



31 JANUARY 2019

## Transport for London: Bus Safety Standard

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TfL



# Overview

- **Vision Zero for London and the bus network**
- **Casualties: who is killed and injured on the bus network**
- **Bus Safety Standard**
  - **Safety measures**
  - **Bus Safety Standard Roadmap**
  - **Casualty benefits**
- **Bus Safety Innovation Challenge**



# Vision Zero for London and the bus network



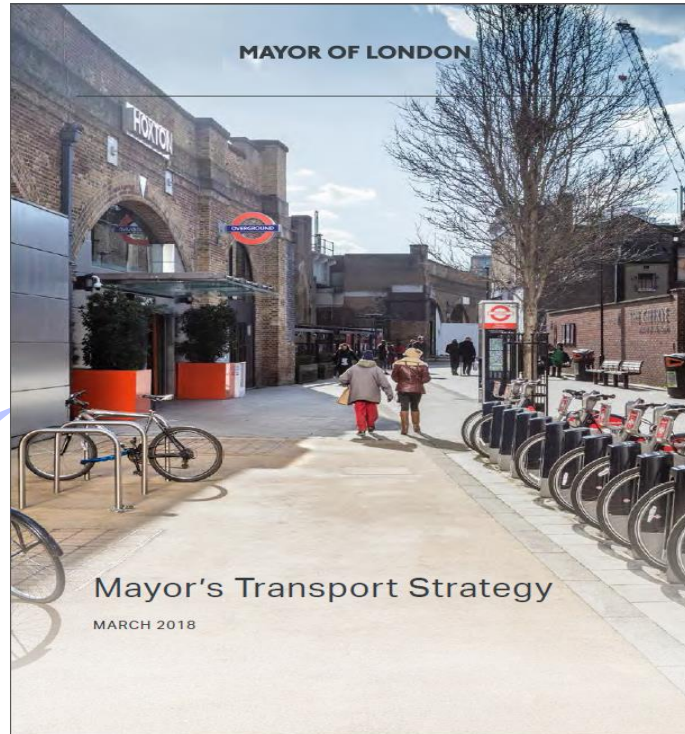
# Vision Zero and the Mayor's Transport Strategy



Target  
**80%**

of all journeys to be by walking, cycling, or public transport by 2041

Adopting Vision Zero ... will be central to the overall success of the **Healthy Streets Approach.**



Minimising road danger is fundamental to the creation of streets where everyone feels safe walking, cycling and using public transport.

London is adopting Vision Zero for the whole transport network.  
The approach is in line with TfL's vision: **Everyone home safe and healthy every day.**

