Cycle Lane Review

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Contents

Aim

This paper reviews the current cycle lanes that can be found on the roads of the UK. The benefits and risks associated with cycling on cycles lanes are discussed. Possible alternative strategies are explored.

Scope

The scope of this paper is restricted to the cycle lanes that are typically found in the provinces, as defined in the Highway Code and The Traffic Sign Regulations[1]. Recent cycle lanes built in London have been designed to a new set of criteria set out in the London Cycling Design Standards[2], hence the the comments made in this document do not generally apply.

Introduction

Cycle lanes are an easy and economic means of defining a part of the carriageway for use by cyclists. These cycle lanes are marked with either broken or solid white painted lines on the road surface. The Highway Code[3] set out the requirements for using cycle lanes in rule 140, as follows;

140. Cycle lanes.

> *These are shown by road markings and signs. You **MUST NOT** drive or park in a cycle lane marked by a solid white line during its times of operation. Do not drive or park in a cycle lane marked by a broken white line unless it is unavoidable. You **MUST NOT** park in any cycle lane whilst waiting restrictions apply.*

There are two quite distinct cycle lanes defined here;

1. Solid white line markings; ‘mandatory’ cycle lane, are for the use of cyclist and motor vehicles must not drive or park in these, and
2. Broken white lines markings; ‘advisory’ cycle lanes, vaguely stating ‘Do not drive or park unless it is unavoidable’.

The width of cycle lanes is recommended to be 2 metres on busy wide roads or where the traffic is travelling in excess of 40 mph[4]. A minimum width of 1.5 metres may be generally acceptable of roads with a 30 mph limit. Where cycle lanes are 2 metres wide there is sufficient room for cyclists to overtake each other, whereas, narrower cycle lanes the overtaking bicycle may need cross the lane marking into the general carriageway. There are also occasions when cyclists need to avoid surface hazards, potholes, drainage grates or debris, and move away from the kerb possibly crossing the demarcation line. Cycle lanes, particularly narrow ones, may give drivers misguided confidence to pass cyclist with less consideration than they would in the absence of a cycle lane.

Coloured surfaces may be applied to cycle lanes to clearly differentiate from the general highway. There is no obligation or legal requirement to apply any colour to cycle lanes. The use of coloured surfaces can assist cyclist in following a route or position themselves in

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[1] Statutory Instruments, Road Traffic, The Traffic Signs Regulations and General Directions 2016

[2] London Cycle Design Standards, Published by Transport for London, 2014

[3] Highway Code Updated 20/05/2018. www.highwaycode.co.uk.

[4] LTN 2/08 Cycle Infrastructure Design, DfT. October 2008

the appropriate part of the carriageway or to highlight key cycle lane features, such as contraflow cycle lanes, cycle lanes through junctions, etc. There is concern that coloured surfaces have little or no effect at night. Used in excess they can be intrusive and lose their effectiveness where needed most.

The signage and road markings for cycle lanes are included in The Traffic Signs Regulations and General Directions 2016[5]. This document reflects the legal requirements for cycling in relation to cycle lanes, it defines the colour and size of the road markings but does not specify the dimension of the cycle lane.

Review

Benefits

A review of academic papers and cycling websites has identified many benefits claimed for the use of cycle lanes, a selection being indicated below;

- Encourage cycling
- Presence of cyclists more obvious
- Cyclists able to officially overtake inside queue
- Define a space for cyclist
- Perceived width of carriageway reduced affecting drivers perceptions and reduced vehicle speed and accidents
- Appear to have calming effect on narrow roads, slowing traffic
- Cyclists do not loose place on carriageway and difficulty at junctions (would be overcome with the Dutch approach)
- Relatively cheap to install
- Increase total capacity of the carriageway
- Visual reminder to drivers
- Encourage cyclist to abide by rules of road where lanes exist
- Provide an extra buffer for pedestrians on pavements
- Provide an space for people in wheelchairs when no pavement
- Increase the comfort of cyclists in traffic
- Increase sighting distances for drivers joining the road
- Make crossing pedestrians more visible
- Reduce pollution and greenhouse gases
- Each bike using the lane reduces cars on the road
- Indicate cycle route through large or complex junctions

The list of benefits indicated above is impressive. A means of demonstrating the benefits is to establish the increase in cyclists with the introduction of cycling infrastructure. The introduction of London's cycle superhighways has significantly increased the number of cycle journeys in the capital, increasing 2.5 times between 2000 and 2016. Cycling still only accounts for 2% of journey in London, comparatively small when compared with other major cities; Tokyo 20%, Berlin 13%, Toronto and Paris 3%.

