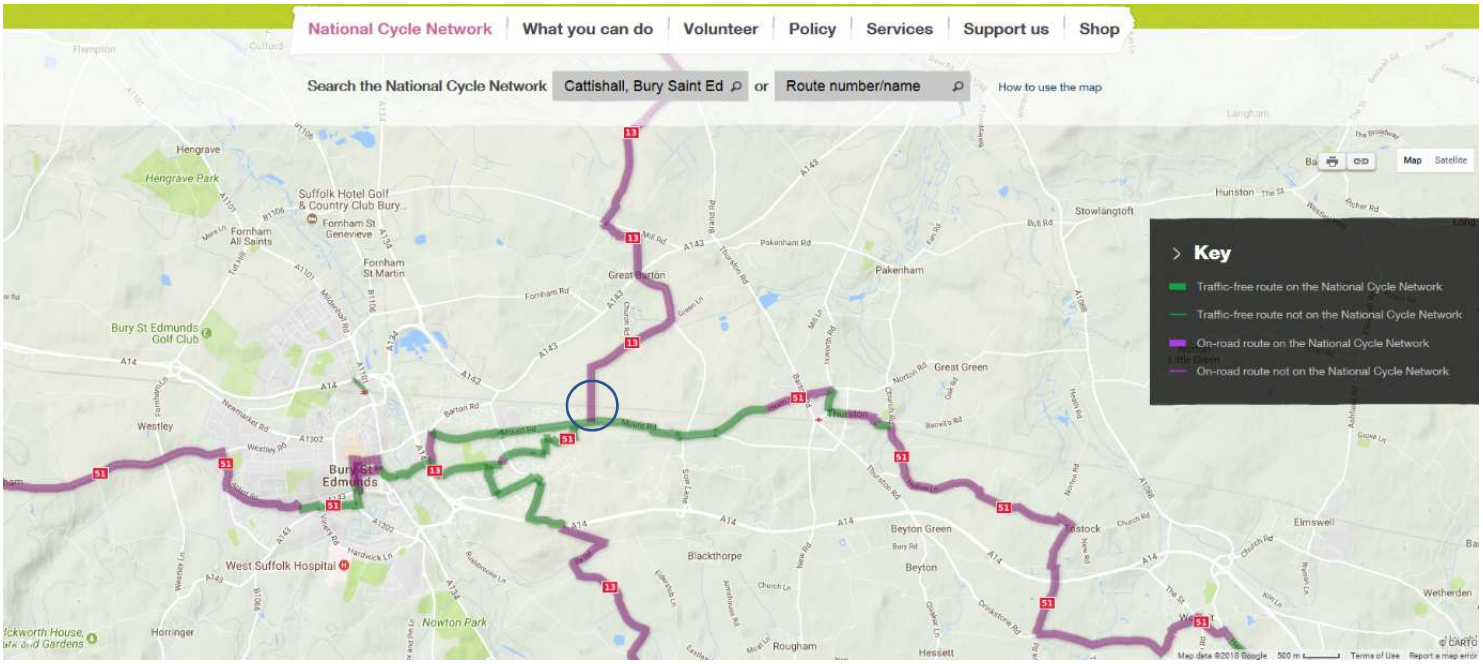
Note on Cycle Speeds and National Cycle Routes

