

Road Safety Inquiry

Written evidence submitted by Brake, the road safety charity.

About Brake

1. Brake is a national charity, founded in 1995, working to deliver safe and healthy mobility for all, and caring for families bereaved and injured in road crashes. Brake promotes safe and healthy mobility, and effective road safety policies by government and its agencies and by leaders in civil society too. We do this through national campaigns, community awareness raising, road risk management advice for employers, and by coordinating the UK's flagship road safety event, Road Safety Week, every November. Brake is also a national, government-funded provider of support to families and individuals devastated by road death and serious injury, including through a helpline and support packs.

Executive summary

2. Safe and healthy mobility is everyone's human right, wherever we are; in cities, towns, villages or moving between places, and no level of death or serious injury is acceptable on the road transport network. Our current road transport network, and the policies used to manage it, are not fit for the purpose of achieving safe and healthy mobility for all. Thousands die or are seriously injured on our roads every year, and magnitudes more are impacted by emissions from vehicles and the predominance of motor vehicle travel.
3. Road safety improvement in Britain has stagnated over the past decade (see paragraphs 21-28) and the Government's current approach is fragmented, lacking in the strategic and holistic vision required to deliver the step-change in improvement required to achieve safe and healthy mobility for all (see paragraphs 15-20).
4. Brake calls on the Government to adopt a Vision Zero approach to road safety, in order to achieve safe and healthy mobility, for all, by 2040. Vision Zero is an evidence-led approach which utilises design-led solutions to achieve a world of zero road deaths and serious injuries. We must redesign our cities, towns and villages; our transport between places; and our vehicles (see paragraph 32). The delivery of such an approach must also include acknowledgment of the need for healthy and active mobility, to address issues of pollution, disease, unhappiness and inequality. Brake acknowledges that the proposed 2040 target date is challenging, however the mission is urgent and the goal achievable; 2040 has been already chosen for significant safe and healthy mobility milestones by leaders in Britain and globally (see paragraph 14).
5. As part of the adoption of Vision Zero, Brake calls upon the Government to urgently implement the following road safety management measures, which are vital to facilitate the delivery of safe and healthy mobility for all: casualty reduction targets and performance indicators; the necessary investment; an action plan for delivery; an independent Road Collision Investigation Branch; a hub for best practice standards; compulsory school education on safe and healthy mobility; support for road crash victims; and, annual reporting (see paragraph 30).
6. Brake welcomes the Transport Select Committee's leadership in this area, through the commissioning of this inquiry, and recommends that the Committee focuses its subsequent road safety inquiries on Vision Zero and the five pillars of this approach (see paragraph 12). It is vital that these inquiries encompass healthy mobility alongside the issue of safety (see paragraph 13).
7. NB. The terms Vision Zero and safe systems, both used in this response, should be understood to mean one and the same. Brake prefers the term Vision Zero, which is forward looking, positive and has greater power in public communications, whereas the Government, in the Road Safety Statement (2015), utilises the term safe systems.

Vision Zero – an approach to deliver safe and healthy mobility

8. A Vision Zero approach to road safety is based on the principle that our life and health should not be compromised by our need to travel and that no level of death or serious injury is acceptable on our road transport network.

9. Vision Zero seeks to achieve safe mobility by design and it does this by putting the human being at its centre, taking our fallibility and vulnerability into account, and accepting that even the most conscientious person will make a mistake at some point. The goal of Vision Zero is to ensure that these mistakes do not lead to a crash; or, if a crash does occur, it is sufficiently controlled to not cause a death or a life-changing injury.
10. The rationale for Vision Zero comes from the inescapable fact that most deaths and injuries on today's roads are caused by driver error, combined with the inability of the road infrastructure to tolerate such mistakes. fig 1. highlights the high proportion of contributory factors, linked to driver error, in the deaths and serious injury crashes, in Britain in 2017, with the categories of injudicious action, impairment or distraction, behaviour or inexperience, and driver/rider error or reaction, all related to driver issues.

