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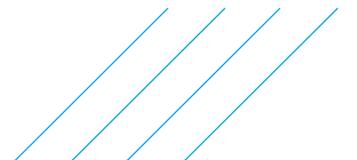
Member of the SNC-Lavalin Group

'Cycling is Changing
- the transition from niche mode to mass transport'
Neil Guthrie, Specialist Advisor - Cycling



Background

- Since 2014, UK cycling infrastructure has evolved more rapidly than in the previous 30 years.
- Great leaps forward achieved matching the best provision in Europe's most cycle-friendly countries (Netherlands, Denmark)
- But limited to a relatively small number of cities – London, Brighton, Manchester, Birmingham, Nottingham, Glasgow
- A new standard of '**2nd generation**' infrastructure is now available to replace conventional cycling facilities
- Until April 2016, many continental style measures required special DfT authorisation
- TSRGD (national standards for traffic signs) updated April 2016. Innovative facilities no longer need authorisation freeing up LAs to implement 2nd generation infrastructure
- A new era of 'mass cycling' finally possible – 'all ages, all abilities' ~~



1st to 2nd generation infrastructure

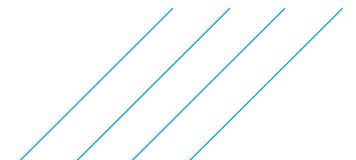
Moving from:

- a niche mode of transport comprising 1-3% of local trips
- a male dominated mode, mainly for the 20-49 range
- limited journey purpose (commuting and recreational trips)
- a risky mode where a lapse of concentration could result in serious or fatal injuries



Moving to:

- a mass mode comprising 10-30% of local trips
- an equal gender split, a wide take-up from childhood to 70+
- all journey purposes (work, shopping, VFR, recreation, access to services etc.)
- a low hassle, low risk means of transport – lapse of concentration rarely has serious consequences~~~



Conventional infrastructure and new solutions

Shared footways (unsegregated or badly segregated)

- the backbone of urban cycle networks, cheap/easy to implement, often require no more than a few signs
- offer reassurance to LAs that safe cycling is provided for... but
- they neither look nor feel like attractive cycling environment, - often cluttered with street furniture and signs
- no guidance on where to walk/cycle = conflict/delay between users
- cause confusion to drivers emerging from side roads
- those cycling in same direction as carriageway vehicles at risk of 'left-hook' at junctions~



Shared footways, badly segregated

- ineffective, often just a white line
- poor compliance, people choose most direct/least cluttered side
- **New option, two-way cycle track**
- one way preferred but two-way a cheaper, more space-efficient solution, best where there are few side-road junctions (e.g. along a riverside). Can also bypass signals at T junction. ~~~

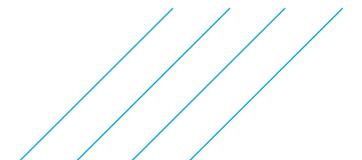


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Conventional infrastructure and new solutions

Conventional cycle lanes

- Why used? Dedicated space on carriageway, priority over turning traffic at side road junctions, direct facility
- But ... do not offer perception of comfort and safety needed to achieve mass cycling on a busy road
- Too much reliance in the past. Restrict use to slower/quieter roads~~



Conventional infrastructure and new solutions

Segregated cycle lanes

Three broad categories, generally all preferable to conventional cycle lanes

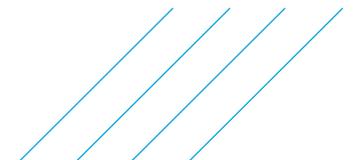
- Light segregation (below left), intermittent vertical features,
- Dutch segregation (below centre) continuous kerb between carriageway and cycle lane,
- Danish or stepped segregation (below right) = cycle track between carriageway and footway level



Conventional infrastructure and new solutions

Bus stops – conventional layout

- Various layouts but usually require cyclist to wait behind a bus or squeeze between a bus and a car