National Cycle Routes

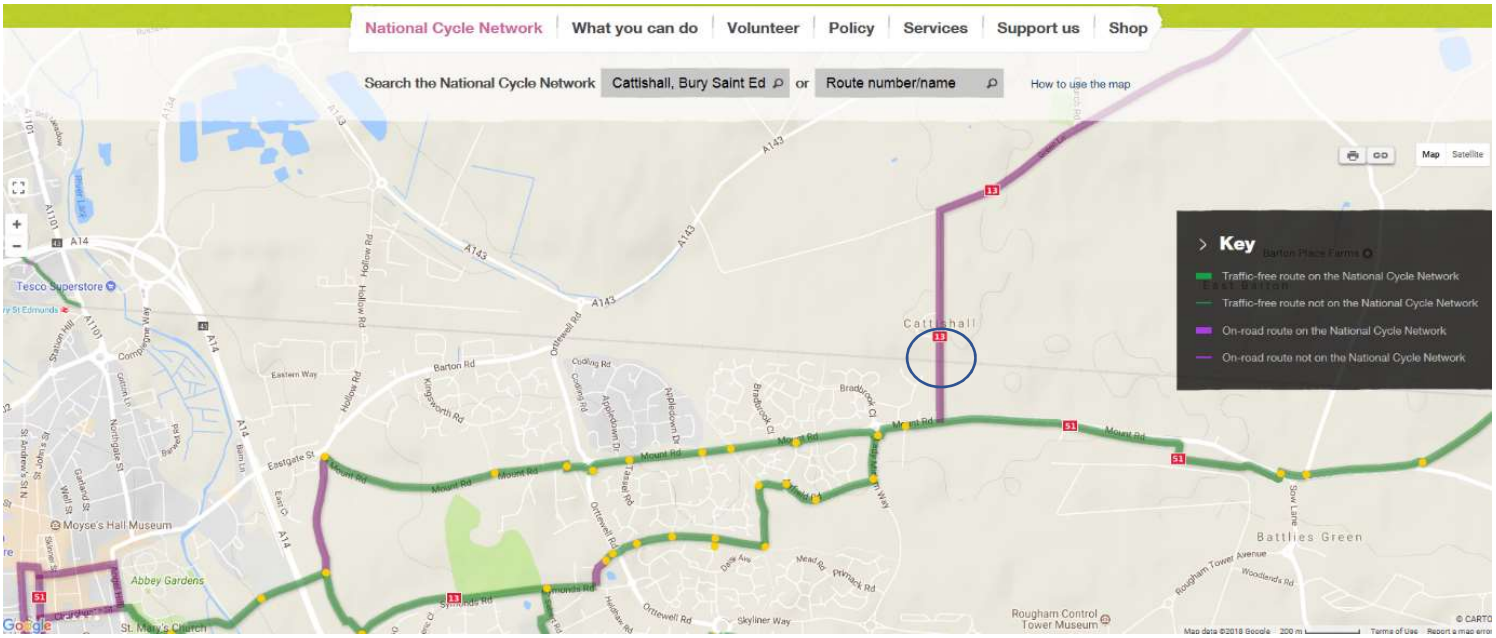
1. On day 18 of the public inquiry in connection with S25 Cattishall level crossing, the Inspector requested details of the National Cycle Routes that were in the vicinity of the level crossing.

2. Extracts from mapping data on the Sustrans website (https://www.sustrans.org.uk/ncn/map) are shown below:

Overview Plan – level crossing shown circled



Detail Plan – level crossing shown circled



Cycle Speeds

3. On day 18 of the public inquiry in connection with S25 Cattishall level crossing, the Inspector requested that a rate for the average cycling speed be agreed.

4. Documentation from the Sustrans Design Guide – Handbook for Cycle Friendly Design is attached to this note. Understanding User Needs within section 3 of this document considers Design Speeds and states "a design speed of 12mph is appropriate for a local access route, or for a main route where there is likely to be significant interaction with pedestrians. For other main routes, designers should aim to provide a higher design speed of 20mph."

