Bus Centre of Excellence / Bus Knowledge Sharing & Information Network

Bus Safety Good practice

Kate Carpenter, Jacobs

Stelios Rodoulis, Bus Centre of Excellence

SoRSA Conference 16 June 2025

Scope

Objective: consider specific issues relating to

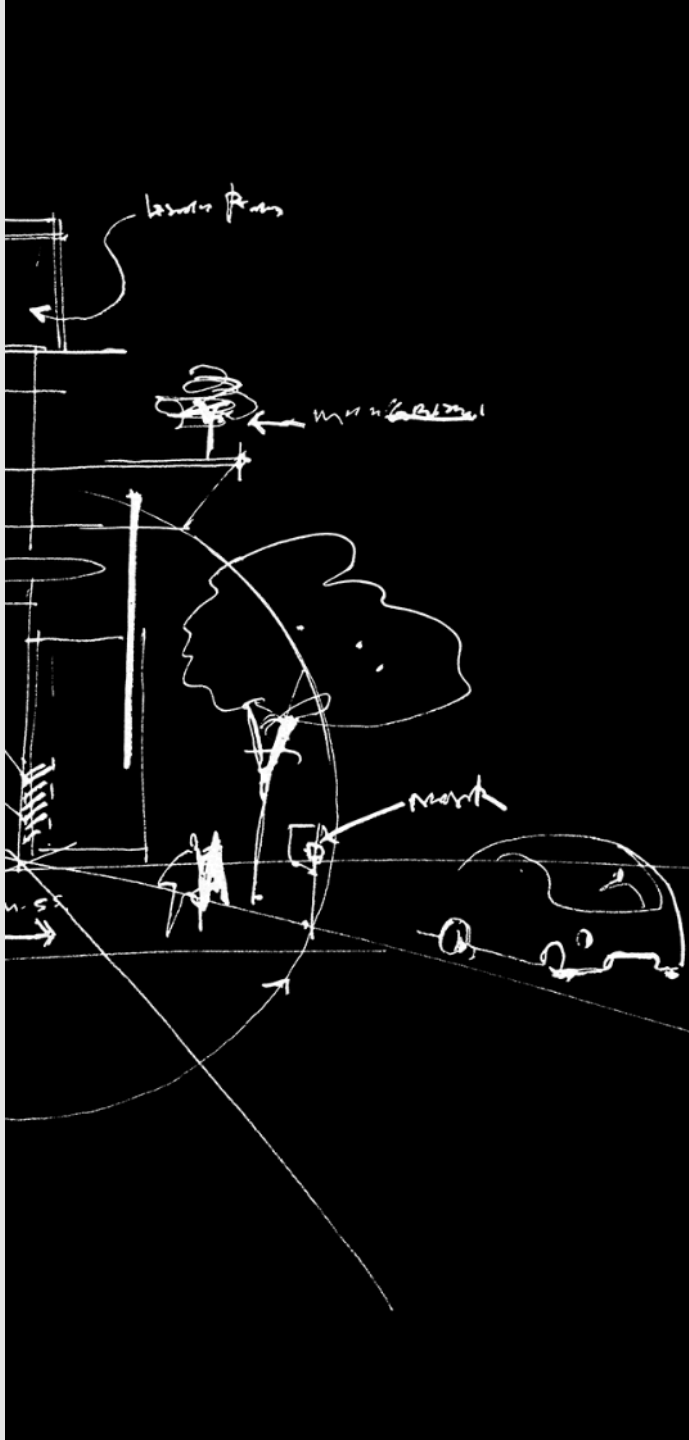
- safety for users of buses
- safety of other road users around them

1. Stelios Rodoulis: Overview of the Bus Centre of Excellence and Bus Knowledge Sharing Information Network (Bus KSI)

2. Workshop A: safety issues relating to buses

3. Workshop B: specific bus-related design issues

choose (each table to decide):
B1: general bus stop issues
B2: floating bus stops: bypasses and boarders



BCoE IDENTITY & MISSION

- Creation of BCoE was recommended in the National Bus Strategy
- DfT funded, part of the Chartered Institution of Highways and Transportation (CIHT)
- A hub for bus professionals across the industry, supporting skills development, knowledge sharing, and professional growth.

Raise capability and share best practices among all those involved in the delivery of bus services and infrastructure

Share knowledge and provide know-how for a new generation of bus professionals

Promote buses' role in a net zero transport system

Bus Centre of Excellence

www.buscentreofexcellence.org.uk

OUR OFFERING

- FREE Membership for all bus professionals
- Attend industry-leading events and conferences
- Join our specialist Networks where members can collaborate, exchange insights, and tackle industry challenges:
  - **Bus Knowledge Sharing & Incident Network** (open to all – focused on bus safety-related discussions)
  - **Public Sector Forum** (exclusive to public sector professionals)
  - **Zero Emission Buses Drop-in Sessions** (open to public sector professionals and bus operators, hosted by the First Bus Decarbonisation Team)
  - **Franchising Network** (open to all - to educate, inform and expand the expertise of bus professionals who are actively engaged or aspiring to Franchising.)
- Free or heavily discounted e-learning opportunities, including bus-specific training modules. A training course on LTN 1/24 is under development.
- Stay up to date with bus-related policies & receive our newsletter
- Join our LinkedIn group

Bus Centre of Excellence

Not yet a BCoE member? It is FREE and quick to join

BUS KSI NETWORK

- The Bus Knowledge Sharing and Incident Network has been set up by the BCoE to lead the improvement of bus safety across the UK.
- It brings together safety experts and bus professionals from across the industry to share learning, build best practice and influence the policy and regulatory direction of safety for the bus industry.
- The long-term vision is to develop the Network into a Rail Accident Investigation Board (RAIB) style board that is Government led, with bus safety as one branch within a wider road safety board.