| Contributory factor reported in accident ¹ | Killed | | Seriously injured | |
|---|--------------|-----------------------|-------------------|-----------------------|
| | Number | Per cent ² | Number | Per cent ² |
| Road environment contributed | 124 | 8 | 2,371 | 12 |
| Injudicious action | 404 | 26 | 4,249 | 21 |
| Driver/Rider error or reaction | 1,009 | 64 | 13,144 | 65 |
| Impairment or distraction | 425 | 27 | 3,630 | 18 |
| Behaviour or inexperience | 390 | 25 | 5,006 | 25 |
| Vision affected by external factors | 114 | 7 | 1,841 | 9 |
| Pedestrian only (casualty or uninjured) | 290 | 19 | 3,253 | 16 |
| Special codes | 103 | 7 | 1,008 | 5 |
| Total number of casualties¹ | 1,566 | 100 | 20,267 | 100 |

1 Includes only casualties in accidents where a police officer attended the scene and in which a contributory factor was reported.

2 Columns may not add up to 100 per cent as casualties are from accidents which can have more than 1 contributory factor.

fig1. [RAS50007](#), Casualties in reported accidents by contributory factor and severity, Great Britain, 2017

11. There is much that can be done to try to help drivers be safer, and we must. The Government can better regulate drivers, with licensing and traffic rules, road policing and penalties that are robust and just. Businesses that move goods and people using roads can set policies and procedures to manage their drivers. Everyone who drives can try as hard as possible to drive as safely as possible; and influence their family and friends' behaviours as drivers too. However, because of human nature, it is unrealistic that such measures, whilst beneficial, will result in all drivers driving safely all the time. It is widely understood, therefore, that efforts to achieve safe drivers alone will not solve the epidemic of road death and serious injury and shouldn't be our main approach. The solution is the adoption of a Vision Zero approach, working to improve transport in ways that mean drivers' mistakes can no longer cause death or serious harm and people are enabled to move in active ways and use public transport. This approach relies on design solutions. We must redesign our cities, towns and villages; our transport between places; and our vehicles (see paragraph 32).
12. Vision Zero is an evidence-led, internationally recognised approach, which focuses on the key pillars of the road system, as identified by the United Nations: the vehicles, their speeds, the roads, the road user and the post-crash response.¹ The pillars of the system must all be designed in such a way that the system itself prevents crashes which result in death or serious injury. In this approach, responsibility is shared by everyone. Policy makers, planners, engineers, vehicle manufacturers, fleet managers, enforcement officers, road safety educators, health agencies and the media are accountable for safety; while every road user, whether they drive, cycle or walk, is responsible for complying with the rules.
13. In seeking to achieve safe and healthy mobility for all, through the adoption of a Vision Zero approach, it is vital to ensure that road safety is not considered in isolation and that interventions are planned that

¹ [Decade Of Action For Road Safety 2011-2020](#), UN Road Safety Collaboration

deliver both safe mobility and healthy mobility outcomes. So, whilst we should do all in our power to strive for a world of zero road deaths and serious injuries, this prize cannot come at the cost of everyone moving around in unhealthy ways. To illustrate this in simple terms, the easiest way to eliminate pedestrian and cyclist deaths would be to ban walking and cycling. However, this would be an undesirable outcome, eliminating the numerous health and societal benefits that travelling by these modes delivers, and so both safe mobility and healthy mobility must be considered as one and the same. Brake urges the Committee to assure the consideration of healthy mobility within its inquiries on road safety.

