

Vision Zero

Getting Serious About Cycling



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co-pilot

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Introduction

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Over 30 years' experience in the
public and private sectors, mainly
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Founder of City Infinity.



We shall look at

- The international perspective.
- The Safe System approach providing a foundational base for design.
- The importance of network planning.
- What our streets might look like if we got serious about cycling through a Vision Zero lens.

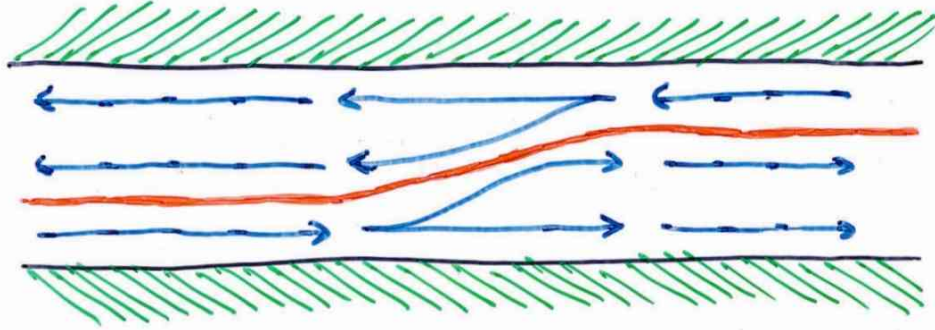


A12 Eastern Avenue, London.

5 slight injuries in the last 10 years to people cycling on a 1.25km section carrying 27k vehicles a day.

Pretty safe then?

Vision Zero – a recap



Tingvall's original sketch for a 2+1 design for rural Swedish roads – where most people were getting hurt.

- Pioneered by Claes Tingvall, traffic safety director of the Swedish Roads Administration.
- His team wondered why victims of crashes were blamed and not the system as was the case with aviation.
- His team proposed designing our danger.
- Adopted in Sweden in 1997.
- Perhaps too driving-centric in the early days.
- Started with a 2+1 trial on the E4 north of Gävle, despite strong public opposition.

Vision Zero – a recap



A modern 2+1 Swedish rural road.

Modern Vision Zero in Sweden:

- **Ethics** – people should not have to die in traffic collisions
- **Responsibility** – system designers must realise that people make mistakes,
- **Solutions** – combinations work better than single solutions.

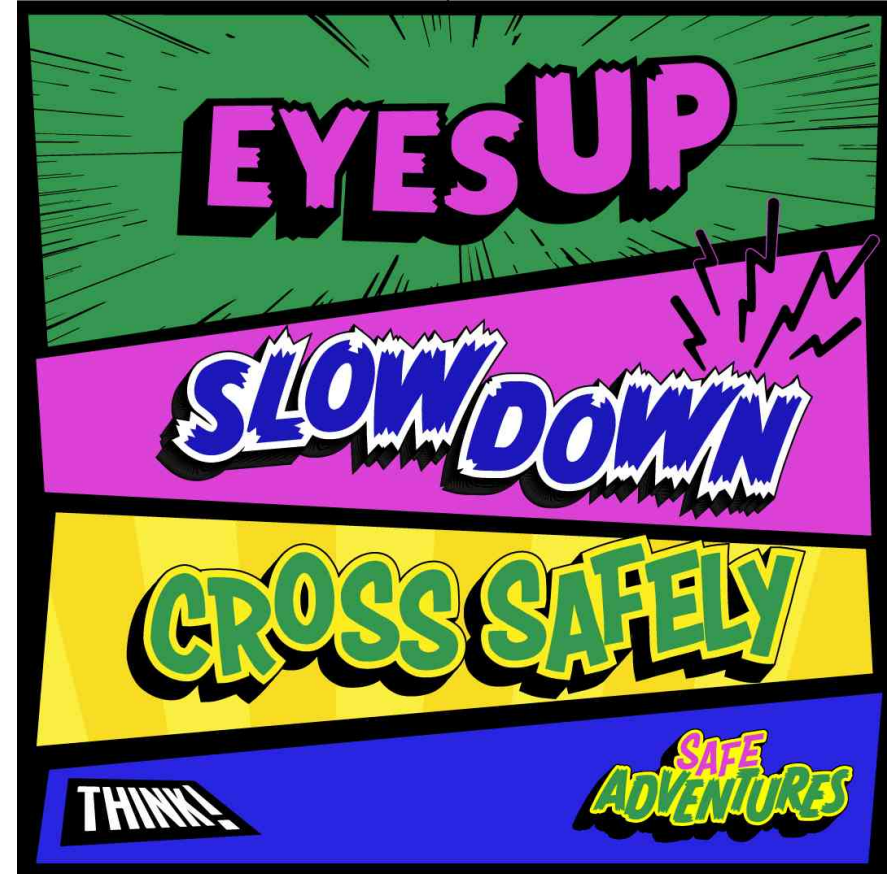
The traditional UK approach



Education

- Tries to persuade people to be careful.
- The most vulnerable have to take the most care.
- Threatens people with rules/ law.
- The Highway Code (more on that later).

Actual Department for Transport campaign for children moving up to secondary school, 2024.



The traditional UK approach



Engineering

- Collisions and risks are unavoidable.
- A trade-off of safety with practicality, often around motor traffic speed and flow.
- Concerns about risk and liability leading to planners and designers operating in their comfort zone.
- A disconnect between transport (and spatial) planning and highway engineering.