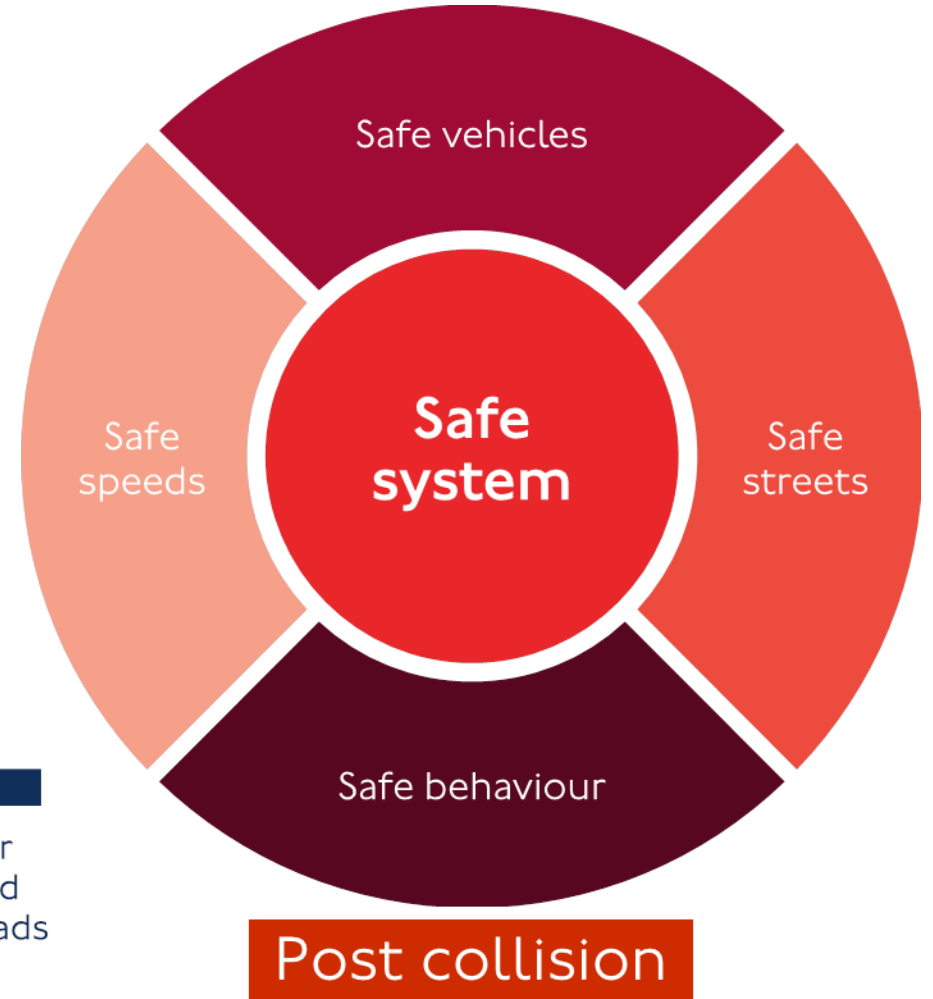




# Aiming for Zero

Loss of life and serious injuries are not acceptable nor inevitable.

# 0



## Countdown to Vision Zero

**2022**

**2030**

**2041**

70 per cent reduction in people killed or seriously injured in or by a bus (based on 2005-09 baseline)

No one killed in or by a London bus

No one killed or seriously injured on London's roads



# Today's reality

## Bus collisions

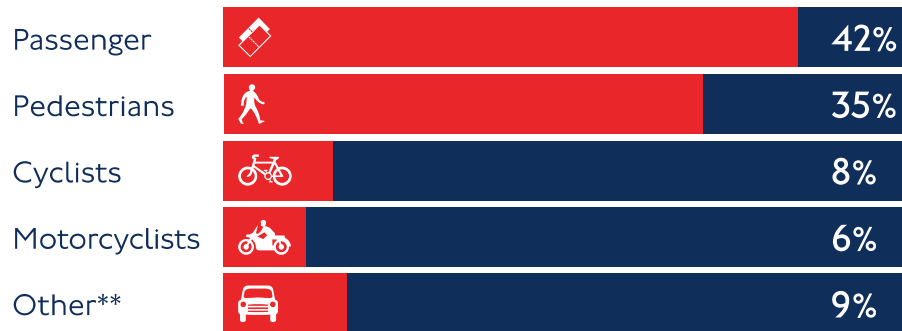
11

people killed  
by a bus in 2017

9

people seriously injured  
by a bus/coach in 2017

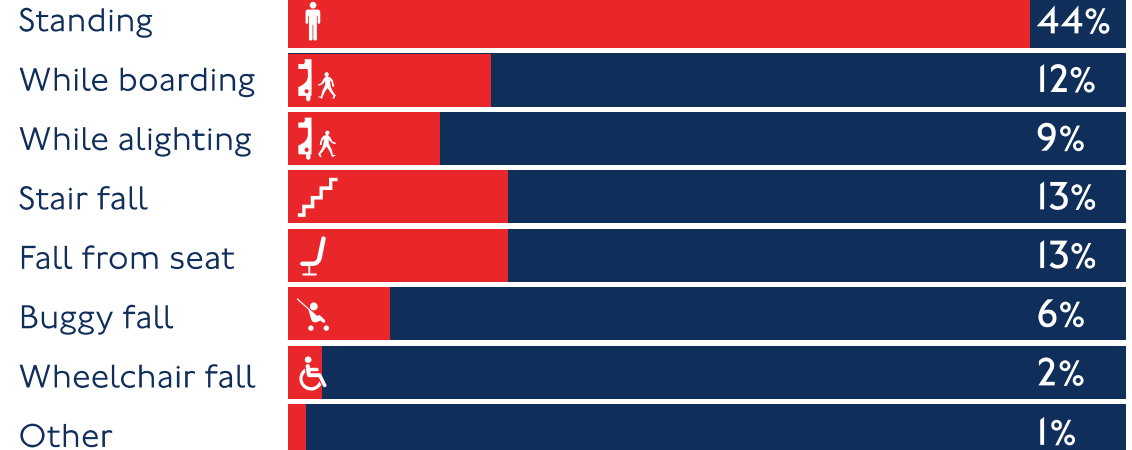
Of those killed or seriously injured in collisions:



