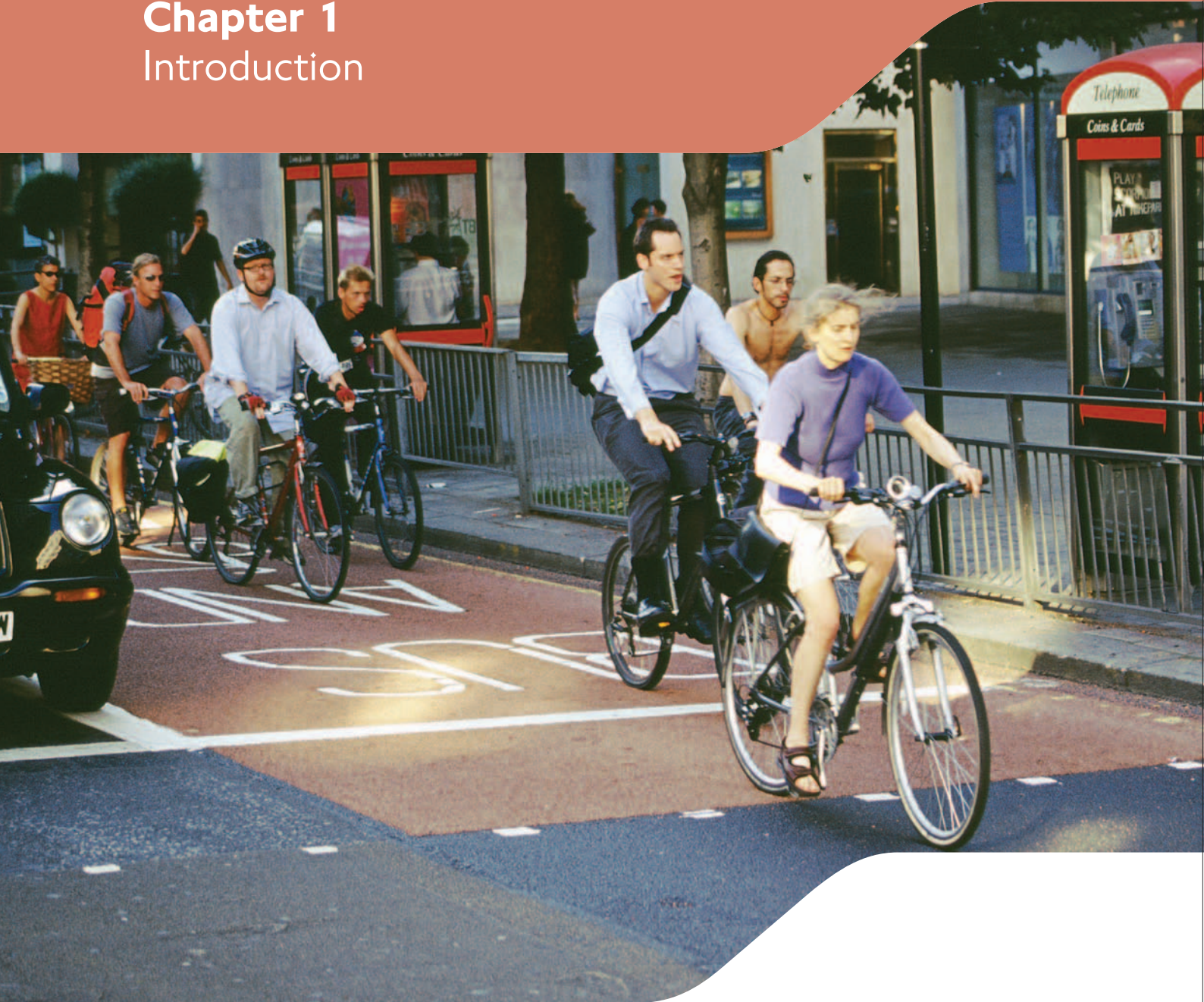


Chapter 1

Introduction



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1.1 Policy context

National policy

1.1.1

The Government's White Paper on Transport¹ published in July 1998 set out a new approach to transport, with a strong emphasis on sustainability. At the forefront of this policy was the promotion of the two most sustainable modes, walking and cycling. The White Paper endorsed the National Cycling Strategy published in 1996, the Minister's foreword to which stated:

"On any examination of the needs of a sustainable transport policy, it is crystal clear that the bicycle has been underrated and underused in the United Kingdom for many years. This is especially true when one looks at those other European countries where cycle use has been increased and maintained by deliberate action at both local and national level. There is enormous potential to increase the use of cycles in Britain, but it will only be realised if we develop a coherent approach setting out how the status quo can be altered in favour of the bicycle."