Bus Centre of Excellence

Bus KSI Network hosted its inaugural Bus Safety Conference in London, 28th May. You can access the presentations from the conference **here**

BUS KSI NETWORK

The objectives of the Bus KSI network are to:

- Facilitate and encourage learning from a wide range of bus fatal or serious incidents.
- Enable safety knowledge sharing across the bus industry, including incident investigation outcomes, recommendations and best practice.
- Provide networking and learning opportunities to advance knowledge of strategic safety change and development, and how to successfully deliver safety improvements.
- Provide access to subject matter experts to assist in understanding the challenges, individual incidences, thematic and trend analysis.
- Make a case for continued open safety knowledge sharing, with Government support and directive, for the bus industry.

How to Join:

- This network is only available to BCoE members.
- If you are an existing members, please email bcoe@ciht.org.uk to join the network.
- If you are not a member, please scan the barcode to register for our FREE membership, then email us to join the network.

Bus Centre of Excellence

2. Workshop A: safety issues relating to buses

10 mins to write + 10 minutes to collate feedback

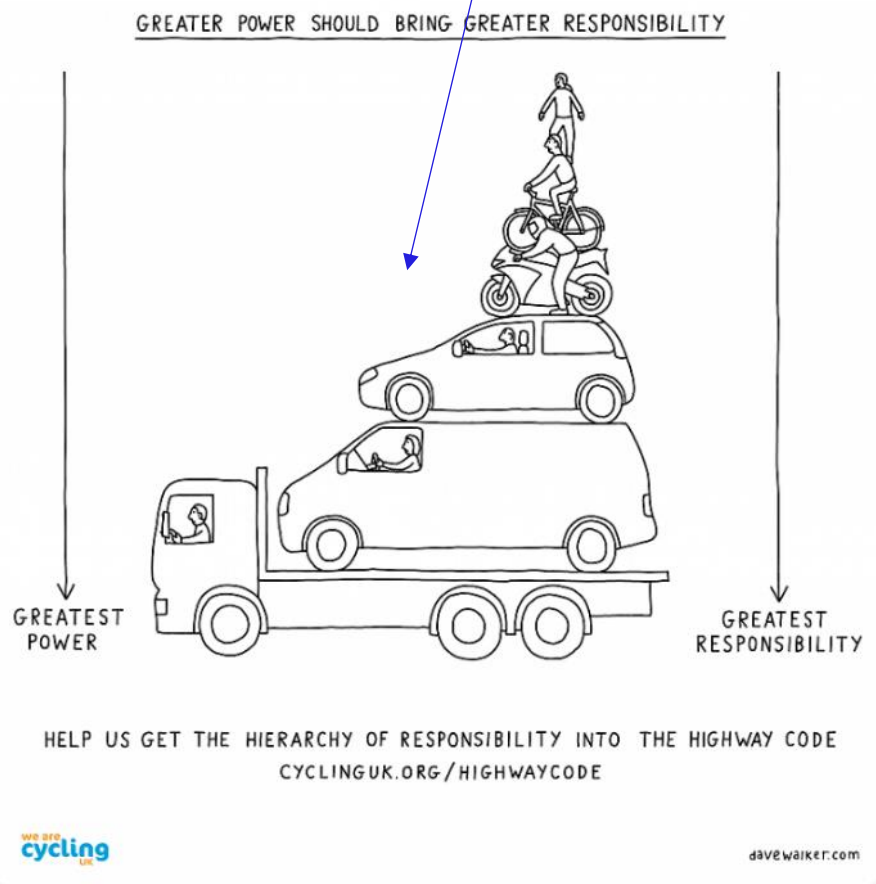
Use Table A on your tables: maximum 3 issues

- **safety issue** – take widest definition of safety that you like
- **who is affected**?
- **what data exists**?

SoRSA 2025 Bus safety session Monday 16 June 2025 - Table for Bus workshop A

	Problem	Who is casualty	What sources of data? any shortfalls in data?	What might be done?
sample	Pedestrians hit by buses	• Pedestrian • Passengers if bus stops suddenly?	STATS19?	
1				
2				
3				

Where do buses fit?



Please hand in your sheets and we will collate and share

2. Workshop A: feedback

- **safety issue**
- **who is affected**?
- **what data exists**?

SoRSA 2025 Bus safety session Monday 16 June 2025 - Table for Bus workshop A

	Problem	Who is casualty	What sources of data? any shortfalls in data?	What might be done?
sample	Pedestrians hit by buses	• Pedestrian • Passengers if bus stops suddenly?	STATS19?	
1				
2				
3				

Please hand in your sheets and we will collate and share

3. Workshop B – Bus stop locations/design *or* bypasses and boarders

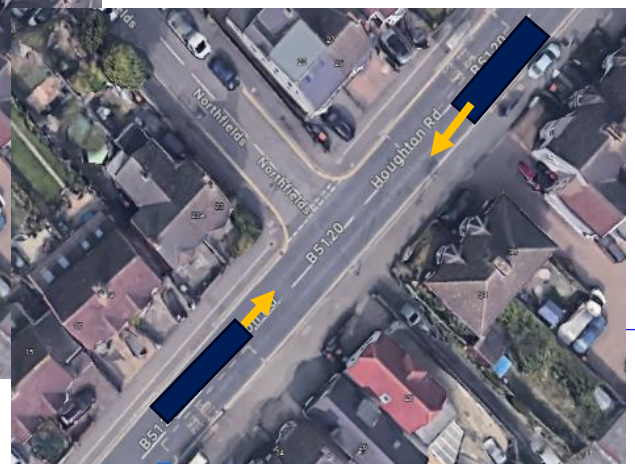
10 mins to write + 15 minutes to collate feedback

Please hand in your sheets and we will collate and share

imagine design manager asks: "what should we consider to make it work perfectly?" (zero problem RSA)

Option B1: bus stop locations/design

how to fix location along road?
relative to each other?
relative to junction?
Origin & destination?
Tactile paving? At boarding *and* at crossing points?
What user additional requirements?
(cyclists **and** bus users?)



