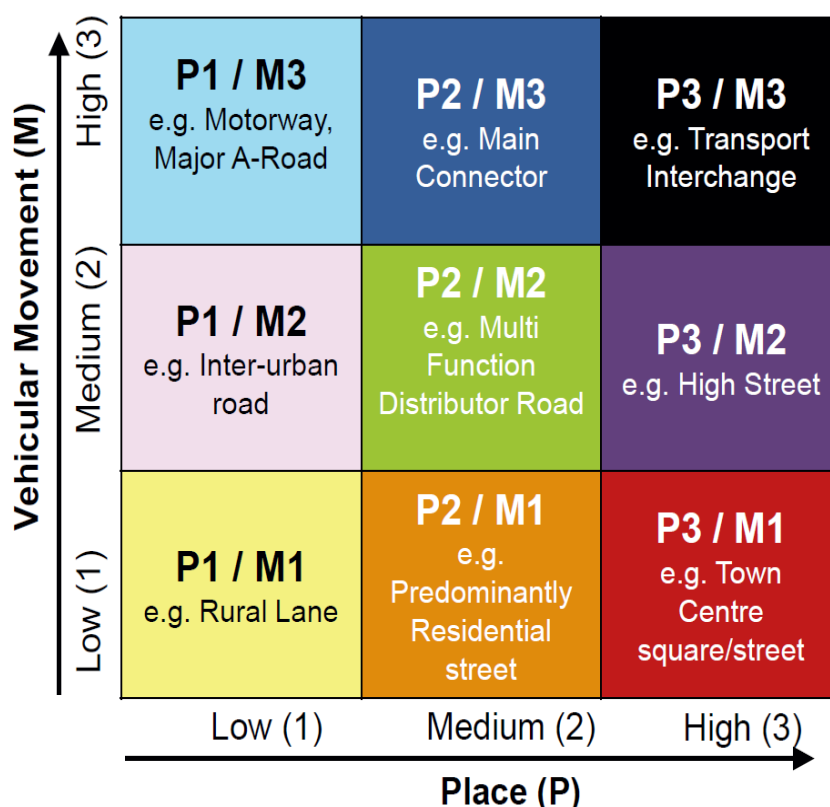


Part 3

Chapter 4 – Planning Cycling Infrastructure

1 Introduction

- 1.1 This Chapter provides guidance on the planning of cycling provision in readiness for a planning application (or the approval of outline design in the case of permitted development schemes) with the aim of ensuring that cycling will be safe and accessible to all and meets the five core design principles of:
 - Safety (including perception of safety)
 - Directness
 - Coherence
 - Comfort
 - Attractiveness
- 1.2 At the master planning stage scheme promoters shall have considered the provision of holistic area-wide schemes for cyclists, or how their proposals connect into the existing networks to reduce traffic levels and make cycling attractive to all reinforcing LTP4 Policy 1: Transport User Hierarchy that gives precedence over motor vehicles to the needs of those walking and cycling.
- 1.3 In accordance with the principles set out in Part 2, Chapter 4: Validation & Master Planning, all scheme promoters shall provide specific, coherent, safe measures to assist cyclists and cycle routes, designed such that anyone aged 12 to 80 could be expected to cycle along them independently and safely.
- 1.4 To aid the practical application of the LTP4 policies Hertfordshire has developed a ‘Place and Movement,’ (P&M) matrix, which recognises the different functionalities that streets will need to have. P&M provides a basis for deciding which activities should be prioritised and where the balance of provision should lie.



- 1.5 Each proposed new or improved highway should have been assigned a P&M category at the master planning stage. This chapter provides guidance on the appropriate cycling provision for each P&M category.
- 1.6 The master plan will have also developed strategies for providing high quality, secure cycle storage for the development including local facilities, employment locations and within homes.
- 1.7 The emerging planning application or the general arrangement for a permitted development scheme, and particularly its cycling and walking provision, must be consistent with the guidance in LTN 1/20 Cycle Infrastructure Design except where stated otherwise in this Chapter.
- 1.8 A key aim of this Place & Movement Planning and Design Guidance is to promote integrated thinking and design and therefore advice relevant to planning and providing for cycling is integrated across the chapters.
- 1.9 This chapter contains the simple, derivative cycling infrastructure guidance based on three defining parameters:
 - Design speed for links $\leq 3\%$ and $>3\%$ vertical gradient.
 - Widths based on predicted usage
 - P&M category and speed limit for associated road / street
- 1.10 This chapter also provides advice on the appropriate legal processes required to create the various types of cycling facilities.

1.11 More detailed supporting technical guidance for final design is set out in Part 4 Chapter 3: Designing for Cycling.

2 Definitions

2.1 For the purposes of this chapter, terms and abbreviations used are as defined in the following table:

Term or Abbreviation	Definition
Cycle	<p>One of the full range of human-powered vehicles described in LTN 1/20, including those shown in LTN 1/20 Figure 5.2.</p> <p>A pedal cycle is defined as ‘a bicycle, a tricycle, or a cycle having four or more wheels, not being in any case a motor vehicle’ (Section 192(1) of the Road Traffic Act 1988 (c.52)).</p> <p>In this Chapter, the term Cycle includes Electrically assisted pedal cycles, often known as e-bikes, which are defined in the Electrically Assisted Pedal Cycle Regulations 1983 (as amended). They can legally be ridden where pedal cycles are allowed, but only by someone aged 14 years or more. They are not classed as motor vehicles for the purposes of road traffic legislation.</p>
Protected facilities	Cycling or shared use space along roads that is physically separated from motor traffic, including by fully kerbed cycle track, stepped cycle track, light segregation.
People walking	Equivalent to the legal meaning of pedestrian/pedestrians
Primary position	<p>Cycling in the centre of a traffic lane.</p> <p>This makes the person cycling more visible to motorists approaching from behind. It enables the motorist to appreciate that it will be necessary either to cross the centre line to overtake or wait behind until there is sufficient space.</p>
Secondary position	Cycling around 0.5m from the nearside kerb.