5. Documentation from the Local Transport Note 2/08 October 2008 Cycle Infrastructure Design is attached to this note states:

    a) Section 8.2.1 On commuter routes, cyclists usually want to be able to travel at speeds of between 12 mph and 20 mph, preferably without having to lose momentum. Frequent road crossings, tight corner radii, the presence of other users and restricted width or forward visibility all affect the speed with which cyclists can travel and the effort required. Cyclists tend not to favour cycle routes that frequently require them to adjust their speed or stop.

    b) Section 8.2.2 A design speed of 20 mph is preferred for off-road routes intended predominantly for utility cycling. This provides a margin of safety for most cyclists. The average speed of cyclists on a level surface is around 12 mph.

    c) 8.2.3 Where cyclists share a route with pedestrians, a lower design speed may be required. Routes with design speeds significantly below 20 mph are unlikely to be attractive to regular commuter cyclists, and it may be necessary to ensure there is an alternative on-carriageway route for this user category.

6. Evidence from Copenhagen, a city recognised as one of the world's top cycling cities, provides data from the last 10 years regarding average cycling speeds in the city. These vary between 15.5 and 16.4kph, and across the full data period average at 16kph. This data is included in the document Copenhagen City of Cyclists, The Bicycle Account 2016, an extract of which is attached to this note. 16kph equates to 9.94mph.

7. Network Rail and Suffolk County Council witnesses do not make any recommendations regarding cycling rates or any associated guidance documents in their Proofs of Evidence.

8. It is clear that various guidance and data exists regarding cycling speeds and to assist the inquiry, consideration has been given to the selection of common cycling rates for use by all parties.

Conclusions

Cycle speeds

9. In conclusion, as the speed data recorded in the Copenhagen City of Cyclists document refers to travel survey data, and the Sustrans Design Guide and Local Transport Note both refer to "design speed", it is considered that reference to travel survey data would be appropriate to refer to when calculating journey times.

10. It is therefore agreed by Network Rail and Suffolk County Council that a cycling rate of 9.94mph should be used for the purpose of assessing travel times for routes considered as part of the Network Rail level crossing reduction proposals in Suffolk.

Department for Transport

Local Transport Note 2/08

October 2008

Cycle Infrastructure Design

8 Off-road cycle routes

8.1 Introduction

8.1.1 Off-road cycle routes almost invariably accommodate pedestrians too. They vary considerably in scope, from a shared-use track alongside an urban road to countryside leisure routes such as those on converted former railway lines. Overall design will depend on how each route is used. All routes should be safe and comfortable, but other design priorities will vary depending on the main purpose a route is intended to serve. For example, routes used for commuting need to be fairly direct, while on leisure routes directness may be less important than providing an attractive environment where the route itself may be one of the main attractors.

8.1.2 In general, off-road cycle routes in urban areas tend to be the least desired option, and it is usually better to cater for urban cyclists on-road if this is practicable. Off-road routes are often created by converting existing footways/footpaths and, if such routes are not carefully designed, pedestrians may view them as a reduction in quality of provision. It is important to consult with cyclists and pedestrian groups on the design of such facilities. This can help reduce the likelihood of objections to the conversion of pedestrian facilities. More information on the establishment of shared use schemes is available in Local Transport Note 2/86 *Shared Use by Cyclists and Pedestrians* (DoT, 1986).

8.1.3 In addition, urban off-road routes may be frequently interrupted by side roads. Track crossings of side roads can be difficult to get right, and they may become points of conflict between cyclists and motorists. This aspect is covered in more detail in Section 10.3.

8.1.4 Off-road leisure routes tend to be more attractive options because they do not usually suffer from the same problems. Long, cross-country routes, for example, are unlikely to be frequently interrupted. In addition, many off-road leisure routes have been created as additions to existing walking and cycling networks, and thus represent an improvement for all users.

8.1.5 New off road routes should be audited after installation to ensure the design is working well. Feedback from users can help this process.

8.2 Design speed

8.2.1 On commuter routes, cyclists usually want to be able to travel at speeds of between 12 mph and 20 mph, preferably without having to lose momentum. Frequent road crossings, tight corner radii, the presence of other users and restricted width or forward visibility all affect the speed with which cyclists can travel and the effort required. Cyclists tend not to favour cycle routes that frequently require them to adjust their speed or stop.

