

Further development of Advanced Stop Lines

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Introduction

This leaflet offers additional design advice based on the findings of further research into the use of Advanced Stop Lines for cyclists (ASLs).

The research investigated the effect of different layouts on the turning movements and flows of both cyclists and motor vehicles. The position of the approach cycle lane, and the signal timings at the junction, were the main variables. 6 ASL sites were monitored by the Transport Research Laboratory (TRL), on behalf of Driver Information and Traffic Management Division, Department of Transport. The work is described in detail in TRL Project Report 181.

Example of an Advanced Stop Line for cyclists



Background

ASLs were first introduced in this country in the late 1980s as a means of giving cyclists a head start at signalised junctions. The original layout relied on two sets of signal heads, one at each stop line. A simplified layout, first piloted by Avon County Council, used a single set of signal heads and included a cycle logo (TSRGD diag 1057) in the cycle reservoir. These have been reported to work satisfactorily (Traffic Advisory Leaflet 8/93; Wheeler 1995). The use of a coloured road surface to give increased prominence to the cycle lane and the reservoir area was first piloted by Manchester City Council, and was successful in reducing encroachment by motor vehicles. ASLs have since been introduced widely across the country.

Method

Video monitoring was undertaken and the behaviour of cyclists and motorists analysed, at the following sites where ASLs were installed:

Predominant turning movement

<i>Central cycle lanes</i>	Wilmslow Rd, Manchester Left turning motor vehicles Broomfield Rd, Chelmsford Left turning motor vehicles Zetland Rd, Bristol Right turning cyclists
	Elm Grove East, Portsmouth Left turning motor vehicles

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	Elm Grove West, Portsmouth Right turning cyclists Devonshire Rd, Cambridge Right turning cyclists
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Central Cycle Lanes

Where a junction is characterised by left turning motor vehicles and cyclist travelling straight ahead, there is value in siting the approach cycle lanes away from the nearside of the carriageway. This encourages cyclists to position themselves to the offside of left turning vehicles prior to the junction. This can be especially useful where all-vehicle nearside lane has been marked for left turns only. Cyclists in these locations had few problems in accessing the central cycle lane.

Central cycle lanes will normally need to be advisory, since it would be very difficult to enforce a mandatory lane in this position. There may also be an occasional need for motor vehicle to encroach into the cycle lane in order to position correctly at the junction, which would not be possible if the lane were to be a mandatory one.

Example of a central cycle lane



Cyclists using a nearside cycle lane



Signal Timings

Cyclists gain full advantage from an ASL during the time a red traffic signal is displayed at the junction. They are able to use this period to position themselves in the reservoir area, ready to move off ahead of motor vehicles.

If the proportion of red time in a traffic signal phase is small, and if the signals change frequently, use of nearside cycle lanes may present cyclists with difficulties when making a right turn. This is because they have less opportunity to make use of the reservoir area to move to the centre of the carriageway ready to make their manoeuvre. There will also be an increased probability of the signals changing from red to green as cyclists approach the junction, when cyclists who had planned to use the reservoir area to position themselves for their manoeuvre will no longer be able to do so.

Nearside Cycle Lanes

Diagram of a nearside mandatory lane

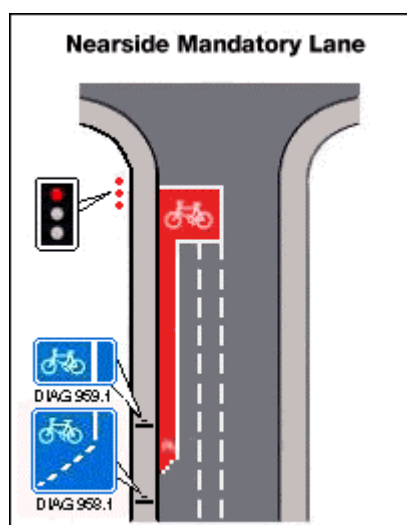
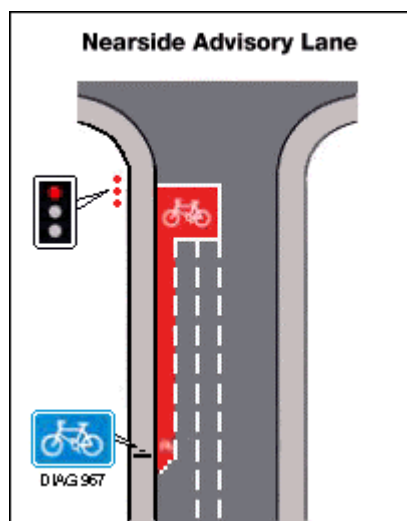