Term or Abbreviation	Definition
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Protected facilities	<p>Cycling or shared use space along roads that is physically separated from motor traffic, including by fully kerbed cycle track, stepped cycle track, light segregation.</p>
People walking	<p>Equivalent to the legal meaning of pedestrian/pedestrians</p>
Primary position	<p>Cycling in the centre of a traffic lane.</p> <p>This makes the person cycling more visible to motorists approaching from behind. It enables the motorist to appreciate that it will be necessary either to cross the centre line to overtake or wait behind until there is sufficient space.</p>
Secondary position	<p>Cycling around 0.5m from the nearside kerb.</p>
Term or Abbreviation	<p>Definition</p>
Segregated	<p>Cycle and pedestrian paths separated from each other (as opposed to being shared).</p>

Term or Abbreviation	Definition
Shared use	A route or surface which is available for use by both pedestrians and cyclists. It provides for pedestrians and cycle users to be either unsegregated or segregated. It is not normally for use by mopeds. Note this does not mean Shared Space, which normally refers to motor vehicles, cycles and pedestrians all sharing the same space.
AADT	Annual Average Daily traffic
CLoS	Cycling Level of Service Tool (LTN 1/20 Appendix A)
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges, published online by Highways England primarily for the Trunk Road and Motorway network
HCC	Hertfordshire County Council
JAT	Junction Assessment Tool (LTN 1/20 Appendix B)
kph	Kilometres per hour
LCWIP	Local Cycling and Walking Infrastructure Plan
LTN	Low Traffic Neighbourhood
LTN 1/20	Local Transport Note 1/20 Cycle Infrastructure Design, DfT, 2020 available online
LTP4	Hertfordshire Local Transport Plan (LTP4 2018-2031), available online
PCU	Passenger Car Unit
PSED	Public Sector Equality Duty (Section 149 of the Equality Act 2010)
RST	Route Selection Tool (available as part of the DfT LCWIP technical guidance)
TSRGD	Traffic Signs Regulations and General Directions 2016 as amended
vpd	Vehicles per day
vph	Vehicles per hour

3 Cycle Mapping & Network Planning

- 3.1 Existing cycle network maps and an understanding of new route aspirations shall be used when planning new routes at the Validation Stage so that they have an origin and destination and connect to existing or will connect to future cycling facilities. The connecting facility shall be a continuous link for cycling.
- 3.2 Information on cycling and existing cycle routes in Hertfordshire can be found on HCC's website.
- 3.3 Cyclestreets.net makes use of open source mapping for route planning and recording issues on the network. Consider making use of this data when planning any new facility.
- 3.4 The guidance in LTN 1/20 Chapter 3 Planning for cycling should be followed in network planning.
- 3.5 In line with LTP4, the cycling network should facilitate journeys by cycle in preference to public transport and car, particularly for day-to-day short journeys but also for journeys up to around 20km.
- 3.6 Planning for cycling should be based around providing a network of all-weather on-carriageway and/or off-carriageway routes that are suitable for all abilities. The cycling network should be safe, convenient, comfortable, attractive and direct.
- 3.7 Subject to topographical constraints, the aim is to create a densely spaced network (typically 250m to 1km spacing between routes, depending on location) so that all people can easily travel by cycle for trips within and between neighbourhoods. In addition to this, longer distance routes within the local network should serve leisure, tourism and utility cycling.
- 3.8 Highway schemes and developments should contribute to creating this coherent countywide network, both within and between settlements. This network may already have been identified in a LCWIP and/or in HCC's countywide cycle network planning.
- 3.9 The outputs will be identified origins, destinations and cycle flows. These should inform how a development's internal cycling (and walking) networks and routes will connect into its surroundings and to the actual and/or intended wider cycle network.

- 3.10 Continuity is important for successful cycle routes and scheme promoters should strive to provide both high quality links and high quality junctions. Stop-start at every side road or low priority at junctions will result in the route being used less than it could be. With off carriageway routes this could result in cyclists using the main carriageway to avoid delaying their journeys.
- 3.11 Scheme promoters should design routes that are continuous and maintain the standard to each node (junction) and depending on complexity of the junction and its strategic position on the network be afforded a similar or higher level of priority as the other vehicle users at the junction. Pedestrians shall not be disadvantaged by such prioritising and should be considered in line with the LTP4 Policy 1 user hierarchy.
- 3.12 An important element of cycle network planning is the ends of potentially cyclable journeys.
- 3.13 A cycle journey will typically start away from the formal cycle network (e.g. at home or at work), which means that the environment between the start and the cycle network needs to be as safe, convenient, comfortable, attractive and direct as the cycle network itself.
- 3.14 A Low Traffic Neighbourhood (LTN) and/or Cycle Streets may be the most effective way of achieving that environment, as well as yielding benefits such as better air quality, and a better and safer living environment for everyone. This concept could be applied to existing neighbourhoods and to new developments
- 3.15 A cycle journey may end at shops, work, leisure or other destinations. They may well not be on the cycle network itself, so good (particularly safe, direct, comfortable and attractive) cycling routes to them from the cycle network are necessary.
- 3.16 At the destination (and at / for home) cycle storage is needed. This can take many forms, as outlined in the Part 3Chapter 7: Planning for Parking, and can be indoor or outdoor, but it needs to be sufficiently secure for its location. If well designed and managed it should enhance its environment.