¹ A new deal for Transport:
better for everyone
– DETR 1998

1.1.2

The extent to which walking and cycling are more sustainable than motorised transport in energy terms is set out at figure 1.1. Cycling is the most energy-efficient mode of transport generally available, and is an order of magnitude more efficient than motorised travel. Unlike other transport modes, cycling uses renewable energy. CO₂ emissions, which are the main contributor to global warming, are closely linked to energy consumption.

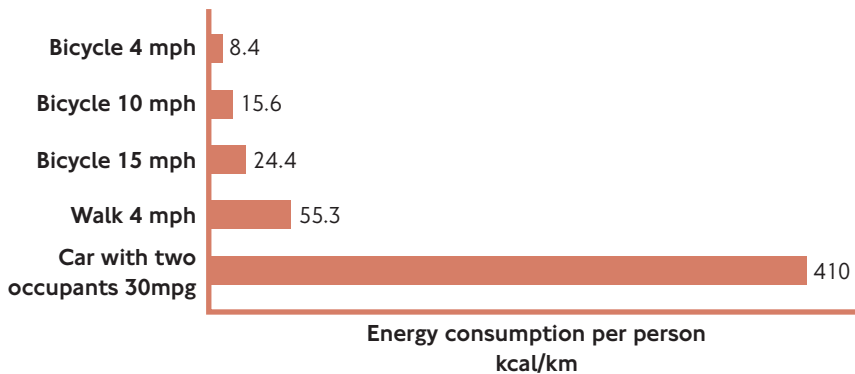


Figure 1.1
Energy consumption of
cycling, walking and
driving

Source: "Bicycling Science",
Whitt & Wilson, 2nd edition
reprinted 1995, Massachusetts
Institute of Technology Press

1.1.3

Cycling also has considerable health benefits. There is increasing concern over the rising proportion of people who are obese. At paragraph 2.5 the White Paper states:

"The way we travel is making us a less healthy nation. Coronary heart disease is the biggest killer of adults in this country. Part of the blame is that we drive too much when we could walk or cycle."

1.1.4

Cycling is an inclusive form of transport. Few people cannot afford a cycle.

Policy in London**1.1.5**

The Mayor's Transport Strategy (GLA 2001) sets out a framework for improvement in the way transport operates in London. A growth in cycling is integral to the Mayor's vision for London. Cycling can make a significant contribution to meeting London's mobility and access needs as well as helping to realise energy, health, and social objectives.

1.1.6

The Mayor's Transport Strategy committed increased resource for cycling, in particular establishing the LCN+, a planned 900km route network covering the whole of London, to be completed by 2009/2010. The Mayor established the Cycling Centre of Excellence (CCE) at Transport for London to lead and co-ordinate development in partnership with the London boroughs and other key stakeholders. The London Cycling Action Plan (LCAP) produced by TfL in 2004 sets out a programme of co-ordinated action to achieve an 80% increase in cycling by 2010.

1.1.7

The development of standards and procedures for designing traffic and environmental schemes that will improve safety, increase accessibility and encourage cycling is one of the specific actions of the London Cycling Action Plan.

1.1.8

The level of cycling in London is low, compared to other cities in northern Europe with a similar geography and climate, and the context challenging. Pedal cycle activity per capita in the 2002/2003 period was somewhat lower in London when compared to the whole of the UK, with the UK averaging 15 cycle trips per person per year in 1999/2001 and London averaging 11 cycle trips per person per year for the same time period².

1.1.9

The casualty statistics for the 3-year period 2001-2003 show that London had a marginally higher than average proportion of cycle casualties. Pedal cyclists formed 7.7% of fatal or serious injuries in London, compared with the national average figure of 6.4%.

1.1.10

There is considerable scope for change. Londoners own around 1.4 million bicycles. 85% of all trips are less than 5 miles, around 30 minutes by bike. Market research shows that at least 10% of Londoners would cycle in London now, if conditions were improved. Since 2001, automatic counters installed by TfL on the Transport for London Road Network (TLRN) and other sites show an encouraging and upward trend against a background trend nationally that shows a slight decline. Between May 2003 and May 2004 a 23% rise in cycling was recorded which, notwithstanding that this was the year during which the



² Trips by main mode of travel – GO Region and Country: Regional Transport Statistics (DfT 2004) including unpublished supplementary data

congestion charge was introduced in central London, does demonstrate that the LCAP target for cycling increase should be achievable.

1.1.11

Also, recorded injuries of all severities to cyclists in London have declined by a third over the period 1995 to 2003. This is consistent with data from elsewhere in Europe, which indicate lower cycle accident rates per kilometre as cycle use rises³. At a London-wide strategic level TfL is monitoring system performance and trends in relation to traffic including cycling, casualties and user satisfaction⁴. But other data relevant to cycling on which to base decisions about individual schemes is limited and not easy to access.

