

**Society of Road Safety Auditors  
Annual Conference  
Monday 20<sup>th</sup> and Tuesday 21<sup>st</sup> June 2016**

## **Cycle Traffic and The Strategic Road Network**

**John Parkin and Phil Jones  
Presenting on behalf of Highways England**

# Designing for Active Travel

## Motorways and Trunk Roads should:

- Enable cycling across and alongside the network
- Make connections to national and local cycle route networks
- Address community severance caused by major roads
- Provide separation in space and time (e.g. grade separation and signalled crossings)
- Deliver safe, direct, coherent, attractive, comfortable routes



## The Challenge to the Profession

“Following our success in the Olympics, the Paralympics and the Tour de France, British cycling is riding high - now **we want to see cycling soar**.”

New trunk road schemes that have a significant impact on cyclists, such as junction improvements or road-widening, will be ‘**cycle-proofed**’ so they can be navigated confidently by the average cyclist”

*Prime Minister David Cameron, 12 August 2013*



## So what needed improving in DMRB?

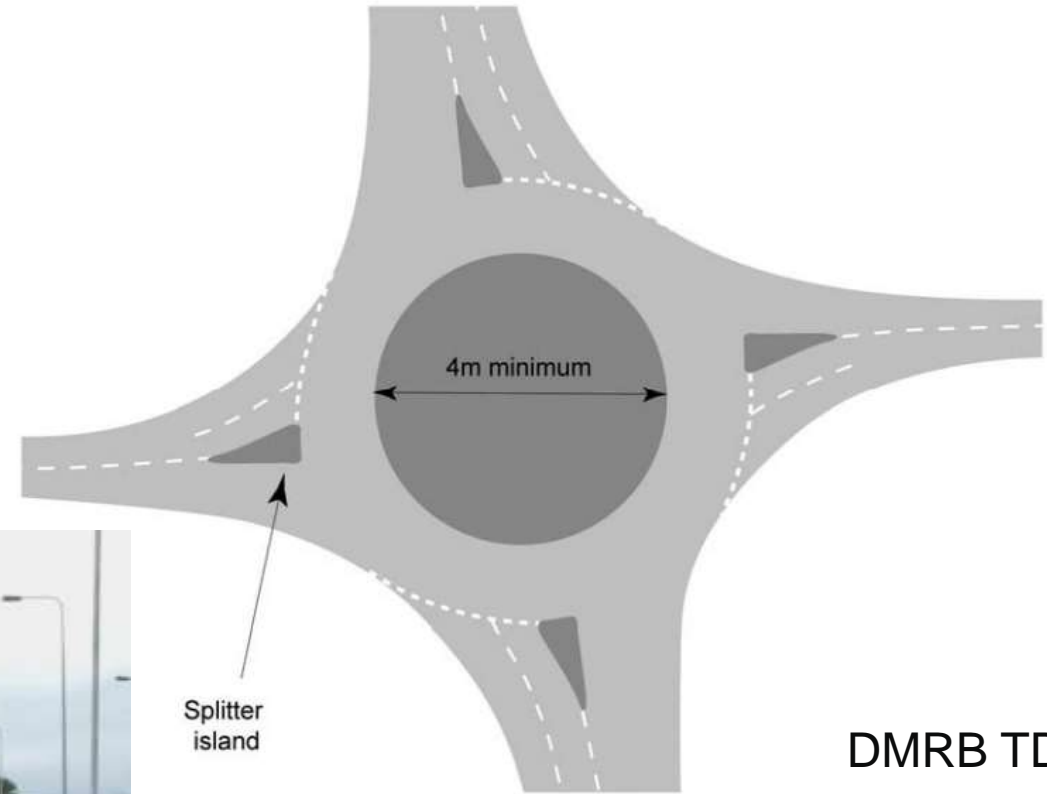
- ‘Non-motorised users’ grouped together
- Non-committal, e.g. phrases like ‘where possible’
- No consideration of context of levels of use by NMUs
- Some guidance dates back to 1987, most from 1990s and early 2000s.
- Only caters for ‘solo’ bicycles
- Always an ‘add on’, i.e. the standard road cross sections usually just show the carriageway.
- Junction issues recognised but solutions not provided



Cyclists require special consideration at roundabouts to ensure safe passage...

10% of all reported accidents involving cyclists occur at roundabouts; of these 11% are serious or fatal.

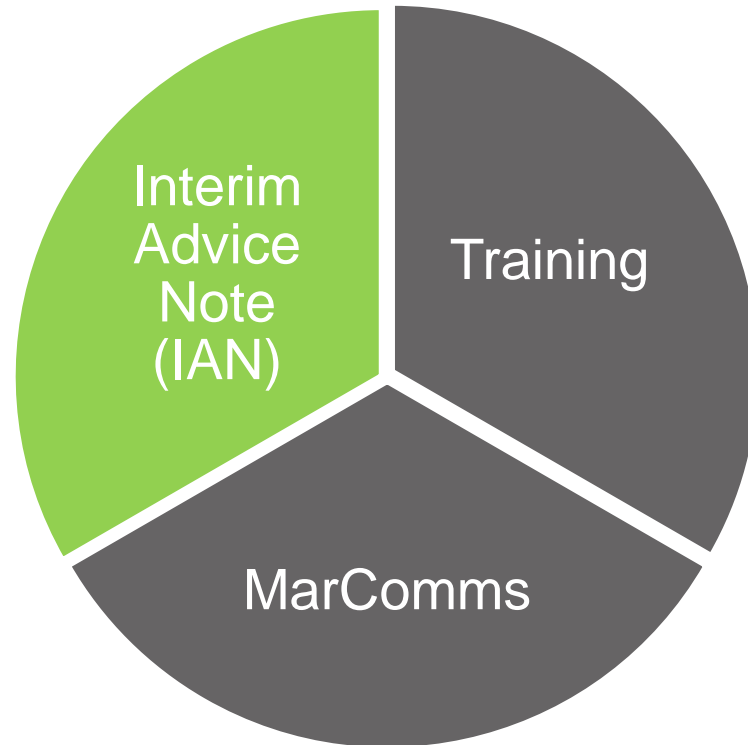
*DMRB TA 91/05,  
Provision for Non Motorised Users*