4 Forecasting

- 4.1 For developments and highway schemes alike, the scenario planning function of the Propensity to Cycle Tool (PCT) should be used to identify potential commuting and school-related cycle trips and therefore daily trips. Both 'between zones' and 'within zone' flows should be included.

- 4.2 As the PCT is only based on 2011 census journey to work data, comparable analyses should be made to take account of developments since 2011 and developments planned. These may, for example, use the outputs of Transport Assessments prepared for those developments, the results of traffic surveys, and transport models. HCC holds and maintains a range of traffic data. Normally the PCT 'Go Dutch' scenario should be used.
- 4.3 Cycle routes should achieve a Cycling Level of Service (CLoS) score of at least 70% and no critical fails. Junctions should feature no cycle turning movements that are red-scored under the Junction Assessment Tool (JAT). These criteria, which are in line with government funding requirements, apply to cycling infrastructure schemes and to highway and other schemes that include cycle infrastructure or part of an existing or intended cycle route.
- 4.4 The JAT criterion need not be applied to cycle routes in Place and Movement category M1. It is likely that little if any dedicated cycle infrastructure will be provided in P&M category M1, although it may well be integrated into other infrastructure such as cycle streets.
- 4.5 A cycle route should provide a consistent CLoS of not less than 5% below the average % score along its whole length.
- 4.6 The CLoS tool and JAT are provided as Appendices in LTN 1/20. A working Excel copy of the CLoS is available to HCC staff. The JAT uses a graphical representation of the junction(s) being considered.
- 4.7 Local people can provide valuable knowledge: scheme promoters should consult and engage proactively with them when proposing new or amending existing cycle facilities even if not obliged to through statutory processes. They include local residents and businesses, HCC and District officers, and local cycling and walking campaign groups. For example, [Cycle Herts](#) is a collaboration of cycle organisations and should be consulted where possible. Hertfordshire's Sustainable Mobility team should also be consulted in case they already have knowledge of the neighbourhood via Travel Plan monitoring.


5 Application of Design Standards

- 5.1 Guidance for provision for cycling is predominantly derived from LTN 1/20 Cycling Design Infrastructure.
- 5.2 HCC also makes selected use of the following design guides. Scheme promoters who wish to make use of these guides should consult HCC as not all of the design guides are applicable in all locations in Hertfordshire.
 - [London Cycle Design Standards](#), TfL

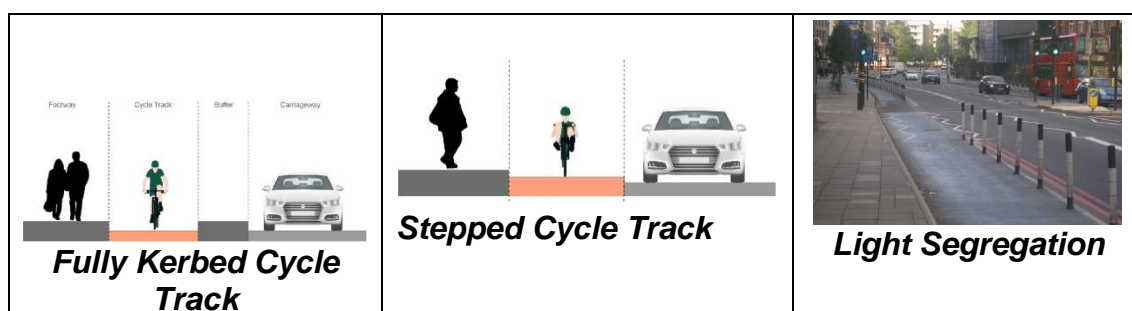
- CD195, Highways England 2020.
 - [Making Space for Cycling, \(Making Space for Cycling - A guide for new developments and street renewals\)](#)
- 5.3 Note that LTN 1/20 supersedes LTN 2/08 (Cycle Infrastructure Design) and that LTN 1/12 (Shared Space) has been withdrawn: these are not to be used.
- 5.4 National Highways standards apply to the Trunk Road network and are used by HCC on a discretionary basis.
- 5.5 As indicated in Part 1, Chapter 8: Standards & Departures, the requirements set out in this guide take precedence in situations where this guide differs from other standards.
- 5.6 Scheme Promoters shall adopt **Recommended Standards** wherever feasible, particularly for the provision of new facilities, as their use is most likely to contribute positively to the objectives of LTP4 and good development.
- 5.7 **Acceptable Standards** may be necessary where improvements are required within existing highway boundaries.
- 5.8 Designing facilities below Acceptable Limits will result in a poor standard of provision and constitutes a 'Departure from Standards'. As such the scheme promoter should submit the scheme proposal to a Design Review Panel so that the overall objectives of the scheme can be reviewed and potential alternative solutions can be discussed.
- 5.9 Scheme promoters and their advisors are expected to keep up to date with cycle design standards.
- 5.10 Cycling experience when preparing cycle infrastructure design gives better insight of the needs of people cycling. We recommend that designers undertake road cycle training so they can experience cycle facilities at first hand.
- 5.11 HCC provides cycle training and sends staff on this course where they will cycle at work.

