

When Do We Need Protected Space for Cycling?

LCC's Love London, Go Dutch campaign calls for 'safe and inviting' cycling environments suitable for all abilities. This short paper outlines when we need protected space for cycling, while the *Love London, Go Dutch Key Principles* and *Matrix* provide more detail on specific criteria recommended by LCC.

Our Vision

Our vision is of a London that is 'safe and inviting' for cycling. 'Safe and inviting' means not having to share space with high speed (over 20mph) or high volume (over 2,000 Passenger Car Units per day¹) motor traffic. A core network should be prioritised, forming a dense and direct system of safe and inviting cycle routes to key destinations. Safe and inviting cycling should also be mainstreamed into other transport or streetscape schemes across London. All engineering solutions should be based on international best practice, and will vary; for example, restricting through motor traffic in residential streets, or creating high quality protected cycle lanes or tracks on busy distributor roads.

The problems now: high speed and high volume motor traffic

Much research evidence suggests cycling 'on road' intimidates many potential and some current cyclists, especially children, older people, and women. As recognised in LTN 2/08 and other UK and international design manuals (e.g. CROW), there are two key reasons: high *speed* motor traffic and high *volumes* of motor traffic. Both must be addressed for cycling to become an attractive option for everyone.

Increasingly 20mph is being adopted as an urban speed limit by London boroughs, and LCC supports speeds being lowered to 20mph or less wherever people live, work, learn, play and shop. Reducing speeds (including by enforcement) encourages cycling and walking and creates more liveable cities.

It is also important to ensure that cyclists do not have to interact with high volumes of motor traffic. At street level this can be achieved either by provision of separate space for cycling or by motor traffic reduction. Motor traffic levels on the core cycle network should be regularly monitored with action taken when routes are no longer safe and inviting for all ages and abilities.

On many side streets a combination of filtered permeability (closing streets to through motor traffic), enforced low speed limits, and good urban design can reduce motor traffic volume and speeds sufficiently to enable mass cycling. On many main roads, high quality protected cycle lanes and tracks could achieve a similar end by reducing the volume of motor traffic with which cyclists share space to zero. On these roads protected space has additional speed benefits for cycling, given traffic congestion.

LCC believes London needs more of both types of solution, so more of our street network becomes 'safe and inviting' for cycling, by people of all ages and abilities. Here our aim is to briefly define an 'ideal' cycling environment, in terms of maximum motor vehicle speeds and volumes (we do not discuss other important factors here). This produces two 'trigger points' (for speed and volume) at which, we believe, separation from motor traffic becomes necessary. Clearly some routes will initially be prioritised, which should be based on evidence about current and latent demand. However, to make London a true cycling city, these principles should be followed in other transport and streetscape schemes.

Terminology

- a) Cycle Lanes (with flow is implied) are one-way and on-carriageway, without physical separation from motor traffic. These are not our preferred option but, if used, we would generally prefer mandatory lanes, which unlike advisory lanes exclude motor vehicles and so provide a greater degree of separation.
- b) Protected Cycle Lanes are one-way and on-carriageway, with bollards / kerbs / planters to stop encroachment, which should be intermittent, to allow cyclists to join / exit and pedestrians to cross. These are sometimes referred to as 'semi-segregated' provision.
- c) Cycle Tracks – are off-carriageway, but adjacent to it, and may run along one or both sides of the road. They can be one-way although the UK default is two-way.

¹ See later in the document for the definition of Passenger Car Units.

Our preferred options: protected lanes or tracks

Where motor traffic volumes or speeds are unsuitable for sharing, protected lanes or tracks, (b) and (c), provide a better cycling environment than (a), so in principle LCC prefers these options. We would not expect to see unprotected lanes proposed for core sections of the cycle network.

It is always crucial to provide safe passage at junctions, and all tracks and lanes must be of sufficient width and quality, exclude car parking, and provide priority over side road motor traffic. The *Love London Go Dutch Key Principles* and *Matrix* provide more details of LCC's views in these and other areas.

Bus lanes

Most UK bus lanes are only 3m wide, providing no space for overtaking within the lane. Wider bus lanes (4.3m or more) are preferable to general motor traffic lanes for cycling, as they exclude cars and HGVs. However, they are not 'cycle facilities' as they involve sharing with buses, taxis, and powered two wheelers; so even with wide bus lanes, the number of buses, taxis, and motorcycles combined will often still imply busy traffic conditions. Many bus lanes are part time, providing inconsistent protection, while bus stops can be problematic at peak hours. High quality protected cycle lanes and tracks are preferable in principle as they can provide cyclists with protection from all motor vehicles, not just some.

When are cycle lanes and tracks needed?

Current UK guidance (LTN 2/08; Cycle Infrastructure Design) gives both volume and speed criteria for when planners should consider separating cyclists from motor traffic. This is reproduced below.

Table 1: LTN 2/08 page 12, Approximate Guide to Type of Provision.