DMRB TD 16/07

**Figure 3/1: Normal Roundabout**

## Developing the Interim Advice Note



Plus:

- Cycling Strategy
- Future research

# Content of the IAN

- Cycle Traffic and the Strategic Road Network
- Design Requirements of Cycle Traffic
- Cycle Traffic on Links
- Cycle Traffic at At-Grade Junctions and Crossings
- Cycle Traffic at Grade Separated Cycle Track Crossings
- Cycle Traffic at Roundabouts
- Cycle Traffic at Signalised Roundabouts
- Grade Separated Junction Layouts for Cycle Traffic
- Cycle Traffic Direction Signing
- Construction and Maintenance

## INTERIM ADVICE NOTE XX/16

### CYCLE TRAFFIC AND THE STRATEGIC ROAD NETWORK

#### Summary

This document gives requirements and advice regarding designing for cycle traffic for the Strategic Road Network (SRN).

#### Instructions for Use

This document supplements and amends the cycling specific information provided in the following documents, and should be read in conjunction with these documents.

TA 57/87	Roadside features
TD 36/95	Subways for Pedestrians and Paved Cycles Layout and Dimensions
TA 91/98	Provision for Non-motorised Users
TA 93/05	The Geometric Design of Pedestrian, Cycle and Equestrian Routes
HD 42/98	Non-motorised user Audits
TD 22/04	Layout of Grade Separated Junctions

# Cycle Traffic and the Strategic Road Network

## Interim Advice Note

- Applies to the strategic road network in England
- Use of the term 'Cycle Traffic' highlights the specific design requirements of cycles as vehicles travelling at speeds that are different to other users of the highway
- Design content - many DMRB documents provide more detailed information, for example on cross-section and longitudinal sections
- Strengthening of language for design, construction and maintenance:
  - Must: a statutory obligation (7 No)
  - Shall: a requirement strictly to be followed (265 No)
  - Should: a recommendation that is not a requirement (21 No)
- Inclusive – all types of cycle user

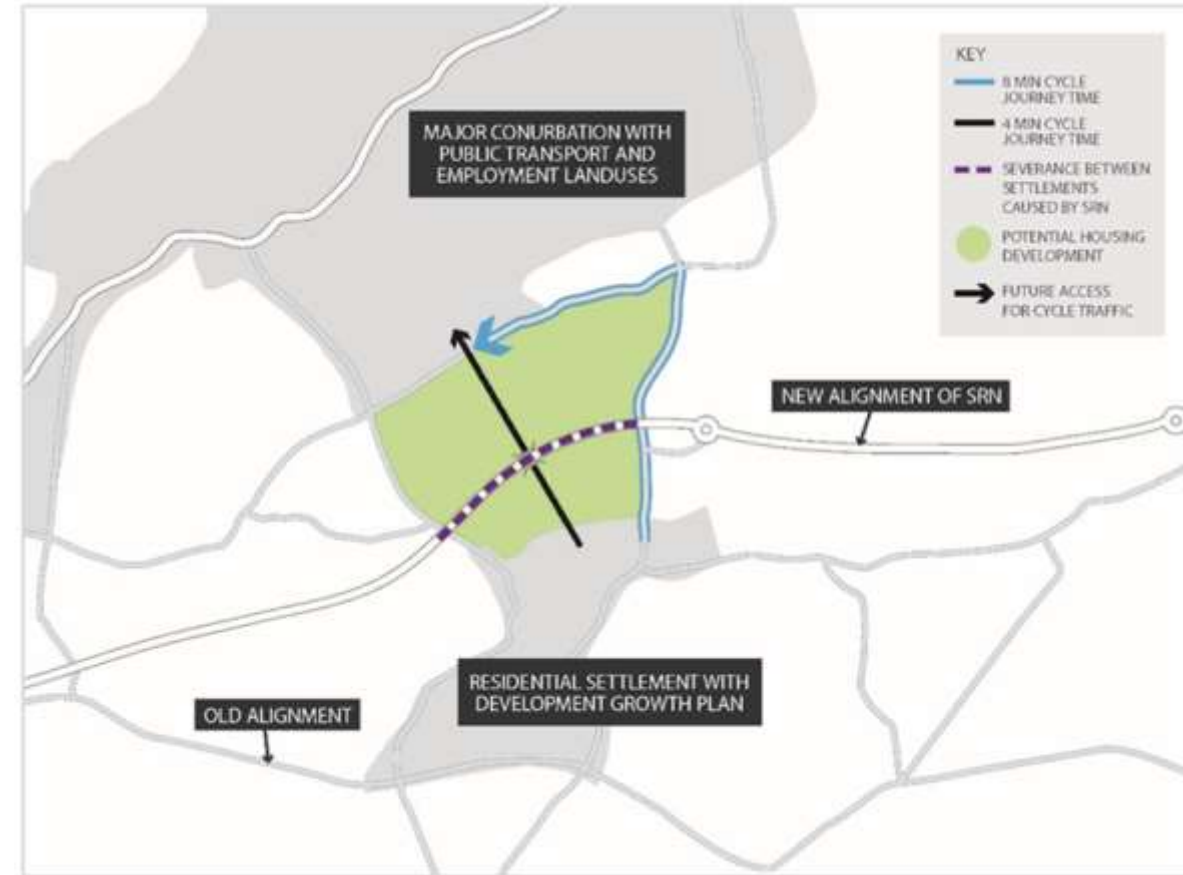


## Designing networks for Cycle Traffic

The development of cycle networks shall be in accordance with Highways England's Cycling Strategy. Designers shall ensure that cycle networks allow for cycle trips in the corridor of all-purpose trunk roads, and alongside motorway corridors where appropriate. Cycle networks shall also allow for trips crossing the SRN corridor.

