

Cyclists' use of Zebra crossings and the feasibility of facilitating their use by cyclists at selected sites

This paper seeks to summarise what is currently known about cyclists' use of Zebra crossings including the legal and regulatory context for non-signal controlled 'protected' shared-use cycle and pedestrian (Tiger) crossings. A meeting has been held with walking, disability, road safety and TfL design experts to discuss the findings of a TRL report – Shared Zebra Crossing Study. It was agreed to publish the TRL research together with this TfL note.

1. Background

1.1 It is a priority for Transport for London to promote sustainable travel modes, in particular bus, cycling and walking. To achieve a change in travel habits and transport mix it is necessary to understand:

- how London's road network currently operates
- what measures might be introduced to make travel safer and feel safer
- what is needed to assess comparative risks and to provide a legal and regulatory framework that supports walking, cycling, urban realm, safety, economic, environmental and social inclusion objectives.

1.2 The Traffic Management Act 2004 requires that, subject to other policy objectives, highway authorities take steps to minimise delays for all road users including pedestrians and cyclists. Signalisation can create delays to both traffic and pedestrians if the traffic conditions do not justify them.

1.3 A study on the Shared Use of Zebras Crossings was carried out by TRL for TfL during 2005/6. This considered the legal framework of different crossing types and studied the current unofficial shared-use of six different Zebra sites. Conflict analysis was carried out using video surveys of the sites, which showed moderate levels of risk and conflict, this is expanded-on in section 4.0..

1.4 Compared with many continental cities where cycling is well provided for, cycling in London is still a comparatively high risk, high cognitive loading activity. These differences may be due to:

- UK highway legal and regulatory framework being extremely complex and at times inconsistent in its application regarding cycling
- a tendency for highway infrastructure and traffic management arrangements developed over the last 50 years to be 'cycle-unfriendly'
- a large range of cycle facility/infrastructure options which are not well understood and can be confusing
- A significant proportion (at least 50%) of London road users being unfamiliar with UK 'rules of the road' /Highway Code

1.5 Unsignalised 'priority' crossings for pedestrians and cyclists are a standard part of the 'toolkit' in many parts of continental Europe but are not authorised for use in the UK. These continental crossings are of shared-use or segregated types depending on the country and their standard layouts.

2. Benefits

2.1 'Zebra' type crossings have many benefits compared with signal controlled (Toucan type) crossings, if the pedestrian and cycle flows are not so high that they cause excessive traffic delay. These benefits include:

- lower cost of installation
- signal works programming ('slot' availability) unnecessary
- lower cost of maintenance
- more flexibility in crossing location
- less delay, journey time savings for pedestrians/cyclists crossing
- less effort (due to stop start) for cyclists
- delays of traffic may be reduced if crossing flows are relatively low
- 'promotion' of active travel / sustainable modes
- greater awareness of facility (due to carriageway striped markings) by drivers when driving

2.2 There are also some dis-benefits of Zebras, compared with signalised crossings, in that no 'safe-to-cross' signal is displayed to users, which is particularly an issue for some user groups.

3. Legalities of the Zebra crossing

3.1 The Zebra, Pelican and Puffin Pedestrian Crossing Regulations and general Directions (1997) give direction on the regulatory frameworks surrounding crossings.

- Zebra crossings give pedestrians priority over vehicles on the carriageway
- Cyclists are vehicles and are permitted to ride on the part of a Zebra crossing that is carriageway, provided they give way to pedestrians crossing or waiting to cross.
- It is not illegal to cycle across a Zebra crossing if there is shared-use to either side, but it is contrary to Rule 64 of the Highway Code which states that cyclists should dismount and walk across Zebra crossings. Breach of the highway code could be used as evidence of an offence, eg cycling dangerously, or of evidence of negligence in the event of a collision. [To date, there is insufficient evidence to suggest a change in Rule 64 of the Highway Code is needed and it is therefore not TfL's intention to pursue this aspect]
- Nearly 90% of cyclists at six sites surveyed cycled across Zebra crossings
- The Secretary of State has powers to make regulations with respect to precedence of vehicles and pedestrians respectively, and generally with respect to the movement of traffic (including pedestrians) at and in the vicinity of crossings. Presently Zebra crossing regulations only allow for pedestrians to have precedence over vehicles.

4. Conflict and Risk

4.1 The TRL study found that the conflict with pedestrians at the six observed sites was low and comparable with at a Toucan crossing.

4.2 It also found there was little difference in the rate of conflict with vehicles between those pushing their cycle across the road and those riding across at

the six Zebra crossings. Relating the road accident reports STATS19 data to the counted movements at the six Zebra crossings studied, shows that they are more dangerous for cyclists than pedestrians by factors of 3.3 (all cyclists) to 3.8 (mounted) times. This is based on relatively small numbers of four actual cyclist casualties over 5 years. The pedestrian collision rate was 1 in 2.38m crossing movements. The STATS19 collision records also show that 5.7% of all cycle accidents in London are at or within 50m of Zebra crossings, but this includes non-crossing movements and also movements at adjacent junctions.

4.3 Conflict (worse than just discomfort) between mounted cyclists and vehicles at Zebras is 2.85% (of cyclists), compared with side-road crossings of 5.13% (TRL 2000). The number of serious conflicts (involving controlled or emergency manoeuvres was very low (0.83% of 1570). No collisions were observed. These figures suggest that a cyclist would be far safer crossing a road via a Zebra (2.85) than exiting and crossing from a priority side-road junction (5.13), but not as safe if crossing on a Toucan or walking across a Zebra. However there is considerable variation between sites which indicates significance of site specific factors which might be addressed through careful design and monitoring of trial sites.