1.1.12

London's cycling environment is complex and dynamic. The city's streets and public places have developed over many years and today make-up a patchwork of distinctive places. They service the capital's economy by providing a traffic function and also perform an important socio-cultural function as places where people – residents, workers and visitors – interact. Relatively few streets have been designed specifically to facilitate or encourage cycling. Nevertheless London has streets and parks that offer the cyclist a travelling experience that is as good as the best in the world. It also has cycle facilities of variable quality, resulting occasionally in situations where those who cycle lack confidence in schemes designed to help them.

1.1.13

There is a division of responsibility for London's networks between TfL as the strategic authority, the boroughs as highway authorities on their own roads, and the boroughs and other agencies managing parks. This represents a further challenge to be overcome in terms of applying consistent policies, standards and levels of service for cyclists and other road users throughout London.

1.1.14

The tool-kit for creating good conditions for cycling is very extensive. It draws on a wide range of best practice – measures to regulate, manage and guide the movement and positioning of general traffic, measures that permit or restrict use for specific purposes or for road users groups as well as urban design treatments that have an environmental and social focus.

1.1.15

Schemes are likely to be successful if they help cyclists to cycle to best advantage i.e. to maintain a steady speed and a direct course without interruption or obstruction from a position where they have a good view of other people, and can be seen by drivers and pedestrians.

1.1.16

TfL recognises that the vitality of London's streets is also a function of their role as a place, neighbourhood or destination, where the presence and activity of people is more related to the surrounding land uses than to the arterial or traffic function of the street. The London Cycling Design Standards (LCDS) seek to reinforce the distinctive character of places and neighbourhoods and wherever practical improve environmental quality by lessening the

³ Comparison of cycle provision in four north European countries – Transport Planning Systems vol 2 no 3 (Londor Publishing 1994)

⁴ TfL Road Network Performance and Research and London Road Safety Unit reports



Schemes are likely to be successful if the cyclist can see and be seen by others



One option for keeping all classes of traffic safer

predominance of motor traffic and traffic related street furniture. There are different pressures on the highway network during peak hours, at night-time, weekends, and school holidays. This will affect the options available to design teams for keeping all classes of traffic moving safely.

1.1.17

⁵ TfL Impacts study 2004

TfL's own research⁵ into the impact of different cycling schemes suggests that people respond to and take up cycling where it is advantageous to cycle rather than go by car e.g. where pleasant direct routes are introduced in parks, or where there is easy cycle access through vehicle restricted areas.

1.1.18

Measures to manage the volume and speed of motor traffic combined with specific well planned cycle schemes will support a growth in cycling. There is also a linkage between measures that provide fast, safe, comfortable cycle priority routes, direct and easy access, and fewer road casualties and higher cycle flows. Such facilities also offer user benefits in terms of journey time, journey experience and satisfaction.

1.1.19

Guidance given by TfL to boroughs preparing Local Implementation Plans (LIPs) to secure funding requires them to detail proposals for additional cycle access. In addition to green cycle corridors and access through pedestrianised areas this might include exemption from one-way restrictions or banned turns. LIPs Guidance also requires boroughs to show how proposals will contribute to the London Cycling Action Plan target for an 80% increase in levels of cycling and in particular contribution to LCN+, and improve design standards and cycle audit procedures for non-cycling schemes.

1.1.20

Under normal circumstances shared-use cycling on the footway remains the provision of last resort. But for areas where general motor traffic is restricted, including areas that are currently, or proposed to be, fully pedestrianised, TfL endorses the Department for Transport view that there should be a presumption that cycling will be allowed unless an assessment of the overall risks dictates otherwise. In conducting this assessment, the risk to cyclists using alternative on-road routes should be taken into account. This is particularly important if the alternative routes are not safe or direct and cannot be made so. Community safety is also a significant factor.

1.1.21

London cyclists themselves highlight three key requirements:

- uninterrupted routes i.e. no loss of priority, no obstruction, no additional stops or turn offs
- improved maintenance i.e. a good riding surface
- more dedicated cycle facilities e.g. cycle lanes offering priority and protection from high volume, high speed or queuing motor traffic



Provision for cyclists through newly enhanced pedestrian zone



Cyclists require uninterrupted routes offering priority over cars

1.1.22

There are some common situations that are inherently problematic for cyclists. These include:

- Large roundabouts (two or more circulating lanes)
- Uncontrolled fast moving left filter lanes
- Banned movements without cyclists exemption
- Road closures without cycling gaps
- Interrupted or obstructed lanes
- “Cyclists Dismount” signs
- Counter intuitive loss of priority (at side roads)
- One-way streets without cyclists’ exemption



A well designed entry treatment will enable cyclists to maintain priority over side roads

1.1.23

Schemes will make a positive contribution to cycling objectives if these specific highly visible barriers to cycling are addressed.

1.1.24

TfL’s aim is to stimulate and apply and maintain consistently high standards to all new schemes so that everyone, regardless of age, ability, experience or

journey purpose, can use them with confidence. Schemes should reduce barriers to cycling and offer benefits to cyclists whether they are making a short trip to the shops or commuting to work every day.