## Planning Principles

- ‘Infrastructure shall provide sufficient capacity to accommodate growth in volumes of cycle traffic’
- ‘Current levels of demand for cycle trips are not always a good indication of potential future levels of demand.’
- ‘Creation of a comprehensive network of good quality cycle routes has the potential to stimulate demand beyond the incremental change that demand models predict.’
- ‘shall give regard to local authority development plans’



## Engineering developments

- Back to basics for principles on: SSD / HA / VA
- Dutch advice leading to ‘Designers shall use centre line markings on two-way cycle tracks to reinforce the Highway Code which states that users should keep to the left.’
- Junctions:
  - Cycle Crossing Designs
  - Off-carriageway provision at priority junctions
  - On-carriageway provision at signalised roundabouts
- Desirable and absolute minimum values:
  - Absolute Minimum values only for existing constraints on existing roads
  - Designers shall record the reasons for using Absolute Minimum Values
  - Where their use is not appropriate, and where mandatory requirements are not met, the designer shall apply for a Departure from Standards, but generally Highways England remains silent on Departures in order not to be seen to be promoting them
- IAN does not cover design shared use facilities: default is for there to be a separate footway where pedestrian demand is high enough to justify it.

# Design speed

**Table 2.2.3 Design Speed for Off-Carriageway Cycle Routes**

<b>Circumstance</b>	<b>Design Speed (kph)</b>	<b>Absolute Minimum Design Speed (kph)</b>
On down gradients of 3% or greater	40	N/A
All other off-carriageway cycle route provision	30	20

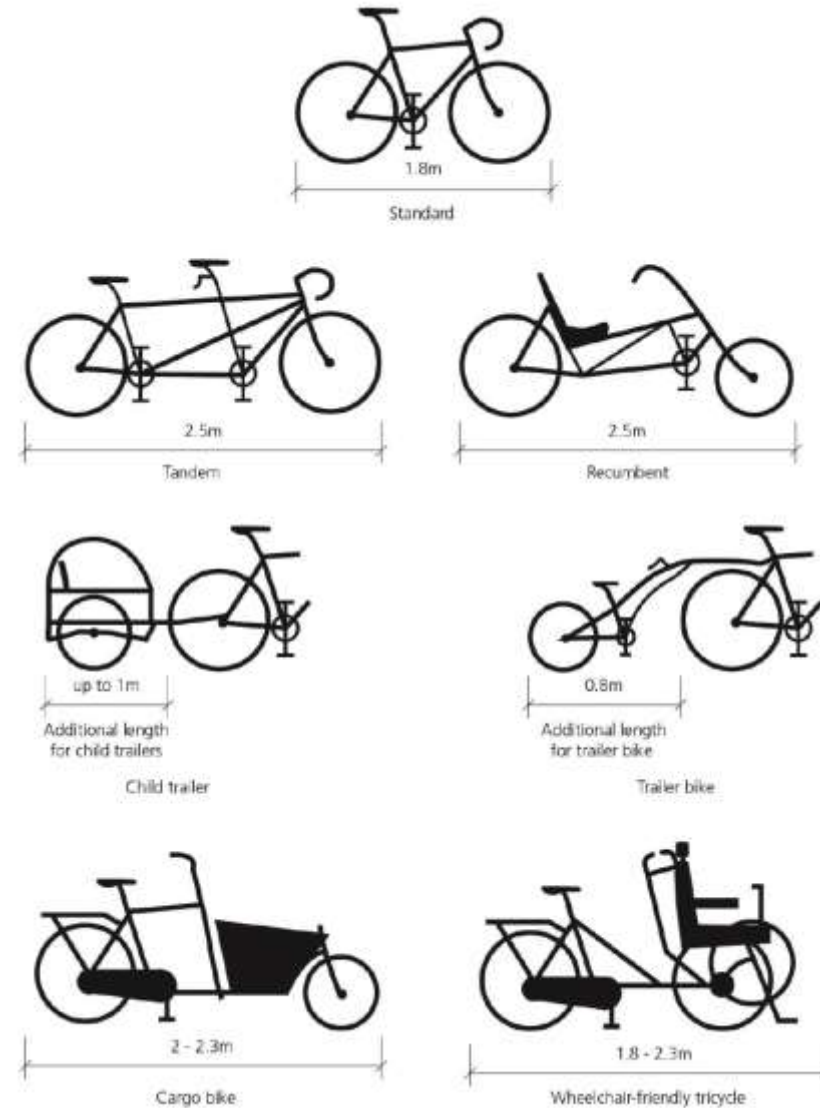
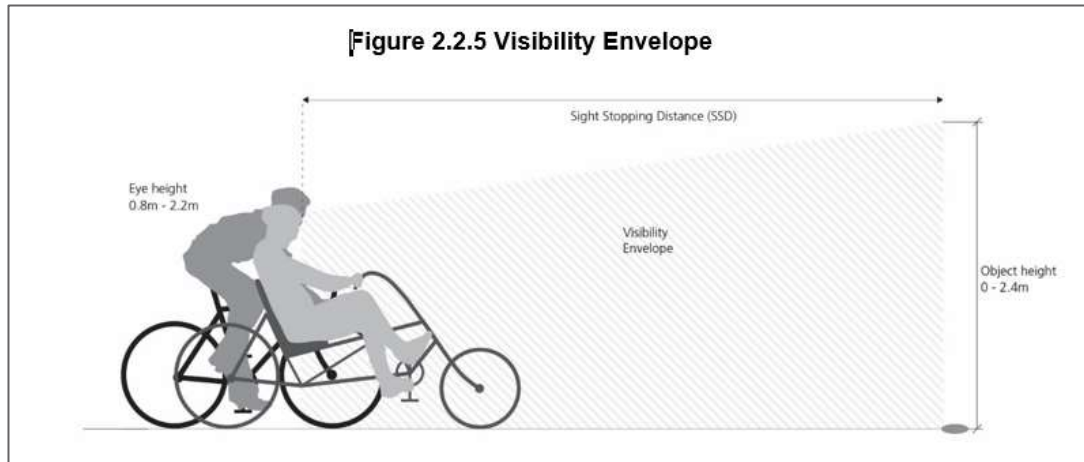
## Minimum Provision – Tracks are the norm on the SRN

