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Automated Vehicles: Consultation Paper 2 on Passenger Services and Public Transport

A joint consultation paper

Law Commission
Consultation Paper 245

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Discussion Paper 169

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Automated Vehicles:

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A joint consultation paper

16 October 2019

This publication is available at https://www.lawcom.gov.uk/project/automated-vehicles/ and at https://www.scotlawcom.gov.uk/publications.

THE LAW COMMISSION – HOW WE CONSULT

Topic of this consultation: The Centre for Connected and Automated Vehicles (CCAV) has asked the Law Commission of England and Wales and the Scottish Law Commission to examine options for regulating automated road vehicles. It is a three-year project running from 2018 to 2021.

Our first consultation paper considered safety assurance together with civil and criminal liability. This paper discusses the regulation of Highly Automated Road Passenger Services (HARPS). We have coined the term HARPS to encapsulate the idea of a new service. It refers to a service which uses self-driving vehicles to provide journeys to passengers without a human driver or user-in-charge. The vehicle would be able to travel empty or with only passengers on board. In other words, there is no person in the vehicle with legal responsibility for its safety.

In this paper we consider a national licensing scheme for HARPS. We also discuss private ownership of passenger-only vehicles. We cover accessibility for older and disabled people, how to control congestion on public roads and how regulation can help self-driving vehicles integrate with public transport.

Duration of the consultation: We invite responses from 16 October 2019 to 16 January 2020.

Comments may be sent:

Using an online form at:

https://consult.justice.gov.uk/law-commission/automated-vehicles-harps

We have also produced a questionnaire in word format available on request. We are happy to accept comments in other formats. Please send your response:

By email to	automatedvehicles@lawcommission.gov.uk
OR	
By post to	Automated Vehicles Team, Law Commission, 1st Floor, Tower, 52 Queen Anne's Gate, London, SW1H 9AG.

If you send your comments by post, it would be helpful if, whenever possible, you could also send them by email.

Availability of materials: The consultation paper is available on our websites at https://www.lawcom.gov.uk/project/automated-vehicles/ and https://www.scotlawcom.gov.uk/publications
We are committed to providing accessible publications. If you require this consultation paper to be made available in a different format please email automatedvehicles@lawcommission.gov.uk or call 020 3334 0200.

After the consultation: The responses to this consultation will inform the next stages of this three-year project. The next review point will be in April 2020.

Geographical scope: This consultation paper applies to the laws of England, Wales and Scotland.

Consultation Principles: The Law Commission follows the Consultation Principles set out by the Cabinet Office, which provide guidance on type and scale of consultation, duration, timing, accessibility and transparency. The Principles are available on the Cabinet Office website at: https://www.gov.uk/government/publications/consultation-principles-guidance.

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About the Law Commissions: The Law Commission and the Scottish Law Commission were set up by the Law Commissions Act 1965 for the purpose of promoting the reform of the law.

The Law Commissioners are: The Hon Mr Justice Green, *Chair*, Professor Nick Hopkins, Stephen Lewis, Professor David Ormerod QC and Nicholas Paines QC. The Chief Executive is Phillip Golding.

The Scottish Law Commissioners are: The Rt Hon Lady Paton, *Chair*, Kate Dowdalls QC, Caroline S Drummond, David E L Johnston QC, Dr Andrew J M Steven. The Chief Executive is Malcolm McMillan.

Contents

List of Abbreviations

ABI: Association of British Insurers.

ADS: Automated Driving System.

ADSE: Automated Driving System Entity.

AEV Act: Automated and Electric Vehicles Act 2018.

AQP: Advanced Quality Partnership.

BVRLA: British Vehicle Rental and Leasing Association.

BST: British Standards Institution.

CAV: Connected and Autonomous Vehicle.

CCAV: Centre for Connected and Autonomous Vehicles.

CPZ: Controlled Parking Zone.

CP1: Consultation Paper 1.

Defra: Department for Environment, Food and Rural Affairs.

DfT: Department for Transport.

DDT: Dynamic Driving Task.

DVSA: Driver and Vehicle Standards Agency.

EHCR: Equality and Human Rights Commission.

EP: Enhanced Partnership.

HARPS: Highly Automated Road Passenger Service.

MaaS: Mobility as a Service.

ODD: Operational Design Domain.

OECD: Organisation for Economic Co-operation and Development.

ONS: Office for National Statistics.

