway stimulates feelings of fear.
- 2: They believe that their legal or social duty is to stay out of the way of motorists, that they are not fully legal roadway users, so that using the roadway stimulates feelings of guilt.
- 3: They believe that they are unable to operate in accordance with the rules of the road, or that it is dangerous to do so, so that using the roadway stimulates feelings of inferiority.

While these feelings exist, they are all based on false beliefs. It is unethical for government or bicycle advocates to use these feelings, thereby

strengthening the false beliefs, to achieve particular ends, and particularly so when this is to advocate more dangerous actions, such as producing cycle tracks of the Bourke Street type.

4.2.3 Confounding the Types of Cyclist

The comfort purpose states its objective as making "all cyclists including children and the elderly feel safe and comfortable." The specific naming of children and the elderly as members of the class of cyclists indicates that these persons are considered different from other cyclists. It is unknown the extent to which child cyclists are more frightened of operating in the roadway than are adult cyclists, but it is certainly correct that adults believe that they should be more frightened and that they are less competent in such operation. Elderly cyclists should not be considered any less skillful than other cyclists, but they are considered to be generally slower, which contributes to the feelings fear, guilt, and inferiority.

It so happens that the dangers of cycling on cycle tracks, side paths, sidewalks, or pavements are very speed sensitive. While cycling on such facilities at normally attainable road speeds incurs large risks of car-bike collision, cycling at pedestrian speeds and obeying pedestrian rules is not significantly more dangerous than walking under pedestrian rules.

The elderly of the type just discussed are slow cyclists, and young children should be controlled to ride at slow speeds on sidewalks (pavements). Therefore, it is reasonable to allow such persons to cycle on sidewalks (pavements) at slow speeds and obeying pedestrian rules. After all, in many locations they have done so for many years, with no bad results.

Those cyclists who ride faster than walking speed should then be required to ride in the roadway, where they will be safer at their speed, and obey the rules for drivers of vehicles. There is no doubt about the ability of the general public to ride bicycles in accordance with the rules of the road for drivers of vehicles; that has been proved on many occasions, and has never been disproved once. That principle is particularly pertinent on streets with such slow traffic as is on Bourke Street.

4.2.4 The Volume Expectation

Some persons hope that building facilities such as the Bourke Street cycle track will considerably increase the bicycle transportation modal share and correspondingly decrease the private

motoring modal share. This hope is based on the belief that a number of people sufficient to make this switch transportationally significant are already making a sufficient number of trips by car which can easily be done by bicycle and are deterred from making the switch only by fear of same-direction motor traffic. There are several unknown quantities necessary to support this hope.

- 1: The number of people who now do not cycle but would be pleased to cycle if they thought it could be safe
- 2: The number of the trips that these people make by car that could conveniently be made by bicycle
- 3: The number of these possibly convenient bicycle trips that these people will choose to make by bicycle

The only number that counts in the calculation is the final number, and the numbers in the items from 1 to 3 get smaller and smaller, by their definition. The number in item 1 is very commonly produced by survey of the type known as a preference survey. These commonly produce either the subject's desire or the answer that the subject believes will be socially acceptable or will please the questioner. The number in item 2 is very difficult to determine, because people who have not been using bicycle transportation have no idea of the inconveniences that must be overcome to use it, and the extent to which they will choose to overcome them. The number in item 3 can only be determined by measurement of actual behavior. In the field of bicycle transportation, actual numbers have proved much smaller than numbers produced by estimating the values for items 1 and 2.

The reasons for this shortfall are obvious. In any modern society in which motoring has been easily obtainable for a long time, patterns of urban development, patterns of residence, patterns of economic activity, and patterns of social connections have developed according to the ease of motoring. Those patterns are not particularly conducive to bicycle transportation.

Whether or not a considerable amount of bicycle transportation will become used in any area depends on the particular characteristics of the area. The potential, not to say the probable future, amount of bicycle transportation in any area can be estimated only by careful study of its travel patterns and its social characteristics. Even such estimates have not proved to be particularly accurate, but they may be better than nothing.

In the absence of such knowledge, I make no prediction about the amount of bicycle transportation that would be generated by a project such as the Bourke Street project, nor by a system of such projects.

5 Conclusions

The Bourke Street project is based on the belief that its cycle tracks will greatly reduce the number of car-bike collisions that typically occur on such streets. All other results that are hoped for depend on that belief and on the social acceptance of that belief. However, that belief is so far from being supported by fact that it must be considered to be false, to be contrary to fact, to have results contrary to the hypothesis.

The fact that the falsity of the belief is so well documented in the field of bicycle transportation engineering shows that advocating such projects is unethical. Unethical for government persons, who are expected to serve the people with truth rather than direct them according to popular superstition. Unethical for transportation engineers, who have the professional responsibility to serve the public safety and convenience according to the best knowledge. Unethical for bicycle advocates, who should not be enticing their comrades into danger to suit another agenda.

It would be far better to encourage most cyclists to ride according to the rules of the road for drivers of vehicles, and to encourage motorists to accept their presence as legitimate roadway users. Those cyclists who are content to ride at little more than pedestrian speed, and to use the cautions inherent in pedestrian rights and duties, are as well accommodated on the existing sidewalks (pavements) as they would be on a cycle track.