Table 2.2.2 Minimum provision for cycle routes

Speed Limit (mph)	Motor Traffic Flow (AADT-Average Annual Daily Traffic)	Minimum Provision for Cycle Routes
40 and over	All flows	Cycle Tracks (excluding stepped cycle tracks)
30	0-5,000	Cycle Lanes
	>5,000	Cycle Tracks
20	<2,500	Cycle Streets or Quiet Streets: combined traffic
	2,500-5,000	Cycle Lanes
	>5,000	Cycle Tracks

# Inclusive Cycles

- Range of types of cycle considered, to create
- ‘Cycle Design Vehicle’ – 2.8m x 1.2m wide



# Widths

**Table 2.2.11 Minimum Widths of Cycle Tracks and Cycle Lanes**

<b>Cycle Route Type</b>	<b>Peak hour cycle flow (either 1-way or 2- way depending on Cycle Route Type)</b>	<b>Desirable Minimum Width</b>	<b>Absolute Minimum Width (for sections up to 100m)</b>
Cycle Lane	<150	2.0m	1.5m
Cycle lanes with light segregation	<150	2.5m	1.5m
1-way cycle track (including stepped cycle track)	<150	2.5m	1.5m
	150-750	3.0m	2.5m
	>750	4.0m	3.5m
2-way cycle track	<150	3.0m	2.5m
	>150	4.0m	3.5m

# Effective Separation from Pedestrian Routes

**Figure 2.3.2.2 Cycle track and Footway Separated by Level  
with Good Quality Surface and Lighting**





# Cross sections

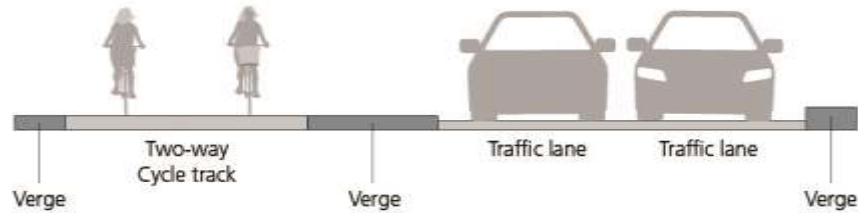
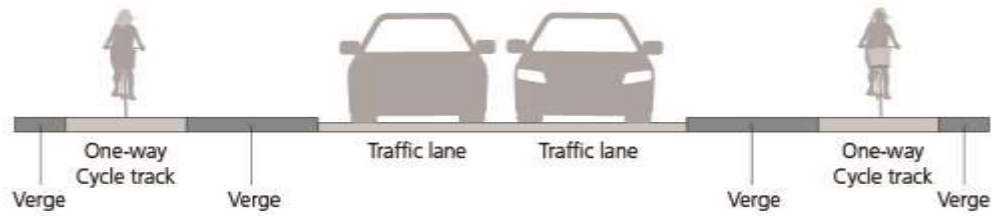
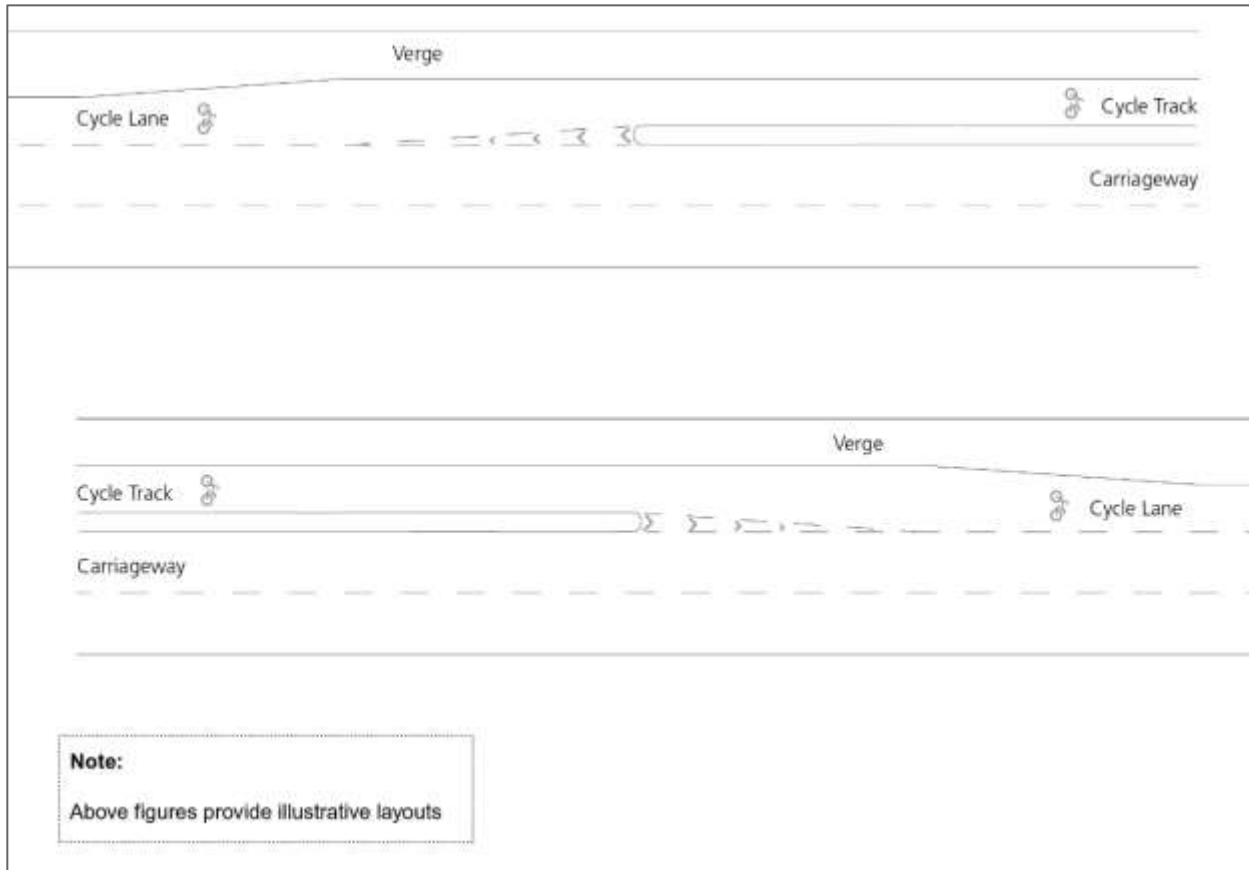