8.2.2 A design speed of 20 mph is preferred for off-road routes intended predominantly for utility cycling. This provides a margin of safety for most cyclists. The average speed of cyclists on a level surface is around 12 mph.

8.2.3 Where cyclists share a route with pedestrians, a lower design speed may be required. Routes with design speeds significantly below 20 mph are unlikely to be attractive to regular commuter cyclists, and it may be necessary to ensure there is an alternative on-carriageway route for this user category.

8.3 Visibility criteria

8.3.1 For cyclists using the carriageway, the forward visibility required to assess hazards and obstacles ahead is governed by the road geometry, which is likely to be more than adequate for cyclists' needs. For off-road routes, forward visibility needs to be considered in more detail.

Sustrans Design Manual

Handbook for cycle-friendly design

April 2014

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Understanding user needs 3

Design speeds

Key design parameters for cycle tracks will normally reflect the expected design speed of the route. A design speed of 12mph is appropriate for a local access route, or for a main route where there is likely to be significant interaction with pedestrians. For other main routes, designers should aim to provide a higher design speed of 20mph.

Widths required by cyclists

The space required by cyclists in motion needs to take account of :

- 'dynamic width' of the cyclist
- clearance when passing fixed objects
- distance from other traffic (both cyclists and passing motor vehicles)

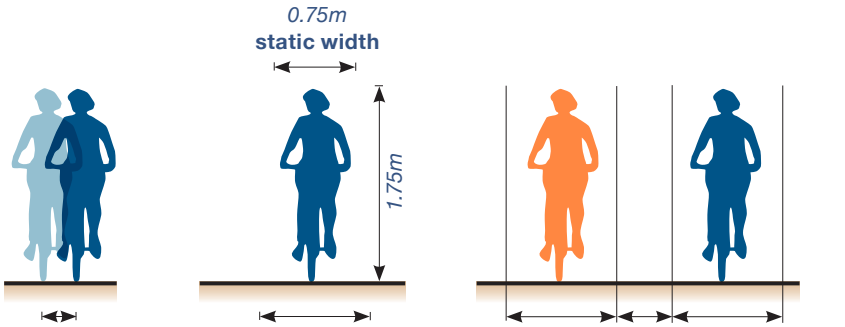
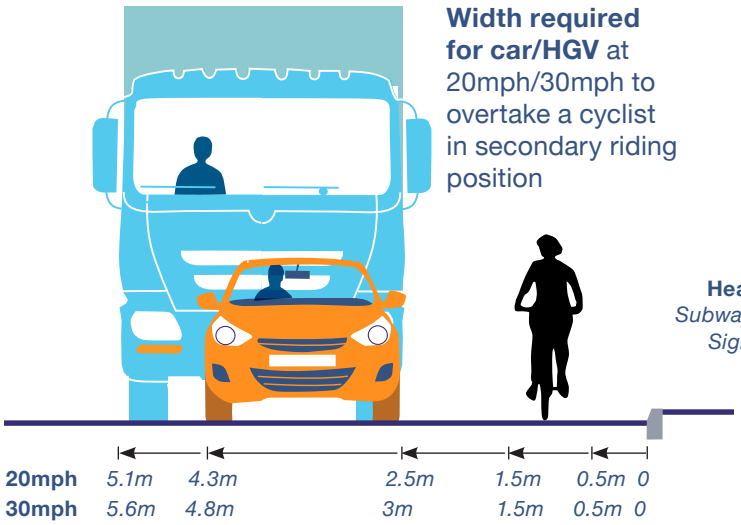


Table H.1 **Overtaking by motor vehicles**	
Minimum passing distance	
20mph	1m
30mph	1.5 m
Total width required for overtaking cyclist in secondary riding position (see figure below)	
Car passing at 20 mph	4.3m
Car passing at 30 mph	4.8m
Bus/HGV passing at 20 mph	5.1m
Bus/HGV passing at 30 mph	5.6m