1.1.25

In order to achieve these conditions, improved co-ordination between the many agencies responsible for planning, design, building and maintenance of schemes is required. To assist in achieving this aim, this document covers the design for cycling in the public realm.

1.2 Responsibilities in relation to cyclists

General obligations

1.2.1

Highway authorities have a statutory obligation to provide for the safe movement of people and goods (Highways Act 1980). The Traffic Management Act 2004 (TMA) gives additional responsibilities to Local Traffic Authorities (LTAs) to address the shortcomings of the Highways Act and New Roads and Streets Works Act 1991, particularly in relation to planning and co-ordination.

1.2.2

S16 of the TMA places a new Network Management Duty which requires LTAs to manage their networks with a view to achieving the following objectives, so far as may be reasonably practicable having regard to their other obligations, policies and objectives (for this purpose “traffic” is defined as including pedestrians as well as vehicles):

- “(a) securing the expeditious movement of traffic on the authority’s road network; and*
- (b) facilitating the expeditious movement of traffic on road networks for which another authority is the traffic authority.”*

1.2.3

In simple terms, cycling will take place regardless of whether or not specific provision for cyclists has been made, and highway authorities have a statutory duty to allow for this to happen expeditiously, and in safety.

1.2.4

London has clear policies and objectives to promote a modal shift away from the car by giving increased priority to buses, meeting cycling growth targets, reducing casualties and upgrading the travelling environment, by relieving congestion and improving journey time reliability through the use of travel demand measures and by making more efficient use of road space.

1.2.5

Design teams who are involved in the development and delivery of infrastructure, streetscape, and traffic management schemes should be aware that they are expected to consider safety and policy objectives in relation to all road users, including cyclists, regardless of which policy or transport mode was the original trigger for the particular scheme.



Removal of lane in a gyratory system creates better access for people that cycle

1.2.6

To enable highway authorities to discharge their responsibilities as set out above, they have been given various powers that are covered in the next chapter of this document.

DDA obligations

1.2.7

The Disability Discrimination Act (DDA) requires authorities to make reasonable adjustments to overcome physical barriers to access, by removing or altering the barrier, enabling people to avoid it or providing access by an alternative means. This applies equally to the street environment as it does to public transport services.

1.2.8

DDA responsibilities impact on design for cycling in three ways:

- Removing, altering or avoiding physical barriers to access by cycle or providing alternatives will generally contribute to DDA and access objectives.
- There is a need to make reasonable provision for cycles that have been built or adapted for use by individuals with a disability, affecting their travel, for example by ensuring cycle gaps are wide enough for trikes and recumbent bikes, and similarly for manual/electric wheelchairs and mobility scooters. Powered invalid carriages are not classed as motor vehicles for the purposes of road traffic legislation⁶ and they can be used on footways, footpaths, bridleways or pedestrianised areas, cycle tracks and in cycle lanes provided that appropriate orders are made
- The necessary steps must be taken to ensure that provision for cyclists does not create new hazards for pedestrians, and in particular those most vulnerable e.g. elderly, blind or partially sighted people and children.

⁶ Road Traffic Act 1999, section 185(1)

1.2.9

In providing for shared use including cycle access to a specific pedestrianised area, it is essential that authorities adopt a clear, recorded and transparent decision-making process and ensure that the local community and disability groups have been consulted.

1.2.10

For routes away from roads, useful guidance on the appropriate application of barriers and the removal of inappropriate barriers is contained in the following Sustrans publications that are available free on their website at **www.Sustrans.org.uk**:

- Disabled people and the National Cycle Network (June 1998)
- Access Controls (November 1998)

Obligations on the cyclist

1.2.11

Cyclists are bound to observe normal traffic laws. In the UK it is not mandatory upon cyclists to use cycle lanes and tracks or stay within them.

1.3 Purpose and use of this document

1.3.1

This document sets out the principles, guidance and standards for designing to reduce barriers to cycling, in order to support road safety targets and increased levels of cycling in London. It is aimed not just at designers of cycle route schemes, but at all designers of infrastructure that cyclists will use or that will affect cyclists. It is intended to help design teams to:

- understand the needs of cyclists;
- design facilities that will assist cyclists, promote safe positioning and encourage assertive, considerate and predictable behaviour;
- meet network management responsibilities;
- determine cycling requirements and traffic priorities;
- communicate with project partners and manage expectations;
- identify and manage risk;
- integrate cycling into the overall transport system; and
- deliver schemes that will support targeted increases in cycling.

1.3.2

Designers are advised to satisfy themselves that they are meeting up-to-date legal requirements, codes and procedures. The designer is at all times required to exercise professional judgement and duty of care in applying LCDS.

