

**Organisation:** Auckland Transport  
**Attn:** Kathryn King  
**Re:** Width of bus lanes

Quality Assurance Statement		
<i>This document has been prepared for the benefit of Auckland Transport by the team that undertook cycle route audits in April and May 2015. No liability is accepted by the authors or their employers with respect to its use by any other party.</i>	Main author:	<i>Axel Wilke</i>
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## 1 Description of issue

1. This memorandum concerns itself with the desirable width of bus lanes. By default, cyclists can use bus lanes. Most bus lanes operate during peak hours only, and at other times, they can be used for parking. For the operation of bus lanes to be safe for cycling, certain widths should be avoided, and there needs to be enough width available if parking is permitted.
2. Figure 1 shows an example of a 3.5 m bus lane; not quite wide enough for safe use by cyclists when parking is permitted.



Figure 1: 3.5 m bus lane with parking permitted<sup>1</sup>

3. Figure 2 shows an example of a 3.2 m uphill bus lane; it is obvious that cyclists are forced into the door opening zone when parking is permitted.

<sup>1</sup> Photo taken outside 105 Mt Eden Road



Figure 1: 3.2 m bus lane with parking permitted<sup>2</sup>

## 2 Legal situation

4. Whilst a road controlling authority has the ability to ban certain user classes (like cyclists) from bus lanes, all bus lanes on Auckland's urban road network are available to cyclists.<sup>3</sup> Cyclists are one of the user classes allowed to use bus lanes by default.
5. Bus lanes can either be full-time or part-time. Where bus lanes are part-time, motorists can either use the bus lane for driving or for parking. As soon as a driver parks in a bus lane, it is effectively no longer available for driving.

## 3 Planning and design principles

6. The following planning and design principles cannot be found in Austroads, but they are taught in New Zealand's *Planning and Design for Cycling* courses. These courses are endorsed by the NZ Transport Agency (in fact, the Transport Agency formally owns the course material) and the content is agreed to by Transport Agency staff, which includes the bus lane design principles.
7. There are plans to incorporate these bus lane planning and design principles into official guidance for the New Zealand industry; this is planned for later in 2015.
8. From a planning perspective, there are three types of bus lanes: wide, narrow, and intermediate width.
9. Where a bus lane is in a kerbside position, it is generally measured from the kerb face to the lane line, and this assumes that there is no lip at the edge of the drainage channel. If there is a lip at the drainage channel that cannot practically be biked along, the measurement is to be taken from the lip.

### 3.1 Cyclists interacting with buses

10. Wide bus lanes are those that are at least 4.2 m wide. Wide bus lanes are the most desirable type, as they achieve a dimension where buses and cyclists can (just, at the lower end of this range) be next to one another; one mode does not impede on the other. This is also stated in ATCOP chapter 13. Cycling Infrastructure Design, 13.2.5 Bus, Transit / Cycle Lanes.

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<sup>2</sup> Photo taken outside 633 Great North Road

<sup>3</sup> Bus-only lanes exist on busways, for example the northern express, which run along motorways.

11. Narrow bus lanes are those that are not more than 3.2 m wide. Narrow bus lanes are less desirable than wide bus lanes, as they require buses and cyclists to line up behind one another. At 3.2 m or narrower, the bus lane is narrow enough for it to be obvious to bus drivers that they cannot overtake cyclists without leaving the bus lane and straddling the adjacent traffic lane. Therefore, buses are held up behind cyclists until such time as there is an overtaking opportunity. Likewise, cyclists are held up behind buses stopped at inline bus stops and need to move into the adjacent traffic lane for overtaking. Narrow bus lanes are undesirable from a bus priority perspective; the more cyclists there are, the less effective the bus lanes become. If the objective is to increase the mode share of cycling, this would be increasingly detrimental to the objective of making bus travel more attractive.
12. Bus lanes of intermediate widths, i.e. from 3.3 m to 4.1 m, represent the least desirable type and from a cycling safety perspective, they are to be avoided. The intermediate dimensions create ambiguity and some bus drivers will overtake cyclists when there is not sufficient clearance for this to be perceived as safe and comfortable by cyclists.

### 3.2 Cyclists interacting with parked vehicles

13. If wide bus lanes are used for parking outside of peak times, there is more than sufficient room for cycling in the remaining space. New Zealand guidance is for the combined width of parking and cycle lanes to be not less 3.7 m,<sup>4</sup> and with at least 4.2 m available, there is ample room for cycling clear of potentially opening car doors.
14. Narrow bus lanes of 3.2 m width are not anywhere near wide enough to both accommodate parking and cycling; they are at least 0.5 m narrower than what they would need to be for these purposes. As such, narrow bus lanes only provide a safe cycling environment when they are full-time bus lanes.
15. Bus lanes of intermediate width are suitable for parking only if they are at least 3.7 m wide. However, as explained in paragraph 10 above, intermediate width bus lanes are to be rejected as they encourage overtaking of cyclists by buses when this is not safe.

## 4 Discussion

16. For 50 km/h speed limits, bus lanes should be at least 4.2 m wide. They result in safe cycling environments suitable for what is called the *Enthusied & Confident*, efficient operation of bus priority not impacted on by cyclists, as well as allowing for parking in off-peak periods.
17. Narrow bus lanes of not more than 3.2 m width are much less desirable. Buses and cyclists impact on one another; a bus may be held up behind a slower cyclist (especially when going uphill), and a stopped bus blocks the passage of a person on a bike. Whilst cycling in a narrow bus lane might be safe in actual terms (by far the biggest crash problem is drivers turning right from the main road into a side street through a queue of stationary traffic adjacent to the bus lane overlooking two-wheeled users of the bus lane), it is certainly not pleasant. As narrow bus lanes do not provide enough width for parking and cycling, they need to be full-time bus lanes. If they are not, cyclists are

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<sup>4</sup> Refer to Table 4-2 and its footnotes in *New Zealand Supplement to the Austroads Guide to Traffic Engineering Practice Part 14: Bicycles* (Transit NZ, 2008)

exposed to the risk of opening car doors, which is one of the most common mid-block crash causes for cyclists. It follows that narrow bus lanes are much less desirable than wide bus lanes.

18. Bus lanes of intermediate width should always be avoided, as they don't work for cyclists when they operate as bus lanes. Unfortunately, most existing bus lanes fall into this category.

## **5 Recommendations**

19. It is recommended that new bus lanes should ideally be at least 4.2 m wide.
20. If this cannot be achieved, new bus lanes should be 3.2 m wide and be full-time, i.e. part time narrow bus lanes should not be considered any further.
21. New bus lanes of intermediate width should not be considered any further.
22. Existing bus lanes of intermediate width should be reviewed and either be converted to narrow full-time bus lanes, or widened to at least 4.2 m. It is appreciated that this is a complicated task that might take a long time to achieve.
23. Existing narrow part-time bus lanes should be converted to narrow full-time bus lanes, or widened to at least 4.2 m.