6 **General Principles for the Provision of Highway Links for Cycling**

- 6.1 Scheme promoters should consider all appropriate ways to encourage cycling, not simply resort to building new infrastructure, in doing so they should apply the hierarchy of techniques as follows:

Consider First  Consider Last	<ul style="list-style-type: none"> • Traffic volume reduction • Traffic speed reduction • Junction treatment, hazard site treatment, traffic management • Reallocation of carriageway space • Cycle tracks away from roads • Conversion of footways/footpaths to shared use for pedestrians and cyclists
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- 6.2 High volume and high speed carriageways create barriers for cyclists, whether as part of a cycle route or as features to cross.
- 6.3 Creating a slow speed, low traffic environment will benefit all users, including cyclists, and should be a key feature of developments, particularly residential developments.
- 6.4 The needs of cyclists shall be considered and factored into the design of all highway schemes, not just those with the objective of increasing cycling trips.
- 6.5 Appropriate protection should be provided from motor traffic on highways for people cycling as shown in LTN 1/20 Figure 4.1, noting its requirements regarding actual 85th percentile traffic speed.
- 6.6 Along roads this normally means segregated cycling space as follows:

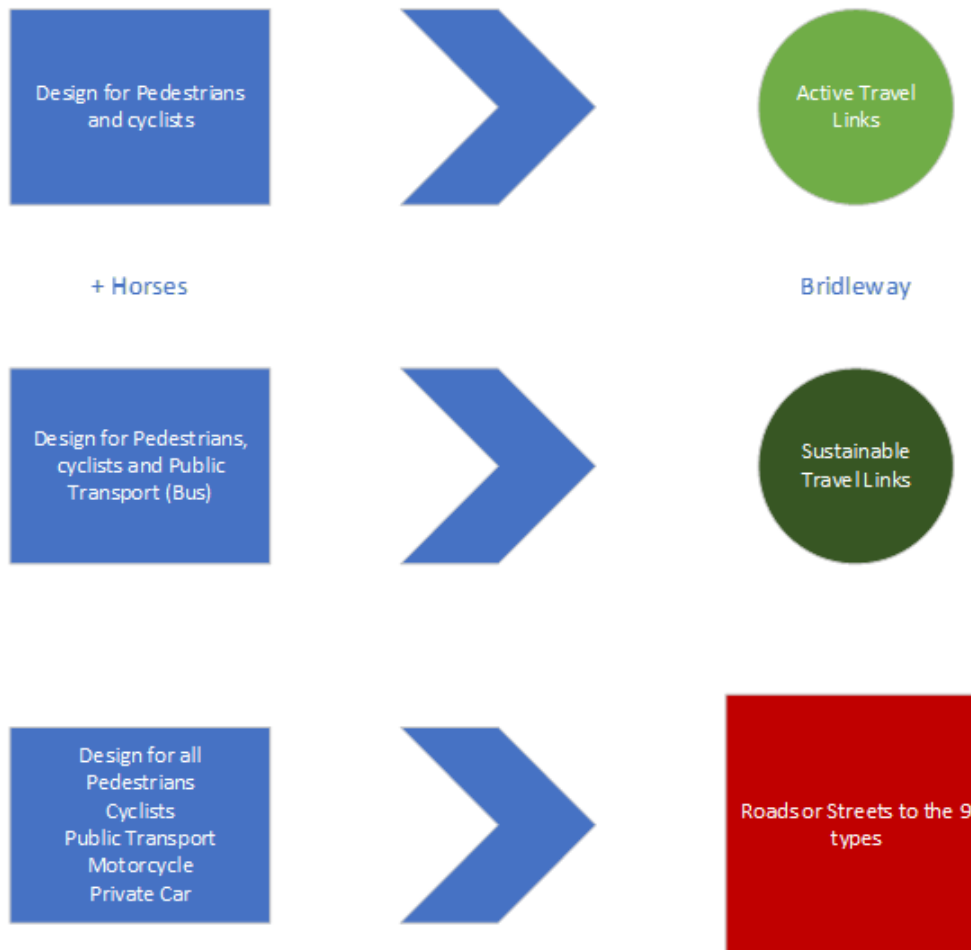


- 6.7 **Stepped cycle tracks and light segregation** are generally unsuitable for urban highways with speed limits above 30mph. They are normally in the same direction as the adjacent traffic lane, although **Error! Reference source not found.** and two-way stepped tracks may be appropriate in certain circumstances to line up other components of a cycle network but should be considered as a Departure from Standards.

- 6.8 If there is risk of vehicles parking on a proposed stepped cycle track then it may be better to create a fully kerbed track, because it may have a lesser spatial requirement than the stepped track plus the necessary protective bollards or the like.
- 6.9 Cycle lanes or cycling in mixed traffic will only be suitable in situations with low traffic speeds and volumes.
- 6.10 In slow speed environments, such as a 20mph areas or traffic calmed carriageways it may be feasible to plan for **on-street cycling**.
- 6.11 If space is required for cycling facilities within an existing, constrained highway, the first priority should be to take that space from motor vehicular traffic rather than from space provided for other vulnerable users.
- 6.12 Therefore, narrowing the carriageway in order to provide adequate cycle lanes will generally be preferable to the alternatives of narrowing footways or creating shared paths of inadequate width.
- 6.13 Heavy Goods Vehicles (HGVs) pose a particular hazard for cyclists, so segregated facilities should be provided in industrial areas or other places that carry a high volume of HGVs. A high volume of HGVs is defined as total buses and HGVs exceeding 500 per day (highest flow, whether weekdays or weekends).
- 6.14 **Cycle lanes** are part of the carriageway and provide no physical protection for people cycling. They should only be used in exceptional circumstances. They should not be provided where the carriageway is less than 9m unless the carriageway is widened or the centre line is omitted/removed.
- 6.15 In hilly areas where the carriageway width does not permit cycle lanes in both directions consider providing a cycle lane only on the uphill side to provide additional width for people wobbling more as they cycle uphill. Cyclists travelling downhill will tend to be moving faster and the speed differential between them and passing vehicles will be less.
- 6.16 Cycle lanes narrower than 1.5m on existing carriageways should be removed when part of improvement or maintenance projects.
- 6.17 Cycle lanes without segregation should not be used except in low speed, low traffic flow situations. They do not provide any physical protection from moving motor vehicles and most people will perceive them to be unacceptable for safe cycling on busy or fast roads.
- 6.18 The introduction of **advisory cycle lanes** is deemed a Departure from Standards for consideration through the Design Review Panel process as in many situations Advisory cycle lanes can increase risk to people cycling compared to no cycle infrastructure because they are prone to encroachment by motor traffic and obstruction by parked vehicles.

