



Cycle Tramway Interface Guidance


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LRG 1.0 Tramway Principles and Guidance (TPG) (LRSSB) LRG 2.0 Non-Motorised Tramway Crossing Guidance Traffic Signs Regulations and General Directions, 2016 (DfT etc) LTN 1/20 Cycle Infrastructure Design, July 2020 (DfT) West Midlands Design Guide, 2019 (TfWM)					
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	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	2 of 12

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CYCLE TRAMWAY INTERFACE GUIDANCE

CONTENTS

1. Introduction
2. Scope
3. Design Principles
4. Types of Interface
5. Other Considerations

Tables

- | | |
|---------|---------------|
| Table A | Terms |
| Table B | Abbreviations |

Figures

- | | |
|------------|---|
| Figure 3.1 | Example Cycle Let Up |
| Figure 4.1 | Tramway Crossing |
| Figure 4.2 | Concept of Crossing Arrangements of Road / Cycle Track / Footway / Tram Track |
| Figure 4.3 | Cycle Bypass at Tramstop |
| Figure 5.1 | Cycle Skid Risk Signage |
| Figure 5.2 | Tram Track Information Board |

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	3 of 12

TERMS AND ABBREVIATIONS

Table A – Terms

Term	Definition
Cycleway Let Up	A design to provide a safe route for a cyclist to leave a section of highway shared with trams before, for example, a narrow section of road or tramstop.
Line of Sight	Operating mode where a tram should be able to stop before a reasonably visible stationary obstruction ahead, from the intended speed of operation using the service brake.
Transport and Works Act Order (or Transport and Works (Scotland) Act Order (TWAO))	Statutory process for attaining Powers to build operate and maintain a tramway / Light Rail system.

Table B – Abbreviations

Term	Definition
DfT	Department for Transport
LRSSB	Light Rail Safety Standards Board
LTN	Local Transport Note
TfWM	Transport for West Midlands
TPG	Tramway Principles and Guidance
TWAO	Transport and Works Act Order

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	4 of 12

1. Introduction

- 1.1. This guidance supports the high level principles set out in LRG 1.0 Tramway Principles and Guidance (TPG) published by the Light Rail Safety Standards Board (LRSSB).
- 1.2. This document provides high level guidance in relation to the interface between cycles and the tramway for those delegated this responsibility in relation to UK tramways (Light Rail systems) based on 'line-of-sight' operations only. As with all guidance, this document is not prescriptive and is intended to give advice not to set a mandatory industry standard. Much of this guidance is based on the experience gained from existing UK Tramways and from published documents from other tramways worldwide.
- 1.3. This guidance is not intended to be applied retrospectively to existing tramways. However, owners and operators should consider and assess any implementation of this guidance and / or any subsequent revision, to ensure continual improvement, so far as is reasonably practicable such as when undertaking track renewal schemes.

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	5 of 12

2. Scope

- 2.1. Cycle usage is increasing in towns and cities as part of a move towards more active travel. It is therefore important that tramways are designed in such a way to safely integrate cycling for all ages and abilities as part of an holistic transport scheme promoted by the local transport authorities and central government policy.
- 2.2. When developing a new tramway scheme, *reserving sufficient land to enable an optimised interface between cycles and tramways should be a significant factor in its design. Cycle provision along the tramway route should be considered during scheme development, and from early design of the tramway prior to any application for a Transport and Works Act Order (TWAO)*¹. Any additional land and Powers required to safely accommodate cycles can then be sought within the TWAO.
- 2.3. When designing a tramway, cycles should be considered as non-motorised vehicles rather than pedestrians with a bike.
- 2.4. Various guidance already exists both nationally and at regional transport level with regards to the design of cycle provision. General guidance on cycle issues is found in DfT Local Transport Note LTN 1/20: Cycle Infrastructure Design (July 2020)².
- 2.5. In addition, Transport for West Midlands (TfWM) has produced extensive guidance on cycling and its integration into the public realm: West Midlands Cycle Design Guidance 2019. Appendix C of this document is particularly relevant for tramways.³
- 2.6. The purpose of this LRSSB guidance document is to supplement existing guidance in respect of cycle interaction with the tramway and it should be read in conjunction with the general guidance provided in LRG 1.0 TPG and LRG 2.0 Non-Motorised Tramway Crossing Guidance.