Table 2.3.3 Minimum Horizontal Separation between Carriageway and Cycle Tracks

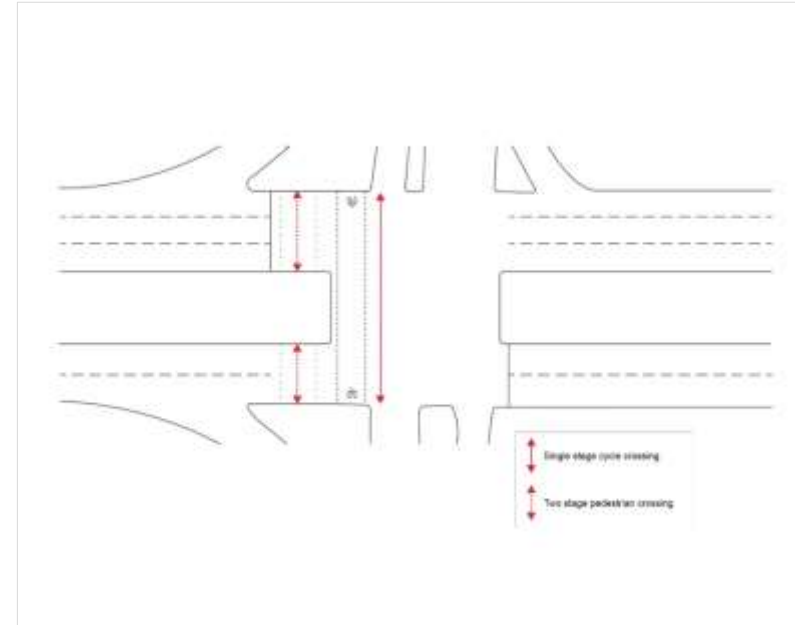
Speed Limit (mph)	Desirable Minimum Horizontal Separation (m)	Absolute Minimum Horizontal Separation (m)
30	0.5	N/A
40	1.0	0.5
50	2.0 (including any hard strip)	1.5 (including any hard strip)
60	2.5 (including any hard strip)	2.0 (including any hard strip)
70	3.5 (including any hard strip)	3.0 (including any hard strip)