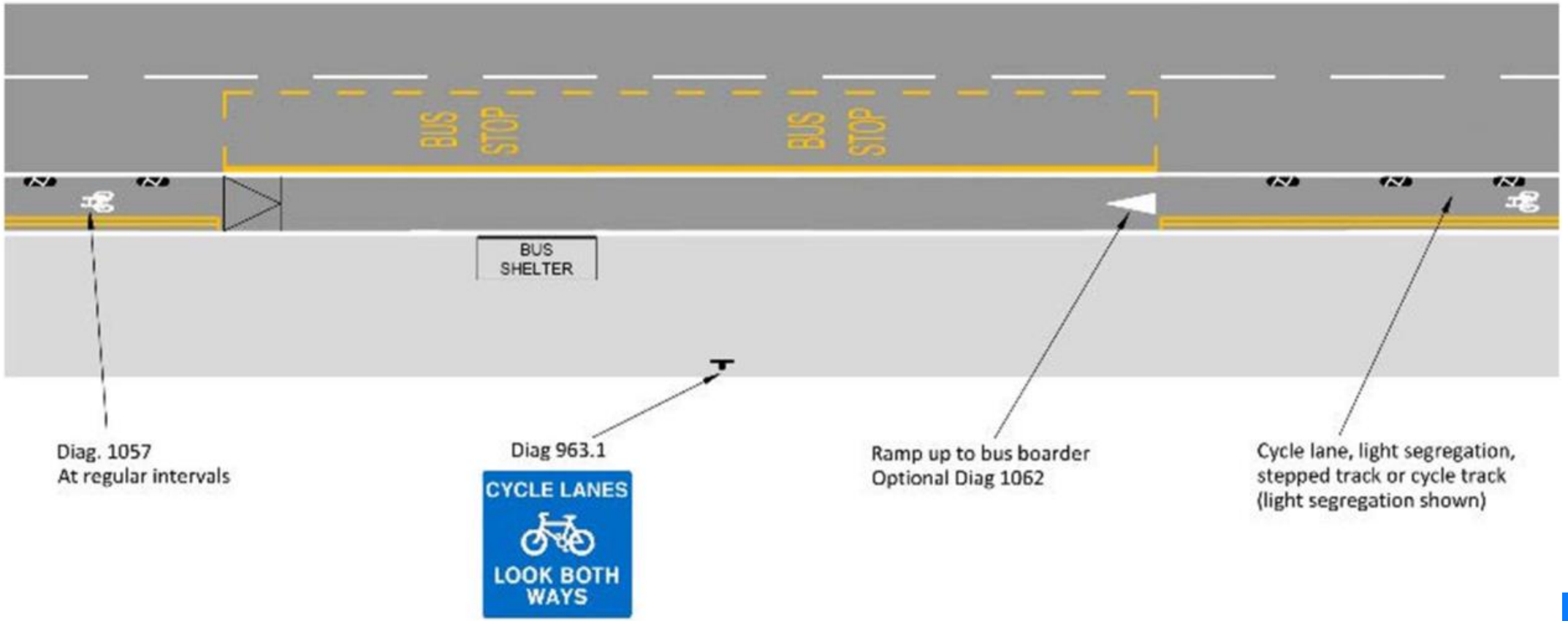
Option B2: floating bus stop design
is border or bypass better? (samples on tables)

cycle lane at road or footway? what kerbs?
Red or buff tactile? Shape?
markings? Studs? Beacons? Zigzags?
crossing location?
What user additional requirements?
(cyclists **and** bus users?)

Bus stop Boarder

- Cycles – light segregation on approach & downstream, raised to footway-level through stop)
  assume cycles have priority?