14. We urge the Government to commit to the delivery of safe and healthy mobility for all by 2040 through adopting a Vision Zero approach, implementing the design-led solutions that our town planners, highway engineers and vehicle engineers have already found to the challenge of our mobility needs (for a vision of this attainable world, see paragraph 31). 2040 has been chosen as an achievable target year for many safe and healthy mobility outcomes, by leaders in Britain and others around the globe. For example, Highways England has a target for the number of people killed or seriously injured on the SRN to be “approaching zero” by 2040,² the Department for Transport has a target for all new cars and vans to be effectively zero emission by 2040,³ and Transport for London has a target for the elimination of all deaths and serious injuries from London’s streets and for 80% of all journeys in London to be made by walking, cycling or using public transport, by 2041.⁴ Brake acknowledges that this target date is challenging, however the mission is urgent and the goal achievable.

The Government’s current approach to road safety

15. To assess the effectiveness of the Government’s approach to road safety it is first important to understand, and characterise, the nature of its current approach. In the Road Safety Statement (2015),⁵ the Government stated that one of its key priorities for road safety was “Adopting the Safe Systems approach”. The Government summarises this by stating that safe systems recognises that: “We can never entirely eradicate road collisions because there will always be some degree of human error; when collisions do occur the human body is inherently vulnerable to death or injury; and because of this, we should manage our infrastructure, vehicles and speeds to reduce crash energies to levels that can be tolerated by the human body.” As noted in paragraph 7, such an approach is also known by the term Vision Zero and the above definition of safe systems echoes that of Vision Zero, noted in paragraphs 8-9.
16. The Government utilises the UN’s five pillars of safe systems to categorise the actions outlined in the Road Safety Statement (2015). The Government has made some notable progress on these, as identified in the Road Safety Statement: Progress Report (2018).⁶ This includes, but is not limited to:
 - Providing funding to police forces in England and Wales to build drug-driving enforcement capability, following the introduction of tougher zero tolerance drug driving laws in 2015;
 - Publishing a Cycling and Walking Investment Strategy;
 - Continuing with £6.1bn investment to local highway authorities in England (outside London) between 2015/16 and 2020/21;
 - Retendering DfT’s programme of in-depth collision investigation to improve understanding of injuries caused by collisions and determine the potential of vehicle technology to make a difference based on real world evidence;
 - Increasing penalties for the use of hand-held mobile phones while driving in 2017;
 - Introducing tougher penalties for speeding in 2017;
 - Consulting on ways to incentivise and reward the uptake of more pre-test practice and inclusion of a broader range of real-world driving experience – leading to learners being allowed to practice on motorways;
 - Rolling out a new system for recording collisions – CRASH.

² [Road Investment Strategy: Strategic Vision](#), DfT, 2014

³ [The Road to Zero](#), DfT, 2018

⁴ [Vision Zero Action Plan](#), TfL, 2018

⁵ [Working Together to Build a Safer Road System British Road Safety Statement](#), DfT, 2015

⁶ [Road Safety Statement: Progress Report](#), DfT, 2018

17. Other road safety actions, not included in the Road Safety Statement, have also been taken by the Government in recent years, such as investing in a competition to bring a new mobile breathalyser to the market and in trials to improve road casualty investigation,⁷ and which Brake has welcomed.
18. The actions listed in paragraphs 16-17 are undoubtedly positive steps for road danger reduction. However, whilst these measures can be categorised under the pillars of the Vision Zero/ safe systems approach, and may adhere to the principles, the delivery of these measures alone does not comprise the adoption of said approach, as promised by the Government in the Road Safety Statement (2015). Adoption of Vision Zero/ safe systems requires a strategic, and holistic, approach to road danger reduction, and this is still lacking.
19. The Road Safety Management Capacity Review,⁸ commissioned by the Government as an action from the Road Safety Statement (2015), states: “A good practice Safe System performance framework comprises a long-term goal towards zero deaths and serious injuries, supported by interim quantitative targets to reduce death and serious injuries, which are in turn supported by a set of measurable safety performance objectives related to death and serious injury prevention and reduction. The review goes on to state that in the UK “... the absence of defined national road safety ambition in a measurable safety performance framework is setting back effort.” NB. Brake recommends that the Committee fully utilises the depth of research and the findings within the Road Safety Management Capacity Review, an independent report, commissioned by Government, published in 2018.
20. The Government’s fragmented approach to Vision Zero/ safe systems can be illustrated through the intended focus areas of the imminent refreshed road safety statement and two-year action plan. The Government has stated that this package of measures will address four priority user groups - young people, rural road users, motorcyclists and older vulnerable users.⁹ Whilst Brake agrees that these are vulnerable groups, deserving of improved safety, and welcomes the Government’s clear and renewed desire to address road safety issues, a Vision Zero/ safe systems approach dictates that the Government should focus on delivering measures which address the safety of the system, not the specific road user groups within it.

