



# Alternative Separation Methods for Cycle Lanes

## Background

As part of a major programme of off-street trials of innovative cycling infrastructure, Transport for London (TfL) commissioned the Transport Research Laboratory (TRL) to conduct a series of trials to examine the impact of different methods of cycle lane separation on the behaviour and safety of road users (inc. cyclists, car drivers, motorcyclists, HGV drivers and pedestrians). The methods of separation investigated, which were compared by public participants to a solid white line separator were:

1. a kerb with 365 mm hard margin (full continuous segregation with physical barrier);
2. bolt-on delineators: the Zicla Zebra 9™ (a type of intermittent separation with low-profile barriers positioned at 2.5 m intervals);
3. 1-m high marker posts: Jislon™ 'wands' (intermittent separation with high-profile barriers positioned at 2.0 m intervals)

## Objectives

Cyclist and driver trials aimed to determine the extent to which the method of cycle lane separation influenced:

- the behaviour (in particular speed and position in their respective lanes for cyclists and vehicles); and
- perceptions of road users, with a focus on usability and perceptions of safety.

Pedestrian trials aimed to determine

- the extent to which the method of cycle lane separation influenced the perceptions of pedestrians when crossing the road.

Trials and reporting focussed on four key areas: Speed, In-lane position, Stopping positions, and Qualitative responses.

## Findings

In general, cyclist, driver and pedestrian ratings of perceived usability and safety were high for all separations (wands, Zebras, kerb and white line) indicating that all four methods were viewed as fairly safe and fairly easy to use. Nonetheless, statistically significant



A kerb with a 365 mm hard margin



Bolt-on delineators



1-m high marker posts



Control site: Solid white line delineator

differences were found between the methods, indicating small but distinct variations in the perceptions and behaviour of the different road users. Such variations may have design implications when implementing integrated and segregated cycle lanes.

The **bolt-on delineators** were found to offer the smallest improvements to the perceived usability and safety of cyclists and car drivers, and were perceived to be less safe and harder to navigate past than a painted white line by HGV drivers and motorcyclists.

A **hard margin** kerb delineator was preferred by car drivers and cyclists over a solid white line, but not by motorcyclists (who were observed to ride further away from it) or pedestrians (due to difficulties in crossing).

The **1-m high marker** (Jislon wand) posts were the only physical separation method which offered improved perceptions of safety and usability over white line separation for all road users (except pedestrians where no significant differences were identified).

## Conclusions of study

Whilst comparison of the alternative methods of cycle lane separation revealed statistically significant differences in the speed and road position of cyclists and drivers, and in their perceptions of usability and safety, the extent of those differences was not so large as to raise fundamental objections to the use of any one method.

Of the separations investigated, hard margin kerb separation and intermittent 1-m high marker separation may offer the greatest benefits to cyclists. Whilst intermittent Zebra separation offers some benefits for the safety and usability of cyclists compared to a painted white line, the extent of those benefits is smaller than with other physical separations.

## Further Information

TfL - Better Junctions for Cyclists  
[www.tfl.gov.uk/betterjunctions](http://www.tfl.gov.uk/betterjunctions)

TRL - Safer Cycling Innovations  
[www.trl.co.uk/cyclinginnovationtrials/](http://www.trl.co.uk/cyclinginnovationtrials/)