The designer is at all times required to exercise professional judgement in applying LCDS

1.3.3

LCDS generally seeks to reinforce and complement the Highway Code, as well as advice on safe positioning and cycling in traffic endorsed by the Royal Society for the Prevention of Accidents (ROSPA) and leading cyclist training organisations.

1.3.4

While an emphasis on local needs is important, LCDS is consistent with recent policy initiatives for cycling, walking, streetscape, traffic management, road safety, public health, equality and inclusion. It helps schemes to be developed within a coherent framework that ensures quality schemes, quality management and a consistent approach to network development.

1.3.5

This document replaces the London Cycle Network Design Manual published in 1998. It reflects and complements the DfT's draft Local Transport Notes LTN 1/04 and 2/04.

1.4 Cycling network - some key concepts

1.4.1

London's cycling network is made up of many types of link. These include public highway, parks, paths alongside waterways, railway land, industrial, retail and housing estates and their car parks, town centres and other parts of the public realm used for traffic or access. Over some short links cycling is not permitted but bicycles may be wheeled or parked. Only motorways and other links with explicit safety-related prohibitions on cycling are excluded from the cycling network.

1.4.2

The cycling network includes a number of linked sub-categories. Of these the following have been mapped and are shown on a GIS layer which may be viewed on LCN website **www.londoncyclenetwork.org.uk** or the TfL Aims database:

- LCN+ routes
- National Cycle Network
- LCN routes
- London Cycle Guide routes

1.4.3

The roles of the various categories are described below.

LCN+ routes

1.4.4

LCN+ routes make up London's strategic cycling network and when fully upgraded will provide fast, safe, comfortable cycle priority routes with clear links through junctions. Criteria for selection of LCN+ route corridors, based on proposals put forward by the London Cycling Campaign, were determined following consultation with stakeholders in 2002. TfL and the London boroughs are committed to completing a major investment programme to bring LCN+ links (around 900km) up to a high standard of service by 2009/10 and to maintain LCN+ routes at this standard.

1.4.5

Once treated, LCN+ routes are expected to attract and support high cycle flows, and be able to cater in the future for a significant (200%) increase in those flows. This means that LCN+ routes need to be designed to attract new cyclists as well as achieving safety, journey time, comfort and other benefits for those who already cycle.

1.4.6

Procedures for appraisal, consultation, design, delivery, quality control and monitoring have been developed by TfL Cycling Centre of Excellence (CCE) in association with the London boroughs and cycling stakeholders. This includes criteria and procedures for route variation and prioritisation. At March 2005 the alignment and preferred treatment for over one third of the individual LCN+ links had been assessed and confirmed. Programme and project management is undertaken by a team employed by the London Borough of Camden.

National Cycle Network (NCN)

1.4.7

NCN routes are national long distance routes providing for walking and cycling, developed by the sustainable transport charity Sustrans. In London these are normally either part of the LCN+ network, or form a key component of the Green Cycle Corridor (GCC) Investment Programme described later. In addition there are some proposed routes which are at an early stage of development e.g. through North-West London and through the Thames Gateway area. The NCN attracts a high proportion of leisure cyclists.

LCN routes

1.4.8

The London Cycle Network was the predecessor of the LCN+ network, and covers a much larger length of cycle route (around 3000km). About half of the network was completed, including some sections of variable standard. LCN routes are largely on borough roads, and appear in borough Unitary Development Plans so that within the borough planning process they should be protected from adverse development.

1.4.9

A comprehensive system of route numbering was developed for the LCN. Certain stretches of the LCN network have been carried forward to the LCN+ network, but otherwise there is no financial commitment from TfL to the LCN other than through normal borough highway budgets.

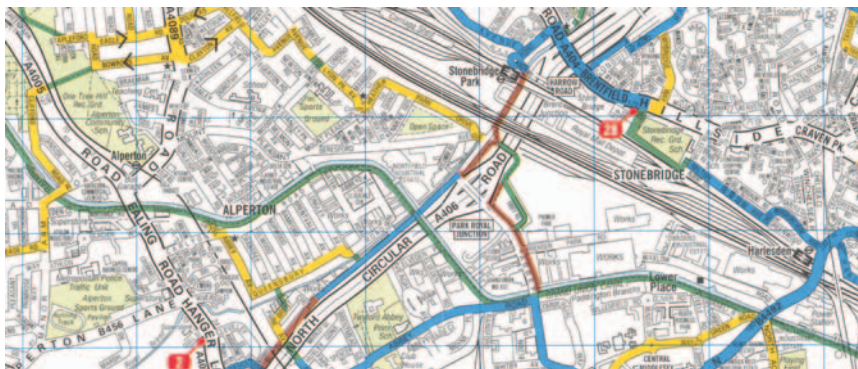
LCG routes

1.4.10

London Cycle Guide (LCG) routes are those included on this series of 19 detailed maps, 4 million copies of which have been printed for free distribution to Londoners. These routes have been recommended by cyclists, with several thousand miles of route being ridden during their preparation. A major input has been obtained from London Boroughs and the London Cycling Campaign. The routes have been classified to assist users, with the current (2nd) edition showing:

- **Blue** – routes that are signed
- **Brown** – off-carriageway routes
- **Green** – Green Cycle Corridor (GCC) routes that are free of motor traffic and off the public highway, e.g. running through parks or alongside waterways in areas of environmental or ecological significance, where cycling is permitted. This includes areas where there is no specific public right of way but where use is permissive.
- **Yellow** – advisory but unsigned routes via quieter streets, recommended for use by cyclists.