- 6.19 The Design Review Panel shall also be consulted when any roadworks (including maintenance) are planned on roads with existing advisory lanes in order for it to consider whether they should be replaced by **Error! Reference source not found.** or **Error! Reference source not found.**, mandatory cycle lanes, or be removed.
- 6.20 However, there are certain circumstances in which advisory cycle lanes can have a safety benefit. In areas subject to a 30mph speed limit and where traffic volumes are less than 3,000vpd or 300vph, there are no significant heavy goods vehicle traffic flows and on-street parking is strictly managed, consideration may be given to the removal of the road centre line and the introduction of advisory cycle lanes.
- 6.21 Providing a cycle track and buffer between parked vehicles and the footway provides a much higher level of service in terms of safety and comfort than having a cycle lane and buffer strip on the offside of parking/loading areas; and requires no additional width. The buffer between a cycle track (or cycle lane) and parked vehicles should be a minimum of 1m wide to provide enough room so that cycle users can avoid being hit if a car door is opened. Adjacent to disabled parking bays the buffer strip shall be at least 2m wide.
- 6.22 **One-way traffic systems** can be a significant inconvenience for cyclists. There should be a general presumption in favour of cycling in both directions in one way streets, unless there are safety, operational or cost reasons why it is not feasible
- 6.23 It is essential to ensure that cyclists are provided with permeability through the road network, therefore, contraflow lanes should always be provided on new one-way streets or at “No Entry” plugs.
- 6.24 Pinch points that could cause cyclists to be ‘squeezed’ by motor traffic should be avoided or removed.
- 6.25 New developments will need to be highly permeable for sustainable modes, with the number of access points and internal routing for the private car highly limited.
- 6.26 **Active Travel Links (ATLs)** are provided within urban, semi-urban, semi-rural and rural settings for walking, cycling and potentially horse riding as non-motorised routes away from the County’s main road system.

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6.27 **Sustainable Travel Links** provide connections within urban, semi-urban, semi-rural and rural settings, as appropriate, for:

- Passenger Transport
- Active Travel modes
- Emergency services
- Limited local access for motor vehicles by design
- Limited local access for motor vehicles by regulation

6.28 Cycles are faster than walkers and slower than motor vehicles. Care should be taken to minimise the conflict that might arise if cycling is mixed with other modes.

- 6.29 Cycle routes and sections of unsegregated shared use should be designed to meet both the needs for walking and cycling equally, including their width, alignment and treatment at side roads and other junctions. Such designation should only be applied in limited situations as follows:
- Alongside interurban and arterial roads where there are few pedestrians
 - At and around junctions where cyclists are generally moving at a slow speed, including in association with Toucan facilities, where it is not possible to segregate pedestrians and cyclists;
 - Where a length of shared use is acceptable to achieve continuity of a cycle route; and
 - In situations where high cycle and high pedestrian flows occur at different times.
- 6.30 A Toucan Crossing may only be used where options which do not involve sharing space between pedestrians and cyclists (such as a parallel or signalised parallel crossing) have been thoroughly examined and found to be undeliverable in a specific location.
- 6.31 **Conversion of existing footways to shared use** should only be considered when options that reallocate carriageway or other space (e.g. verge) have been investigated and rejected as unworkable.
- 6.32 When the provision for active travel modes is immediately adjacent to the trafficked carriageway the geometrical design parameters for Active Travel will act as limits (e.g. minimum radii, visibility splays), but where the highway parameters are more generous they should be used.
- 6.33 Parallel or more direct routes for walking and cycling shall be provided where the carriageway design cannot meet the standards for Active Travel Links. This is to avoid the carriageway dictating the gradients for walking and cycling

7 General Requirements for Place & Movement

- 7.1 The following table shows typical options for the appropriate provision for cyclists for new highways and within the new and existing highway network for each of the P&M categories.
- 7.2 These are derived from consideration of the hierarchy of provision, from likely traffic flows and speeds.
- 7.3 Selection of provisions outside of those shown within each category are likely to lead to compromises requiring departures from standards and, as such the Scheme Promoter should request a review from a Design Review Panel.

Category	Typical Cycling Provision	
<p>P1/M3 Major A road or Primary Road connecting two large urban settlements</p>	<p>Recommended Standard</p>	<p>Protected segregated cycle track Protected Shared Use</p>
<p>P1/M3 Major A road or Primary Road connecting two large urban settlements</p>	<p>Acceptable Standard</p>	<p>Protected Shared Use (Urban where pedestrian flows will be low)</p>
<p>P1/M3 Major A road or Primary Road connecting two large urban settlements</p>	<ul style="list-style-type: none"> • Direction Signage • Cycle priority at side roads (main road speed limit no more than 30mph) • Unlit except at junctions 	
<p>P2/M3 Main Connector linking a strategic road to a settlement (predominantly A roads)</p>	<p>Recommended Standard</p>	<p>Protected segregated cycle track Protected Shared Use</p>
<p>P2/M3 Main Connector linking a strategic road to a settlement (predominantly A roads)</p>	<p>Acceptable Standard</p>	<p>Protected Shared Use (where pedestrian flows will be low)</p>
<p>P2/M3 Main Connector linking a strategic road to a settlement (predominantly A roads)</p>	<ul style="list-style-type: none"> • Cycle priority at side roads (up to 40mph main road speed limit) • Direction Signage • Bus stop bypasses or bus stop boarders • Part Night Lighting 	