Table H.2 **Additional clearances to maintain effective widths for cyclists** (see figure below)	
Type of edge constraint	**Additional width required (mm)**
Flush or near-flush surface (including shallow angled battered kerbs - see photo below)	Nil
Kerb up to 150 mm high	Add 200
Vertical feature from 150 to 600 mm high	Add 250
Vertical feature above 600 mm high	Add 500

Table H.3 **Calculation of minimum width required:** minimum width = a+b+c+d	
a	dynamic width
b	minimum passing distance from other users (Table H.1)
c	clearance for edge constraints (Table H.2)
d	additional width for high cycle/pedestrian volumes, steep gradients, curves

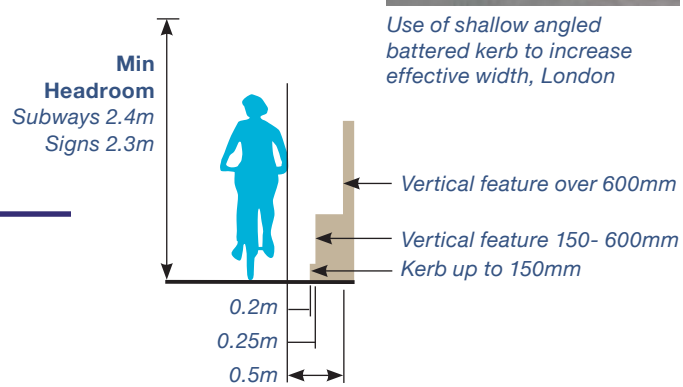
Source : LTN 2/08 & LTN 1/12



Width required for car/HGV at 20mph/30mph to overtake a cyclist in secondary riding position

Additional clearance to maintain effective width and headroom for cyclists

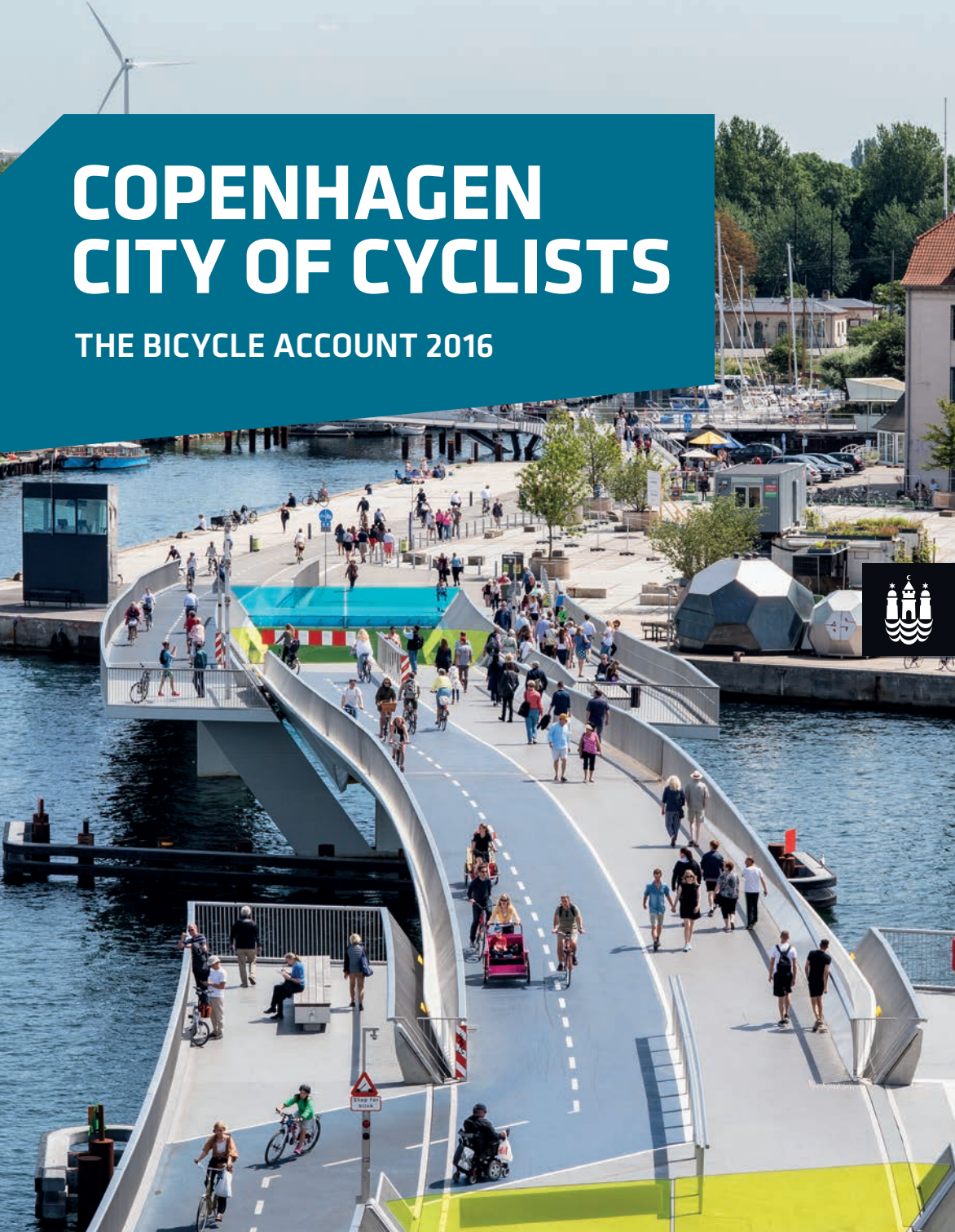
Use of shallow angled battered kerb to increase effective width, London



