New Cycle Route Quality Criteria Accompanying technical note (v0.0)

1. Introduction

This technical note sets out the New Cycle Route Quality Criteria, describing expected levels of provision on all proposed cycle routes in London. The Quality Criteria are based on London Cycling Design Standards best practice guidance, focusing on whether conditions are appropriate for routes to be designed to mix people cycling with motor traffic, as well as recommending an appropriate level of provision for routes with protected space for cycling.

The Quality Criteria will be reviewed by TfL Sponsors for all cycle routes that are expected to be part of the signed cycle network. All proposals will continue to go through due TfL approval processes, including the application of the Healthy Streets Check for Designers tool.

By filling out the accompanying **New Cycle Route Quality Criteria tool** spreadsheet, users will be informed whether existing conditions and/or proposals are expected to be appropriate for routes to be designed to mix people cycling with motor traffic. Where the conditions warrant a fully separated track or cycle lane, Sponsors can also use the tool to highlight whether the proposed design treatment for the link is expected to be appropriate for the context. This technical note provides details on the Quality Criteria and describes the thresholds that feed in to the automation process embedded within the spreadsheet tool. The full list of Quality Criteria thresholds is set out in section 4.

2. Using the Quality Criteria tool

The Quality Criteria tool can be used throughout the lifecycle of a cycle route project before each Stage Gate:
- To assist in the selection of a preferred route alignment and exploration of potential design forms in Outcome Definition alongside other factors including existing conditions, modal and network requirements and stakeholder input
- At Feasibility Design / Option Selection to help identify the range of route design forms and the selection of a single preferred option
- At the Concept Design stage to ensure the design is fit for purpose

Within TfL the assessment will be undertaken by the Project Sponsor, with support from relevant colleagues where necessary. Data is to be input within the accompanying **New Cycle Route Quality Criteria tool** which is an Excel spreadsheet that automatically generates a corresponding design recommendation.

A proposed cycle route should be divided into links which comprise a consistent street character. Where there are significant changes in the quality of provision for cycling being offered, such as if there is a long stretch of on-street parking that adversely impacts on cycling, this should be considered as a separate link location. Discretion should be used when dividing up a route in this manner so that a balance is achieved in terms of understanding the nature of the route as a whole, as well as particular pinch-point issues. These links should then be assessed using the tool to give an indication of the level of provision for cycling across the full length of the link (see sections 3 and 4).

Main junctions should be reviewed as part of the link, with criteria 4 designed to cover the levels of provision expected for junctions. This tool does not provide a detailed assessment of junctions but flags up when a design proposal may not be delivering to a high standard as part of the 'Additional design considerations' and should be further evaluated as appropriate.

Data collection

In order to complete the assessment, the following data is required:
- Peak hour predicted motor vehicle flows. Where modelled flows are not available, existing motor vehicle flows should be used, with the peak identified using a 7am to 7pm count on a weekday.
- HGV flows based on the 12 hour average % of motor vehicle traffic, 7am to 7pm (defined as lorries and trucks over 3.5 tonnes with 3 or more axles). Where there are temporary construction sites that may skew the data, a proportion of the HGV traffic attributable to a particular site should be understood, so that the long term flow trend is used as the basis for identifying the HGV proportion of traffic.
- Classified turning counts at major junctions on the route.
- 85th percentile speed data for a typical weekday (where multiple locations are collected within a section of road, the highest speed value should be used).
- Carriageway dimensions between the centre point and kerb edge for the majority of the route, as well as at the most significant pinch-points where appropriate.

Spot checks or site observations may be used as required in the absence of formally recorded data.

3. Criteria Review Process Overview

The Criteria Review Process is automated within the spreadsheet tool and explained in detail within this technical note, so that users of the tool can understand more about the thresholds that have been set. The process identifies whether conditions are expected to be appropriate for a design to mix people cycling with motor traffic. This process is structured such that schemes should be aspiring for a high target level of provision across a range of criteria, and are not just meeting a minimum required quality level.