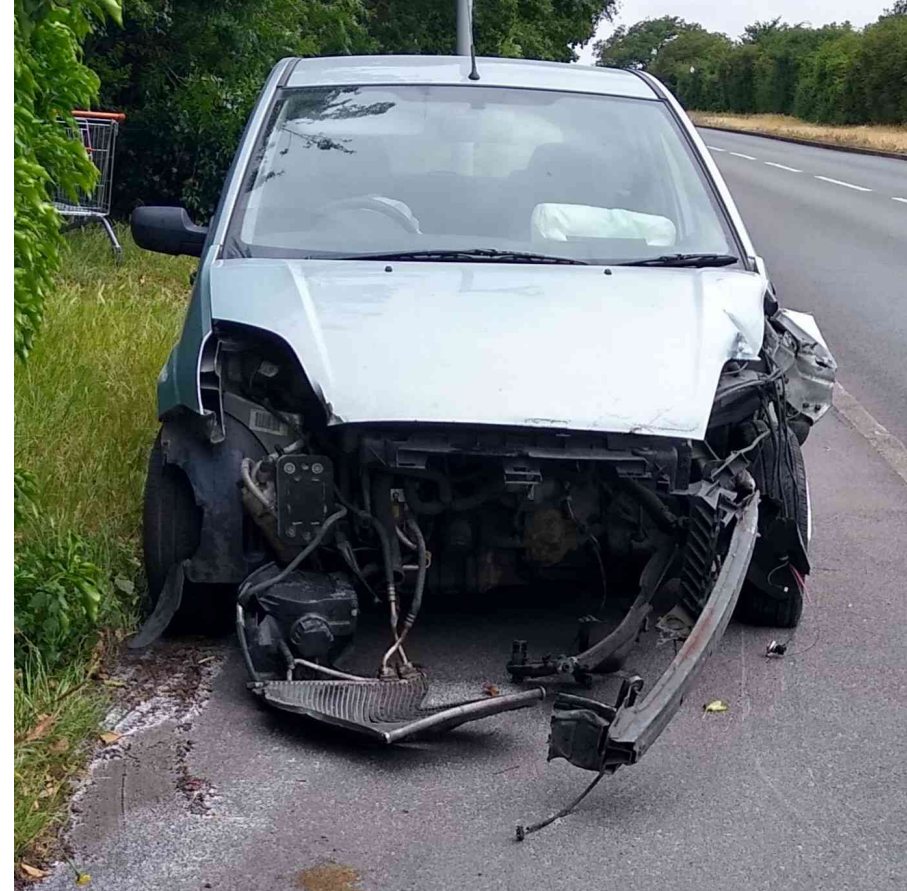


The traditional UK approach



Enforcement

- Prosecutions against individuals.
- Assumptions made about those killed and injured – e.g. not wearing a helmet.
- Investigating officer biases.
- Biases within judiciary and juries.
- Lack of reporting of judicial outcomes by the courts.
- Criticism of the road layout or systemic issues are incredibly rare.



The Safe System approach



The traditional UK approach	The Safe System Approach
Solving the problem of “accidents”.	Solving the problem of death and serious injury.
Placing responsibility onto individual road users.	Responsibility comes from system failures.
Reacting to the problem with incremental “accident” reduction.	Reacting to the problem with systematic and proactive reduction.
The goal of optimising of “accident” reduction.	The goal of zero fatal and serious injuries.

From CIHT – Progressing the UK towards Safe System Implementation, 2024.

The Safe System approach

If Vision Zero where we want to get to, then the Safe System approach is our delivery framework.

The five Safe System pillars:

- Safe roads.
- Safe road users.
- Safe speeds.
- Safe vehicles.
- Post collision response.

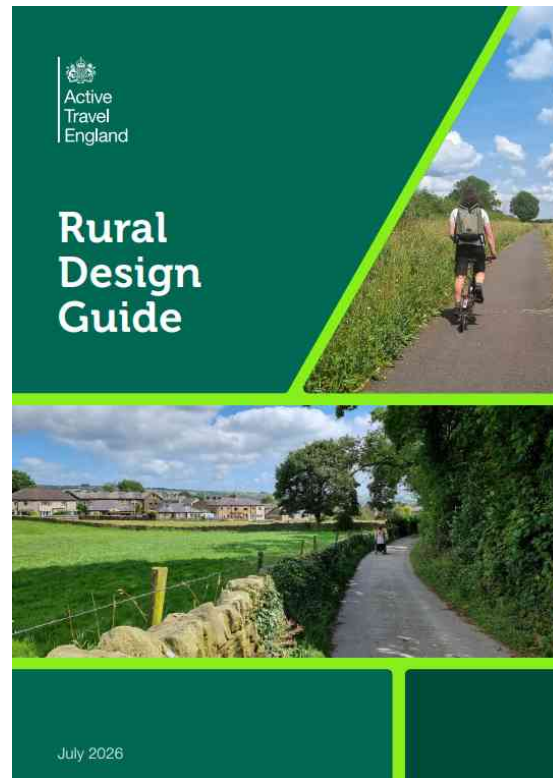
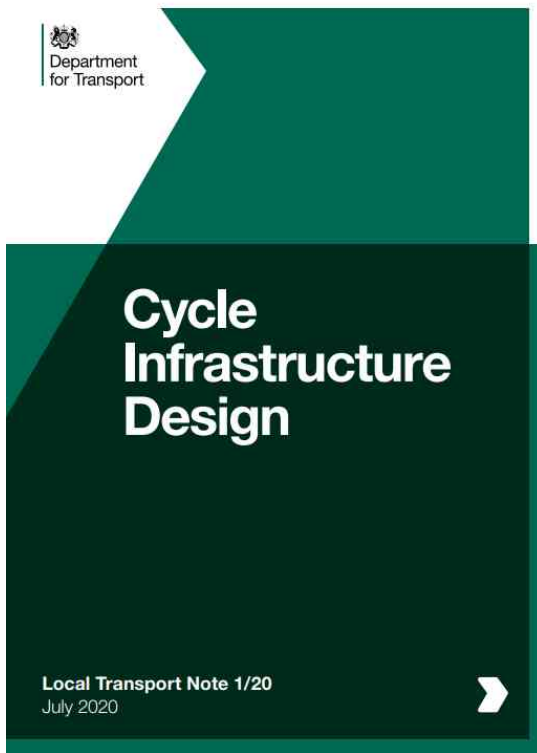


From CIHT – Progressing the UK towards Safe System Implementation, 2024.

The Safe System approach



Cycle Infrastructure Design



18 years of development. Vision Zero and the Safe System approach are **still** not referenced, but we **are** now using the Safe System approach.

The Safe System approach



Table 1.2 Hierarchy of provision

Consider first  Consider last	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

LTN 2/08.

- How realistic was this ever going to be?
- Way behind international standard practice.
- Failed to engage with the conditions people actually wanted.
- Led to “dual-provision”
 - Cycling on the road for the fit and brave
 - Cycling on the footway for everyone else.

The Safe System approach



Classic dual provision in Oxford.

- Right turns?
- Left hooks?
- Pedestrian impact?