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<p>P3/M3 An urban interchange between two or more modes of transport</p>	<ul style="list-style-type: none"> • On-highway cycling • Highway, cycleway and crossing facilities • Shelter • Changing facilities, showers, lockers • Traveller information (routing, weather, docking station location etc.) • Direction Signage • Mobile device charging • Secure storage / parking sufficient for both interchange users and those needing parking for other local facilities. • Depot space for cargo bikes • Full Night Lighting
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<p>P1/M2 Inter-urban road excluding the SRN and MRN network connecting two settlements within a rural setting</p>	<p>Recommended Standard</p>	<ul style="list-style-type: none"> • Protected segregated cycle track • Protected Shared Use
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<p>P1/M2 Inter-urban road excluding the SRN and MRN network connecting two settlements within a rural setting</p>	<p>Acceptable Standard</p>	<ul style="list-style-type: none"> • Protected Shared Use
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<p>P1/M2 Inter-urban road excluding the SRN and MRN network connecting two settlements within a rural setting</p>	<ul style="list-style-type: none"> • Cycle priority at side roads (up to 40mph main road speed limit) • Direction Signage • Unlit
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<p>P2/M2 Multifunctional inner urban/suburban roads with bus routes, connecting different parts of an urban settlement and non-residential access road including to and within industrial estates.</p>	<p>Recommended Standard</p>	<ul style="list-style-type: none"> • Protected segregated cycle track • Protected segregated Shared Use • Stepped Cycle Track
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<p style="text-align: center;">P2/M2</p> <p>Multifunctional inner urban/suburban roads with bus routes, connecting different parts of an urban settlement and non-residential access road including to and within industrial estates.</p>	<p>Acceptable Standard</p>	<ul style="list-style-type: none"> • Light segregation (or cycle lanes only within bus lanes) for existing highways with constrained widths • On-street cycling for all purpose highways designed to achieve 85th percentile speeds of 22mph or lower and if parking is controlled
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<p style="text-align: center;">P2/M2</p> <p>Multifunctional inner urban/suburban roads with bus routes, connecting different parts of an urban settlement and non-residential access road including to and within industrial estates.</p>	<ul style="list-style-type: none"> • Bus stop bypasses or bus stop boarders • Direction Signage • Cycle priority at side roads (up to 40mph main road speed limit) • Part Night Lighting, except Full Night Lighting for stepped cycle tracks
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<p style="text-align: center;">P3/M2</p> <p>Inner urban road e.g. high street, local shopping parades</p>	<p>Recommended Standard</p>	<ul style="list-style-type: none"> • Protected segregated cycle track • Stepped Cycle Track • On-street cycling for all purpose highways designed to achieve 85th percentile speeds of 22mph or lower and if parking is controlled
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<p style="text-align: center;">P3/M2</p> <p>Inner urban road e.g. high street, local shopping parades</p>	<p>Acceptable Standard</p>	<ul style="list-style-type: none"> • Light segregation (or cycle lanes only within bus lanes) for existing highways with constrained widths • Contraflow cycle lanes
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<p style="text-align: center;">P3/M2</p> <p>Inner urban road e.g. high street, local shopping parades</p>	<ul style="list-style-type: none"> • Cycle priority at side roads. • Bus stop bypasses or bus stop boarders • Wayfinding signage • Cycle Parking • Bike Hire • Full Night Lighting
<p style="text-align: center;">P1/M1</p> <p>Minor road within rural setting</p>	<ul style="list-style-type: none"> • On-Road cycling • Unlit

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<p>P2/M1</p> <p>Residential streets identified as Active and Sustainable Travel Links (ATLs & STLs)</p>	<p>Recommended Standard</p>	<ul style="list-style-type: none"> • On-street cycling for new highways by street design • Segregated provision for ATLs & STLs • Protected from busway within STLs
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<p>P2/M1</p> <p>Residential streets identified as Active and Sustainable Travel Links (ATLs & STLs)</p>	<p>Acceptable Standard</p>	<ul style="list-style-type: none"> • Traffic calming to achieve 85th percentile speeds of 22mph or lower to enable on-street cycling • Shared facilities for ATLs & STLs • Contraflow cycle lanes
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<p>P2/M1</p> <p>Residential streets identified as Active and Sustainable Travel Links (ATLs & STLs)</p>	<ul style="list-style-type: none"> • Cycle Streets in urban areas • Part Night Lighting • Wayfinding signage • Cycle parking • Places to stop and rest 	
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<p>P3/M1</p> <p>Inner urban road or square at the core of a settlement</p> <p>Shared Space Residential Street initiatives</p>	<p>Recommended Standard</p>	<ul style="list-style-type: none"> • On-street cycling for new highways by street design
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<p>P3/M1</p> <p>Inner urban road or square at the core of a settlement</p> <p>Shared Space Residential Street initiatives</p>	<p>Acceptable Standard</p>	<ul style="list-style-type: none"> • Traffic calming to achieve 85th percentile speeds of 22mph or lower to enable on-street cycling • Contraflow cycle lanes
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<p>P3/M1</p> <p>Inner urban road or square at the core of a settlement</p> <p>Shared Space Residential Street initiatives</p>	<ul style="list-style-type: none"> • Wayfinding signage • Cycle Parking • Places to stop & rest • Bike Hire • Depot space for cargo bikes 	
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8 Geometric Design Requirements for Cycling

- 8.1 The following table summarises the geometric parameters for the provision of cycling facilities, which are predominantly derived from LTN 1/20, which includes the detailed supporting rationale.
- 8.2 The geometric parameters for cycling shall (except where minimum values of the corresponding highway parameters for the carriageway are more generous) dictate the carriageway design standards for horizontal radii, vertical curves, Stopping Sight Distances, visibility splays and longitudinal gradients where cycling is expected to be accommodated on carriageway or where the cycling facilities are contiguous with the carriageway.
- 8.3 The design parameters for Active Travel Links shall be applied to facilities shared with pedestrians.