## On board

3,074

slips, trips and falls  
on buses in 2017



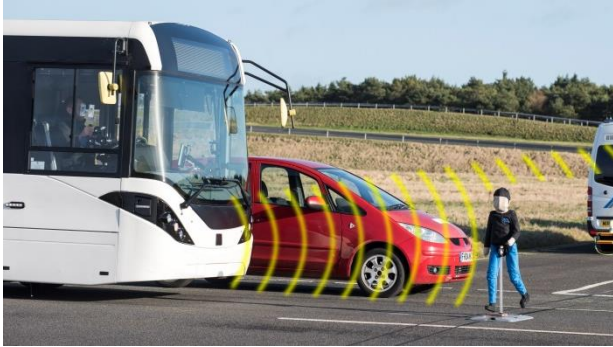
# Bus Safety Standard

**For more information go to:**

<https://tfl.gov.uk/corporate/publications-and-reports/bus-safety-data>

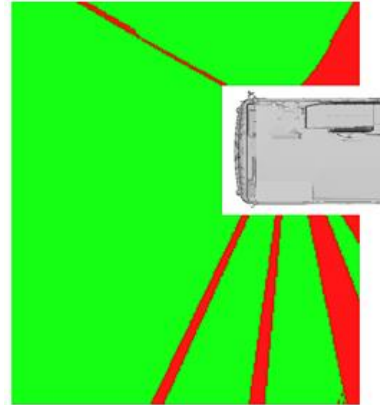


# Safety Measures



Advanced Emergency Braking

Vision Standard for

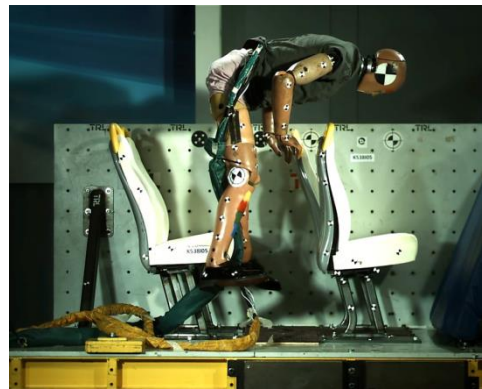


Runaway bus prevention

Acoustic Conspicuity



Occupant Friendly



Pedal Application Error

Intelligent Speed Assistance



VRU Frontal Crashworthiness





# Intelligent Speed Assistance (ISA)

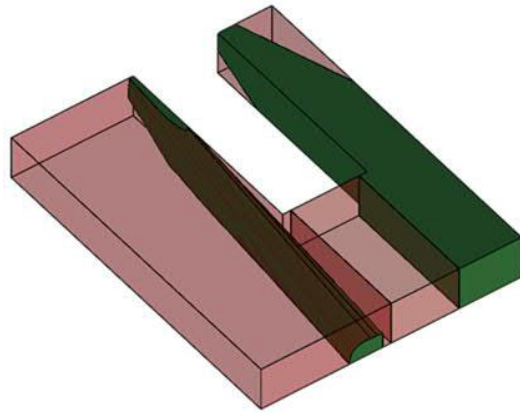
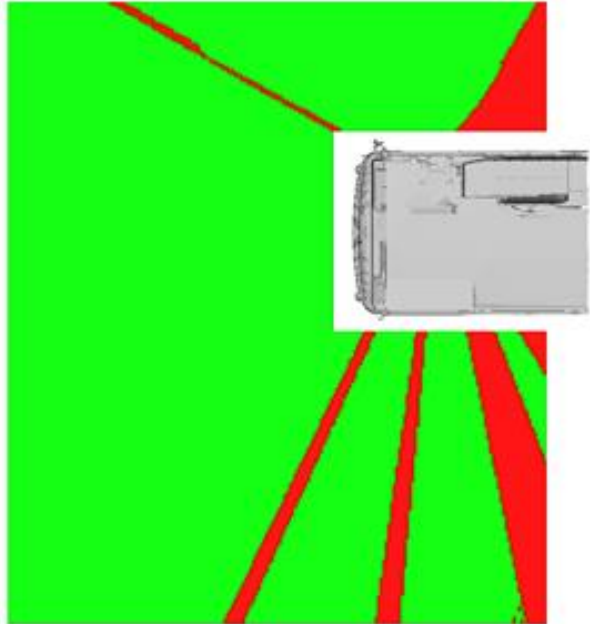


Actively being rolled out onto London's bus fleet

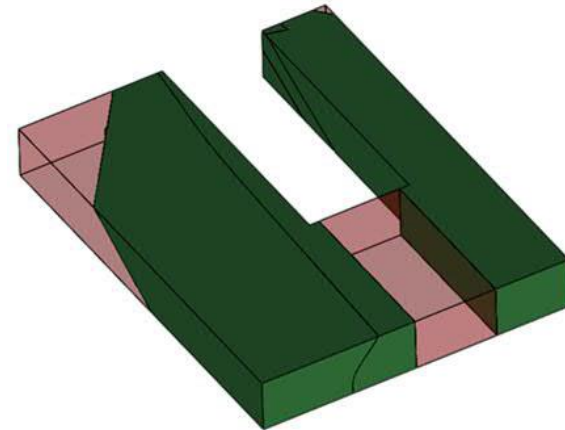
c.700 buses to have active mandatory ISA on over 50 routes by April 2019