# Transitions

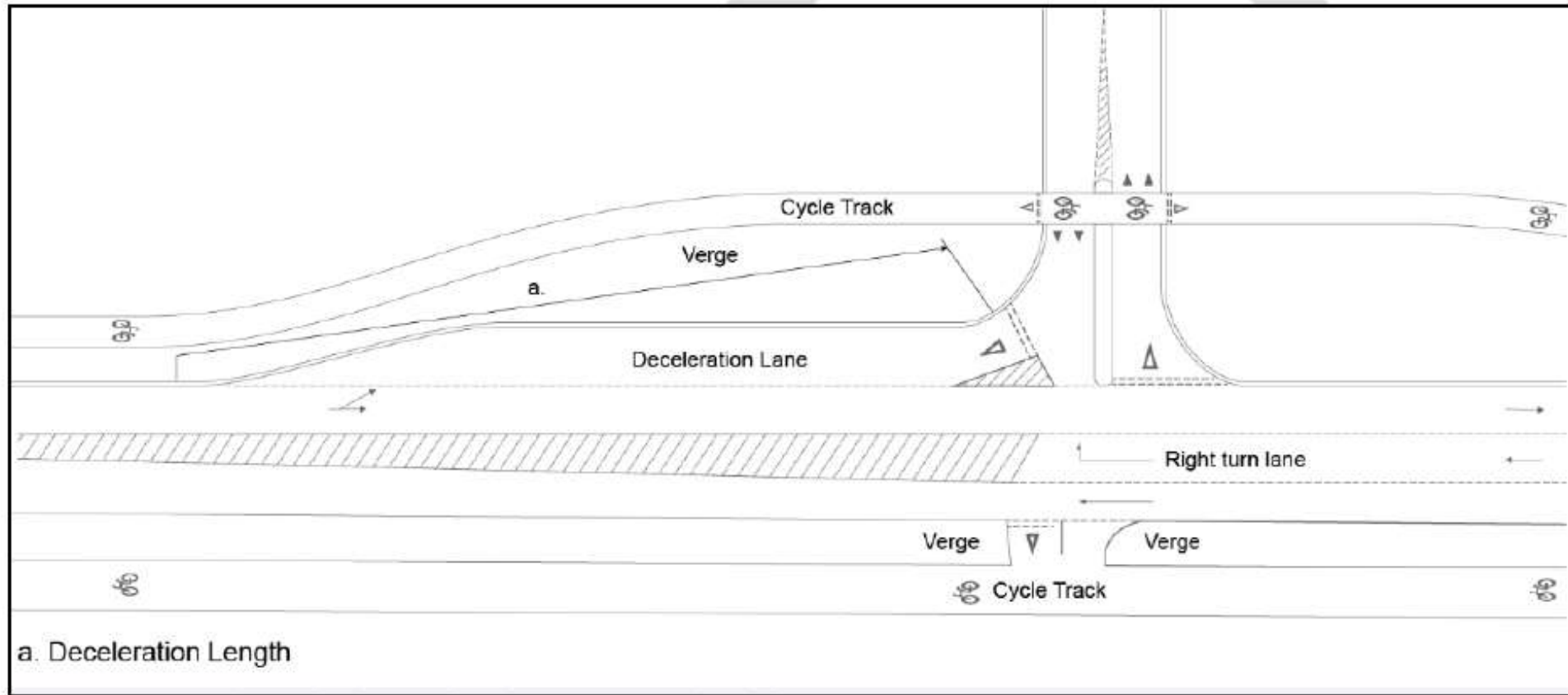


# Crossings

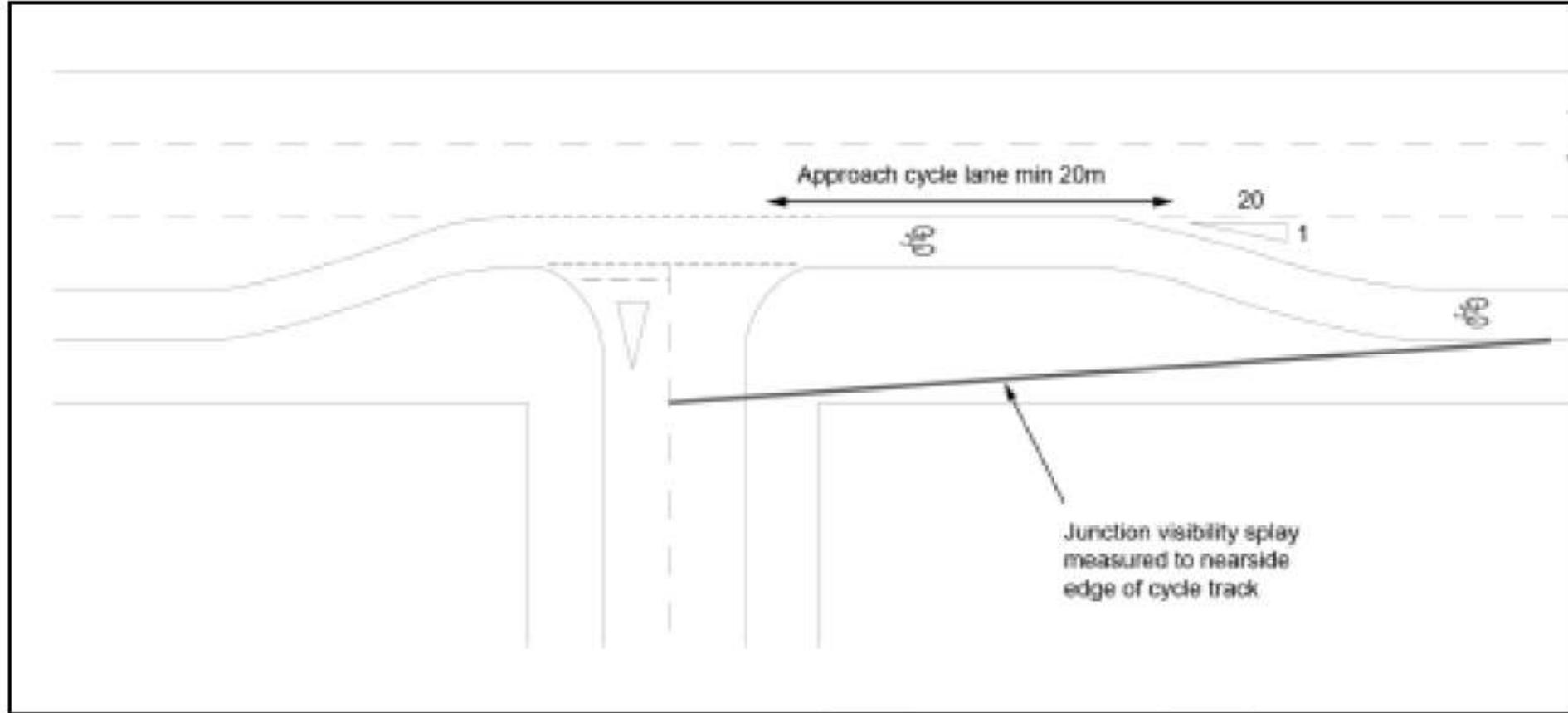
- Preferred and possible crossing types, based on Speed Limit, Flow, Number of Lanes Crossed.
- E.g. 50mph, >10,000 AADT, any width
  - Grade Sep preferred, signals possible
- Staggered crossings shall not be used
- ‘Signal timings for cycle crossings shall take account of the time taken by cyclists to complete the crossing from a standing start’