1 The means by which statutory Powers to build, operate and maintain a tramway are provided.

2 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951074/cycle-infrastructure-design-ltn-1-20.pdf

3 <https://corporate.tfwm.org.uk/media/2713/2019-07-15-wm-guidance-wcovers.pdf>

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	6 of 12

3. Design Principles

- 3.1. Early tramway design should aim to segregate cycles from trams as far as practicable to minimise interfaces between tramways and cycles. Careful design is also required in the scenario where cycleways are added to an existing tramway system. Cycle routes can be achieved in a number of ways depending on space and powers available.
- 3.2. Minimising the interaction between cycles and trams can be achieved through segregation of the tramway from the highway, or provision of segregated cycleways remote from highway and tramway. However, cycle routes in whichever form should be as direct as possible and not take users on an indirect route that is likely to result in the facility not being used, and cyclists potentially choosing to stay on the tramway and being exposed to the risk the facility is trying to mitigate.
- 3.3. Early liaison with the relevant Highway Authority (or Authorities) is advised at the start of the development of any scheme to ensure that, where applicable, the individual Highway Authority specify any policies they may have and can provide any guidance or information including any relevant stakeholder groups.
- 3.4. Local cycling and active travel groups may also provide useful information in relation to local cycle routes and relative demand. This may include finding the most practicable effective cycle route solutions for the tramway route under development.
- 3.5. A hierarchy of provision should be agreed with relevant stakeholders at an early stage in the design process. Such a hierarchy could include segregated cycleways, cycleways shared with pedestrians and shared carriageways etc.
- 3.6. Cycle measures should not be limited to just addressing problems associated with the interface between the tramway and cycling at a specific location. A holistic 'continuous route' approach should be taken to ensure that any cycling provision proposed integrates fully with new and existing cycling provision within the corridor as a whole, rather than a series of disjointed measures directly related to the tramway.
- 3.7. Cycle provision including alternative routes should follow the continuous route concept if practicable. With careful design of cycle infrastructure it is possible to create a route where the cyclist is forced to make a conscious decision to ignore designated cycle routes provided. An example of a good practice solution of a 'cycleway let up' is shown in Figure 3.1 (Source: DfT Local Transport Note LTN 1/20: Cycle Infrastructure Design (July 2020)).

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	7 of 12

Figure 3.1: Example Cycle Let Up



- 3.8. If cycles and trams have no option but to share the same highway alignment, then there should be appropriate facilities for cycles to make safe crossing movements across the rails and to traverse junctions, tramstops and pedestrians crossings.
- 3.9. Crossing points should have adequate visibility of approaching trams, and be provided with signage, surface markings, crossing controls, lighting etc. as appropriate to the specific requirements of the location.
- 3.10. The minimum desirable crossing angle for a cycle over a track should be 60 degrees as experience from tramway systems has shown that falls from cycles due to greasy rail head or being trapped in the groove significantly increase at lower angles. Refer to the next section for further information.
- 3.11. Any cycle route that is provided or actively promoted to avoid cycles crossing tram tracks at unacceptable angles should be intuitive. Ideally it should not involve a significant increase in cycle journey time or any sudden turns or movements, and should require minimal sign posting. The use of complicated 'map' type signage should be avoided, and instead there should be a reliance on providing appropriate infrastructure to clearly denote the cycle route. The use of kerbing and coloured surfacing can be introduced to define a safe route.
- 3.12. Depending on visibility and speeds of approach on both the tramway and cycleway, it may be necessary to provide chicane barriers on the cycleway at the crossing point to slow cyclists and ensure that they turn to view approaching trams. See LRG 2.0 for further information.
- 3.13. There are a number of tramway systems around the world that have experimented with groove infills to prevent bicycle wheels becoming trapped. However, no proprietary system has yet been considered successful or safe for use on tramways.

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	8 of 12

4. Types of Interface

Track Crossing Points

- 4.1. Where it is necessary to provide a facility for cycles to cross tram tracks, intersections should be, as far as possible, at right angles to the tracks. Where there is no opportunity to provide a crossing angle that is greater than 60° alternative crossing layouts and other measures that mitigate the risks faced by cyclists when crossing at shallow angles should be considered to ensure the safety of cyclists.
- 4.2. If there is no reasonable design solution to avoiding crossing at shallow angles, consideration should be given to coloured lanes and / or patches providing sufficient contrast with surrounding paving to increase visibility in poor weather and poor light conditions, as illustrated in Figure 4.1 below (Source: West Midlands Cycle Design Guidance 2019 (TfWM)).