# Vision Standard for Buses



Class II mirror only  
spot mirror



Class II mirror + blind



# Acoustic Conspicuity: AVAS

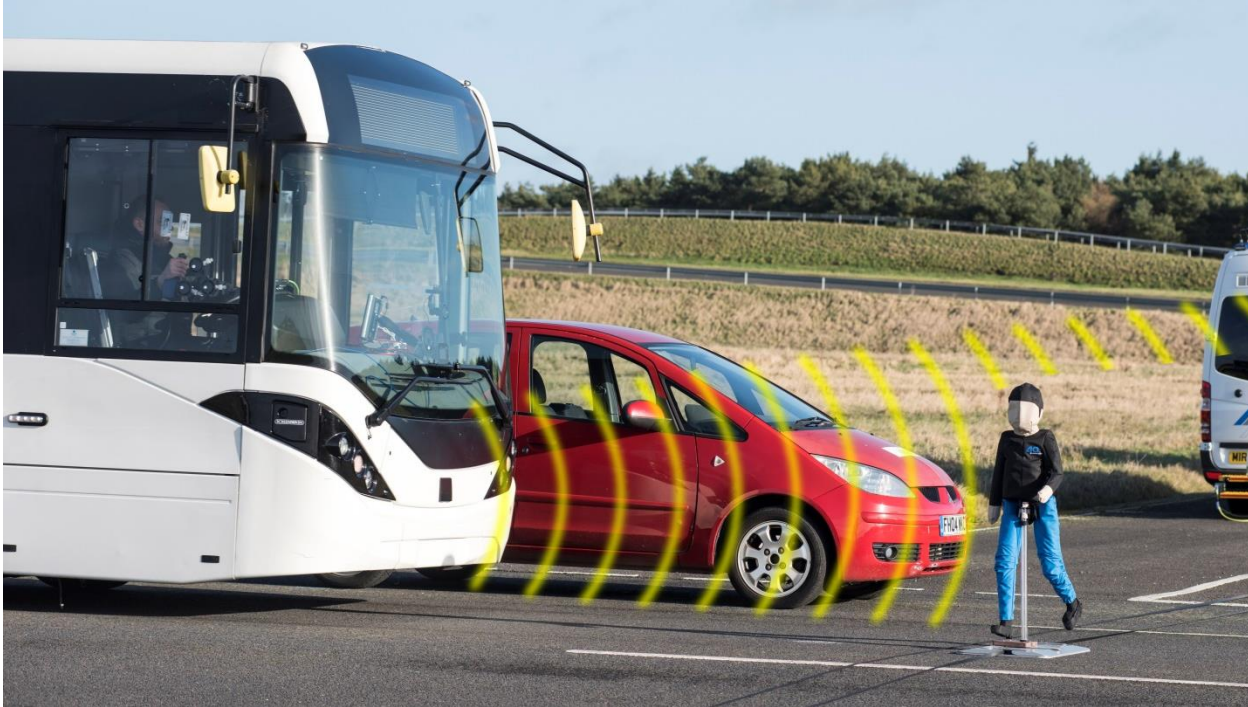


Developing one  
'urban bus' sound for  
use across TfL's quiet  
running bus fleet