The American city of Calgary implementing a cycle strategy in 2011 with the vision of becoming one of the premier cycling cities in North America and is looking to make changes that will encourage cycling in Calgary. The city developed a strategy and over a

[5] Statutory Instruments, Road Traffic, The Traffic Signs Regulations and General Directions 2016

period of 10 year developed a number of cycle routes across the city. Since commencing the number of cycle journeys have increased by 95%.

Cycle lanes provide the novice cyclist a degree of safety, having a dedicated lane in which to cycle where cars are prohibited or restricted. Cycle surveys invariably identify safety, lack of dedicated cycle lane and traffic as the most significant issues which deter potential cyclist[6]. An American survey of cycling in Portland identified that riding on cycle lanes was important to cyclist[7], more than a third of cyclists were women and they preferred cycling on roads with low volumes of traffic and separate cycle paths.

In Denmark the first bicycle tracks were introduced in Copenhagen as early as 1910. Since then about 8000 km of bicycle tracks and lanes have been added through rural and urban Denmark. The traffic data for two roads, one with cycle paths on either side and the other with cycle lanes on either side, were analysed pre and post construction to identify any changes. Analysis of the data showed an increase in cycling, 5% for the cycle lanes with a 1% decreased traffic and 20% for cycle paths with a 10% decreased traffic[8]. Cycle paths and cycle lanes can have a positive influence on regular cycling and reduction in traffic, while cycle paths have the most significant impact.

Risks

Relatively few risks have been identified related to cycling along cycle lanes, summarised as follows;

- Dooring (vehicle door opened in path of cyclist)
- Built adjacent to the kerb and least well maintained part of carriageway
- False sense of security for cyclists and drivers
- Pedestrians treat cycle lane as extension of pavement
- Potential to increase certain accidents with cyclists
- Less space for other road users (city of Bristol)
- May cause cyclists to be less cautious of other road users

Cycle lanes are claimed to create a false sense of security with both cyclist and drivers, both parties claiming their respective part of the carriageway with no regard to the other users in their respective lane.

Jensen's analysis of the cycle path and cycle lane introduction in Copenhagen[9] not only showed the positive increase in cycling but also an increase in crashes and injuries. The safety of cyclists and pedestrians worsened, particularly at intersections. The increase in crashes varied dependent on the location and changes incorporated during the road layout revision. Closure of parking spaces, to make way for the cycle lanes, resulted in more drivers turning at junctions, seeking alternative parking locations along minor side roads, increased collisions at junctions. Also, illegally parked cars caused collisions with passing cyclists.

There have been a number of academic investigations into the space given by drivers when passing cyclist on a variety of roads with and without cycle lanes. An early paper by

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[6] Barriers to cycling, Cycling Embassy of Great Britain, 14 November 2017

[7] Where do people cycle? The role of infrastructure in determining bicycling behaviour. J Dill. 2014

[8] Bicycle Tracks and Lanes: a Before-After Study, S Jensen. 7 November 2007

[9] Bicycle Tracks and Lanes: a Before-After Study, S Jensen. 7 November 2007

Brewster and Walker investigated the space given to cyclist by passing cars[10], they noticed that the passing proximity reduced the further the cyclist rode from the kerb. In addition, if the cyclist wore a helmet the passing distance was consistently and noticeably reduced, attributed to drivers perception that helmeted cyclist were more serious and less likely to make unexpected moves. The gender effect was also investigated by the rider wearing a wig so that he appeared female from behind, passing vehicles were found to give more clearance. The mean overtaking clearance being 1.23 metre for male cyclist and 1.37 metres for female. Another interesting characteristic being that passing distance increased during the day, being closest in the early morning.

The suggestion that cyclist wearing a helmet influences the drivers perception of the cyclist has been further investigated by evaluating the appearance of cyclist on the drivers overtaking proximities[11]. A range of outfits represented 'Commute', 'Casual', 'Hiviz', 'Racer', 'Novice', 'Police', and 'Polite', the latter being a commercially available vest which carried the message 'POLITE notice – please slow down'. A researcher randomly chose an outfit at the beginning of each day which they would wear on their daily commute to and from work. The passing distance of overtaking drivers was found to very similar for all of the outfits, with a mean distance of 1.117 metres, apart from the 'Police' outfit which elicited a substantial change in the drivers behaviour. The Hiviz vest with 'POLICEwitness.com – Move Over – Camera Cyclist' emblazoned on the back resulted in a mean overtaking distance of 1.22 metres, significantly greater than all other outfits worn. A small proportion of the overtaking drivers, about 2%, passed within 0.5 metre irrespective of the outfit being worn, which suggests there is little riders can do by changing their appearance to prevent close overtakes. Although the finding that high visibility clothing had no benefit over casual clothing in the overtaking proximity, it does not mean that such clothing has no value. Primarily it is meant to ensure the cyclist is not overlooked, rather than to influence the behaviour of overtaking drivers.