Figure 4.1: Tramway Crossing



Parallel Street Running

- 4.3. Where practicable, a cycle route adjacent to the tramway should be wholly outside of the tramway path with clear demarcation to guide cyclists from straying into the tramway path. Utilising DfT cycle design standards should provide a width that ensures cyclists keep within the cycle space provided and enable a tram to pass a cyclist within a safe distance.
- 4.4. In constrained environments where specific cycle provision cannot be accommodated (for example, city centres), the clearance between kerb and the nearest rail should be an absolute minimum of 1000 mm. Where practicable, any obstacles must be removed from that area, for example using kerb drainage rather than in-carriageway drainage.
- 4.5. The above minimum clearance is intended to provide a clear route for cyclists and combined with the removal of obstacles from that area, reduces the likelihood of sudden movements by cyclists

Issue	1
Revision	0
Date	26/11/2021
Page	9 of 12

towards the tramway. This minimum clearance distance is not intended to provide clearances for trams to pass cyclists.

- 4.6. Additional provision may need to be made for cycles seeking to turn right when crossing in front or behind a tram, in order to provide a facility where they avoid crossing the tracks at shallow angles.
- 4.7. Whilst wider cycle lanes are beneficial, it should be noted that there is a risk that they could lead to unauthorised parking within the lane that obstructs the cycle provision and may require a cyclist to cycle into the tramway, (as well as potentially obstructing the passage of a tram). To mitigate this, deterrent measures could be put in place in consultation with the Local Highway Authority, for example, through appropriate Traffic Regulation Orders. This is also something to consider when designing the scheme to ensure that appropriate powers (and land) is sought within any TWAO.

Good Practice Solutions

- 4.8. Good practice example solutions have been provided below for consideration by any designer for various common cycle / tramway interface scenarios.
- 4.9. Figure 4.2 below illustrates an arrangement where a safe cycle path is identified through the junction. In designing such an arrangement, consideration should be given to separate cycle traffic signals in preference to toucans if practicable (Source: West Midlands Cycle Design Guidance 2019 (TfWM)).

Figure 4.2 Concept of Crossing Arrangements of Road / Cycle Track / Footway / Tram Track



Tramstop Bypass Lanes

- 4.10. Tramstop bypass lanes can be considered. However, whilst the track interface is avoided by installing the bypass lane (for example where there are side platforms), there needs to be appropriate mitigation of any potential safety risks associated with the additional pedestrian / cycle

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	10 of 12

interface this may introduce. Therefore, this needs to be carefully considered by designers. Figure 4.3 below provides an illustration of such a facility (Source: West Midlands Cycle Design Guidance 2019 (TfWM)).

Figure 4.3 Cycle Bypass at Tramstop



- 4.11. All reasonable design effort should be given to providing a continuous cycle lane. Where there are discontinuities in cycle lanes due to the presence of tramstops, experience from UK tramways shows that there is likely to be misuse or misunderstanding by cyclists who following their desire lines even where this leads them to crossing rails at shallow angles.
- 4.12. Particular care should be taken to avoid pinch points in the cycle lanes.
- 4.13. On long, steep routes and on the approach to tramstops it is better to divert cyclists off the carriageway and give safe alternative provision.

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	11 of 12

5. Other Considerations

- 5.1. The impact of rail head friction and skid resistance of sealants adjacent to the rail must be considered in order to reduce the chances of cycle wheels slipping on the rails.
- 5.2. Good quality lighting needs to be provided to allow the cycleways to be used by all users at all times of day and night.
- 5.3. Any cycle parking should be provided as close as possible to the tramstop platform as possible, with good lighting and passing surveillance. The cycle parking also needs to provide facilities for non-standard bikes (i.e. tricycles, bikes with panniers etc). Level access should be provided where possible.
- 5.4. The inclusion of a “cycle skid risk” sign should be considered along tramways as shown below in Figure 5.1. If not already obtained, authorisation for the use of such signage will need to be acquired, since this is not a sign prescribed in the Traffic Signs Regulations and General Directions 2016⁴.

Figure 5.1 – Cycle Skid Risk Signage



- 5.5. Some UK networks already use the above signage, however the accompanying information board can vary as shown in Figure 5.2 (below) to specify ‘Tram Tracks’. If not already obtained, authorisation for the use of such signage will need to be acquired, since this is not a sign prescribed in the Traffic Signs Regulations and General Directions 2016.

4

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/916837/TSRGD_2016_circular_document.pdf

	CYCLE TRAMWAY INTERFACE GUIDANCE	LRSSB - LRG - 19.0	
		Issue	1
		Revision	0
		Date	26/11/2021
		Page	12 of 12

Figure 5.2 – Tram Track Information Board



- 5.6. The approach to the design of cycle measures needs to be holistic. As stated above in Section 3, the Local Highway Authority may have policies, information and guidance to provide any promoter. In addition, local cycling groups may also provide useful information including potential user levels in addition to feedback on the most effective cycle route solutions for the tramway route under development.