Traffic flow	85th percentile speeds			
	<20 mph	20–30 mph	30–40 mph	>40 mph
<1,500 vpd, or <150 vph				Cycle lanes or tracks
1,500–3,000 vpd, or 150–300 vph			Cycle lanes or tracks	Cycle lanes or tracks
3,000–8,000 vpd, or 300–800 vph	Cycle lanes may be appropriate	Cycle lanes may be appropriate	Cycle lanes or tracks	Cycle tracks
8,000–10,000 vpd , or 800–1,000 vph	Cycle lanes	Cycle lanes	Cycle lanes or tracks	Cycle tracks
>10,000 vpd	Cycle lanes or tracks	Cycle lanes or tracks	Cycle lanes or tracks	Cycle tracks

Notes:

- 1 vpd = number of motor vehicles in typical 24-hour weekday.
- 2 vph = number of motor vehicles in typical morning peak hour.
- 3 Where traffic speeds/flows are low, the designer should assume a default position of no signs/markings specifically for cyclists. However, there may be situations where it is appropriate to indicate the cycle route using cycle symbol markings to diagram 1057 with advisory route signs to diagram 967.
- 4 Cycle lanes used in the higher speed/flow situations should provide good separation between cyclists and motorists. Wide cycle lanes or buffer zones can help here.
- 5 Where cycle lanes or tracks are shown in the table, cycle lanes should be considered first. In general, cycle tracks should only be considered if cycle lanes cannot be made to work.
- 6 In congested areas cycle lanes can be useful even when traffic speeds/flows are low.

85th percentile speeds refers to the speed that 15% of drivers exceed, and is often used as a basis for assessing speeds, alongside the mean.

LTN 2/08 is correct in arguing that where motor vehicle speeds or flow are high, cyclists need delineated space. However, LCC disagrees with the preference expressed for lanes over tracks; instead, as above, we prefer tracks or protected lanes over standard (unprotected) cycle lanes. Cycle facilities should always be in line with international best practice; the Love London Go Dutch key principles and matrix set out LCC's views in more detail on specific issues.

Speeds

We see the LTN 2/08 table as skewed towards high speeds. In London, cyclists should never be expected to share the carriageway with motor vehicles where 85th percentile speeds exceed 20mph (second column right onwards). We would recommend reducing speeds still further, to reflect the crucial difference between motor traffic travelling at 20mph (50% faster than a typical cyclist) and 15mph (only slightly higher than average cycling speeds) or less. Speeds should be monitored and where they rise above desired levels additional action (e.g. enforcement or engineering measures) taken.

Volumes

We would want to see a lower maximum vehicle flow, and disagree with the use of 'vehicles per day', in which an HGV counts the same as a bus or a car. PCUs (Passenger Car Units) are used in The Netherlands to set maximum vehicle flows; this is a better metric, as it weights larger vehicles more in the traffic mix.

Table 2: Passenger Car Unit (PCU) values for various vehicle types.

Vehicle Type	PCU Value
Motor Cycle	0.4
Passenger Car/Light Goods Vehicle	1.0
Buses & Coaches	2.0
Heavy Goods Vehicle (HGV)	2.3

Abbreviated from TfL 2010, <http://www.tfl.gov.uk/assets/downloads/traffic-modelling-guidelines.pdf>

However, the PCU method is still flawed; it reflects vehicle size rather than the effects different vehicles have on cyclists. HGVs pose a disproportionate risk to cyclists in London, yet are commonly given a PCU value of only 2.3, while a danger-based metric would be much higher. While using PCUs for now, we recommend the development of a more appropriate risk-based index.

We suggest the initial use of 2,000 PCUs per day as a maximum for cyclists sharing space with motor traffic. This is appropriate for planning a core network and mainstreaming cycling beyond this, being the figure given in the Dutch CROW manual for main cycle routes. It implies at peak no more than around 200 PCU per hour or 3 PCU per minute. Successful shared space schemes do not just improve street design but also seek to reduce motor traffic volumes (for example, on Brighton New Road, the number of vehicles per day was reduced from 13,000 to 1,200). However, we recognise that 2,000 PCUs per day remains high for some users (e.g. children) and ideally it should be lower, as with speeds.

Conclusion

Speed and volume criteria should be used to make our streets safe and inviting for cycling, through either high-quality protected lanes and tracks, **or** reduction of motor vehicle volume and speeds to levels compatible with mass cycling. Specific solutions chosen will depend on context, e.g. the function of a road in broader transport networks. The guiding vision is that the entire network would be safe and inviting for cycling; as a first step, a core network (based on direct routes between key origins and destinations) should initially be prioritised for immediate improvement.

In London, 'safe and inviting' for cycling means either providing protected space or, if space is shared, ensuring both speeds and volumes of motor traffic are low. In assessing schemes where current speeds or volumes are too high we will expect to see either (i) specific measures to reduce motor traffic volumes and speeds to acceptable levels or (ii) high quality protected infrastructure.