A study of vehicle overtaking distances when passing cyclists on three different UK roads, with and without cycle lanes, and speeds of 50 mph (site 1), 30 mph (site 2) and 40 mph (site 3) has shown that the mean passing distance were greatest for roads with 'no cycle lane', refer to Table 1[12], and varied depending on the site and speed. The study also indicated that vans (LGV) passed closer to cyclist than cars, see Table 2.

Table 1 Passing distances for all vehicle

	Mean Vehicle Distance (mm)					
	Cycle Lane			No Cycle Lane		
	Site 1	Site 2	Site 3	Site 1	Site 2	Site 3
All vehicles	1,517	1,459	1,129	1,634	1,476	1,150

Table 2 Passing distance for cars and vans

	Mean Vehicle Distance (mm)					
	Cycle Lane			No Cycle Lane		
Vehicle Type	Site 1	Site 2	Site 3	Site 1	Site 2	Site 3
Car	1,520	1,435	1,128	1,704	1,474	1,283
Van	1,476	1,396	1,175	1,490	1,429	1,189

The report concludes; *It may be concluded that drivers generally give wider berths to cyclists on stretches of road without cycle lanes. Cycle lanes therefore do not appear to provide greater space to cyclists. Vehicle overtaking proximity also varies depending on vehicle type, and this confirms Walker's finding.*

[10] Drivers overtaking bicyclists, Brewster and Walker. August 2006

[11] The influence of a bicycle commuter's appearance on drivers' overtaking proximities, Walker Garrard Jowitt. 2013

[12] Do on carriageway cycle lanes provide safer manoeuvring space for cycle traffic? Meyers and Parkin. 2008

Surveys conducted as part of this research have also suggested that cycle lanes reduce the perception of risk for both cyclists and drivers. This increased confidence may actually increase risk, particularly if cycle lanes are narrow Cycle lane widths in design standards may need to be reviewed.

An analysis of UK cycle lanes on drivers passing distances[13] produced results contrary to earlier studies, suggesting that passing distances were greater when the cycle lane was present. This study confirmed that variables other than the presence of cycle lanes in urban areas would influence the drivers passing distance of cyclists. It has been postulated that the presence of opposing traffic at the time of the overtake is significant in urban areas. Overtaking distance was found to increase with the absolute road width and reduced with the presence of restrictions such as parking or opposing traffic. Cycle lanes, unless sufficiently wide, had little statistical effect and coloured lanes appeared to slightly reduce the predicted overtaking distance. In the urban environment there are more significant factors encountered when a driver overtakes a cyclist mid-block than the existence or not of cycle lanes.

A further study into the influence of UK road markings, lane width and driver behaviour on overtaking distance and speed[14] again found that the presence of cycle lanes had no effect on the overtaking distance. This study took place on urban streets with speed limits of 20 mph and 30 mph, the group mean overtaking speeds were 43.36 km/h (27.1 mph) on 20 mph roads and 56.17 km/h (35.1 mph) on 30 mph roads, while the majority of drivers drove at approximately 45 km/h (28 mph) in both speed limits. The overtaking speeds and distance showed considerable variation and some significant speed limit infringement, see Table 3. The mean passing distance for 20 mph roads was 1.6 metre, and for 30 mph roads 1.7 metre. Dual lanes produced the greatest overtaking distance of 1.97 metre, as drivers were happy to use the offside lane.

Speed limit	Overtaking speed		Overtaking distance
	km/h	mph	Metres
20 mph	26.3 - 68.8	16.4 - 43	0.8 - 2.4
30 mph	18.8 - 76.8	11.8 - 48	1.0 - 2.8

Table 3 vehicle overtaking speed ranges

The lane width on 20 mph roads had no discernible difference on overtaking distance or speed. On 30 mph speed limit roads the overtaking speed were significantly greater on spacious width roads compared with tight or critical width roads. Significantly more overtakes were above the speed limit than below for both 20 mph and 30 mph limit roads.