The London Cycle Guides have been well received by London cyclists

GCC Investment Programme routes

1.4.11

Green Cycle Corridor Investment Programme Routes are signed routes for use by non-motorised traffic which are predominantly off the public highway and run through parks and similar areas, and where a programme of investment is underway to improve conditions for cycling and for access for all.

Courier routes

1.4.12

Roads in Central London form the workplace for many of London's cycle couriers. All main roads within the congestion charge zone should be treated as routes likely to be used by cycle couriers. This means a high priority to the removal of significant hazards to cyclists, and maintaining priority for cyclists through junctions.

Pedestrianised areas

1.4.13

In any areas where it is either proposed or currently managed that significant numbers or classes of vehicle are excluded from a road or an area, the highway or local traffic authority should consider providing for public access and exempting cyclists from motor vehicle restrictions. The presumption is that cycling be permitted unless there are overwhelming safety reasons to justify its exclusion.

Significant cycle commuter routes

1.4.14

Any main road route where cyclists form a significant proportion of the vehicular traffic (10% or more during the morning peak, or 500 cyclists per day) can be classified as a significant cycle commuter route. These are important routes used by experienced adult cyclists. They require removal or reduction of significant hazards to cyclists, maintenance of priority for cyclists through junctions, and room to enable cyclists to get past queuing traffic.

Significant cycle commuter
route



Other local streets, estates

1.4.15

Authorities should assume that the traffic and amenity function will include young and inexperienced cyclists, and should design for slow speed motor traffic access, with appropriate arrangements for car parking and interaction between people.

Industrial estates

1.4.16

Industrial estates are areas where the primary function is circulation and parking of HGV traffic. Casualty reduction treatment only is required, unless there is the width for an uninterrupted, high quality 'protected' cycle-only facility with priority through junctions and a good business case e.g. no alternative route.

Relative importance of routes

1.4.17

Where changes are proposed to a route that forms part of the cycling network, the impact that this will have on cyclists and the aims of the LCAP will vary according to the type of route, as shown on figure 1.2.

1.4.18

All routes shown on the London Cycle Guides should be treated as high or medium impact routes. This means that authorities will be expected to record any proposed deterioration or disbenefit for cyclists in terms of access, interruption, obstruction, journey time, loss of priority or destabilization and submit this to the relevant cycling specialist before acceptance.

Level of importance	Criteria
High	Sites that are part of the LCN+, routes popular with couriers, sites with high volumes of general traffic with existing or potentially high usage by cyclists e.g. commuter routes. National Cycle Network route.
Medium	Sites that are an LCN or London Cycle Guide route (but not on LCN+). Also sites with potentially moderate cycle usage, i.e. within a regeneration zone/policy area or within 2km of a cycling hub or destination e.g. stations, schools, town centres, major employment, hospitals, markets, parks.
Low	Local access and links where low cycling demand envisaged.
Not applicable	Routes without hard surface for year-round cycling and that do not form part of GCC programme.

Figure 1.2
Route importance in relation to potential for impact on LCAP objectives

The more important the route, the greater will be the contribution towards achieving LCAP targets if improvements are made

1.5 LCN+ design principles, standards and checking procedure

1.5.1

LCN+ is a planned network of cycle routes approximately 900km in length that will address the barriers to cycling on high demand corridors across London and provide fast, safe and comfortable conditions for cyclists.

1.5.2

The network will be provided on the Transport for London Road Network (TLRN), on borough roads as well as through parks, and on other green corridors that do not come under the jurisdiction of highway authorities.

1.5.3

For this purpose, fast, safe and comfortable means:

- minimised effort for cyclists
- enables uninterrupted, unobstructed movement at a steady speed
- easy to follow
- well surfaced routes
- maintains priority through junctions
- a good user satisfaction rating
- a good journey time rating
- enhances the environment, distinctive character and improves ambience for cyclists and others
- identifies and addresses cyclist casualty locations
- manages conflict with motor traffic and pedestrians
- raises driver awareness of cyclists
- clarifies positioning of cyclists and other highway users

1.5.4

Further work is planned to establish measurable target levels of service in relation to these factors.