ORR: Office of Road and Rail.

PACTS: Parliamentary Advisory Council for Transport Safety

PCN: Penalty Charge Notice.

PHC: Private Hire Car (Scotland).

PHV: Private Hire Vehicle.

PSV: Public Service Vehicle.

QCS: Quality Contract Scheme.

QPS: Quality Partnership Scheme.

RTRA: Road Traffic Regulation Act 1984.

SAE: Society of Automotive Engineers.

SEA: Special Enforcement Area.

SMMT: Society of Motor Manufacturers and Traders.

TfL: Transport for London.

TfWM: Transport for West Midlands.

TRO: Traffic Regulation Order.

UNECE: United Nations Economic Commission for Europe.

Glossary

Assisted driving: When individual automation features such as adaptive cruise control or lane changing features assist the driver.

Automated driving system: A vehicle system that uses both hardware and software to exercise dynamic control of a vehicle on a sustained basis. Sometimes abbreviated to ADS.

Automated driving system entity: In Consultation Paper 1, we used this term to describe the entity which puts the automated driving system forward for authorisation and is responsible for its safety. This may be the vehicle manufacturer or software designer or a joint venture between the two. Sometimes abbreviated to ADSE.

Conditional automation: An automated driving system which can perform the dynamic driving task but which requires a user to be receptive to requests to intervene in order to guarantee road safety: SAE Level 3.

Connectivity: Connectivity in the context of connected cars refers to cars with a wireless connection that allows them to communicate with their internal and external environments, including with a remote supervisor and with other cars in a fleet of connected cars.

Consultation Paper 1: The first consultation paper in the joint review of automated vehicles by the Law Commission and Scottish Law Commission. It was published in November 2018 and is available at: https://www.lawcom.gov.uk/project/automated-vehicles/.

Driver assistance: Individual automation features such as adaptive cruise control or lane changing features which assist the driver. The driver is still responsible for the dynamic driving task including monitoring the environment.

Dropped kerbs: Part of the footway that is lower to allow vehicles to cross the pavement from the road to a driveway.

Dropped footways: Parts of the kerb that are lower for easier access.

Dynamic driving task: Defined by the Society of Automotive Engineers International (SAE) below as referring to the tactical functions (object and event detection and response) and operational functions (longitudinal and lateral motion control) which comprise the task of driving.

Geofencing: Technology which restricts the vehicle to the geographical area in which it is designed to operate.

HARPS: Highly automated road passenger services. The term refers to a service which uses highly automated vehicles to supply road journeys to passengers without a human driver or user-in-charge. Some services may resemble taxi, private hire or bus services; others may look and operate differently.

HARPS operator: A business which carries passengers for hire or reward using highly automated vehicles on the road without the services of a human driver or user-in-charge. For further discussion, see Chapter 4 paragraphs 4.7 to 4.30.

Highly automated vehicle: A vehicle equipped with an automated driving system which can perform the dynamic driving task without requiring a user to be receptive to requests to intervene.

Hire-vehicle: Vehicles which are available for private rental.

Mobility as a Service (MaaS): The integration of various modes of transport along with information and payment functions into a single mobility service.

MOT test: Ministry of Transport test which checks that vehicles meet road safety requirements and environmental standards.

Operational design domain: The domain within which an automated driving system can drive itself. It may be limited by geography, time, type of road, weather or in some other way. Sometimes abbreviated to ODD.

Passenger-only vehicles: A highly automated vehicle authorised for use without a user-in-charge. A passenger-only vehicle may travel empty. Alternatively, the only people in the vehicle may be mere passengers who have no legal responsibility for the vehicle.

Private hire vehicles: A motor vehicle constructed or adapted to seat fewer than nine passengers, other than a hackney carriage or public service vehicle or a London cab or tramcar, which is provided for hire with the services of a driver for the purpose of carrying passengers. Known as private hire cars in Scotland.

Remote supervision: Using connectivity to allow a human to supervise vehicles even if they are not in vehicle or in line of sight of the vehicle. See supervision and supervisor below.

Society of Automotive Engineers International (SAE): The society which established the levels of automation of vehicles from 0 to 5 in their technical document J3016.

Society of Motor Manufacturers and Traders (SMMT): A trade association representing more than 800 automotive companies in the UK.