Two levels of provision have been defined with target 'green' levels set as the recommended high level of provision to aim for, while a required 'grey' level sets the minimum benchmark. Where a section of the route is identified as not meeting the target 'green' level of provision,

a cross comparison of other criteria is made by the tool to ascertain whether a lower level of provision for one criteria can be considered appropriate in that instance.

Not all target levels need to be met for a scheme to be expected to be appropriate for people cycling to mix with general traffic; however the framework requires particular target level combinations to be reached for a layout to be considered appropriate. This draws on London Cycling Design Standards advice to make these associations.

Three scenarios are used by the tool in situations where not all of the criteria achieve the target green level of provision, to determine if conditions will likely still be appropriate for cycling to be mixed with general traffic – as shown in the table below. Where the majority of a route is failing to achieve the target level of provision and several links have criteria that do not meet a target level of provision, the design issues should be raised with the Lead Sponsor for further discussion with the project team.

The tool applies the Criteria Review Process on a link by link basis once all data inputs have been completed. Outputs of the tool cover whether existing conditions are expected to be suitable for cyclists to be mixed with motor traffic, a follow on recommended action based on the design approach being proposed, and additional design considerations based on any dedicated facilities being proposed for cycling.

A scheme should only progress to Detailed Design following conversations with the Lead Sponsor and careful consideration of the safety implications for cycling.

Scenarios which are considered as acceptable by the tool	Criteria 1 Flows	Criteria 2 Speed	Criteria 3 Width	Criteria 4 Turning risk	Criteria 5 Kerbside activity	Criteria 6 HGVs
Scenario 1	Falls below the target green level	✓✓	At least 2 out of 3 criteria achieve the target green level of provision			Proportion of HGVs* is less than 5%**
Scenario 2	✓✓	Falls below the target green level	At least 3 out of 4 criteria achieve the target green level of provision			
Scenario 3	✓✓	✓✓	At least 2 out of 4 criteria achieve the target green level of provision			

✓✓ denotes that the target green level has been attained for a section of the route

Heavy Goods Vehicle (HGV) – defined as lorries and trucks over 3.5 tonnes with 3 or more axles

*** Based on the 12 hour average % of motor vehicle traffic, 7am to 7pm*

4. Full List of Quality Criteria

All six Quality Criteria are interrelated and are considered in the round when assessing the existing conditions or a scheme proposal. Design considerations for each criterion provide details on how the tool cross-references different criteria and identifies how it responds to conditions that are not directly covered by the target ('green') and required ('grey') thresholds.

All design teams should aspire to deliver a high level of provision for cycling by aligning proposals with the target 'green' level of provision where possible.

✔✔ = target level of provision for new cycle routes

✔ = required level of provision for new cycle routes

Criteria 1: The degree of separation for people cycling is appropriate for the total volume of two-way motorised traffic

✔✔ The design of new cycle routes should only mix people cycling with motorised traffic where there are fewer than 500 motor vehicles per hour (vph) at peak times, and preferably fewer than 200vph.

A minimum light segregated cycle lane should be provided where there are 500-1000vph.

✔ The design of new routes will fully separate people cycling from two-way motorised traffic where there are more than 1000 motor vehicles per hour at peak (vph).

Design considerations

The degree of separation for cycling should be informed by predicted two-way motor traffic flows; see overleaf: *Reference table - Degrees of separation* for the full list of design options.

Where the design intent is for people cycling to be mixed with motorised traffic, designers are encouraged to look at ways of incorporating measures that reduce traffic flows to below 200vph. The 500vph level should be considered a preferred upper limit for people cycling to be mixed with motorised traffic and would generally not be desirable where the majority of the route has flows in excess of this level.

Where a cycle lane is proposed, designers are encouraged to incorporate light segregation features to protect the lane.

The proportion of HGVs* should be below 5%** for motor vehicle flows between 500-1000vph, for no dedicated cycle lanes to be considered as a potential option. Note that this arrangement would not meet the target high level of provision and the Criteria Review Process uses other criteria to ascertain whether this approach would be acceptable.

Where a proposed cycle route crosses a busy road with motor vehicle flows of more than 1000vph, people cycling should be separated in time via signals. Where the intersecting side road has flows of 1000vph or below, designers should refer to LCDS Figure 5.4 Cycle crossing options, to determine an appropriate type of crossing provision.