Figure 6.32: Bus stop boarder layout

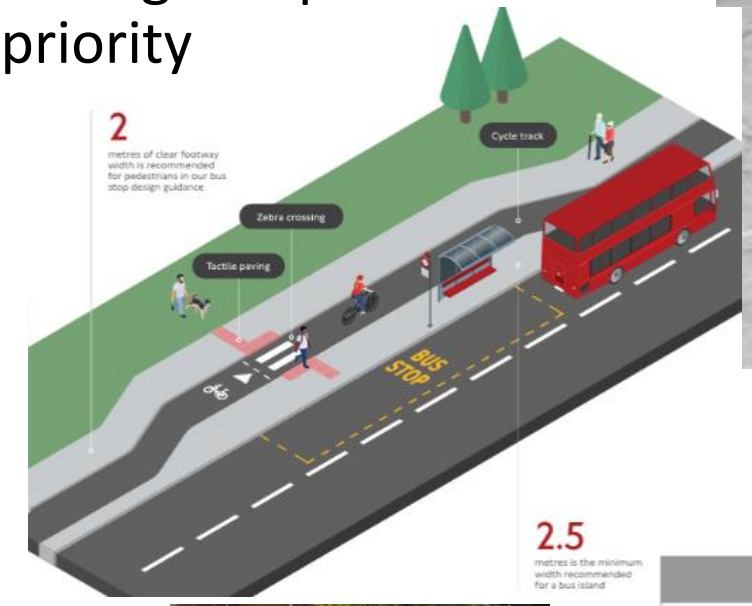


Bus stop Bypass

- Cycles – segregated route through stop pedestrians crossing have priority

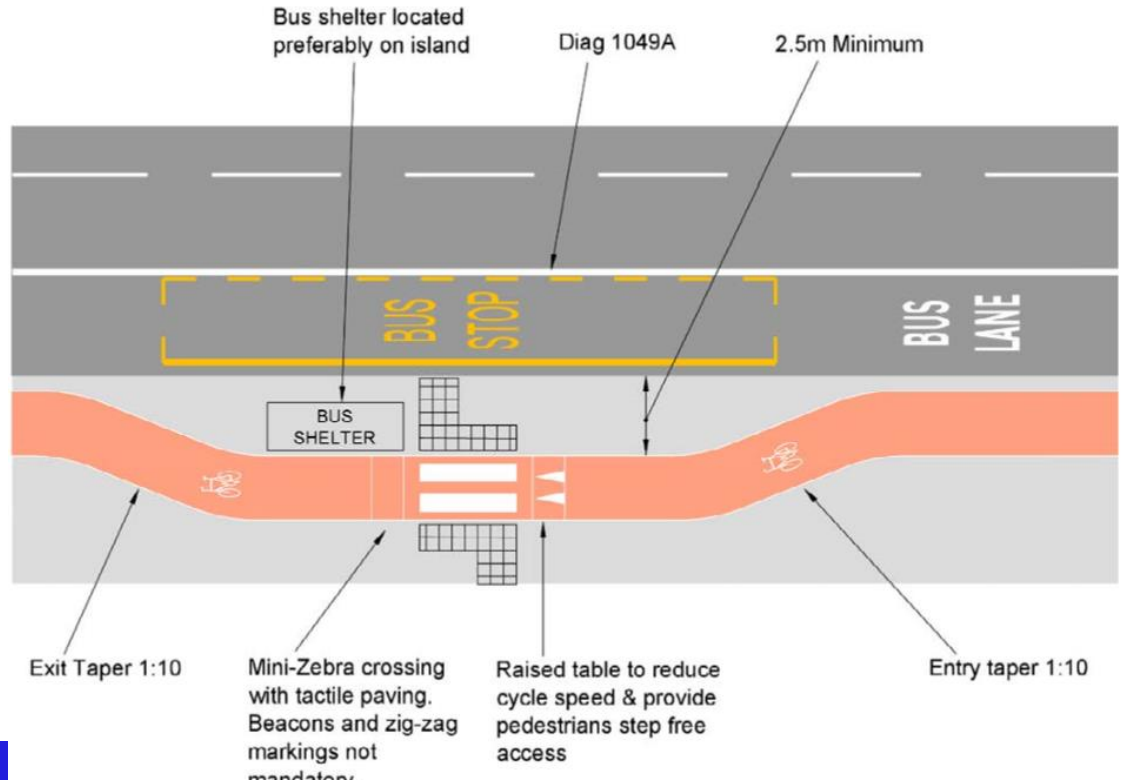
bypass, colour, no stripes, buff tactile

bypass, stripes, red tactile



bypass, stripes, red tactile

bypass, no stripes, buff tactile

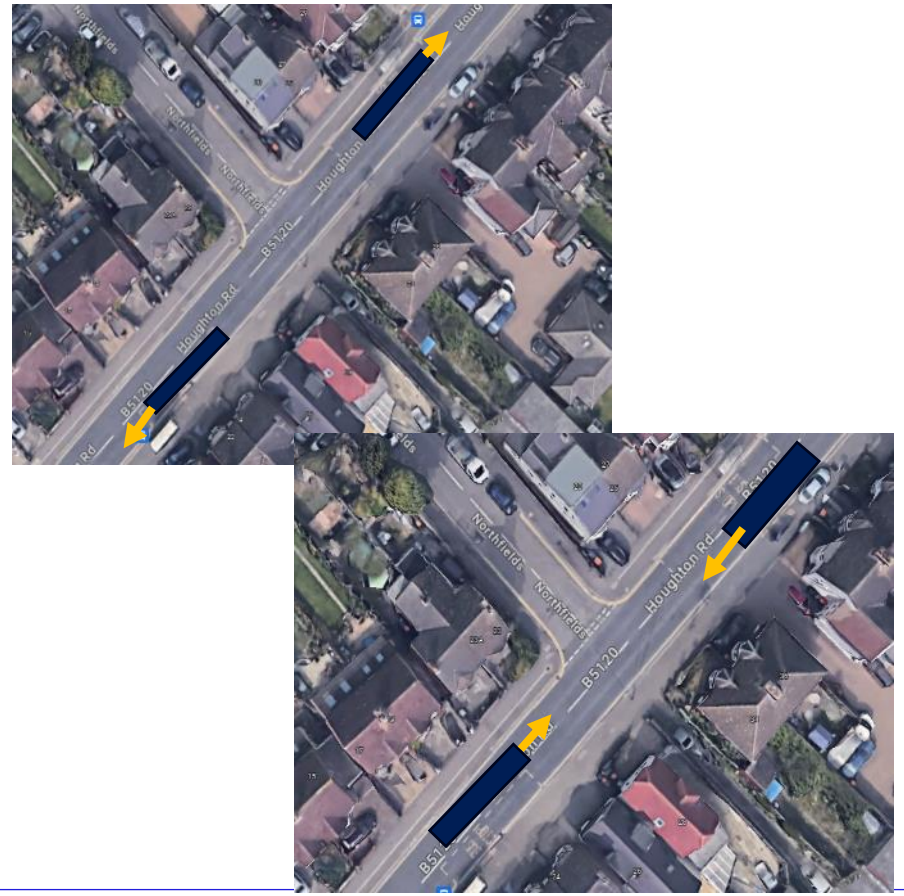



Shared footway cycleways
Large secondary school
Toucan crossing
B5120
Houghton Rd
Northview Rd
Northview Rd
Dunstable Foodbank
Google
75
71
69
67
65
63
94
92
90
88
86
4
84
82
10
2
78
74
72
70
59
57
55
53
49
47