# Side Roads – Bent Out



## Side Roads – Bent In (max 30mph)



# Roundabouts

- Normal roundabouts without off-carriageway cycle facilities not permitted
- Options
  - Off-carriageway tracks with crossings (including grade separation)
  - Signalisation with appropriate facilities
  - Change to compact roundabout (low flows)
  - Change to different form of junction

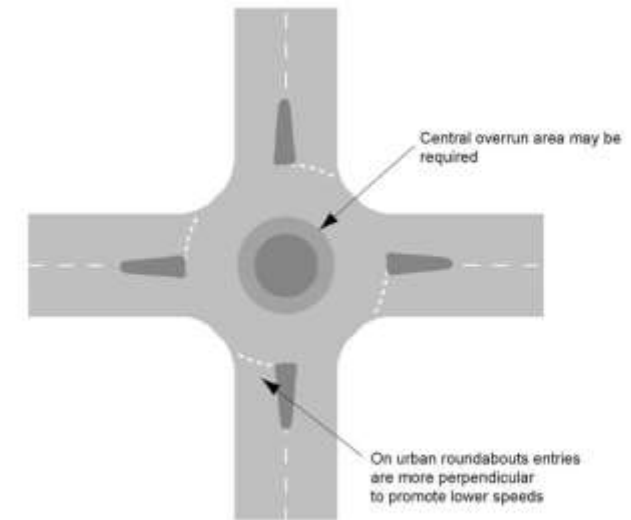


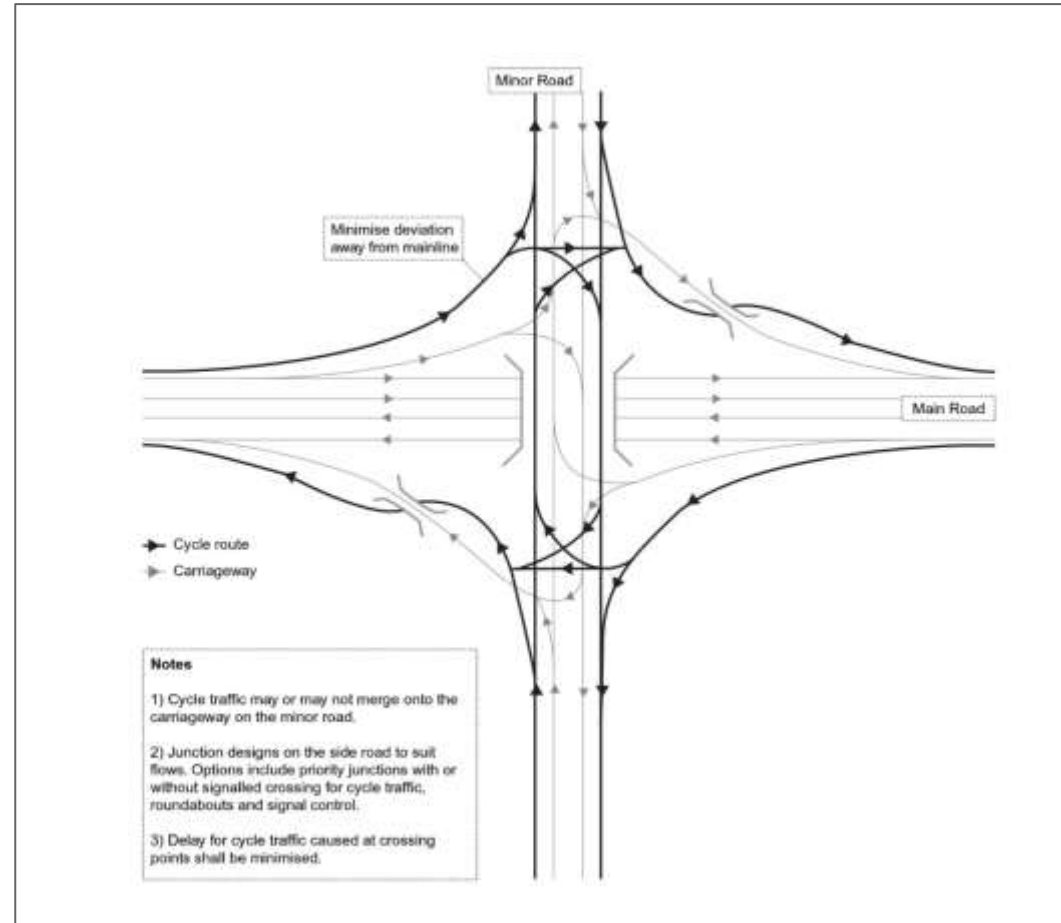
Figure 3/2: Compact Roundabout in an Urban Area