The Safe System approach



Speed limit ¹	Total motor traffic flow (pcu/24 hour) ^{2,3}	Protected space for walking/ wheeling ⁴ – fully protected footway	Protected space for walking/ wheeling ⁴ – virtual footway	Walking/ wheeling in mixed traffic	Protected space for cycling ⁴ – fully protected cycle track	Protected space for cycling ⁴ – stepped cycle track	Protected space for cycling ⁴ – light segregation	Cycle lane (mandatory/ advisory)	Cycling in mixed traffic ⁵
20mph ³	0-999	Suitable for most	Suitable for most	Suitable for most	Suitable for most	Suitable for most	Suitable for most	Suitable for most	Suitable for most
	1,000-1,999	Suitable for most	Suitable for most	Suitable for most to not suitable for all	Suitable for most	Suitable for most	Suitable for most	Suitable for most	Suitable for most
	2,000-3,999	Suitable for most	Suitable for most to not suitable for all	Not suitable for all to suitable for few	Suitable for most	Suitable for most	Suitable for most	Suitable for most	Suitable for most to not suitable for all
	4,000-5,999	Suitable for most	Not suitable for all	Suitable for few	Suitable for most	Suitable for most	Suitable for most	Suitable for most to not suitable for all	Not suitable for all
	>6,000	Suitable for most	Not suitable for all	Suitable for few	Suitable for most	Suitable for most	Suitable for most	Not suitable for all	Not suitable for all to suitable for few
30mph	0-1,999	Suitable for most	Not suitable for all	Suitable for few	Suitable for most	Suitable for most	Suitable for most	Not suitable for all	Not suitable for all
	2,000-3,999	Suitable for most	Not suitable for all	Suitable for few	Suitable for most	Suitable for most	Suitable for most	Not suitable for all	Not suitable for all to suitable for few
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40mph	Any	Suitable for most	Suitable for few	Suitable for few	Suitable for most	Not suitable for all	Not suitable for all	Suitable for few	Suitable for few
50mph	Any	Suitable for most	Suitable for few	Suitable for few	Suitable for most	Suitable for few	Suitable for few	Suitable for few	Suitable for few

ATE rural design guide.

- Table 4-3 updates LTN1/20.
- Includes walking & wheeling.
- A detailed starting point.
- A high bar which is rightly challenging.
- Actually a Vision Zero response for designing to **enable** cycling.

The Safe System approach

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The Safe System approach



Table 1. Safe System survivable impact speeds for different crash scenarios^{24,25}

Type of road/road section	Safe System survivable impact speed	
Roads/road sections with possible crashes between cars and vulnerable road users including 2- and 3-wheelers	Max. 30 kph	(20 mph)
Roads/road sections with intersections with possible side-on crashes between cars	Max. 50 kph	(30 mph)
Roads/road sections with possible frontal (head-on) crashes between cars	Max. 70 kph	(40 mph)
Roads/road sections with no likelihood of side-on or frontal crashes between cars and limited access (usually motorways)	Max. 100 kph*	(60 mph)

* In many countries, motorways still have higher speed limits of up to 120 kph or even 130 kph. But setting speed limits on motorways should be about balancing three core priorities: safety, mobility, and the environment. Introducing lower speed limits on motorways cuts both fuel consumption and pollutant emissions. Thus, speed limits over 100 kph should generally be avoided.

*Guide for Safe Speeds
International Bank for
Reconstruction and
Development/ the
World Bank*

The Safe System approach



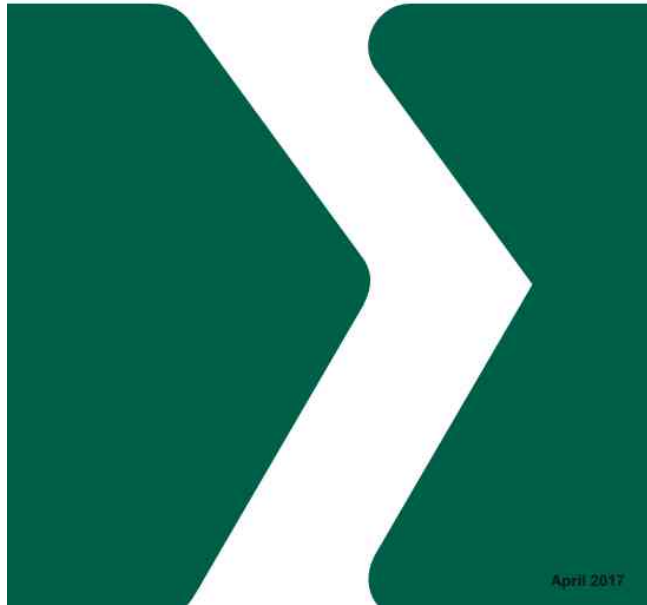
- 20mph is foundational.
- On average, the survivability of people outside of motor vehicles drops off non-linearly over 20mph.
- From a design perspective, it enables the radical:
 - Narrower traffic lanes (releasing space).
 - Tighter turns.
 - Reduced forward visibility.
- This creates a positive feedback loops:
 - Self-enforcing – I have to go more slowly.
 - Self-explaining – going more slowly is obvious.



The street is the wrong starting place



Local Cycling and Walking
Infrastructure Plans
Technical Guidance for Local Authorities



- Lots of network planning information around walking, wheeling and cycling.
- Absolutely no mention about the motoring network and how we should unravel cycling (and walking/ wheeling) from it.
- Barely mentions maintenance and operational network management.
- We need holistic thinking – who has done that?

The street is the wrong starting place



Functionality of roads

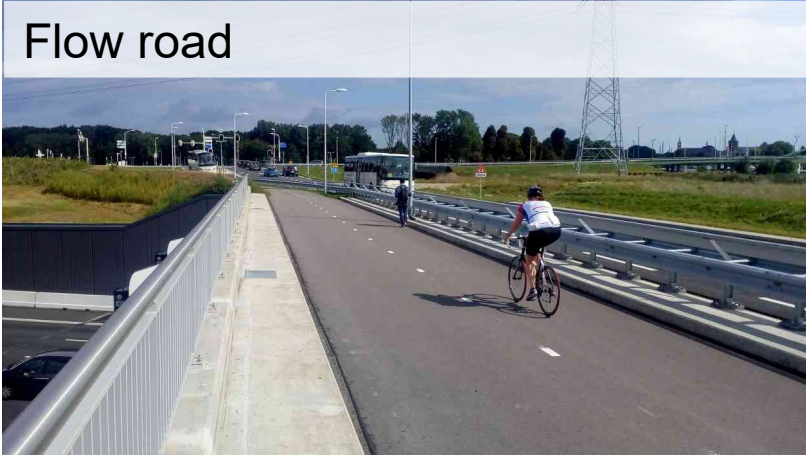
The Dutch have three types of road which authorities are required to classify in terms of what the road ***should*** be for;

- **Through roads** – flow function on road sections and across intersections – 20k+ AADT motorways <20k AADT on other through roads.
- **Distributor roads** – flow function on road sections and exchange function at intersections – 4k to 15k AADT
- **Access roads** – exchange function on road sections and at intersections - <4k to 6k AADT, a low flow situation is <2k AADT.