3. Workshop B Option1: bus stop locations/design - feedback

imagine design manager asks: “what should we consider to make it work perfectly?” (zero problem RSA)

Option B1: bus stop locations/design
how to fix location along road?
relative to each other?
relative to junction?
Origin & destination?
Tactile paving? At boarding *and* at crossing points?
User additional requirements?



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Please hand in your sheets, we will collate and share

3. Workshop B2 Floating bus stops

Option B2: floating bus stop design

is border or bypass better? (samples on tables)

cycle lane at road or footway? what kerbs?

Red or buff tactile? Shape?

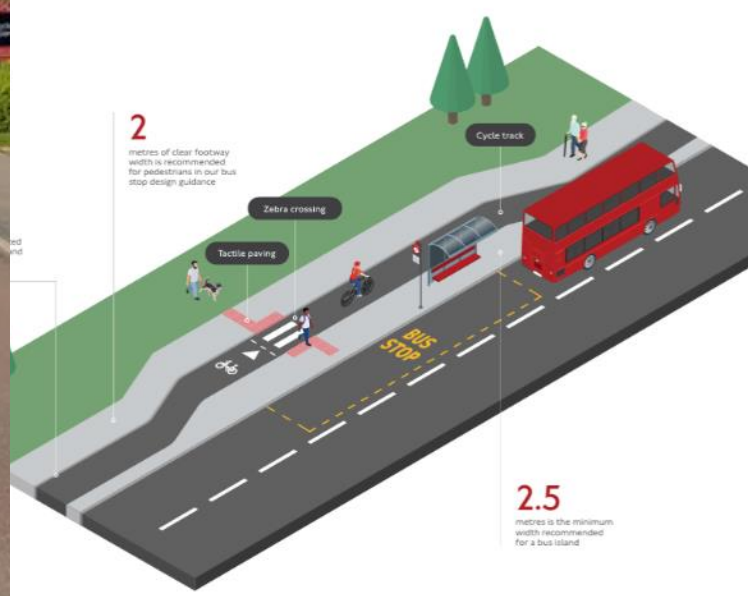
markings? Studs? Beacons? Zigzags?

crossing location?

What user additional requirements?

(users of cycle route **and** bus stop?)

bypass,
no stripes, buff tactile



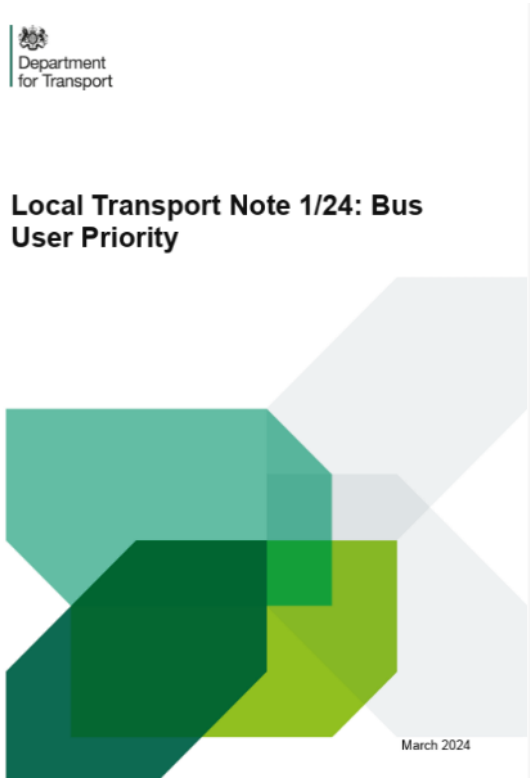
bypass, stripes, red tactile

bypass, colour,
no stripes, buff tactile

Bus stop boarder

Links

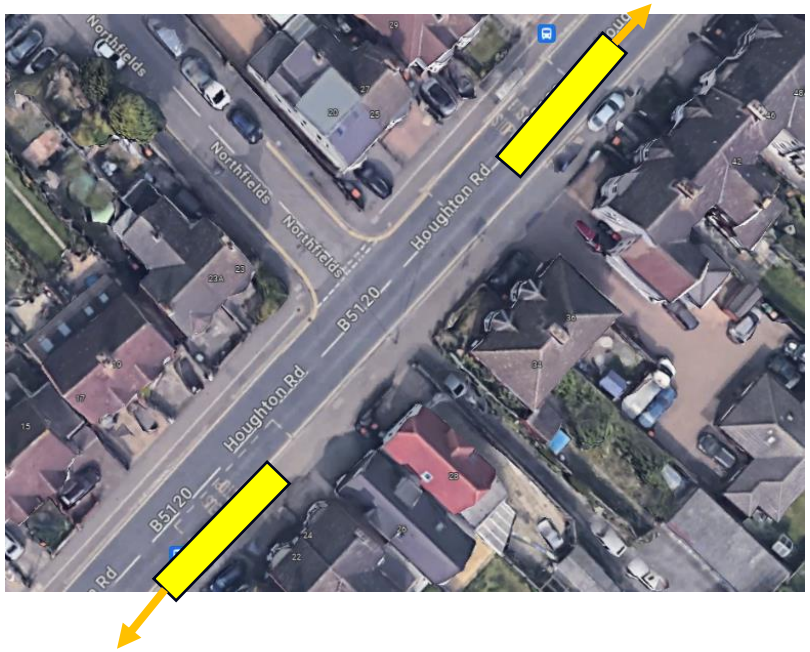
- TfL Bus stop bypass safety review: 164 locations reviewed; 50 stakeholder groups involved https://content.tfl.gov.uk/bus-stop-bypass-safety-review-2024.pdf
- TRL review of stops https://www.trl.co.uk/uploads/trl/documents/PPR855%20-%20Bus%20Stop%20Bypasses%20-%20Surveys%20of%20Pedestrians%20and%20Cyclists.pdf
- LTN 1/24 Bus User Priority