Supervision (of passenger-only vehicles): At its most basic this refers to the way in which operators and keepers know where their vehicles are and (if stopped in inappropriate places) can remove them. Supervision also allows human input into decisions about dealing with the consequences of accidents, mounting the pavement, following police instructions or steering around broken vehicles or road works.

Supervisor (of passenger-only vehicles): The human who sits in front of screens in a remote supervision centre. Developers outlined two broad views on how remote supervision would work. Supervisors may be emergency drivers, steering vehicles remotely. Alternatively, they may respond to a request from a vehicle and decide a course of action from a menu of options, which the vehicle then implements.

User-in-charge: In Consultation Paper 1, we used this term to refer to a human who is in position to operate the controls of a highly automated vehicle. The user-in-charge would

not be a driver while the automated driving system is correctly engaged but must be qualified and fit to drive. Their main role is to take over in planned circumstances after the vehicle has come to a safe stop. They would also have obligations to maintain and insure the vehicle and report accidents. A highly automated vehicle would require a user-in-charge unless it is authorised to operate without one. The user-in-charge must be in the vehicle (or in line of sight of the vehicle) and can be distinguished from a remote supervisor (discussed above).

Chapter 1: Introduction

1.1 This is the second consultation paper in a three-year review of automated vehicles by the Law Commission of England and Wales and the Scottish Law Commission. In 2018 we were asked by the Centre for Connected and Autonomous Vehicles (CCAV) to review the UK's regulatory framework to enable the safe and effective deployment of automated vehicles on Britain's roads.[1]

1.2 Our first consultation paper (Consultation Paper 1) considered issues common to automated vehicles that can drive themselves for only part of a typical journey and those that can do so for a whole journey. In particular, we looked at safety assurance together with civil and criminal liability.[2] This paper considers vehicles which can drive themselves for whole journeys (albeit, probably on limited routes or within a particular geographical area). Consequently, they will not need to have a driver or other person qualified and fit to drive in the vehicle. These vehicles may travel empty or with people who are purely passengers. We refer to them as "passenger-only" vehicles.

1.3 Our focus is on how passenger-only vehicles might be used to supply passenger transport services to the public. Our aim is to ensure that these new services are safe and used to meet the objectives set by local and central Government. We therefore look at how such services should be regulated and how they can be integrated with other forms of public transport. We also consider who would be responsible for passenger-only vehicles that are privately-owned.

1.4 We seek responses by **16 January 2020**. Although we are happy to receive responses in any form, consultees may find it most convenient to use our online response portal at https://consult.justice.gov.uk/law-commission/automated-vehicles-16 ja.

CONSULTATION PAPER 1

1.5 We published Consultation Paper 1 in November 2018. We received 178 written responses and are very grateful to all those who responded and who shared their views during meetings and conferences. A full analysis of the views expressed is available on our website.[3]

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1 In July 2015 the UK Government established CCAV to develop policy and deliver a programme of research and deployment for connected and autonomous vehicles in the UK. CCAV is part of the DfT and the Department for Business, Energy & Industrial Strategy. See https://www.gov.uk/government/collections/driverless-vehicles-connected-and-autonomous-technologies.

2 Automated Vehicles: A joint preliminary consultation paper (8 November 2018), Law Commission Consultation Paper No 240; Scottish Law Commission Discussion Paper 166, https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2018/11/6.5066_LC_AV-Consultation-Paper-5-November_061118_WEB-1.pdf, (CP1).

3 Automated Vehicles: Analysis of Responses to the Preliminary Consultation Paper (2019), https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2019/06/Automated-Vehicles-Analysis-of-Responses.pdf, (Analysis of Responses). A summary of the analysis is also available at https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2019/06/Summary-of-Automated-Vehicles-Analysis-of-Responses.pdf, (Summary of Analysis of Responses).

1.6 We start with a brief summary of our main proposals.

A "user-in-charge"

1.7 Consultation Paper 1 was primarily concerned with highly automated vehicles which do not need to be constantly monitored while they are driving themselves and can, if necessary, come to a safe stop without human intervention.

1.8 We provisionally proposed that highly automated vehicles should have a "user-in-charge" able to operate the controls, unless the vehicle is specifically authorised to operate without one. The user-in-charge would need to be qualified and fit to drive, but would not be a driver while the automated driving system is correctly engaged. Instead the role of a user-in-charge would be to take over driving, either in planned circumstances or in unplanned circumstances where the vehicle has come to a safe stop.