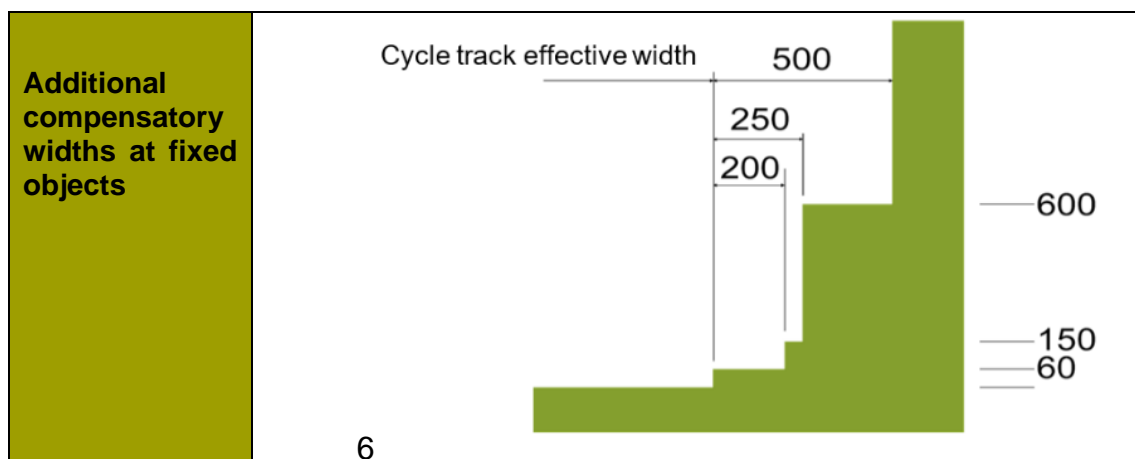
Geometric Design Parameters

Minimum effective widths for Cycling

Direction ²	Peak hour cycle flow ³	Recommended width ¹	Acceptable limit width at constraints ⁴	Absolute limit
1 way	<200	2m	1.5m	N/A
1 way	200-800	2.2m	2m	N/A
1 way	>800	2.5m	2m	N/A
2 way	<300	3m	2m	N/A
2 way	300-1,000	3m	2.5m	N/A
2 way	>1,000	4m	3m	N/A

Notes:

1. The presence of gullies, kerbs, walls and street furniture prevent the use of the full width of a cycle lane or track. The full width of the cycle lane or track shall therefore equate to *'the effective width + any additional compensatory width'* as set out below.
2. One-way flow for one-way cycle route. Two-way flow for two-way cycle route.
3. Based on a saturation flow of 1 cyclist per second per metre of space. For user comfort a lower density is generally desirable.
4. Provision narrower than the Recommended width should be the exception, minimised and only used on sections up to 100m long.



Provision for Utilities	Buried Utilities shall not be laid longitudinally underneath unsealed or sealed surfacing and the ATL shall be wide enough to accommodate access for safe utility maintenance without closure of the ATL.
Planning for Temporary Works	A minimum clear width of 3m shall be required for walking and cycling during periods of maintenance of any form.

Minimum margin width between the cycle lane and the carriageway for light segregation features	0.4m
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Minimum Separation between carriageway and cycle track (excluding allowance for any street furniture or tree planting)

Speed Limit	Recommended	Acceptable
30mph	0.5m	0m
40mph	1m	0.5m
50mph	2m	1.5m
60mph	2.5m	2m
70mph	3.5m	3m

Buffer strip width alongside parked vehicles

	Recommended	Acceptable
General	1m	0.5m
Cycle Track and Blue Badge Parking	2m	2m
Cycle Lane and Blue Badge Parking	1m	0.5m
Taper	1:10	Approach 1:10 Exit 1:5

Min forward visibility

	Recommended	Acceptable
Gradient ≤3%	47m	31m
Gradient >3% uphill	31m	17m

Visibility Splay X-Distance

Recommended	4.5m
Acceptable	2.4m

Minimum Link Radii

	Recommended	Acceptable
Gradient ≤3%	25m	15m
Gradient >3% downhill	40m	25m

Minimum Radius at Junctions	4m
Recommended Longitudinal Gradients	1% to 2%

Maximum Longitudinal Gradient

Gradient	Maximum Length Acceptable Limit	Maximum Length Absolute Limit: Departure from Standards
2.0%	150m	250m
2.5%	100m	160m
3.0%	80m	110m
3.5%	60m	80m
4.0%	50m	65m
4.5%	40m	50m
5.0%	N/A	40m
6.0%	N/A	25m
7.0%	N/A	20m
7.5%	N/A	18m

Crossfall Gradients

	Maximum	Minimum
Recommended	2% (1:50)	1% (1:100)
Acceptable	2.5% (1:40)	1% (1:100)

Absolute Limits: Departure from Standards	Steeper gradients will only be considered where existing ground levels make it impractical to achieve the acceptable limits specified. If shallower gradients are used drainage must be considered
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Minimum Sag K Value

	Recommended	Acceptable
Gradient ≤3%	5%	3.5%
Gradient downhill >3%	7.5%	5%

Minimum Crest K Value	6.0
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Vertical Clearances

Minimum	2.7m
At obstruction up to 23m long	2.4 m
Absolute Limits: Departure from Standards	2.3m Use warning sign diagram 530 and yellow / black chevron diagram 530.2 across top of subway entrance

9 Lane widths for on-carriageway cycling

- 9.1 The prescribed widths of P&M category P3/M2, P1/M1, P2/M1, P3/M1 and P2/M2 L2 carriageways have been selected for their suitability for on-street cycling.
- 9.2 The following traffic lane widths are applicable when improving conditions for cycling on existing roads and streets.