The effect of cycle lanes was found to be inconclusive, although the group means of the data indicate reduced overtaking distances and increased overtaking speeds, particularly for wider cross-sections roads.

A more insidious threat to cyclist is the view taken by drivers and the media, cyclists have become the butt of their jokes and publicly vilified. In the social psychologist world minorities, the out-group, are treated with disregard and dislike, being considered in some respect inferior to the ‘in-group’. This can be seen when drivers refer to cyclist in a negative perspective, in a DfT report investigating the drivers perception of cyclists[15] the

[13] Cycle lanes: their effect on driver passing distances in urban areas, McHale and Stewart. 2011

[14] Influence of road markings, lane widths and driver behaviour on proximity and speed of vehicles overtaking cyclists, Shackel and Parkin. 2014

[15] Drivers’ perception of cyclists, Department for Transport. 20002

terminology used to describe cyclists is enlightening; ‘irresponsible’, ‘despised’, ‘dangerous’, ‘erratic/unpredictable’, ‘arrogant’, and ‘inconvenient’, all very negative and the only positive terms used were; ‘healthy’ and ‘brave’, which can still be considered to be derogatory. A Times article by Matthew Parris *“What is smug and deserves to be decapitated?”* He continues - ‘*A festive custom we could do worse than foster would be stringing piano wire across country lanes to decapitate cyclists. It’s not just the Lycra, though Heaven knows this atrocity alone should be a capital offence ….*’ for which he eventually had to write an apology, yet this type of misguided reporting potentially leads to members of the driving ‘in-group’ to doing just that. Every day we are subject to drivers overtaking unnecessarily close in their desire not to be slowed in their progress or not to interfere with other drivers journeys or just to demonstrate their power over the inferior cyclist.

Cycling cities

The Dutch have been been evolving their road system since the 1970’s, slowly changing the emphasis from being car orientated road system to one that is people focused. They have developed a system that protects the vulnerable road users from the traffic by limiting the opportunity of fast and heavy vehicles to come into contact with cyclists and pedestrians. Most rural major roads have separate cycle track while urban roads have a range of street designs depending on the speed and mass of vehicle. Cycle lanes will only be used where the vehicles travel at low speed, as the vehicle speed increases then segregated cycle tracks will be used.

Dutch cycle lanes are either marked with broken lines, where cars are allowed provided they do not impede cyclist, or by solid lines where cars are not permitted[16]. It was interesting to note that parking is not permitted in any of the cycle lanes. Quiet urban residential streets are often denoted ‘fietsstrats’ (cycle streets) where the bicycle is the primary and preferred mode of transport and vehicles are permitted as ‘guests’. Speed limits on streets where unprotected road users (cyclists and pedestrians) are likely to come into contact with motorised vehicles are limited to 30 km/h (19 mph), often the street layout physically limits the capability of vehicles to speed. The Dutch continue to evolve their roads system and now have an updated strategy ‘Advancing Sustainable Safety’[17] which encompasses greater consideration of the road users and the impact of the road design and infrastructure.

Other cities around the world are now investing in improving road infrastructure for cyclists and pedestrians. Seville built an extensive cycle network between 2006 and 2011, the daily cycle journey rose from 13000 in 2006 to 72565 journeys in 2011. They now have a highly connected network of 164 kms segregated two way cycle tracks. In Helsinki an extensive cycle network of 1200 kms criss-crosses the city. Most cycle paths are segregated from the road, though they negotiate some serious hills. Even north America is taking the bicycle seriously, in Montreal they now have a network of 750 kms of cycleway of which 342 kms are physically separated from the motor vehicles. There has been criticism that some of the cycle lanes are in the ‘dooring zone’, between parked cars and flowing traffic.

Closer to home London embarked on an extensive plan to improve cycling in city with the Cycle Superhighways. Announced in 2008 the original plan for 12 radiating

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[16] Cycling in the Netherlands, Wikipedia.

[17] Advancing Sustainable Safety, National Road Safety Outlook for 2005-2020, SWOV Institute for Road Safety Research. 2006

superhighways, at present 8 cycle superhighways have been completed. Initially painted on the road surface the superhighways attracted cyclists, but, there were safety criticisms of the design and lack of segregation. A series of deaths in 2013 raised further concerns about junction design and subsequently criticism from a coroner of the slippery blue surface[18]. Analysis of collisions showed that about a third of casualties occurred at junctions while about 10% of casualties caused by colliding with open doors or swerving to avoid them. Improvement in the later cycle superhighways have included greater segregation of the cycleways from the general traffic where necessary and appropriate[19]. A suite of documents have been produced by Transport for London that set out how cycling should be implemented, providing guidance on the design and construction of cycle facilities[20].