What job should each road be ***actually*** doing, not necessarily what it is doing now.

The street is the wrong starting place

Flow road



Area access/ urban through road



Local access road



Weesperweg, North Holland – a through road.
80km/h with vulnerable users protected.

Coolsingel, Rotterdam – a distributor road. 50km/h
(30km/h recommended) with vulnerable users
protected because of flows.

Oude Kerkstraat, Delft – an access road. 30km/h
with everyone mixing

The street is the wrong starting place

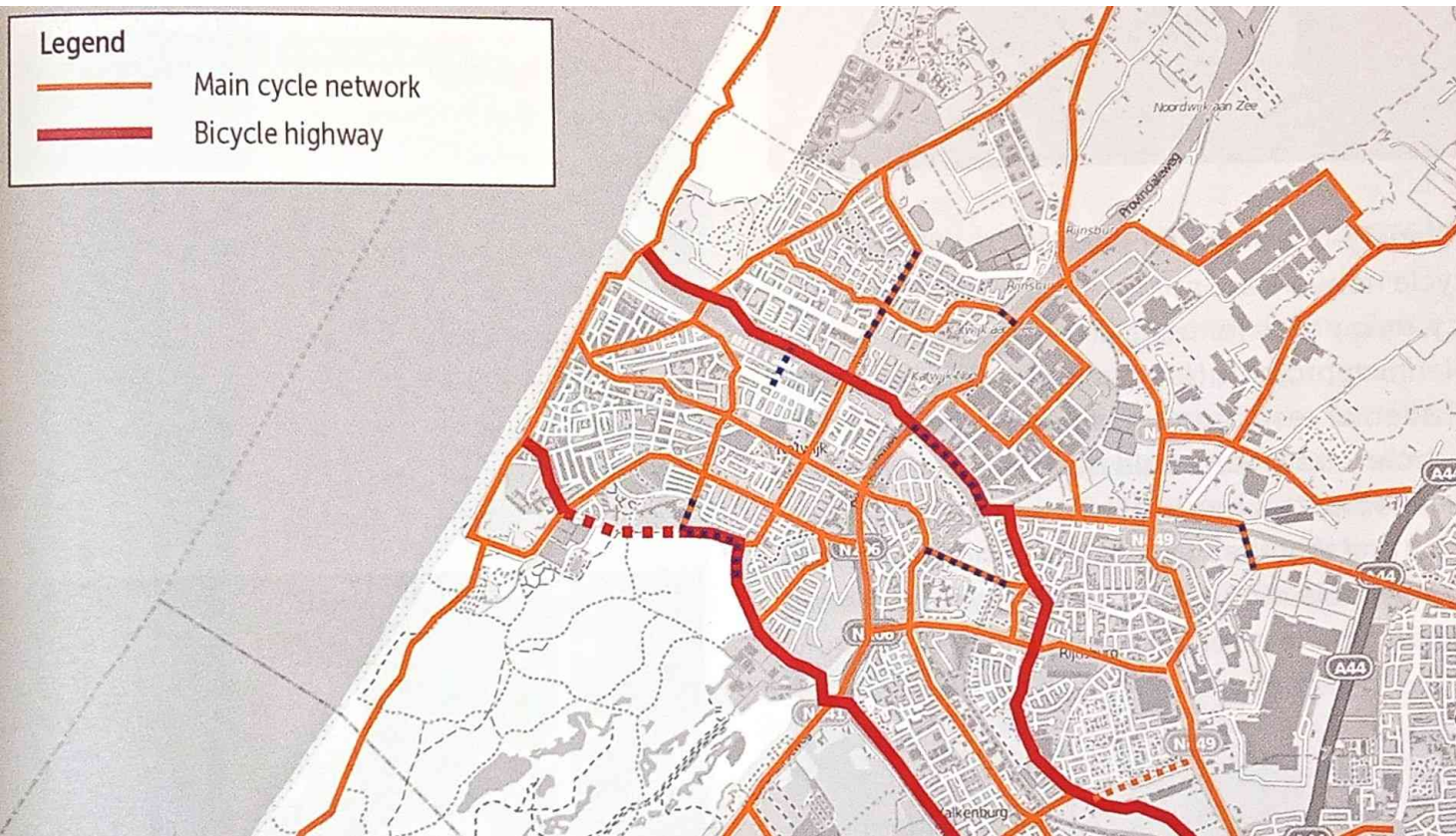
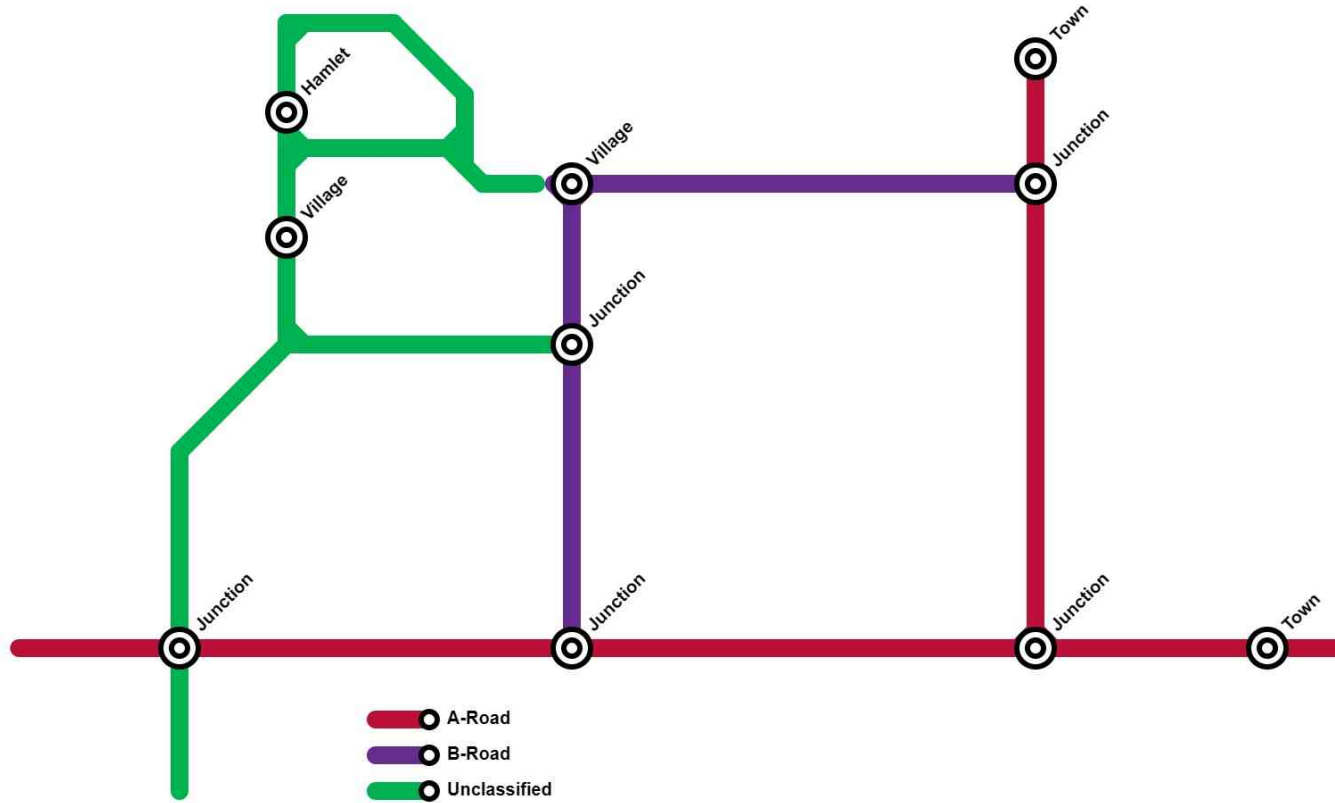