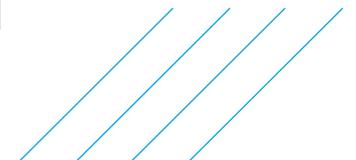


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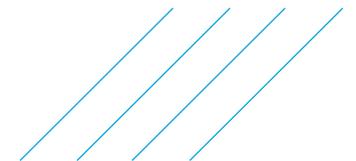
Crossings – previously Toucan, now Zebra style or cycle-only

- Toucans lump cycling and walking together – different modes have different needs. The slowest cyclist usually quicker than the fastest walker. Signal times inefficient.
- Cycle-only gives a clear crossing, longer distances possible,
- Zebra style parallel crossing now legal, bringing benefits of Zebra crossing to cycling



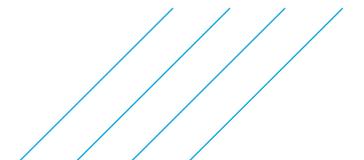
Measures at signalised junctions

- **Advanced stop lines** = standard treatment for on-carriageway cycling
- Poor compliance by all users (including cyclists)
- Of no use at all if you arrive when lights are green, can be of minimal use if lights are red. A crude, unsophisticated facility
- New guidance restricts their use (according to approach lanes, signal timings and traffic flows)~~



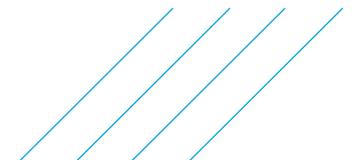
Measures at signalised junctions

- a range of new options are now available (partly due to new legislation)
- these options aim to design out the 'left hook' and to assist with the right turn
- 'hold the left', two-stage right, and 'early release'~~



Measures at signalised junctions

- **Cycle gate** (below left)
- **Dedicated right turn stage** (below right)~~



Roundabouts

- Conventional roundabouts particularly hazardous/intimidating for cycling round (2 collision types)
- Two new layouts have been trialled/introduced, classic Dutch (with Zebra style crossings, and a segregated signalised design)



Classic Dutch type roundabout

- TRL research
- Sydenham Hill (Crystal Palace)

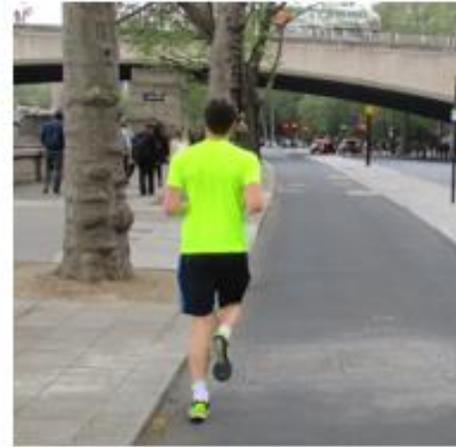


Impact of new infrastructure on cycle flows (outcomes)

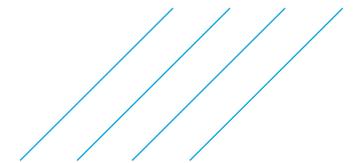
- East-West Cycle Superhighway, Victoria Embankment, 3,600 morning peak up **54%**
- North-South, Blackfriars Bridge, 4,700 morning peak, up **55%**
- CS5, Vauxhall Bridge, 1,900 per morning peak up **73%**
- Cycle routes are taking up **30% space**, carrying **46% traffic** (at peak times)
- East-West and North-South corridors **carrying 5% more people per hour** than they could without cycle lanes (expected to increase)~~



Other modes and vehicle users in the Cycle Superhighways

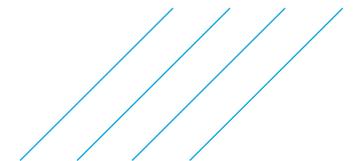


New name needed?