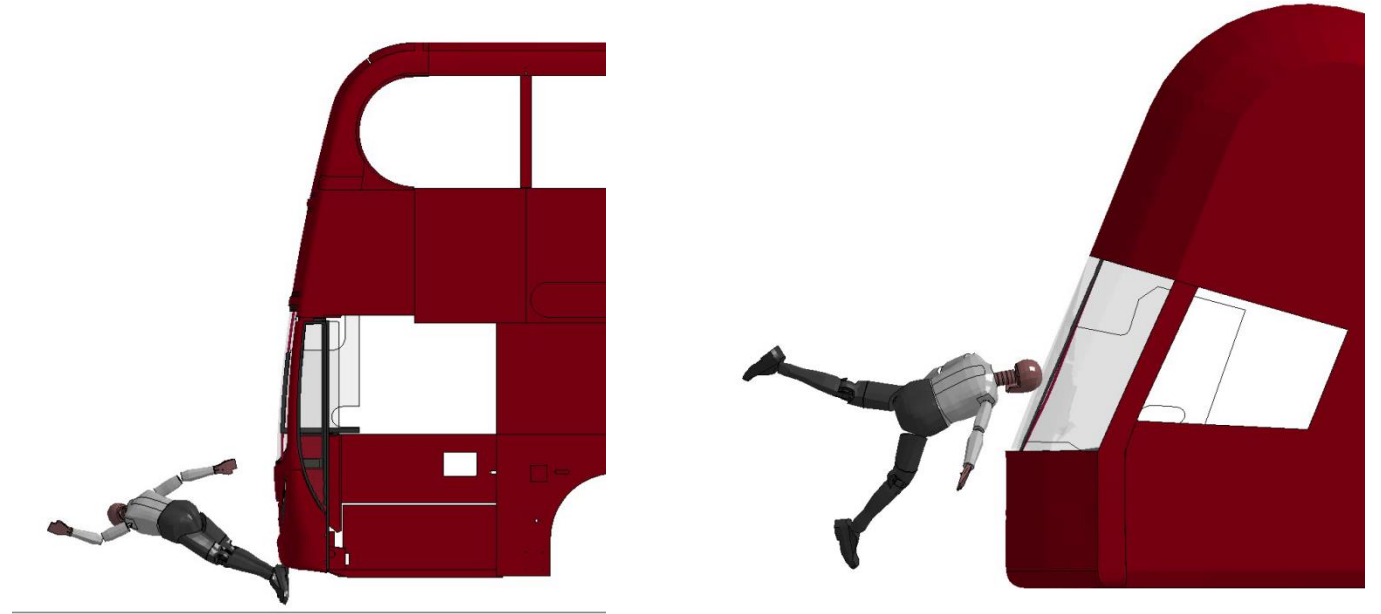


# Advanced Emergency Braking

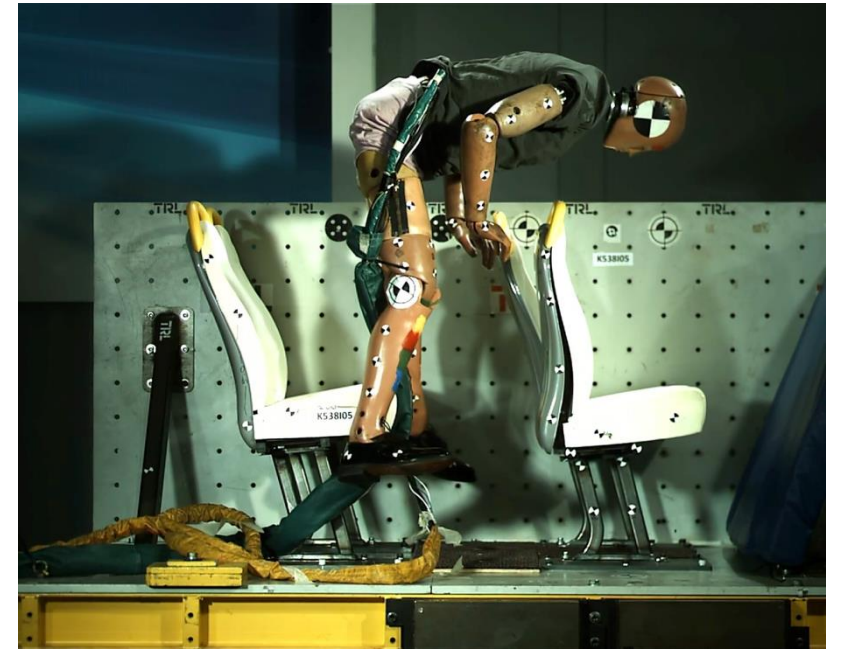