Reference table: Degrees of separation (from LCDS)

Increasing degree of separation →			
	A. Full separation (from motorised vehicles on links)	**Dedicated cycle track** **Stepped track** **Separated path** **Shared use area with 'suggested route' for cyclists** **Shared use footpath** **Shared use footway**	Cycling off-carriageway
	B. Dedicated cycle lanes	**Fully segregated lane** **Light segregated lane** **Mandatory cycle lane**	Cycling on-carriageway
	C. Shared lanes	**Shared bus/cycle lane** **Advisory cycle lane** **Cycle street**	
	D. Integration of users	**Mixed traffic** **Shared space**	

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** Based on the 12 hour average % of motor vehicle traffic, 7am to 7pm

Criteria 2: The speed of motorised traffic is appropriate for people cycling

✔✔ The design of new routes should only mix people cycling with motorised traffic where there is a 20mph speed limit and the existing 85th percentile speed is less than 25mph *or* measures should be put in place to reduce speeds where the existing 85th percentile speed is more than 25mph.

✔ The design of new routes will <u>not</u> mix people cycling with motorised traffic where there is a 30mph speed limit and the existing 85th percentile speed is more than 30mph, unless speed reduction measures are proposed.

Design considerations

Where the existing 85th percentile speed is more than 25mph in a 20mph limit or more than 30mph in a 30mph limit, and the proposal is to mix people cycling with motorised traffic, designers should justify what measures will be put in place to provide sufficient speed reduction measures.

Speed reduction measures may include: reducing the speed limit to 20mph; installing new infrastructure such as raised tables, raised side road entry treatments, cycle-friendly speed humps, cycle lanes that narrow general traffic lanes; and/or by removing the centreline.

Where a scheme is proposing a reduction in the speed limit from 30mph to 20mph, it can be assumed for the purposes of this assessment, that the future 85th percentile speed will be less than 25mph.

Criteria 3: An appropriate width for cycling is provided to suit the local context

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Where new routes are designed for people cycling to mix with motorised traffic or within a cycle lane, the width of the nearside general traffic lane and cycle lane should be 4.5m or more *or* 3.2m or less where two-way motor vehicle flows are lower than 500vph, and 85th percentile speeds less than 25mph.

Where new routes are designed for people cycling to be separated from other traffic, the width of the lane or track should be provided to a preferred minimum of 2.2m for one-way cycle lanes or tracks, and 3.0m for two-way cycle lanes or tracks.

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Where new routes are designed for people cycling to mix with motorised traffic, the width of the nearside general traffic lane will <u>not</u> be between more than 3.2m and less than 4.0m, where flows are higher than 500vph.

An absolute minimum of 1.5m for one-way cycle lanes or tracks, and 2.0m for two-way cycle lanes or tracks applies.

Design considerations

The width of the carriageway should be measured across a link of relatively consistent character and width. The nearside general traffic lane should be measured from the centreline, or road centre point where a centreline is not marked, to the kerb edge and include parking or loading bays where present. Where there is a particular pinch-point that is of concern, then it is at the assessors' discretion whether to include this as a separate location for analysis.

Designers should plan to provide width for predicted cycle flows, which can be ascertained using forecast models. Recommended widths for segregated one-way lanes/tracks based on the peak hour cycle flow are as follows: 1.5m for up to 200 cyclists per hour; 2.2m for 200-800 cyclists per hour; and 2.5m for more than 800 cyclists per hour. Recommended widths for segregated two-way lanes/tracks based on the peak hour cycle flow are as follows: 2.0m for up to 300 cyclists per hour; 3.0m for 300-1000 cyclists per hour; and 4.0m for more than 1000 cyclists per hour.

For a cycle lane or track that is proposed to be narrower than the target level, the designer needs to fully justify the design approach based on predicted cycle flows.

Where people cycling are encouraged to adopt the primary position within a general traffic lane with widths of 3.2m or less, vehicle flows should be lower than 500vph, and 85th percentile speeds less than 25mph.