Figure 4-1
Dutch Design Manual
for Bicycle Traffic.

The design of each part of the network depends on the functionality of the road network.

It's the elephant in the room!

The street is the wrong starting place



Let's look some road network redesign - this example happens to be rural.

- Busy A-road
- B-road providing resilience.
- Unclassified roads used as rat-runs.

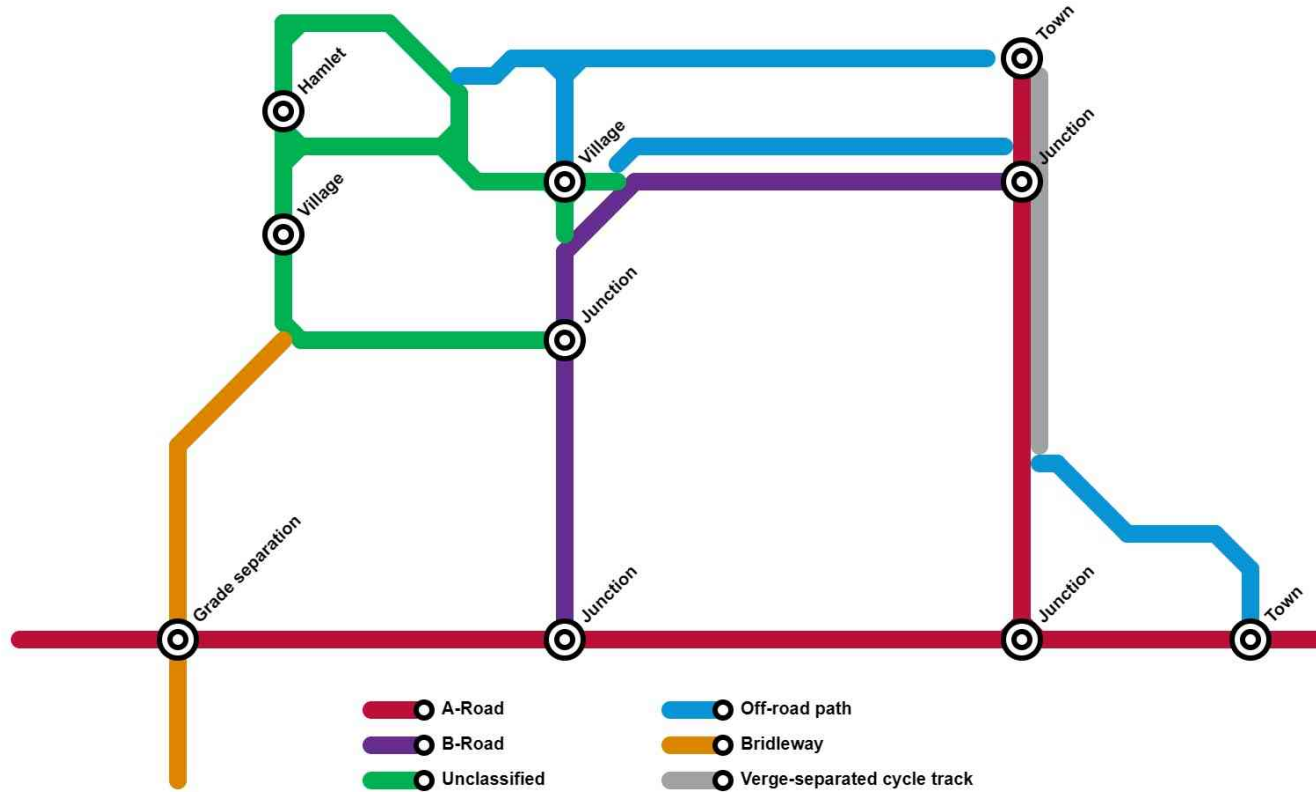
The street is the wrong starting place

How does and should the network function?

- Decide on flow roads, distributor roads and access roads.
- Can we re-purpose any roads – LTNs, quiet lanes or streets?
- Do we need to acquire land?
- Are there any interim solutions?
- Can the highway cross section be redesigned?
- Can we play with speed limits?
- What about modal filtering?
- What about main road crossings?
- Do we need bridges or tunnels?

Decisions made here will influence our future network which unravels the motoring and cycling networks.

The street is the wrong starting place



- Quiet roads.
- New off-road path connections – over land and parallel to section of A-road
- Short section of new road taking B-road round the back of a village.
- Unclassified road now a bridleway with a bridge over the A-road.
- A and B road still serves flow purpose.

A network plan to underpin Vision Zero



So, we need a network plan:

- Adopt it in policy via an appropriate consultative and engagement process to give it weight.
- Get some early feasibility done and at the right scale.
- There will be obvious barriers – this is a long term plan.
- Develop a delivery plan.
- Early interventions can start to build momentum.
- Accept that this is about providing a basic level of connection to start with.
- Sometimes quick and basic does the job.
- Low traffic neighbourhoods and low traffic lanes are integral.
- We will need to set some appropriate speed limits as a response to Vision Zero and the safe system approach.