Feature	Recommended	Acceptable Limit	Notes
Traffic lane (cars only, speed limit 20/30mph)	3m	2.75m	2.5m only at offside queuing lanes where there is an adjacent flared lane
Traffic lane (bus route or >8% HGVs, or speed limit 40mph)	3.25m	3m	Lane widths of between 3.2m and 3.9m are not acceptable for cycling in mixed traffic.

Feature	Recommended	Acceptable Limit	Notes
2-way traffic lane (no centre line) between advisory cycle lanes - subject to Design Review Panel	5.5m	4m	4m width only where AADT flow <4000 vehicles** and/or peak hour <500 vehicles with minimal HGV/Bus traffic.

10 LTP4 Compliance

- 10.1 The suitability of cycling and the concept of cycling provision should already have been LTP4 Compliance tested at the Site Validation and Master Plan stages.
- 10.2 Cycling provision shall also be LTP4 Compliance tested at the outline planning application stage, if appropriate and at the full planning application stage.

LTP4 Compliance Test: Outline Planning Application

The proposed network strategy and accompanying narrative demonstrates that the strategy will support LTP4 Policy 1: Transport User Hierarchy giving precedence to the needs of those walking and cycling over motor vehicles and that it can be developed into a proposed network that will be safe and accessible to all.

The proposals at 1:2500 scale show that key destinations are close to where people live with an effective network for active travel.

Cycle routes within the site will be able to achieve a Cycling Level of Service (CLoS) score of at least 70% and no critical fails.

LTP4 Compliance Test: Full Planning Application

The proposed network supports LTP4 Policy 1: Transport User Hierarchy giving precedence to the needs of those walking and cycling over motor vehicles.

The proposed provision for cycling will be safe and accessible to all and meets the five core design principles of:

- Safety (including perception of safety)
- Directness
- Coherence
- Comfort

- Attractiveness

The plans and accompanying narrative demonstrate compliance with this guidance and as assessed by the first Healthy Herts test.

Cycle routes within the site achieve a Cycling Level of Service (CLOs) score of at least 70% and no critical fails.

Cycle routes provide a consistent CLOs (i.e. not less than 5% below the average % score) along their whole length.

Junctions feature no cycle turning movements that are red scored under the Junction Assessment Tool (JAT).

LTP4 Compliance Test: Approvals

The detailed proposals deliver the strategy agreed at the Full Planning Stage Gateway.

The design is compliant with this guidance and any departures from Standards have been agreed.

The design passes the second Healthy Herts test.

11 Legal processes

11.1 LTN 1/20 Appendix C provides guidance on legal issues and definitions, and on processes to create cycle tracks in new developments.

11.2 Traffic Regulation Orders (TROs) or other legal processes may be needed as part of the provision of cycling facilities.

11.3 For **on-carriageway facilities**:

- **Advisory Lanes** – no legal processes are required to create an advisory cycle lane. However, parking restrictions to keep the lane clear of parked vehicles should be considered.
- **Mandatory Lanes** – a TRO is required to restrict use to pedal cycles. TSRGD 2016 removes the requirement for a TRO with 24hr Mandatory Lane. The TRO would not restrict loading and in locations where this may be a problem, segregation or a loading ban should be considered. It may be necessary to provide alternative loading arrangements.

- **Contraflow** – A TRO is required to create a one-way carriageway. The TRO will need to exempt cyclists travelling on the carriageway or be applicable only to motor vehicles. This may mean an existing TRO would need to be modified.

11.4 For **off carriageway, but set alongside**:

- Section 65 of the Highways Act 1980 provides HCC with powers to create new cycle tracks in the highway verge without any special legal procedures, but a conversion report shall be provided for the signature of a HCC authorised officer. The conversion report should document the consultation process undertaken along with consideration of Equality Impacts and make it clear that the cycle track includes a right-of-way on foot so that pedestrians are able to use the track.
- Where an existing footway needs to be modified to accommodate the cycle track the process becomes more complex, the table below outlines the requirements for various scenarios.

Location of new Cycle Track & Type of facility

Powers used from Highway Act 1980	Section 66	Section 65
Verge (shared)		Create Cycle Track
Verge (segregated shared)	Create Footway	Create Cycle Track
Existing Footway (shared)	Remove Footway	Create Cycle Track
Existing Footway (segregated shared)	Remove Footway and create in new location as appropriate	Create Cycle Track

- 11.5 Creating a cycle track away from a road corridor can be a complex process sometimes requiring agreement from third party landowners. The table below outlines some of the possible options.

Location	Option
Bridleways, BOATs and Restricted Byways	Can be used by cyclists

Location	Option
Footpaths	Cycle Tracks Act 1984 Section 3 - Cycle Tracks Order to convert footpath (only up to 95% of width to retain Public Right of Way status on the definitive map). This option can be difficult and costly to pursue as it will require approval from the Secretary of State, and any objections would need to be resolved at a Public Inquiry.
Private Land	Landowner dedicates as highway
Private Land	Permissive agreement with landowner
Private Land	Purchase land

- 11.6 The **Equalities Act** places a number of duties on public authorities. Among these duties is the requirement to assess whether changes will adversely affect those with Protected Characteristics under the Act.
- 11.7 Consequently existing footway conversion could be seen as adversely affecting groups with protected characteristics and therefore an EQIA is an important process in recording the consultation and decision-making process.