Criteria 4: Collision risk between people cycling and turning motor vehicles is minimised

✔✔ At all priority junctions where motor vehicle flows are greater than 200vph on the side road, infrastructure measures should be provided to reduce the volume and/or speed of turning movements by motor vehicles.

At signal-controlled junctions where there is full separation on the two main cycle route approach arms, conflicting movements between cycle traffic and motor traffic should be separated with dedicated signals for cycles.

✔ At signal-controlled junctions, a cycle early release signal will be implemented where it is appropriate to do so.

Design considerations

Collision data should be cross-checked to understand the location and severity of collisions to assist in informing a design response. Designers should outline the mitigation measures that will be put in place to minimise interaction with motor vehicles that are turning.

Where appropriate, measures for priority junctions should look to include:
- Approaches that reduce the speed of turning vehicles, such as raised junctions, side road entry treatments and tight corner radii
- Ways to minimise motor vehicle turning movements through road closures, banned turns, or modal filters on the side road

The target level of intervention for signal-controlled junctions is to separate cycles in time with interventions such as hold-the-left signals or cycle gates included as appropriate on the cycle route, to separate cyclists where there is a known conflict issue. The expected level of intervention for signal-controlled junctions is for a cycle early release signal to be provided, but only where it is considered appropriate to do so, based on factors such as volume of turning movements and collision data.

Criteria 5: Kerbside activity has a minimal impact on people cycling

✔✔ Where there is kerbside parking and people cycling are mixed with motor traffic, 85th percentile speeds should be less than 25mph *or* the running lane should be at least 4.5m wide.

Where people cycling are in separate cycle lanes, they should be physically separated from kerbside activities with the lane width (including the buffer width where required) allowing for at least 1.0m clearance from parked motor vehicles*.

✔ People cycling on new routes will be able to comfortably pass kerbside activities with at least 1.0m clearance from stationary parked motor vehicles*.

Design considerations

As part of the assessment, designers should assume the worst case arrangement; i.e. when parking or loading bays are fully occupied. It is recommended to conduct an assessment of the cycling conditions at a pinch-point, so that the impact of reduced lane width adjacent to parking can be identified separate to other sections of the route where there may be no designated kerbside activity.

The criteria for kerbside activity are designed to consider the speed of motorised traffic to ensure that where there is kerbside parking and people cycling are mixed with motor traffic, 85th percentile speeds are less than 25mph. This is to ensure that people cycling can comfortably ride in the primary position as part of the flow of general traffic, 1.0m away from parked vehicles. Carriageway widths of 4.5m widths more is an additional situation which would allow for cyclists to have approximately 1.0m clearance between a stationary parked vehicle and an oncoming moving vehicle (based on an average parking bay width of 2.4m). It is assumed that this situation would allow for oncoming motor vehicles to not need to cross the carriageway centreline and overly impinge on the opposing lane. Where this is frequently the case, an additional note should be entered as part of the data capture process to highlight this issue.

Parking occupancy data should be used to inform the rationalisation of kerbside designations and justify any locations where parking or loading cannot be reduced. Designers should look at how timed restrictions can be incorporated to minimise the impact of parking and loading during peak cycling hours.

Taken from the central point of the cycle lane

Criteria 6: Interaction between HGVs and people cycling in mixed traffic is minimised along a link

✓✓ Where people cycling are to be mixed with motorised traffic flows of 200-500vph, the proportion of HGVs* should be less than 5%**.

Where people cycling are to be mixed with motorised traffic flows of less than 200vph, the proportion of HGVs* should be less than 10%**.

✓ Where the proportion of HGVs* is 5%** or more for any level of flow above 500vph, measures will be put in place to reduce HGV flows people *and/or* people cycling on new routes will be provided with at least a 4.5m nearside general traffic lane, bus lane, or cycle lane combined with the adjacent general traffic lane *or* provision will be made for people cycling to be fully separated from general traffic.

Design considerations

Where there are temporary construction sites that may skew the data, a proportion of the HGV traffic attributable to a particular site should be understood, so that the long term flow trend is used as the basis for identifying the HGV proportion of traffic.