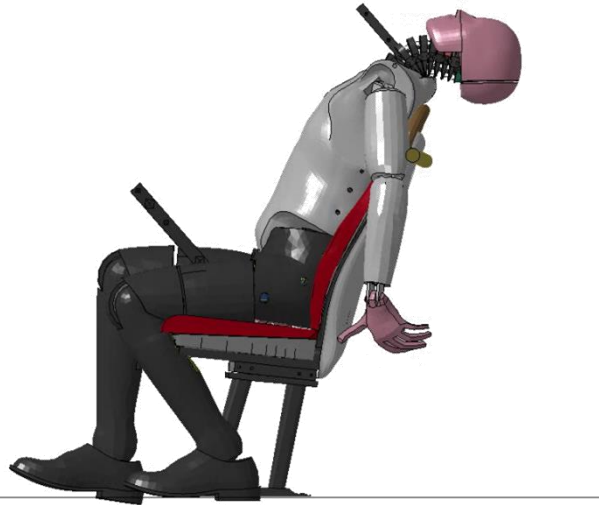
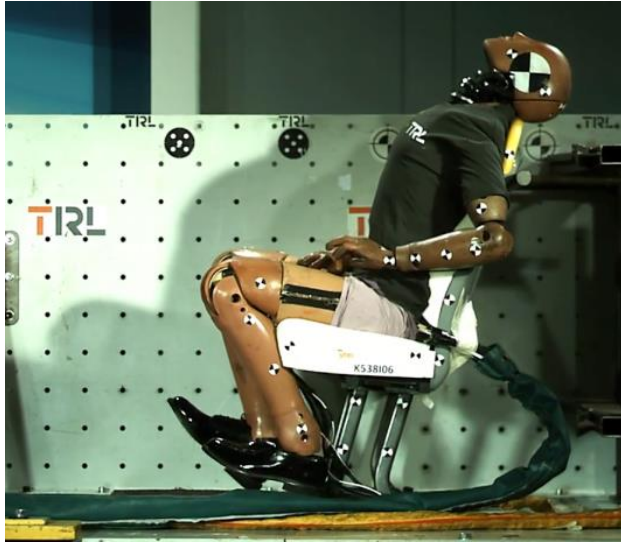