Now we can start designing for cycling



The Dutch lead the world on designing for cycling, but it didn't happen overnight.

- Stop de Kindermoord (Stop the Child Murder) was originally a campaign for school buses in the 1970s in Amsterdam as the streets were too dangerous!
- It took 20 years of campaigning and experimentation before the Dutch started to redesign their streets, but it is far more than just cycling.



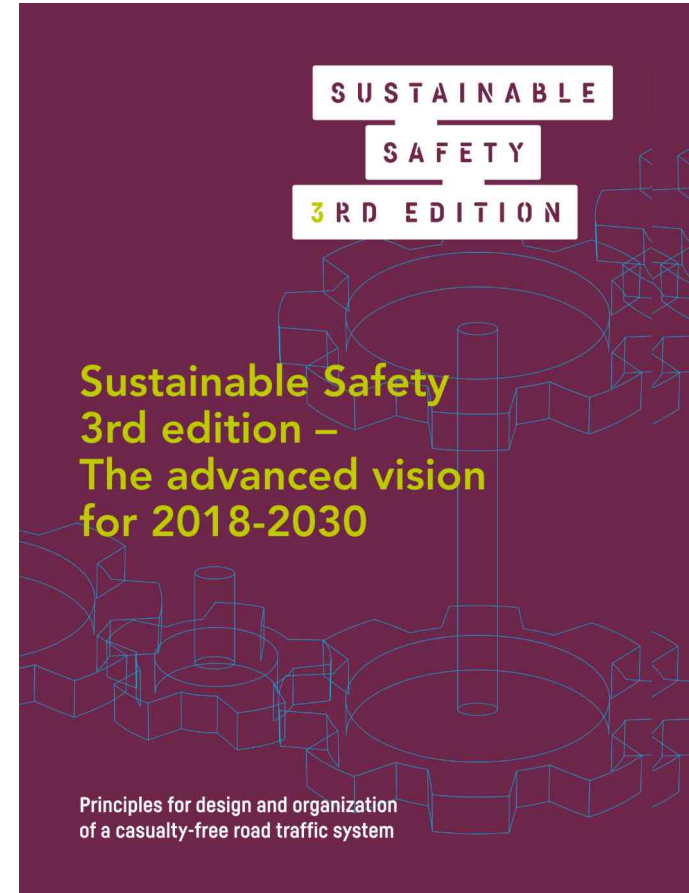
Dutch National Archive

Now we can start designing for cycling



- The “Sustainable Safety” approach was adopted in 1992 – the Dutch version of Vision Zero which follows the safe system approach.
- Third edition was published in 2018.
- Adopted nationally and by virtually all provinces and local authorities.
- Backed by a national strategic plan for ***continuous improvement***.

To the Dutch, the job is never finished and if something isn't working, they fix it.



Now we can start designing for cycling



The core design philosophy is:

“mix where possible, separate where necessary.”

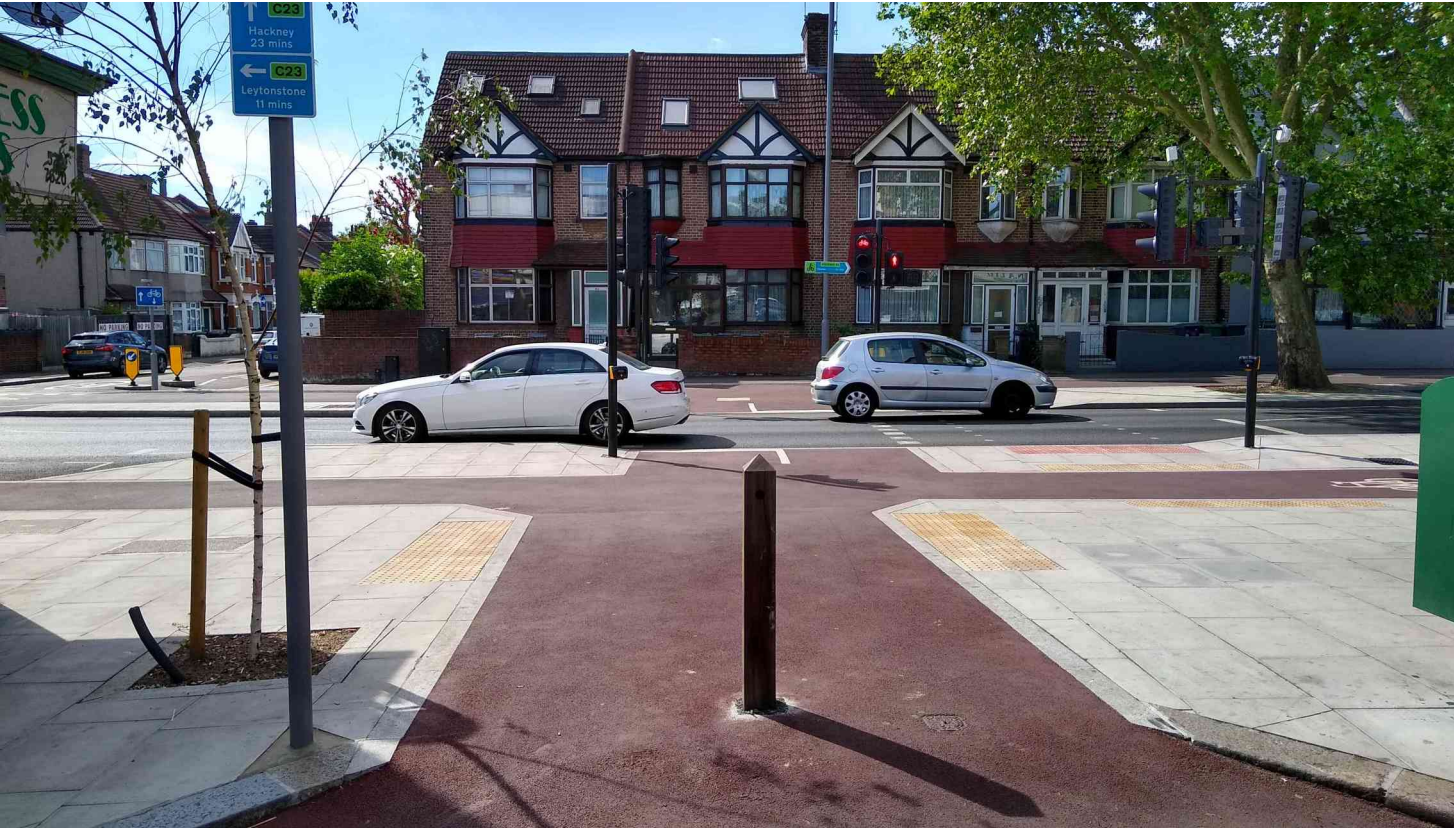
The result is local access streets don't need cycle tracks because they are low speed and low traffic.