Diagram of a nearside advisory lane



The research suggest that right turning cyclists are more likely to remain in a nearside approach cycle lane where motor vehicle flows are lower. As flows increase, right turning cyclists make less of a nearside approach lane, and take the earliest opportunity to position themselves on the right hand side in anticipation of their manoeuvre. This study suggests a threshold of 200-300 motor vehicles per lane per hour, after which cyclists start to abandon use of a nearside lane if necessary.

If necessary these additional signs can be erected to indicate to cyclists and motorists how they should behave at an ASL. To prevent unnecessary sign clutter **these should be only used where it is clear that a facility is not understood by road users**. In these circumstances, it will usually be sufficient to use only the signs for motorists. Care should be taken in using the sign for cyclists where the signal heads are not located immediately at the stop line, as this may encourage cyclists to wait ahead of the stop line. The use of one or more of these signs will require special authorisation which should be addressed in the first instance to the appropriate regional Government Office (or to the Welsh Office or the Scottish Office). Working drawings showing the sign designs are available from DOT, the Welsh Office, and the Scottish Office.

Design Principles

ASLs can be preceded by a mandatory or an advisory cycle lane, which should be indicated by TSRGD1994 Diagrams 958.1 and 959.1 for a mandatory lane (which should be backed by a traffic regulation order prohibiting motor vehicles from the lane), and Diagram 967 for an advisory lane.

The approach cycle lane should preferably be 1.5 m wide, but at constrained sites narrower widths have been used effectively.

The cycle reservoir should be between 4m and 5m in depth. If the reservoir is shallower than this cyclists can feel intimidated by the close proximity of the vehicles queuing behind them. If the reservoir is deeper than this, motorists may feel encouraged to encroach into it.

The cycle logo (Diagram 1057) should be placed in the cycle reservoir to remind road users of its purpose, and to discourage encroachment by motor vehicles. TSRGD 1994 allows the cycle logo to be used in this position without requiring special authorisation from DOT, provided an appropriate upright sign has been used to indicate the cycle lane (Direction 16).

A contrasting surface colour is strongly recommended for the reservoir and the approach cycle lane, to discourage encroachment by motor vehicles.

It is essential that the Police understand and agree to the overall scheme design.

Further Information

Professional and technical enquiries should be addressed to:

Driver Information & Traffic Management Division
3/24 Great Minster House
76 Marsham Street
London SW1P 4DR
Tel: 0171-271 5184

References

TRL Project Report 181 - Advanced Stop Lines for Cyclists: The Role of Central Cycle Lane Approaches and Signal Timings
A Wheeler (TRL) - Advanced Stop Lines: A Simplified Layout. Traffic Engineering and Control, May 1995.

Traffic Advisory Leaflet 8/93: Advanced Stop Lines for Cyclists

Traffic Advisory Leaflet 3/95: Cycle Routes

Traffic Advisory Leaflet 8/97: Cycling Bibliography

Traffic Signs Regulation and General Direction 1994 (SI.1994 No.1519)

Bicycle Association/Cyclists' Touring Club/Institution of Highways and Transportation/ Department of Transport (1996): Cycle Friendly Infrastructure - Guidelines for Planning and Design. £15.00

Enquiries

The Traffic Policy/Driver Information and Traffic Management Division of the Department of Transport sponsors a wide range of research into traffic management issues. The results published in Traffic Advisory Leaflets are available to England, Wales and Scotland. Attention is drawn to variation in statutory provisions or administrative practices between the countries.

The Traffic Advisory Unit (TAU) is a multi-disciplinary group working within the Driver Information and Traffic Management Division in the Central Transport Group of the Department of Transport. The TAU seeks to promote the most effective traffic management and parking techniques for the benefits, safety and convenience of all road users.

Enquiries, and requests for unpriced TAU publications to: Driver Information and Traffic Management Division, Zone 3/23, Great Minster House, 76 Marsham Street, London, SW1P 4DR, Telephone: 0171-271 5169

Within Scotland, enquiries should be made to: The Scottish Office, Development Department, Victoria Quay, Edinburgh, EH6 6QQ Telephone: 0131-244 0837