The current state of road safety in Britain

21. With an understanding of the Government’s approach, it is possible to build up a clearer picture of the effectiveness of their actions set against the current state of road safety in Britain. Britain has some of the safest roads in Europe, with 27.1 deaths per million inhabitants, the fewest across the 28 EU member states.¹⁰ This, however, should not detract from the fact that Britain’s road safety record is stagnating and that no level of death or serious injury on our road transport network is acceptable. In 2017, there were 1,793 road deaths, compared to the 2010-14 average of 1,799, highlighting little to no improvement in the road safety record. There were also 24,831 serious injuries on the roads in 2017, a 3% increase on 2016, although robust comparisons of these figures are not possible due to changes in the crash reporting system. However, it is important to note that the new system does likely reflect a truer picture of the number of serious injuries on our roads.¹¹
22. The headline figure of deaths on our roads can be further broken down in order to provide a clearer view of the safety of various road types in Britain. Of the 1,793 road deaths in 2017, the majority (60%) occurred on rural roads (1,068). A total of 626 deaths occurred on urban roads and 99 on motorways.¹² Rural roads have regularly been the site of the most fatal crashes and pose the greatest fatal danger to some of our most vulnerable road users, including those people walking or cycling. Two-thirds (301) of bike – both cyclist and motorcyclist - deaths in 2017, an average of 25 a month, took place on rural roads – the highest number of bike deaths on Britain’s rural roads for more than five years.¹³

⁷ [Drink drivers face swifter justice with new roadside breathalysers](#), DfT, 2019

⁸ [Road Safety Management Capacity Review](#), DfT, 2018

⁹ [Written Statement to Parliament](#), 2018

¹⁰ [European Commission](#), 2019

¹¹ [Reported Road Casualties Great Britain](#), DfT, 2018

¹² *Ibid*

¹³ [Reported casualty and accident rates by urban and rural roads, road class, road user type, severity and pedestrian involvement, Great Britain, latest available year](#), RAS30018, Department for Transport, 2018.