Flow roads and area access/urban through road get the cycle tracks.



*Hang on, this is Poole, not Papendrecht!
Link from a filtered side street joining signals on a main
road with cycle tracks.*

Now we can start designing for cycling



Lea Bridge Road,
London.

Low traffic side
streets plugging into
main road cycle
tracks where the
motoring and cycling
networks coincide.

Now we can start designing for cycling



Westgate roundabout,
Chichester.

The local cycle
network isn't great,
but this developer-led
project on a main
roundabout does
some local heavy
lifting.

Now we can start designing for cycling



Victoria Road,
Glasgow.

Part of the South City
Way connecting
suburbs to the city.

Quieter side streets
plugging into the main
cycleway which also
provides access to
shops and services.

Now we can start designing for cycling



Chorlton Road,
Trafford, Greater
Manchester.

A filtered side street
providing access to a
protected junction
which used to have
five traffic arms.

Now we can start designing for cycling



Judd Street, Camden, London.

The cycle route uses the filtered side street, then crosses the Euston Road to become a pair of cycle tracks on Midland Road (which is one-way for general traffic).

Now we can start designing for cycling



Kent Street,
Birmingham.

An extension to the
A38 cycleway.

The area is being
redeveloped from
post-industrial to
residential and
eventually, the cycle
track won't be
needed.

Now we can start designing for cycling



Railton Road, Brixton, London.

Part of a low traffic neighbourhood with a low frequency bus route.

Cycle tracks are not needed here on Cycleway 48.

Now we can start designing for cycling



Claridge Road,
Thamesmead,
London.

Not a road, part of a
cycling network
separated from the
main road network.

Here, providing
access to a primary
school.

Now we can start designing for cycling

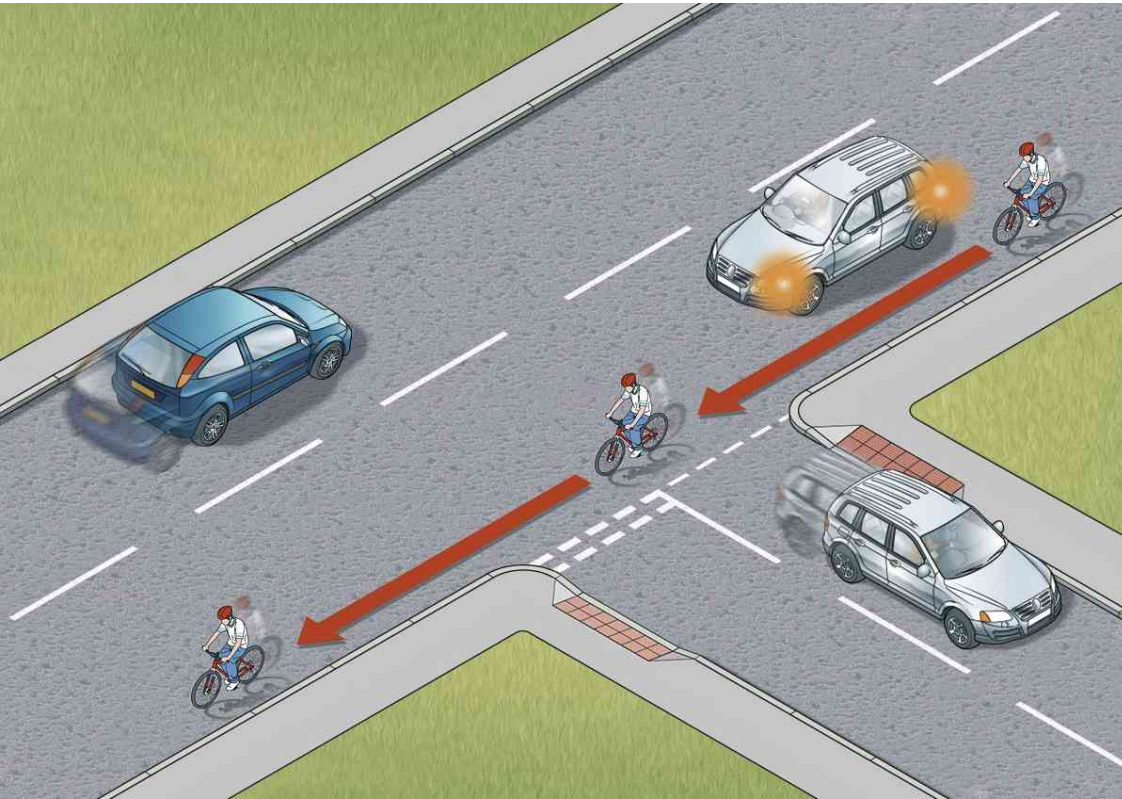


Abbey-Chesterton
Bridge, Cambridge.

A long time in the
planning, but a vital
piece of the city's
network.

It creates a route
which simply doesn't
exist for driving.

Back to the Highway Code (for cycling)