Alternatives

Cycle lanes are an easy and simple means for marking a section of the road for cyclist but they are not the only means of providing such a facility. Some of the alternatives are outlined below;

1. Buffer cycle lanes, the demarkation line are replaced by a pair of lines, sometimes with crosshatching to identify a separation from the moving traffic. Some schemes also have a buffer between the cycle lane and parked cars. Buffer zones provide additional defined clearance between the cyclists and traffic.
2. Light segregation, similar to segregated lanes these have a physical feature between the cycle lane and traffic[21], see following;
    i. Bollards - one of the simplest form the separation and may be set into the road surface.
    ii. Planters - plant containers forming a barrier, which may be intermittent or continuous.
    iii. Pre-fabricated kerbs - formed from either concrete or other synthetic material they form an island between the cycle lane and traffic. Secured to the road surface they are a semi-permanent feature. Armadillo and Orca are two commercially manufactured kerb separator that provide obstacles that delineate the separated lanes.
    iv. Splitter islands - positioned at each end and regularly along the section of segregation.
3. Hybrid cycle lanes, on-road lanes that have physical demarcation such as cobbles and the surface raised above the road level. Sometimes these lanes have a coloured surface to emphasise separation.

These options can all be applied to an existing road surface and do not require any excavation of the road for installation.

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[18] List of cycle routes in London, Wikipedia. 2018

[19] Cycle safety action plan, TfL.

[20] LONDON CYCLING DESIGN STANDARDS, Transport for London. 2014

[21] Road Safety Factsheet Cycling – Light Segregation, ROSPA. 2017

Cycling in Derby

The cycle lanes in Derby exhibit all the ills that can be found in any other modern town or city. Most of the cycle lanes are discontinuous, stopping with no intensional destination or purpose. Generally installed on reasonably wide roads but then stopping where the carriageway narrows or there is a potential conflict area, they are frequently on one side of the road only. Their widths is variable and frequently fail to meet the recommended minimum width of 1.5 metres[22], often varying in width and having a poor surface or drainage grates to negotiate. The majority of Derbys cycle lanes are 'advisory' where vehicles are permitted to drive and parking is allowed, creating a hazard for cyclists. At key times these lanes are clogged with parked vehicles, particularly the beginning and end of school day, when the cycle lane would be most beneficial yet the cyclist is forced to ride amongst drivers focused on other issues.

Discussion

Safety is considered to be a major issue preventing people from cycling on the roads. Government surveys repeatedly show that safety is the most common barrier to cycling, even exceeding those who find it easier to go by car. By age only those between 18 and 24 felt more comfortable with only 36% concerned about safety, while all other age groups more than 50% were concerned with safety and increasing percentages with age[23]. A surprising proportion of the population own bicycles, with around 80% of children aged 5 to 10 and about 50% of people aged 40 to 49 own one. Yet many of these bicycles will reside in sheds and garages with the hope of being used sometime, if used they will only be ridden in parks or on trails for leisure purposes. So many people have the intension of cycling yet they only feel comfortable when riding in areas where vehicles are excluded.

There is a huge potential to get bicycles out of sheds and being ridden yet the perception for most people is that roads are too dangerous. To some extent this may be accounted for by the number of cars on the roads, in 2016 there were 37.3 million cars licensed for use on the road while in 1980 there were only 19.2 million licensed vehicles[24]. There is a perception that busy roads are dangerous and the thought of riding a bicycle amongst speeding two ton vehicles is a daunting prospect. Unfortunately it is not the vehicles that are the problem but the drivers and how they behave towards other road users that becomes the issue.

Cycle lanes can have considerable benefit in getting people cycling on the roads. However, as we have seen they still bring risks as the painted lines do not prevent vehicles from entering the cycle lane. Even the presence of cycle lanes gives drivers a false sense of security and subsequently pass closer to the cyclist than they would have on an unmarked road. There is little that people riding bicycles can do to increase the distance of overtakes as studies have shown. Whilst riding bicycles is a minority activity drivers will continue to treat cyclist with disdain, it is the nature of humans to align within a group and take on their views, be that good or bad.