23. The protection of vulnerable road users is a pressing concern. There has been a worrying rise in the number of pedestrians and motorcyclists being killed on the roads. In 2017, 470 people walking were killed, an increase of 5% on 2016, and an 11% increase on the 2010-14 average. 349 motorcyclists were also killed in 2017, up 9% on 2016. There was a slight reduction in the number of cyclists killed in 2017 compare to 2016 and the 2010–14 average, with 101 cyclists killed in 2017, down 1% on 2016, and down 9% on the 2010-14 average. This should be caveated however, with the fact that there was a 5% decrease in cycling traffic from 2016 to 2017.¹⁴
24. In 2017, pedestrians and cyclists accounted for almost a third (32%) of deaths on the UK’s roads despite only making up a small proportion of miles travelled. People choosing to cycle and walk are some of the most vulnerable road users, proportionately more at risk on our roads than other users, and this is likely to have had an impact on declining active travel levels in Britain. The trends for trips taken by bicycle or on foot are both down since records began in 2002, with the numbers remaining within a similar range over the intervening years. The number of walking trips made in 2017 was 4% down on the number of trips made in 2002; and the number of cycling trips made in 2017 was 8% down on 2002. The total number of trips made by cycling or walking in 2017 was just 28% of all trips.¹⁵
25. No assessment of the current state of road safety in Britain can avoid discussing dangerous driver behaviour which continues to result in death and serious injury on our roads. Drink driving is still a serious issue. The latest estimates for 2017 provide a central estimate of 290 deaths in crashes involving at least one driver over the drink drive limit, the highest estimated level since 2009. However, there was a decrease by 6% in the total number of crashes where at least one driver was over the alcohol limit, falling from 6,070 in 2016 to 5,730 in 2017.¹⁶ Nonetheless, the number of deaths in crashes involving at least one driver over the drink drive limit represents about 16% of the total number of deaths on the roads, and has remained at similar levels for several years.
26. Another key determinant to the state of safety on our roads is speed. Speed is a factor in all crashes – you cannot have a crash without speed – it determines if we can stop in time and if we can’t stop, how much energy will be involved in the collision. Exceeding the speed limit or travelling too fast for conditions was a contributory factor in 21% of all fatal crashes in 2017 and has remained at a similar level since 2012.¹⁷ The levels of speed compliance in Great Britain is also worthy of consideration, with 48% of cars exceeding the limit on motorways, 52% of cars exceeding the limit on 30mph roads, and 86% of cars exceeding the limit on 20mph roads.¹⁸
27. The ages of those involved in crashes is also an important consideration in understanding the nature of road safety in Britain. Those aged 17 to 24 and 60 and over made up almost half (47%) of the total deaths on the roads in 2017. The number of young people (17 to 24) killed in 2017 was 279, representing 16% of all road deaths, down from 299 in 2016, and is trending downwards over the past several years, decreasing by 24% from the 2010-14 average. Nonetheless, given that those aged 17-24 make up only 7% of all full licence holders,¹⁹ they could be seen to be overrepresented in crash statistics. The number of older people (60 and over) killed in 2017 was 559, an increase from 533 in 2016, and representing 31% of all road deaths. There is an increasing trend in the number of deaths amongst this age group, with the number of fatalities in 2017 representing a 14% increase on the 2010-14 average. This may be due to Britain’s ageing population, with an 8% increase in the population of 60 and over from the 2010-14 average, but a concerning trend nonetheless.²⁰
28. The above picture of the current state of road safety clearly indicates a stagnation and highlights the need for a full adoption of the Vision Zero approach.

¹⁴ [Reported Road Casualties Great Britain](#), DfT, 2018

¹⁵ [Walking and Cycling Statistics](#), England, DfT, 2017

¹⁶ [Reported road casualties in Great Britain: provisional estimates involving illegal alcohol levels: 2017](#)

¹⁷ [Reported accidents and casualties where speed was reported as a contributory factor, by severity, Great Britain](#), table RAS50008, 2018

¹⁸ [Vehicle Speed Compliance Statistics](#), Great Britain: 2017

¹⁹ [DVLA Driver Licence Data, Table DRL0101, Provisional and Full driving licences held, by age and by gender, Great Britain](#): as at November 2018

²⁰ [Reported Road Casualties Great Britain](#), DfT, 2018

Brake's recommendations for road safety management action

29. The above analysis of the state of road safety in Britain, and the Government's current approach, makes clear that significant action is needed to arrest the ongoing stagnation and set us on a path to zero road deaths and serious injuries. Brake urges the Government to adopt a Vision Zero approach in order to deliver safe and healthy mobility for all by 2040.
30. This vision is not only achievable but there is a moral imperative for us all, particularly government, to deliver to it. This safe and healthy future will require significant leadership and below we recommend the road safety management steps that the Government must take immediately to start us on this path (summarised in fig.2).