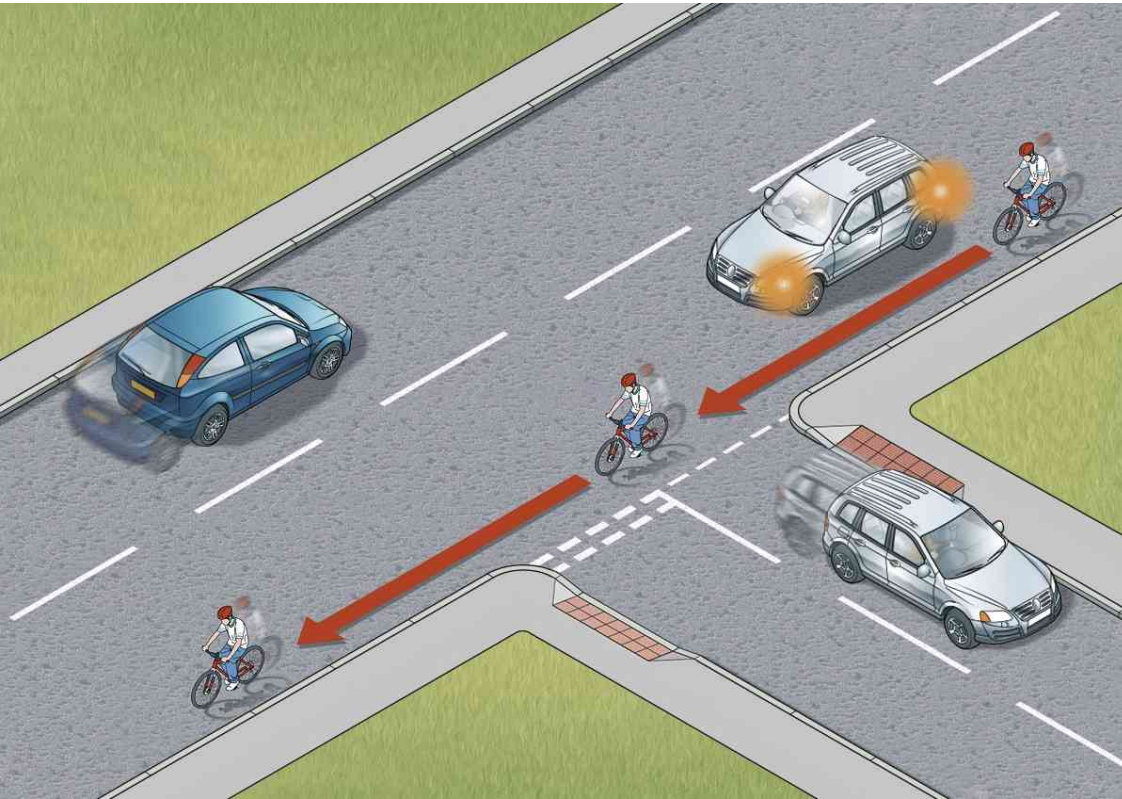


Rule H3 of the Highway Code.

“You should not cut across cyclists, horse riders or horse drawn vehicles going ahead when you are turning into or out of a junction or changing direction or lane, just as you would not turn across the path of another motor vehicle”

Does this rule work?

Back to the Highway Code (for cycling)

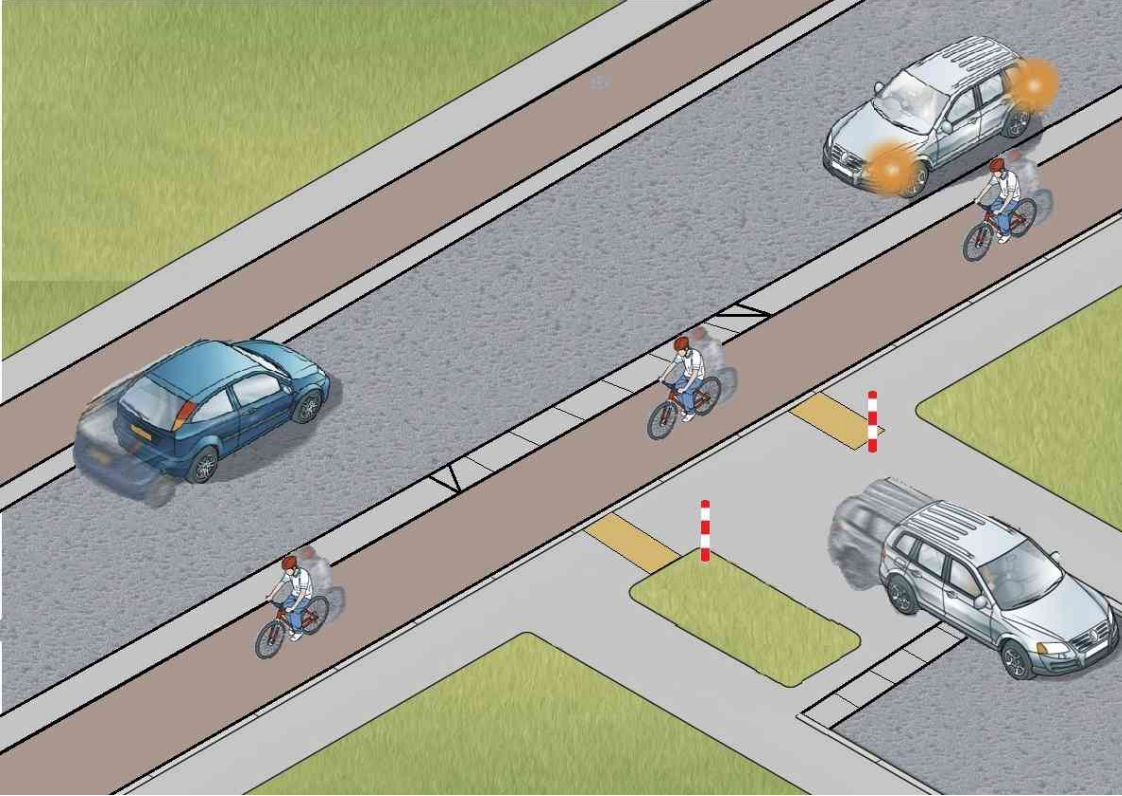


It probably hasn't been thought about, but the main road here looks like an area access road/ urban through road.

How likely is it that drivers will obey Rule H3?

Can we have a show of hands – who thinks drivers are likely to obey the rule?

Self-explaining design



Is this layout better?

Design > Rules – an important response to *safe roads* and helps with the *safe speeds* aspects of the Safe System approach.

But, we can only start to do this when we have decided how our network should be arranged.

The side street here ***must*** be low traffic for this treatment to work.

Self-explaining design



Manchester vs Wassenaar



What messages are users being given?

Self-explaining design



A UK street and a Dutch street.
Both about 15 metres wide.
Both urban through roads.



What messages are users being given?

Self-explaining design



16.5k vehicles per day vs 11.5k vehicles per day.
This is more than about cycling.

A tale of two high streets:
Green Lanes, Haringey.
Middenweg, Amsterdam-Oost



Self-explaining design



One British and one Dutch.
Maybe we're not so different!



A tale of two residential streets.
Both filtered and traffic calmed for
local access by motors.



Designing for sustainable mobility

And don't forget management



Cycleway 2, East London.



Network design provides resilience.
Abandoned people might not come back.

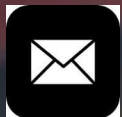
Final thoughts



- A designer ***cannot*** make strategic decisions – that's the job of senior officers and councillors.
- Routes don't grow cycling, networks do, and so if we are taking Vision Zero seriously, this ***must*** apply to network planning even before we look at streets and junctions.
- Schemes fail/ get watered down because we've not looked at network and we've not taken some decisions around it.
- Getting things wrong should be acceptable, but we also need to back that with investment for monitoring and adjustment.
- Design is way more effective than rules are.



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