CIHT

Thank you for your contributions!

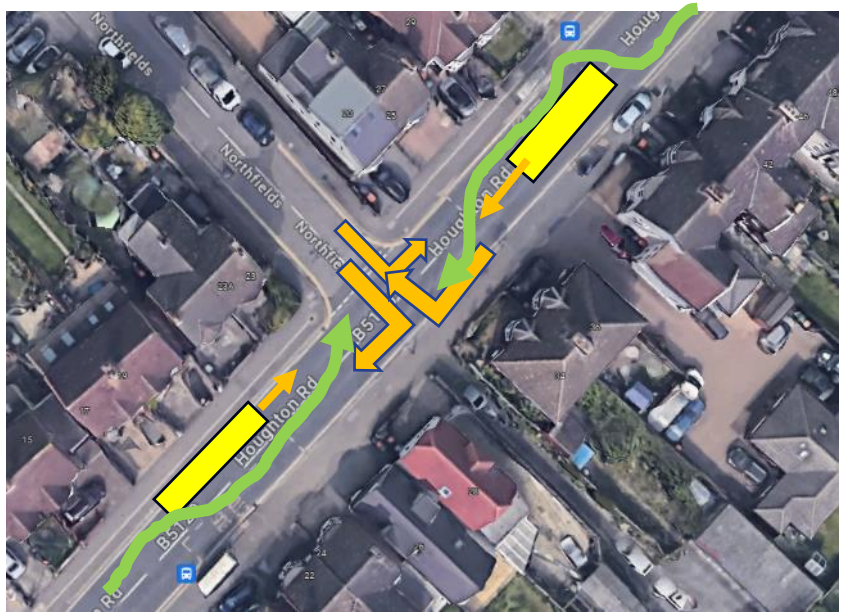
3. Workshop B Option1: feedback
Bus stop design for bus stop pairs



Nose to nose

× As buses leave the stop they pull towards each other; overtaking are caught between busesvehicles

Please hand in your sheets and we will collate and share



Tail to tail:

- ✓ As buses leave the stop they pull away from each other; overtaking vehicles are not caught between buses
- ✓ Overtaking vehicles less likely to be on the wrong side of the road at the junction

Add junction and driveway manoeuvres = added conflicts, more risk

Some closing thoughts (share slides after, not to run in detail on the day)

What injury data won't show

https://www.think.gov.uk/thinkmap/
https://www.crashmap.co.uk/

- :
  - **false negative – especially for pedestrian, cycle and scooters/e-scooters** (many injuries are unrecorded)
  - **risk reduction equally important**. there are few pedestrian deaths on the most difficult junctions because they are so hostile people cross elsewhere. Absence of collisions doesn't mean it's safe
  - **'Build it and they will not come':** If stop design and/or location are poor people don't use them and may not travel at all leading to social isolation which impacts life expectancy as much as smoking (Joseph Rowntree Foundation research)

Interchange design considerations

- Inter-visibility between driver and passengers
- Interaction with cycle routes (bypasses)
- Kerb height and form; tactile paving
- Tail to tail, not nose to nose, 40m separation
- Lighting
- Bus Operator/highway authority co-ordination
- Ensure timetables allow safe driving
- Access for passengers with disability
- Temporary works and bus stations

“ [total silence].”

Department for Transport

Guidance on the Use of Tactile Paving Surfaces

“A tactile warning surface is not recommended for use on raised bus boarding areas.”