- a) **Casualty reduction targets and performance indicators** - A defined pathway to achieving zero road deaths and serious injuries is central to a Vision Zero approach. The Government must set a target of zero road deaths and serious injuries by 2040, aligning the UK with best practice globally, with set milestones to this target. Casualty reduction targets must also consider and encourage the healthy movement of people and not be set in isolation, for example, we need targets for reduction of deaths and serious injuries per miles travelled on foot and bicycle. Negative unintended consequences of target setting must be avoided, i.e. steps to reduce cyclist casualties must not come at a cost to the numbers choosing to cycle.

Measurable performance indicators must enable transparency on progression towards safe and healthy mobility for all. We ask the Government to consult on the appropriate formation of these indicators with the road safety and healthy mobility community.

- b) **The necessary investment** - The Government must allocate the necessary investment to enable safe and healthy mobility for all by 2040 to be achieved, through the delivery of measures outlined in these recommendations. The Government should work across departments to quantify the cost-benefit of such an approach, accounting for costs associated with road casualties, poor health from lack of mobility, and traffic pollution.
- c) **An action plan for delivery** - The Government must create an action plan to deliver safe and healthy mobility by 2040, mandating design-led solutions, both cross-department and with devolved authorities. Priority must be given to: building and maintenance of segregated infrastructure for cycling and walking in cities, towns, villages and between places; traffic-free places where people live and in public spaces; public transport provision; safe road design inclusive of the best safety infrastructure and speed limits; on urban, rural and main roads; and ridding roads of unsafe and polluting vehicles, through regulation, incentive, and exclusion schemes.

The action plan must also deliver an effective driver and fleet operator regulatory system, inclusive of licensing, policing and criminal justice, to improve safety in the short term. This will identify and plug inadequacies; with current concerns being licensing standards, the UK's high drink-drive limit, inadequate road policing, ineffective traffic offences, and penalties including failures to ban unsafe drivers. We need a robust and just system.

- d) **An independent Road Collision Investigation Branch** - The Government must establish an independent Road Collision Investigation Branch (RCIB) that identifies causation that can be prevented through design or management, rather than trying to establish criminality.

The RCIB should identify and make recommendations regarding effective and cost-effective countermeasures to stop deaths and injuries, support Britain's police in pursuance of excellence in their forensic investigation of crashes, and develop standards and expertise in collision investigation, data recording and analysis that can assist and unify investigations in the UK and, for comparison purposes, abroad.

- e) **A hub for best practice standards** - The Government must create a single 'go to' place for safe and healthy mobility best practice standards and their summary. Everyone, whether road safety professionals or the public, should be able to go to a single source of information for best practice

guidance about safe and healthy mobility solutions. Such a hub would provide an understanding of what should be done and help identify what is not being done to enable people to take action for change.

The hub should be maintained by central government and its development achieved in partnership with those holding necessary expertise (for example manufacturers, universities, NGOs). Best practice standards should integrate learnings from within the UK and internationally and the Government should look for project learnings that can be incorporated into standards. The Government should promote its wealth of standards internationally to foster global progress on road safety.

- f) **Compulsory school education on safe and healthy mobility** - The Government must incorporate safe and healthy mobility into the curriculum, to be taught from a young age through to and including at secondary school as part of PSHE and Citizenship. The curriculum must cover road danger, the benefits of active travel and public transport, and Vision Zero/ safe systems principles.
- g) **Support for road crash victims** - The Government must ensure that on the journey to zero, the victims of road crashes are supported emotionally and practically through long-term and expanded funding of victim support services, such as Brake’s National Road Victims Service (NRVS).
- h) **Annual reporting** - The Government must annually report progression towards safe and healthy mobility for all by 2040, primarily through the mechanism of casualty reduction targets and performance indicators but also encompassing progression towards the delivery of the measures detailed in these recommendations.