1.5.5

One of the key objectives of this document is to provide clear guidance to practitioners who are planning and designing schemes on LCN+ routes. In order to achieve the desired high standards on LCN+ routes a system of minimum requirements have been set out within Chapters 3 to 8 of this document. These are identified by bold text within a shaded box. On LCN+ routes, departures from these principles require to be agreed with CCE, its designated project managers (LB Camden) or other designated agent.

1.5.6

On other cycle routes, or on other infrastructure schemes that may affect cyclists, departures from these principles should not be made without consulting the relevant borough officer with responsibility for cycling, who will take account of local policies and may wish to consult more widely e.g. with local cycling groups.

1.5.7

Where design teams have concerns about the impact of cycling improvements on other priorities such as delays to buses or vehicle flows, consideration should be given to all available options. These will include mitigating measures such as banned turns or the relocation of waiting, parking and bus stops. Where either the existing untreated situation, or proposals, include significant hazards for cyclists, or significant loss of priority, or high levels of unlawful driving or cycling, authorities should introduce measures on a trial basis and check, monitor and review operations.

1.5.8

LCDS represents a statement of guiding principles and best practice. The absence of national standards is a matter of deliberate policy by DfT at national level, because it is considered that highway authorities are legally responsible for their own highways and that it is inappropriate for Government to specify standards or monitor compliance.

1.5.9

These standards are based on a consideration of cyclists' requirements. Although there is clear linkage between perceived risk and modal choice, there are other factors that influence the impact of individual schemes on levels of cycling and attitudes towards it. For example, TfL impact research suggests that schemes will be unsuccessful and unused if there is a loss of priority over side roads. The 2005 review of procedures in London by TRL shows that introduction of cycle lanes that do not meet the aspirations in terms of width set out in this guidance does nevertheless attract use and enable cyclists to 'undertake' peak hour queues. Further work is required to isolate the impacts of different factors on attitudes towards cycling, driver behaviour and cyclist behaviour.



Poorly designed facilities will simply be ignored by cyclists



Cyclists should be able to "undertake" peak hour queues

1.5.10

While it is recognised that there are different views as to the value and importance of specific cycle facilities as well as different approaches to streetscape and design, the setting of standards and a procedure for exemption or consultation provides TfL with a prompt to instigate monitoring of experimental schemes and to learn from their performance.

1.6 What sort of cyclist are we designing for?

1.6.1

Cyclists come in a wide variety of levels of experience and confidence, and attitude. They also ride cycles of varying designs and dimensions.

1.6.2

Chapters 3 to 8 in this document set out dimensions and standards for providing infrastructure for cyclists. These take account of the design dimensions for cyclists themselves, as set out below.

Levels of experience and confidence

1.6.3

Cyclists will vary at one extreme from the hardened commuter or cycle courier, to at the other extreme children who are for the first time learning road sense, and novice or elderly cyclists who may be apprehensive about cycling generally. In between, there will be a wide spectrum of cycle users with varying levels of confidence and experience.



A well-designed cycle facility will be attractive to a wide spectrum of cycle users



Experienced cycle commuter

1.6.4

It is not practical to design for all experience levels in all situations. For example, it would be unrealistic to design for unaccompanied young children in central London. Conversely, a Green Cycle Corridor providing access to a school should be assumed to be likely to be used by a proportion of relatively inexperienced cyclists. Designers must exercise common sense in these matters.

1.6.5

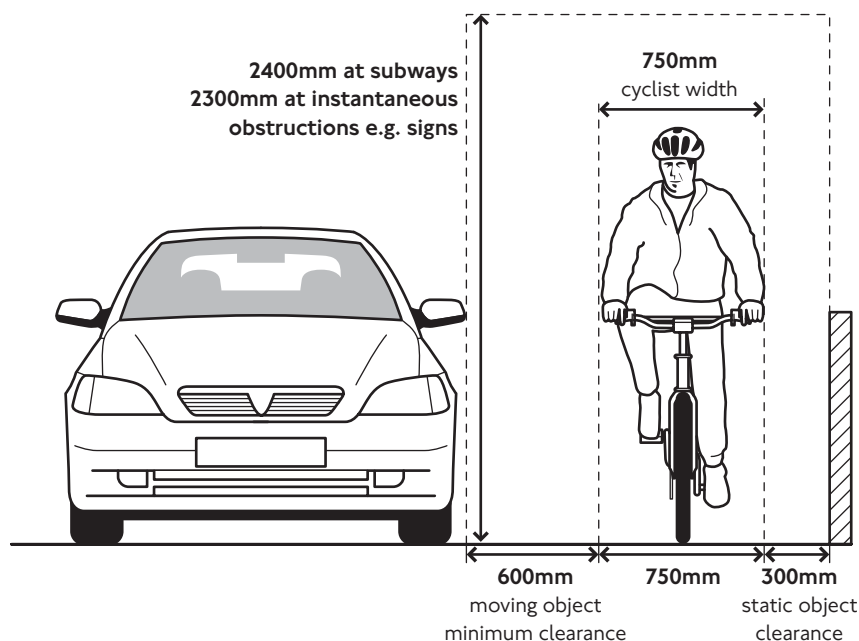
However, a well-designed cycle facility will be attractive to a wide spectrum of cyclists. The objective must be to cater for as wide a spectrum as possible, taking into account the locality in question.