Not to scale

COPENHAGEN CITY OF CYCLISTS

THE BICYCLE ACCOUNT 2016



1.34 → 1.4 m

Increase in number of km cycled per weekday 2014-1016.

74 → 76%

Increase in the share of Copenhageners who feel secure when cycling 2014-2016.

POLITICAL TARGETS, COPENHAGEN BICYCLE STRATEGY 2011-2015 AND CO-CREATE CPH 2025

'06	'08	'10	'12	'14	'16	'25	
36	37	35	36	45	41	50	**Share that bike to work/education in Copenhagen (%)***
53	51	67	76	74	76	90	**Share of cycling Copenhageners who feel secure (%)**
98	121	91	102	92	94	35	**Number of serious cyclist casualties (per annum)**
-	-	-	17	19	20	80	**Share of PLUS network with 3 lanes (%)**
-	-	-	0	7	6	15	**Reduction in cycling travel time (%)**
48	54	50	61	63	71	80	**Satisfaction with state of cycle tracks (%)**
-	-	67	73	70	71	80	**Satisfaction with impact of bicycle culture on urban life (%)**
26	26	27	29	33	37	70	**General satisfaction with bicycle parking (%)**

*Calculated separately for each individual year whereas previously a two-year average was used.

OTHER KEY FIGURES

'06	'08	'10	'12	'14	'16	
1.15	1.17	1.21	1.27	1.34	1.4	**Kilometres cycled (million km per weekday)**
4.0	3.2	4.4	4.2	4.9	4.9	**Kilometres cycled between serious casualties (million km)**
16.0	16.2	15.8	15.5	16.4	16.3	**Average cycling speed (km/h)**
332	338	346	359	368	375	**Cycle tracks (km)**
17	18	23	24	28	33	**Cycle lanes (km)**
39	41	42	43	58	61	**Green Cycle Routes (km)**
-	-	-	17.5	38.5	57	**Cycle Superhighways in Capital Region (km)**
42	47	48	49	51	54	**Bicycle parking on roads and sidewalks (1,000 spaces)**