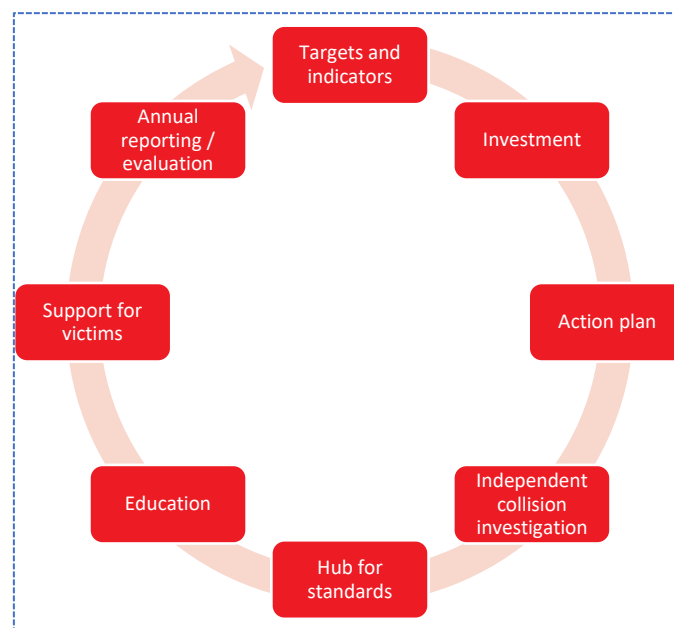


fig.2 Brake manifesto for safe and healthy mobility

31. Brake also draws the Committee’s attention to the UN’s Sustainable Development Goals²¹ and the review of progress, currently being undertaken by UK government as part of the Voluntary National Review.²² The core Sustainable Development Goals for road safety are target 3.6, which seeks to reduce road traffic deaths and injuries by 50% by 2020, and target 11.2, which aims to provide access to safe, affordable, accessible and sustainable transport by 2030. Brake urges the Government to utilise this process to commit the UK to a Vision Zero approach with casualty reduction targets, in line with delivering safe and healthy mobility for all by 2040.

²¹ <https://sustainabledevelopment.un.org/>

²² [Voluntary National Review](https://www.gov.uk/voluntary-national-review), gov.uk

The vision of the world we must, and can, achieve

32. Through the adoption of a Vision Zero approach and a commitment to delivering safe and healthy mobility for all by 2040, the Government can realise the future that progressive leaders, engineers and planners are trying to create. A vision of this future, which is achievable with the correct leadership and investment, is detailed below. Safe and healthy mobility action should all be geared towards the delivery of this future destination.

a) Safe and healthy cities, towns and villages

- i. The spaces between buildings prioritise people above vehicles. The space lets us move, rest and meet, play and be safe. We have unimpeded, well-lit, obstacle-free cycle paths and footpaths, with well-lit, well-maintained surfaces for efficient travel, getting us where we need to go, directly from homes and public transport hubs, walking or cycling at the speed we want to go at. We can stop, rest and meet each other in vehicle-free spaces, with pleasant, shaded, sheltered seating, places for children to play, and access to water and toilets. It is normal to walk and cycle for our short journeys, and many of us choose to walk and cycle longer journeys too, across our towns and cities.
- ii. Public transport (such as trains, buses and trams) is accessible. We reach it easily by walking or cycling, and it arrives frequently, or can be hailed. It is fairly priced, clean, not overcrowded and disability-friendly. We can cycle to it; there is cycle storage on-board and at stops. If there is no cycle storage on board, we can easily cycle at the other end of our journey. It is possible we may still hail private taxis only for us, and to meet our needs in some situations, but our normal choice is to walk, cycle and use shared transport.
- iii. Road infrastructure is intelligent. It connects and communicates with vehicles through vehicle-to-infrastructure (V2I) technology to enable safety, including keeping vehicles below speed limits of 20mph or lower. Road infrastructure gives priority to people walking and cycling at junctions and crossings.
- iv. Less space is needed for roads and places to park, because we have changed the way we move, and have less need for privately owned cars and parking spaces for them. We have used this space to create places for people.
- v. Our walking and cycling paths, our public spaces and our road infrastructure are audited to meet internationally recognised, best practice standards based on the needs of people. Potholes and broken paving stones are a thing of the past.
- vi. When planning new developments, or redeveloping an area of a city or town, we minimise the distance people need to travel to access amenities as well as building according to the above principles. We give people more mobility outcomes, partly by bringing amenities closer.
- vii. Motorised vehicles are designed for the safety of people walking and cycling as well as occupants and travel below 20mph or lower; and are emission-free. They provide essential services efficiently, such as shared transport, moving our goods, emergency and social services. They are allowed only where they need to go.