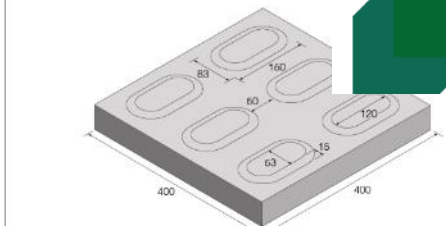
Department for Transport

Inclusive Mobility

A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure

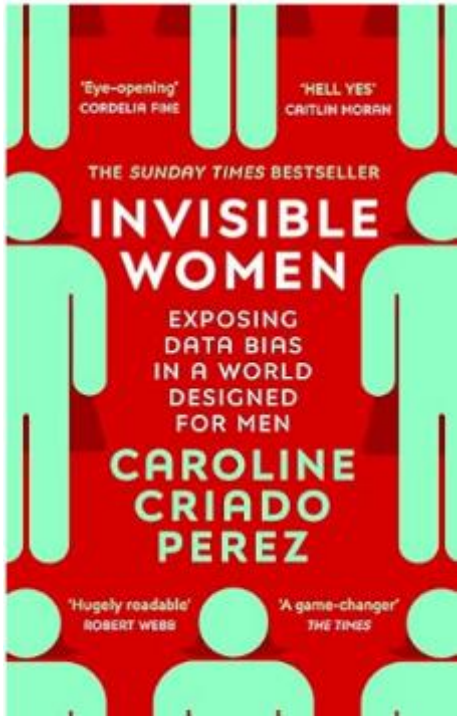
December 2021

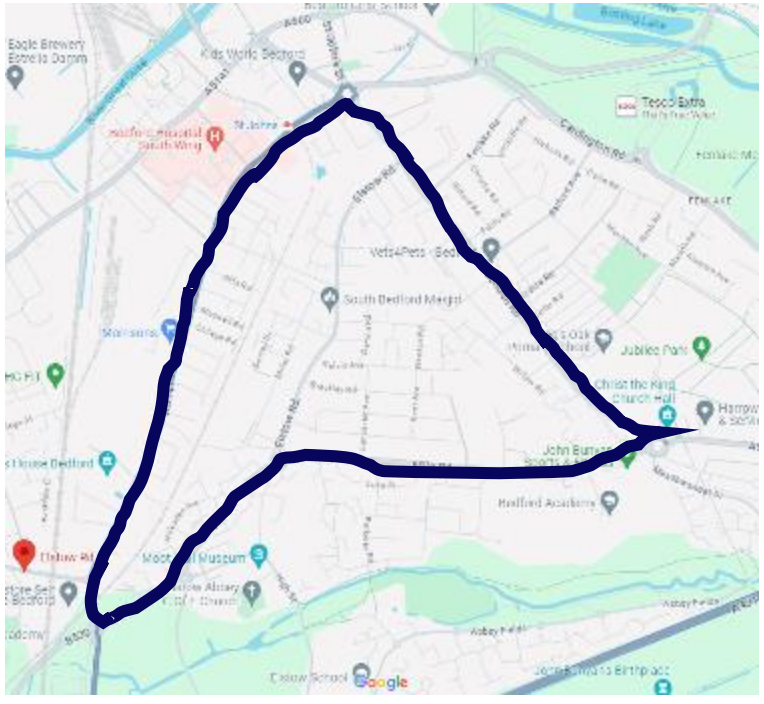
Figure 20: Profile and plan of the platform edge

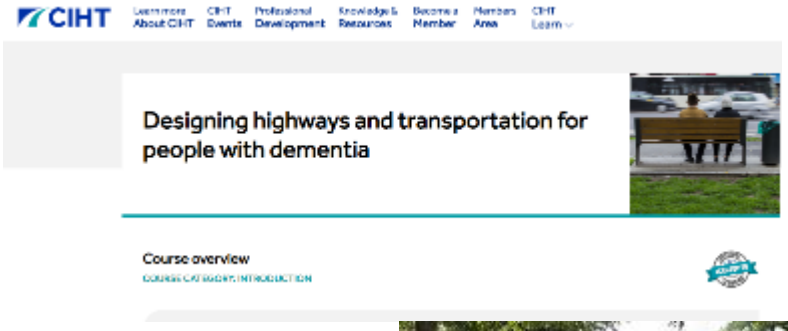


Bus routes/stops can influence risk,

- Desire lines, origins vs destinations for ***all*** user groups
- Especially for school buses (dedicated eg children with special educational needs)
- Presumed parental supervision, which may not be present routinely or occasionally
- Parents may not know the actual routes children follow (via shops, petrol filling stations etc)







Bus stop design (3)

- Lighting of stop; approaches and potential crossing points
- Need to interact with desire lines
- Understand fear of crime and its effect on travel
- Lighting on connecting routes (luminance, quality, time of operation)

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Milton Keynes Council reviews streetlight switch-off decision

19 July 2012

A decision to switch off streetlights in Milton Keynes could be reversed following a 30% rise in accidents and two deaths in unlit areas.

Nearly 2,600 lamps could now be relit if a proposal is accepted by the council's cabinet.

Council leader Andrew Geary said it was "absolutely right" to review the decision to turn off 2,700 of the 7,100 grid road lights in the town.

The decision was taken in September last year as part of budget cuts.

Energy savings would be achieved on a further 3,300 lights through "dimming and trimming".

Lights were kept on by roundabouts, junctions and bus stops.

Accidents increased

However, during two recent inquests, the problem of drivers' vision being impaired by the rapid alternation of lit and unlit sections was highlighted.

LONDON SCHOOL of HYGIENE & TROPICAL MEDICINE

Switching off street lights at night does not increase car crashes and crime

29 July 2015

New research sheds light on how local authorities can safely save energy costs and reduce carbon emissions.

Schedules and driver management

- Timetabling can increase risky driver behaviour
- Harsh acceleration and braking are often reported, would incentivising smooth driving reduce this? Telemetry efficient to identify risky driving style.
- Unclear if a skill deficit or attitude deficit?
- Monitoring eg using footwell cameras and dashcams?