# Roundabouts



# Grade Separated Junctions

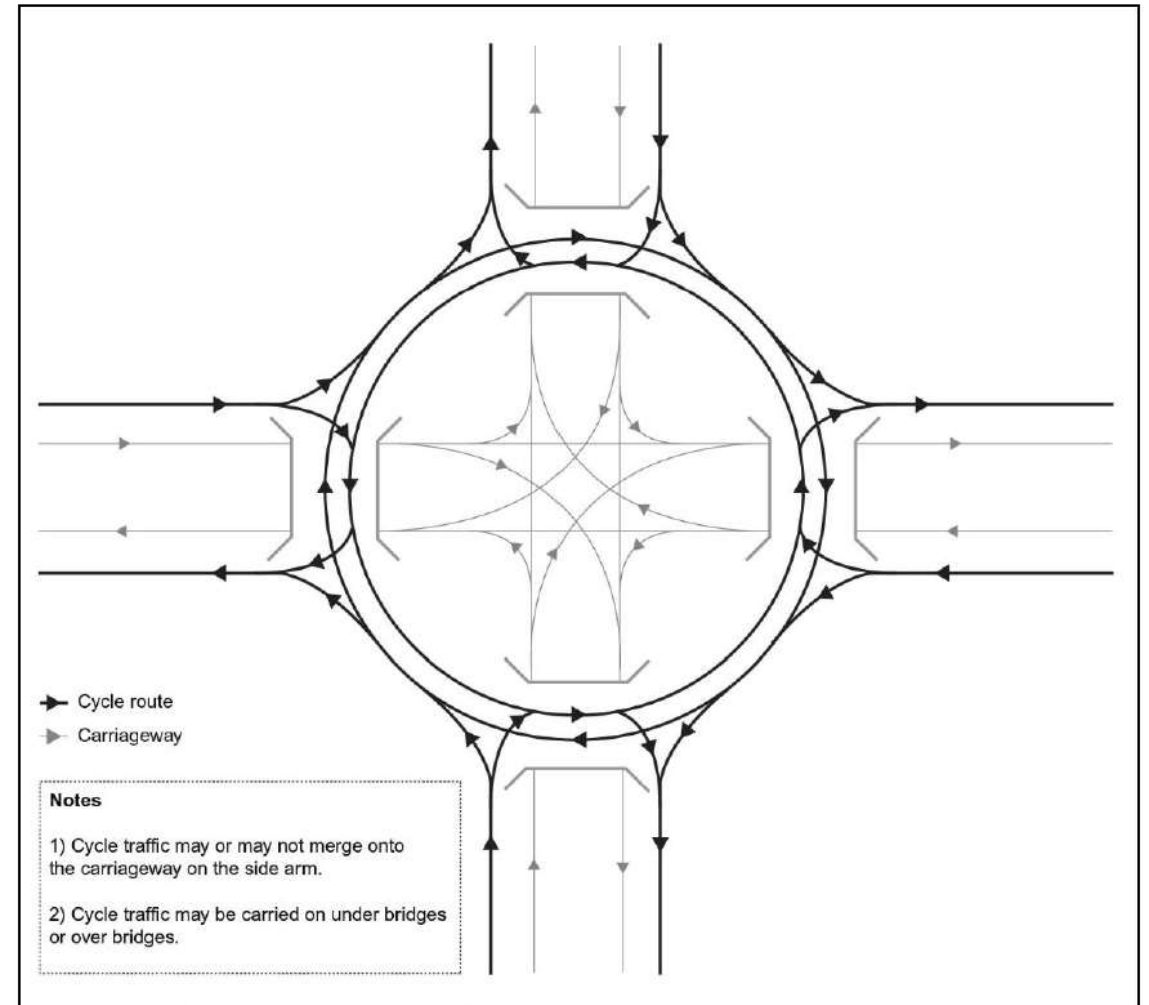
‘All movements for cycle traffic shall be catered for.’



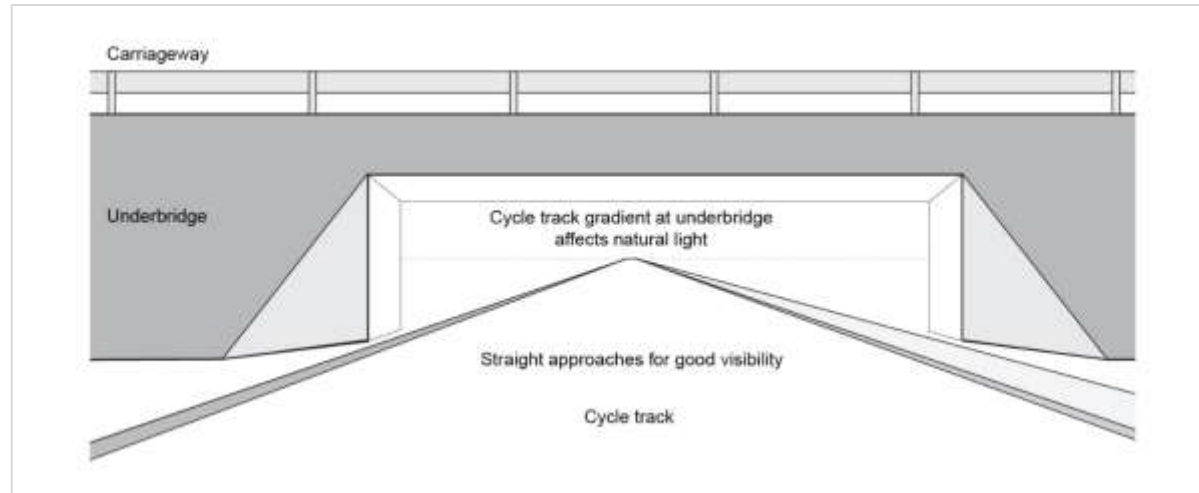


# Grade Separated Junctions

Grade separation may be required for cycle traffic, even if motor traffic not grade separated



# Grade Separation



## Timetable

- Signed off by Highway England's Chief Highway Engineer (May 2016)
- Publication weeks (?) away and will be published alongside E-learning package currently being developed
- Future research agenda being developed, may possibly include:
  - Demand modelling and monitoring and evaluation;
  - Broad range of geometry issues leading from behaviour (e.g. gap acceptances); and
  - Junction design and control issues
- IANs have a shelf life of around 1-2 years. IAN will be reviewed and updated or integrated into DMRB parent documents within this timescale.



Parkin, J., Clark, B., Clayton, W., Ricci, M. and Parkhurst, G. (2016) Understanding interactions between autonomous vehicles and other road users: A Literature Review. Project Report. University of the West of England, Bristol. Available from: <http://eprints.uwe.ac.uk/29153>

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