Dimensions of design cyclist

1.6.6

The typical dimensions of a solo adult cyclist riding a conventional cycle are shown in figure 1.3. A large majority of cyclists will fall into this category, or fit within these design dimensions. Taking account of the need for side clearance when moving, and the need to avoid inspection covers etc. a standard minimum cycle lane width of 1.5m is required, measured from the kerb to the centreline of the line separating the cycle lane from the rest of the carriageway. Where justified by demand and conditions, and where feasible, greater widths for cycle facilities should be provided. For two-way off-carriageway cycle facilities, a minimum width of 3.0m is recommended.

Figure 1.3
Clear space profile for
typical conventional cyclist

**1.6.7**

However there are also a number of non-standard cycles in use, including:

- Cycles with trailers for children or deliveries
- Tricycles, including those used by some disabled people
- Tandems with two or more seats
- Cycles with trailer cycles for children



Non-standard cycle with trailer

- Recumbents
- Delivery cycles such as used by the Royal Mail
- Small-wheeled foldable cycles
- Purpose built cycles for disabled people e.g. hand propelled.

1.6.8

It is very unusual for the width of non-standard cycles to exceed 0.9m.

There are a number of even wider cycle designs in existence, including “Pedicabs” and side-by-side two-seaters and four-seaters, but such machines are rare, and their use normally confined to tourist areas (e.g. Covent Garden). Where the presence of such machines is likely to occur, it may be possible to accommodate provision for them in cycle infrastructure but otherwise it will be reasonable to assume that they will use routes designed for motor traffic.

1.6.9

For the purposes of designing cycle facilities, the normal design width of 1.5m will accommodate a non-standard cycle of width up to 0.9m, albeit with reduced side clearance as compared with a normal solo cycle.

1.6.10

Where the cyclist has to pass between physical obstructions such as bollards or kerbs, the minimum width between the obstructions should be 1.5m. In exceptional circumstances only, this may be reduced to 1.2m, in which case a record should be kept as to why a greater width could not be provided. Narrower gaps will force riders of some non-standard machines to dismount, and gaps of below 1.0m may make the route impassable to riders of such machines.

1.6.11

More detail on appropriate widths for different types of facility can be found in the relevant part of Chapters 3, 4 and 5.

1.6.12

It follows that width restrictions designed to prevent the passage of motorcycles will also prevent the passage of some cycles of non-standard design. Other means of deterring the passage of motorcycles should therefore be used where this is required, such as CCTV, and offenders should actively be prosecuted.

1.6.13

Cycles with long wheelbases such as tandems and some recumbents, or with small wheels such as foldable cycles, are particularly sensitive to short sharp speed humps. If the down stroke of a pedal coincides with the top of a badly constructed hump this can result in “grounding”, with the cyclist possibly even falling off. Riders of smaller wheeled cycles are also more sensitive to poor surface maintenance.

1.6.14

All cyclists are sensitive to sudden changes in level, for example where a dropped kerb is not correctly installed. A sudden large step can cause a damaged wheel. Even a modest step can affect steering if the cycle has to cross it at a shallow angle.

1.7 Layout of this document

1.7.1

The remainder of this document is divided into the following chapters:

- Chapter 2** – Processes involved in taking a scheme from concept to implementation.
- Chapter 3** – Options for motorised vehicle speed control and traffic management on “Plain links” i.e. links without special facilities for cyclists.
- Chapter 4** – Information on the options for links including on-carriageway lanes, off-carriageway tracks and shared use situations within the highway boundary, green cycle corridors, rights of way outside the highway boundary.
- Chapter 5** – Options at priority junctions, signalised junctions and roundabouts and informal and formal crossings
- Chapter 6** – Statutory and informatory signing and markings
- Chapter 7** – General construction details and workmanship, including surfacing, colour, drainage, lighting etc.
- Chapter 8** – Guidance on cycle parking within the highway boundary

1.7.2

At the end of this document there are a number of appendices, as follows:

- Appendix A** – References and bibliography
- Appendix B** – Liaison with TfL Signals Section
- Appendix C** – Typical Detail Drawings.

1.7.3

The Typical Detail Drawings should be used as guidance. They only relate to specific cycle facilities and are not intended to be comprehensive. In particular design teams should consider sightlines and other road user or location specific issues, as well as application of general traffic markings such as “Slow” or “Keep clear” or hatching.

1.7.4

A glossary of acronyms and other terms may be found at the start of this document.