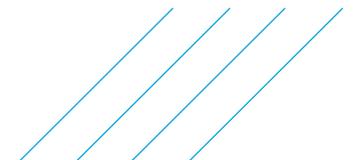
Cost of 2nd generation infrastructure

- Conventional cycling infrastructure cost approximately **£50,000-£100,000/km**
- Most expensive central London schemes = £5m per km (**often over £1m**)
- Do not need to spend millions/km but **£500,000** is a useful guide
- Cheaper but effective schemes possible (South Wimbledon below left)
- Blue paint Cycle Superhighways = impressive impact on flows 50% to 80% (problem was junction treatment)~~



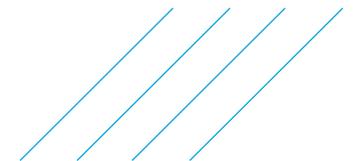
New focus, nationally, on quality over quantity

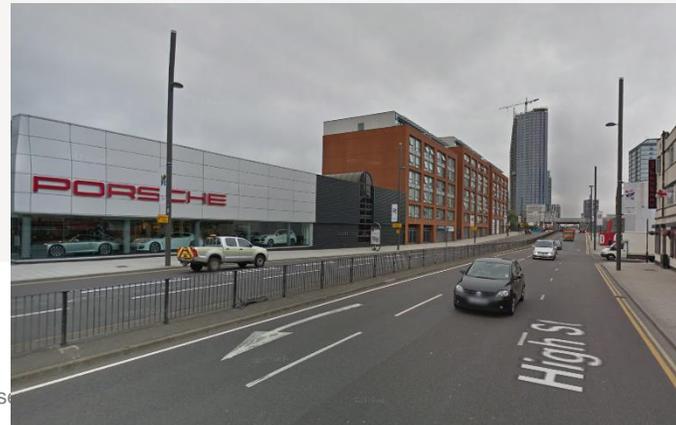
- TfL (from 2014) generally **won't fund** major cycling schemes that rely on **shared footways and ASLs**
- Highways England (Interim Advisory Note, 2016) now conditionally advising against conventional cycling infrastructure (Toucan crossings, shared facilities and advanced stop lines)
- Bournemouth Cycling Officer (2015) - *"We'd intended for route to be 3km but costs of Danish style paths were massively underestimated. Rather than spreading the money thinly/doing something mediocre, we decided to do **1km of good scheme** to set a working precedent for future projects."*
- Birmingham City Council (March 2017) *"Desired step change in modal shift will only be achieved if programme is refocused on a **smaller number of high quality routes**"*
£100,000/km increased to £500,000. ~~



Finding space for 2nd generation facilities

- Typical urban carriageway 8m wide – how to free up space?
- Minimise main traffic lane widths, or remove lane if spare capacity (restrict car parking)
- Reallocate space from narrow one-way cycle lanes –
- Remove centre hatching and turning ‘pockets’
- Remove pedestrian refuge islands replace with Zebra
- Footways can be removed or narrowed (in certain circumstances)



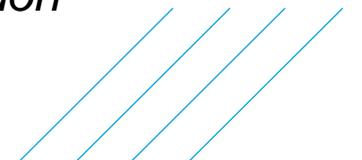


Best practice at Vauxhall – ASLs/shared footway replaced by segregated track and cycle-only crossing

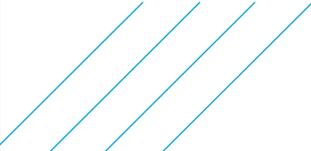


“We've brought a bit of Amsterdam to the unlikely environs of Vauxhall - opening up access to huge swathes of south London for safer cycling”.

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Waiting patiently...



Summary

- A move from niche mode to mass transport (all ages, all abilities) is possible
- Must acknowledge unsuitability of conventional 'first generation' infrastructure
- Need to focus on quality even if it means less quantity. Flagship schemes important to demonstrate concept.
- Emphasise space efficiency of cycle traffic. Reallocating road space results in more people travelling down a corridor. Cycling infrastructure is a solution to capacity problems, not a threat.
- Avoid cycling and walking sharing space where possible – two very different modes
- London has become a test bed for cycling infrastructure. Much of it works but not all of it! Learn from successes and failures.
- Must embrace **2nd generation** infrastructure. Half hearted schemes will not be effective in increasing flows. Reduce route length if necessary to maintain quality (£500,000/km instead of £100,000)
- Be creative in finding the necessary space (e.g. from spare traffic lanes, substandard cycle lanes, central reservations).~~~

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