Where the proportion of HGVs* is more than 5%** for flows greater than 200vph, designers should identify why the number of HGVs cannot be reduced further and/or demonstrate why fully separated space for cycling cannot be provided.

Where motor vehicle flows are between 500vph and 1000vph and the proportion of HGVs* is less than 5%**, it may in exceptional circumstances be acceptable to allow for people cycling to be mixed with general traffic, which is calculated by the Criteria Review Process.

* Heavy Goods Vehicle (HGV) – defined as lorries and trucks over 3.5 tonnes with 3 or more axles

** Based on the 12 hour average % of motor vehicle traffic, 7am to 7pm

5. Examples of how the automated spreadsheet tool conducts the Criteria Review Process

	Criteria 1 Flows	Criteria 2 Speed	Criteria 3 Width	Criteria 4 Turning risk	Criteria 5 Kerbside activity	Criteria 6 HGVs	Acceptable to be mixed with motor traffic?	Summary
Scenario 1 example pass	600vph *Does not meet target*	20mph speed limit with 85th percentile speeds below 25mph ✔✔	3.0m *Does not meet target (flows too high)*	SRETs on side roads and early release at signals ✔✔	Speeds below 25mph ✔✔	Less than 5% ✔✔	**Yes – passes 3 out of 4 criteria across criteria 3-6**	**Acceptable for people cycling to be mixed with traffic – although traffic reduction would be preferable**
Scenario 1 example fail	600vph *Does not meet target*	20mph speed limit with 85th percentile speeds above 25mph but includes traffic calming ✔✔	4.5m ✔✔	SRETs on side roads and early release at signals ✔✔	Speeds below 25mph ✔✔	More than 5% *Does not meet target*	**No – fails required HGV ratio for flows in excess of 500vph**	**Not acceptable for people cycling to be mixed with traffic – traffic reduction or separation required**
Scenario 2 example pass	300vph ✔✔	30mph speed limit with 85th percentile speeds less than 30mph and no measures proposed *Does not meet target*	4.5m ✔✔	SRETs on side roads and early release at signals ✔✔	4.5m of space or more ✔✔	More than 5% *Does not meet target*	**Yes – passes 3 out of 4 criteria across criteria 3-6**	**Acceptable for people cycling to be mixed with traffic – although traffic calming and HGV reduction would be preferable**
Scenario 2 example fail	150vph ✔✔	20mph speed limit with 85th percentile speeds more than 25mph and no measures proposed *Does not meet target*	3.0m *Does not meet target (speeds too high)*	SRETs on side roads and early release at signals ✔✔	Speeds above 25mph *Does not meet target*	Less than 10% ✔✔	**No – fails 2 out of 4 criteria across criteria 3-6**	**Not acceptable for people cycling to be mixed with traffic – traffic calming or more space for cycling required**
Scenario 3 example pass	300vph ✔✔	20mph speed limit with 85th percentile speeds below 25mph ✔✔	3.0m ✔✔	SRETs on side roads but no early release at signals *Does not meet target*	Speeds below 25mph ✔✔	More than 5% *Does not meet target*	**Yes – passes 2 out of 4 criteria across criteria 3-6**	**Acceptable for people cycling to be mixed with traffic – although early release and HGV reduction would be preferable**

Scenario 3 example fail ✔✔	150vph	20mph speed limit with 85th percentile speeds above 25mph but includes traffic calming ✔✔	3.0m ✔✔	No SRETs on side roads *Does not meet target*	Less than 4.5m of space *Does not meet target*	More than 10% *Does not meet target*	**No – fails 3 out of 4 criteria across criteria 3-6**	**Not acceptable for people cycling to be mixed with traffic – early release, kerbside activity reduced and HGV reduction is required**
Required level fail based on width and flows ✔✔	400vph	20mph speed limit with 85th percentile speeds more than 25mph and no measures proposed *Does not meet target*	3.7m *Does not meet required level*	SRETs on side roads but no early release at signals ✔✔	Less than 4.5m of space *Does not meet target*	Less than 5% ✔✔	**No – fails required width criteria relative to flows**	**Not acceptable for people cycling to be mixed with traffic – traffic reduction or additional width for cycling is required**