Encouraging people to ride their bicycles is an admirable aspiration but putting them onto roads with no protection is foolhardy, at best they will reluctantly cycle or more likely retire their bike back to the shed never to be used again. Installing cycle lanes should be the very last resort and then only when the speed differential between cyclist and vehicles is

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[22] LTN 2/08, Cycle Infrastructure Design, Department for Transport. 2008

[23] Walking and Cycling Statistics, England: 2017, Department for Transport. 2017

[24] Transport Statistics Great Britain 2017, Department for Transport. 2017

minimised to about 20 mph. Such speed limits are becoming more common but they are not being enforced, ignored like so many other speed limits and restrictions.

A House of Commons Transport Committee, Cycle Safety report summarises the following paragraphs;

> 31. **We are grateful to all the cyclists who shared examples of cycle infrastructure. We were concerned to hear about the cycle lanes that have not only failed to increase safety for cyclists, but were in some cases more dangerous than cycling on the carriageway. In too many cases our cycling infrastructure not only fails to protect cyclists, but also treats cycling as an add-on to roads—an optional extra to be added if there was spare space, rather than a valid mode of transport, as entitled as motor vehicles to space on the road.**
>
> 32. *Safe cycling should be an integral part of the design of all new infrastructure projects. Local authorities should be able to demonstrate that the cycling has been considered and incorporated into the design of new roads at the earliest stage, and that local cyclists have been consulted as part of this process.*
>
> 33. *Cycle-proofing should not necessitate a blanket design and protocol for cycle lanes, which would inevitably fail to reflect local circumstances. Instead there should be an emphasis on sharing best practice. For example, to improve cycle lanes the Department for Transport should set out different options for local authorities to adopt, each designed with cyclists and meeting or going beyond minimum standards of safety. We ask the Department to report back on progress on the sharing of good practice between local authorities.* [25]

There is an appreciation that cycle safety is not being addressed by the current arrangement yet there is a lack of direction and initiative in guiding from the government.

Derby has a history of cycling, up until the end of the last century (1999) many workers at both the railway and Rolls Royce would cycle to and from work, it is only in recent years that commuting by bicycle has become the reserve of the hardy few. Commuting around the city would be so much easier and safer with a connected network of cycle routes, to meaningful destinations. Many of the cycle lanes that have been installed are on one side of the road only, most cyclists undertake return journey so will only enjoy the benefits of a cycle lane on one leg of their journey. A hazard frequently encountered when riding along the cycle lanes are parked vehicles, forcing the cyclists around the obstacles risking opening doors and fast moving vehicles on the carriageway. Even where parking restriction are in place parked vehicles still block the cycle lanes, enforcement seems to be somewhat ineffective. Having survived these hazards there is still the narrow and variable width cycle lane with poor surface and drainage grates to negotiate.

How can the experience of riding along cycle lanes be improved? There are concerns about the effectiveness of 'advisory' cycle lanes, the DfT states "*Advisory lanes are not recommended where they are likely to be blocked by parked vehicles*"[26]. Although cycle lanes set aside a portion of the carriageway for cycling they are ineffective when forcing cyclist into the carriageway. Future implementations should incorporate some form of light segregation that offers a degree of physical barrier between the cycle lane and the carriageway, improving safety for people using the cycle lanes by preventing vehicle incursions and parking. The DfTs recommendations for cycle lane widths of 2 metres should be followed where ever possible, with an absolute minimum of 1.5 metre width. Cycle lanes, together with segregated cycle paths and shared paths, should form continuous cycle routes between meaningful destinations as part of a cycle network around the city. Where light segregation is not feasible the basic cycle lane should consists of a painted line with double yellow lines parking restriction and a 20 mph speed limit, thereby ensuring the safety of cyclists using the infrastructure.

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[25] House of Commons Transport Committee, Cycle Safety, Third Report of Session 2014–15

[26] LTN 2/08, Cycle Infrastructure Design, Department for Transport. 2008

Conclusion

Cycle lanes are a key feature of cycle networks in and around any city but there are a few aspects that need to be prioritised;

1. Cycle lanes must form part of continuous cycle routes between meaningful destinations.
2. Cycle lanes must have some form of light segregation between cycle lane and carriageway along their length.
3. Recommended width is 2 metres, where absolutely essential reduced to 1.5 metres.
4. Cycle lanes consisting of painted white lines should only be implemented in conjunction with mandatory ‘double yellow line’ parking restriction and 20 mph speed restriction.

We should be aspiring to adopt the Dutch approach to road design, segregating the vulnerable road users from motorised traffic depending on the speed and mass of vehicles. The Dutch have a proven track record which has been adopted by many cities and countries, we don’t need to ‘reinvent the wheel’.