b) Safe and healthy transport between places

- i. Public transport (trains and buses) between places is accessible. It is fairly priced and arrives when we need it, and gets us where we need to go, efficiently and on time. It can be used by people with disabilities and there are clean and comfortable seats for all of us.
- ii. We can move between places by combining public transport, cycling and walking. When we get off a train or a bus, we can get on another train or bus, or easily cycle or walk, to where we want to go next; from the heart of our cities to small settlements far away. We can easily rent or lock up bicycles at transport hubs and carry them on public transport.

- iii. We have long-distance, segregated routes for people. For some journeys between places, we can choose to do the whole journey just by cycling or with electrically assisted e-bikes. We have tarmacked cycle paths, segregated from roads, that connect towns to other towns.
- iv. Our roads between places are built for safety, with features such as barriers that separate vehicles from other vehicles travelling in the other direction. Our roads wirelessly communicate with our vehicles, using V2I technology, helping vehicles do things like slow down when weather conditions become poor. Roads that cannot be fitted with safety features and V2I technology (because they are too narrow, or for other reasons) have much lower speed limits.
- v. Freight is carried efficiently, including using railways and boats, and ensuring lorries on our roads are designed for safety, the roads they travel on, and are loaded and routed to minimise distance travelled.

c) Safe and healthy vehicles and drivers

- i. Vehicles have highly capable crash prevention systems that include wireless communication with road infrastructure (V2I) and each other [vehicle-to-vehicle technology (V2V)]. Whether driverless or not, the systems keep vehicles below speed limits (Intelligent Speed Assistance) and in lane, detect hazards and emergency brake. Vehicles may travel in convoys (known as platooning) on some roads. They are protected from cyberattack.
- ii. Some, many, or all of our vehicles are driverless, and drivers' safety is managed. The way vehicles are designed means it is not possible to break speed limits. It is not possible to start driving if a driver is under the influence of alcohol or drugs, or if anyone in the vehicle is unrestrained. Vehicles will detect if driving is poor for any reason (such as tiredness), tell drivers to stop driving and inform authorities, including insurers, employers and enforcement agencies. Drivers are selected, trained, tested and re-tested to rigorous standards, giving them the best chance of behaving as carefully as a commercial pilot. Many people choose not to qualify as a driver and instead use public transport, active travel, or use vehicles they hail. Everyone is taught, from the age of three upwards, the importance of road safety.
- iii. Vehicles pass stringent crash tests replicating the 'real world' crash scenarios that could involve those vehicles and testing their effect on adults and children, inside and outside vehicles. Restraint systems have advanced further, and vehicles only start if everyone is properly belted up. Any vehicle with a safety defect is not possible to drive.
- iv. Vehicles are designed to be safe for the roads they travel upon. Vehicles designed for cities and towns are likely to be mainly small and light. Vehicles designed for our largest roads between places may be much bigger and heavier.
- v. Our vehicles are ultra low emission or zero emission, with accessible charging points, and are able to travel long distances without recharging. Components such as tyres, brakes and clutches produce minimal particulate emissions.
- vi. Our vehicles record what happens in any crash (through event data recorders) and immediately, electronically, notify emergency services (known as e-call). This means we can reach crash victims faster, establish causes and solutions to stop crashes happening again, and punish and ban drivers.