4.4 Required mitigations on shared-use Zebra crossings

- Entrance and exit 'paths, central refuge and crossing should be of sufficient width and geometry to accommodate pedestrian and cycle flows
- Design to force cyclists to slow or stop and give them adequate visibility and time to assess/decide before crossing
- Signing and road marking should facilitate and encourage awareness of other road users and safe behaviours by drivers, cyclists and pedestrians
- Signing and road marking should support routes taken by cyclists
- Signing should be such as to support enforcement activity against driver/cyclist breach of Zebra restrictions (that endanger /intimidate people legitimately crossing) including drivers obstructing crossings

4.5 Remaining risks

The TRL study helps to classify a number of remaining risks which require consideration in the context of further 'trials'. These include:

Incorrect observation of rules -

- Failure of driver/rider to give way to person on crossing
- Failure of pedestrian/cyclist to wait for traffic to stop

Unexpected manoeuvres -

- Cyclists turning from road onto crossing or crossing onto road

Speed -

- High vehicle approach speeds

High cognitive loading -

- Vehicle turning onto road close to the crossing
- Poor cyclist visibility

5. Conclusions

5.1 The initial study points to a number of benefits in terms of the cycling environment, the safety and convenience of all road users, public attitudes towards cycling in London AND fulfilment of TfL's Traffic Management Act and value for money responsibilities. The study also indicates that the mitigations proposed are likely to go a long way to addressing both existing risks and any additional risks that might arise from proactively designing for shared-use cycling at zebra crossings.

5.2 A number of considerations and measures are recommended to improve the overall conditions for cyclists at crossings:

- Simplify road layouts to minimise cognitive overload and provide for movement through clear unobstructed pedestrian and cyclist desire lines
- Individual site specific characteristics including visibility, vehicle speeds, crossing access and exit route, pedestrian and cyclists desire lines, width of routes and crossing, motor traffic, cycle and pedestrian flows, determine the level of risk and conflict
- In most crossing situations pedestrian and cyclist desire lines can conflict, ie layouts need to take account of this by providing sufficient width and visibility for space to be informally shared where conflicting movements are being made
- Visibility considerations at Zebras would be different for cyclists unless they were slowed to pedestrian speed.
- Importantly, conflict between cyclists and pedestrians was at a low level and low frequency, and would be reduced further by setting the minimum crossing width of 4 metres (as with Toucan crossings).

5.3 The applications for shared-use Zebra crossings are likely to be particularly beneficial in the following situations:

- Where pedestrian and cycle flows are low and the conversion to a Toucan would provide a lower level of service for pedestrians and cyclists
- Where signal controlled junctions may be difficult or impossible to provide because of layout or capacity issues

6. Next steps

6.1 TfL/CCE to work with highway authorities (boroughs and TLRN), TfL colleagues, and Cycling England Demonstration Towns to:

- Continue to review and analyse behaviour at the Hyde park site
- identify sites for trials
- undertake current use and safety audits and Non Motorised User Audits of trial sites
- extend our understanding of comparative risks in conjunction with LRSU (London Road Safety Unit of TfL)
- quantify benefits
- involve road users groups and traffic experts in the development of proposals for design, signing, enforcement and communication at trail sites

- discuss findings and proposals with DfT
- observe and monitor and report on impacts on behaviour and realisation of benefits of shared use and shared-use of Zebra crossings

6.2 CCE to publish the TRL report findings (Shared Zebra Crossing Study), communicate current and best working practice within TfL, London and UK and develop proposals in association with road user groups and other stakeholders for the safer shared use of Zebra crossings.

6.3 The full TRL report 'Shared Zebra Crossing Study' is available on www.TfL.gov.uk/businessandpartners/publications/cycling.

Appendix 1

7. Definitions

Bridleway - a highway over which the public have a right of way on foot or horseback or cycle

Carriageway – the part of the Highway for vehicles (as well as people)

Cognitive overload – This describes a situation where the brain attempts to tackle many, perhaps too many tasks simultaneously and cannot give full or proper attention to each task. Typically this may result in one of these tasks failing. RAC research suggests that drivers can not deal with more than three items of information at any one time.

Cycle priority junction – a junction that gives priority to cyclists

Cycle track – a part of the Highway over which pedal cycles have the right of way

Footpath – a public right of way that is not adjacent to a carriageway that is prescribed for use on foot only

Footway – the part of the highway that is adjacent to the carriageway from which vehicles are generally excluded.

(Public) Highway - a road or path over which the (general) public have a right of way and the highway authority has responsibilities to maintain and manage

Pavement – non-technical word for footway also used in context of fixed penalty offence of 'cycling on the pavement'

Pelican/Puffin – signalised crossings for walking only

Priority crossing – a crossing where users have priority

Priority junction – a junction that has priority by means of give-way

Segregated Crossing – a crossing where separate provision is made for cycling and walking

Shared-use – a part of the highway over which pedal cycles and pedestrians have right of way

(Shared use – a general non-technical term)

Shared surface – a space that is shared by different transport modes/classes of traffic, including motorists, cyclists and pedestrians

Toucan – a shared-use signalised crossing for cycling and walking