Co-ordination between bodies: joining the dots

- Operator – highway authority – schools/colleges/other bodies – passenger representative bodies:
  - it only works at all if it's connected
  - it only works for all if it's accessible
  - access to buses stopping 'out in the road' because of uncontrolled parking
  - home to school transport routes
  - trip-chaining routes (bus-bus; bus-walk; bus-cycle; bus-scoot etc)
  - bus station safety eg poor match on desire line

- Temporary works
  - access for users with mobility or visual impairment at temporary stops
  - access for buses stopping 'out in the road'

Bus Centre of Excellence – collection of data Potential data sources for different types of incident and initial suggestion of impact/priority

No	Event - type	concern	Road users affected	Data sources	impact (no/scale)	potential benefit	priority
1	Road traffic collision (impact) – injury **reported** to police. • On road (public highway) • In depot • In public interchange (bus station) • Includes passenger caught up in door/fabric of bus, hit by wing mirror	• Injury to bus users • Injury to bus driver • Injury to other users • Users delay/inconvenience • Reputational/insurance impact • Deterrence of bus use • Damage to bus or other vehicles • Damage to infrastructure (street furniture, buildings etc)	• Bus passenger • Bus driver • Pedestrian • Cyclist • Motorcyclist • E- scooter user • Car user, • Goods vehicle user **injury/comfort/fear/delay**	• STATS19 data • Police investigations • Coroners' reports • Telematics • CCTV (in vehicle, street) • Dashcams (bus, public) • Driver report • Customer complaints • Surveys of users	High	High	High
2	Road traffic collision (impact) – injury occurs ***not* recorded** to police (known heavy under-reporting for pedestrian, cyclist and e-scoters for example)	• Injury to bus users • Injury to bus driver • Injury to other users • Users delay/inconvenience • Reputational/insurance impact • Deterrence of bus use • Damage to bus or other vehicles • Damage to infrastructure	• Bus passenger • Bus driver • Pedestrian • Cyclist • Motorcyclist • E- scooter user • Car user • Goods vehicle user **injury/comfort/fear/delay**	• Telematics • Hospital data • CCTV (on vehicle, street) • Dashcams (bus, public) • Driver report • Customer complaints • Surveys of users	High	High	High
3	Bridge Strike or other damage-only infrastructure impact (lamp column, sign, tree etc not within STATS19) – no injury	• Users delay/inconvenience • Reputational/insurance impact • Damage to infrastructure (street furniture, buildings etc)	• Bus passenger • Bus driver • Motorcyclist • Car user • Goods vehicle user **injury/comfort/fear/delay**	• Police investigations • Telematics • CCTV (in vehicle, street) • Dashcams (bus, public) • Driver report	mix of • low freq high impact • high freq low impact	high for bridge strikes, less for other events	high (targeted)
4	Harsh braking/acceleration/steering No collision but **resulting in injury** within bus	• Injury to bus users • Injury to bus driver • Injury to other users • Reputational/insurance impact • Deterrence of bus use • potential other future collision types	• Bus passenger • Bus driver **injury/comfort/fear**	• STATS19 data • Hospital data • Telematics • CCTV (on vehicle, street) • Dashcams (bus, public) • Driver report • Customer complaints • Surveys of users	medium	high	high
5	Harsh braking/acceleration/steering No collision and***not* resulting in injury** within bus	• Injury to bus users • Injury to bus driver • Injury to other users • Reputational/insurance impact • Deterrence of bus use • potential other future collision types	• Bus passenger • Bus driver **comfort/fear**	• Telematics • CCTV (in vehicle, street) • Driver report • Customer complaints • Surveys of users	low	medium	medium-high

6	Bus driver taken ill (medical event) and/or tiredness impaired no collision occurs, no injury	• As for collision events	• Bus passenger • Bus driver **injury/comfort/fear/delay**	• Medical report • Driver report • telematics	low freq high impact	high	high
7	Mechanical failure of bus no collision occurs, no injury	• Reputational/insurance impact • Deterrence of bus use • Users delay/inconvenience	• Bus passenger • Bus driver **comfort/delay**	• Mechanical investigation/report	low freq high impact	high	moderate
8	Fire/explosion within/outside eg to engine of bus not resulting in injury	• Injury to bus users • Injury to bus driver • Reputational/insurance impact • Deterrence of bus use	• Bus passenger • Bus driver **injury/comfort/fear/delay**	• Mechanical investigation/report • Fire service report • Driver report	low freq high impact	high	moderate
9	Anti-social behaviour on bus not resulting in injury	• Injury to bus users • Injury to bus driver • Reputational/insurance impact • Deterrence of bus use • Damage to bus	• Bus passenger • Bus driver **injury/comfort/fear**	• CCTV (in vehicle, street) • Crime reports inc public • Driver report • Customer complaints • Surveys of users	medium harm disproportionate impact*	high	high
10	Anti-social behaviour off bus (at stops; bus stations etc) not resulting in injury	• Injury to bus users • Injury to others (present/passing) • Reputational/insurance impact • Deterrence of bus use • Damaged bus infrastructure eg shelter and/or pole	• Bus passenger • Bus driver **injury/comfort/fear**	• CCTV (in vehicle, street) • Crime reports inc public witnesses • Driver report • Customer complaints • Surveys of users	medium harm disproportionate impact*	high	moderate (criminal) outside PT operator control
11	Suicide/self-harm involving people external to bus – for example people stepping intentionally into the path of a bus resulting injury to pedestrians or other road users present in driver swerving	• Injury to bus users • Injury to others (present/paasing) • Reputational/insurance impact • Deterrence of bus use • Damaged bus infrastructure eg shelter and/or pole	• Bus passenger • Bus driver • Pedestrian • Cyclist • Motorcyclist • E- scooter user • Car user • Goods vehicle user **injury/comfort/fear/delay**	• STATS19 (intent may not be evident) • Suicide attempt records held by highway authorities and other bodies • Hospital data	low freq high impact	high	moderate outside PT operator control

*Deterrence of use likely to be higher for groups with higher perceived likelihood of crime/fear of crime, due to gender; age; ethnicity; faith; disability and any combination of these aspects which have compound intersectionality impact (the whole harm is more than the sum of the parts)