# VRU Frontal Crashworthiness



# Occupant Friendly Interiors



# Roadmap

			2018	2019	2020	2021	2022	2023	2024	2025	2026	onwards	
<b>Driver Assist</b>	<b>Intelligent Speed Assistance (ISA)</b>	Standalone mandatory	Required										
	<b>Advanced Emergency Braking (AEB)</b>	Car, Pedestrian & Cyclist partners			Preferred				Required				
	<b>Runaway Bus Prevention</b>	Interlock system		Preferred		Required							
	<b>Pedal Application Error – Foot placement</b>	Brake toggling			Preferred		Required						
		Pedal standardisation			Preferred		Required						
	<b>Pedal Application Error – Recovery</b>	Pedal indicator lights		Required									
		Pedal acoustic feedback		Preferred		Required							
	<b>Pedal Application Error – Intervention</b>	AEB logic			Preferred				Required				
	<b>Vision – Direct &amp; indirect vision standard</b>	Direct vision		Preferred			Required						
		Enhanced indirect vision			Preferred					Required			
		Class II CMS			Preferred		Required						
		Blind spot Mirrors		Required									
		Blind spot CMS			Preferred		Required						
		Reversing CMS		Required									
Front & Nearside				Preferred					Required				
<b>Vision – Internal obscuration</b>	Driver assault screens		Required										
<b>Partner Assist</b>	<b>Acoustic Conspicuity</b>	Acoustic Vehicle Alerting System	Required										
<b>Partner Protection</b>	<b>VRU Frontal Crashworthiness – Bus front end design</b>	Minimum geometry		Preferred		Required							
		Optimised geometry					Preferred		Required				
	<b>VRU Frontal Crashworthiness – VRU impact protection</b>	Energy absorption				Preferred				Required			
		Wiper protection		Preferred		Required							
<b>VRU Frontal Crashworthiness – Mirror strike protection</b>	Class II CMS			Preferred		Required							
<b>Occupant Protection</b>	<b>Occupant Friendly Interiors – Visual inspection &amp; design</b>	Level 1 requirements		Preferred		Required							
		Level 2 requirements			Preferred				Required				
	<b>Occupant Friendly Interiors – Slip protection</b>	Surface friction requirements		Required									





# Casualty Benefits

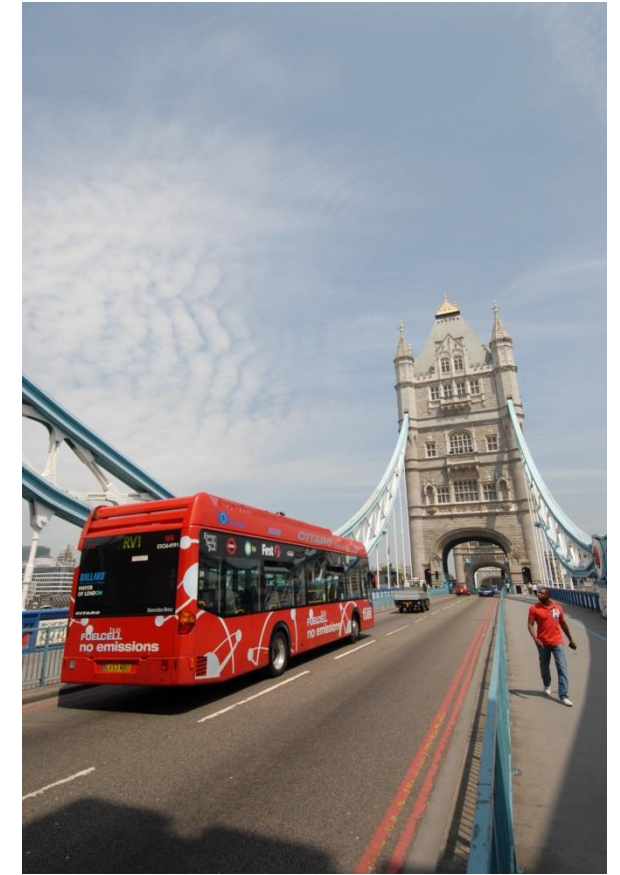




# Bus Safety Innovation Challenge

*'...a call to industry for safety innovation in the bus market...'*





## Contact

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EVERY JOURNEY MATTERS