1.9 We were encouraged by the support shown for the concept of a user-in-charge. However, many consultees asked whether the user-in-charge would need to be in the vehicle, or whether they could be in a remote control centre. We reached the conclusion that a user-in-charge should be in the vehicle or in direct sight of the vehicle (as with remote parking). This is not to say that remote supervision is undesirable - simply that it raises different issues (which we consider further in this second consultation).

Safety assurance

1.10 We provisionally proposed that the UK Government should establish a safety assurance scheme to complement the current system of international type approval. This would apply to situations not covered by international type approval, notably automated driving systems (ADS) which are installed as modifications to type-approved vehicles or vehicles incorporating an ADS which are manufactured in small series. Unauthorised ADSs should be prohibited.

1.11 Every ADS put forward for authorisation would need to be backed by an entity (usually the vehicle manufacturer or software developer, or a joint venture between the two). Borrowing on work by the Australian National Transport Commission, we called this the "Automated Driving System Entity" or ADSE. These proposals received widespread agreement. CCAV have now set out a workstream to take them forward.[4]

1.12 We proposed that this safety assurance scheme would continue to operate after automated vehicles had been approved and brought onto the roads. In the event of a problem, the scheme would have powers to apply a range of regulatory sanctions to the ADSE, including improvement notices, fines or (in serious cases) withdrawal of approval.

Civil liability

1.13 We considered the law on civil liability for injury or damage caused by highly automated vehicles. We looked in detail at Part 1 of the Automated and Electric Vehicles Act 2018.

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4 See *New system to ensure safety of self-driving vehicles ahead of their sale* (4 September 2019), https://www.gov.uk/government/news/new-system-to-ensure-safety-of-self-driving-vehicles-ahead-of-their-sale.

Under this Act, the insurer is directly liable to compensate the victim. The insurer may then reclaim these damages from any other party liable for the accident. Responses from consultation suggested that the civil liability regime is generally "good enough for now",[5] though the Act may need to be reviewed in the light of practical experience.

Criminal liability

1.14 Consultation Paper 1 looked at offences which arose directly from the way that the vehicle is driven, such as dangerous driving or exceeding speed limits. We provisionally proposed that the user-in-charge would not be responsible for the behaviour of a vehicle while it is driving itself. Instead, the safety assurance agency would apply a new system of regulatory sanctions against the ADSE, designed to prevent problems from arising again.

1.15 We also considered other offences which do not arise directly from the dynamic driving task, such as those relating to insurance and roadworthiness. In law these liabilities are currently placed on "users". We provisionally proposed that the law should be amended to clarify that users-in-charge are "users" for these purposes. A user-in-charge would therefore be required to insure the vehicle and make sure that it is roadworthy.

Adapting road rules

1.16 Driving rules have been developed to be interpreted and applied by human drivers. Consultation Paper 1 considered the challenges of taking these "analogue" legal rules and developing them into a more precise "digital highway code" to govern the actions of highly automated vehicles. To focus the debate we asked three sample questions: how far should automated vehicles mount the pavement; exceed speed limits; or edge through pedestrians?

1.17 The responses suggest that it is not possible to produce a digital highway code that sets precise rules for every instance. Instead, there were strong calls for a more structured dialogue between developers and regulators to consider areas of concern and promote consistency. We urged Government to consider establishing a forum for collaborating in this area.[6]

THE FOCUS OF THIS PAPER: PASSENGER-ONLY VEHICLES

1.18 Here we focus on highly automated vehicles which are authorised to operate without a user-in-charge and may travel empty or with only passengers on board. Unlike conventional vehicles or automated vehicles with a user-in-charge, they would have no responsible person in the vehicle to ensure safety or compliance with the law.

"HARPS": a new form of service

1.19 In this paper we talk about Highly Automated Road Passenger Services, or "HARPS". We have deliberately coined the term HARPS to encapsulate the idea of a new service.

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5 See Analysis of Responses, para 6.133. Particular concerns were raised about the data which should be retained following an accident and how product liablity law applies to "pure" software, sold without a physical product. For discussion of these, see Summary of the Analysis of Responses, paras 4.3 to 4.9.

6 See Summary of the Analysis of Responses, para 6.7.

1.20 The term HARPS refers to a service which uses highly automated vehicles[7] to supply road journeys to passengers without a human driver or user-in-charge. Many UK research projects and trials supported by CCAV aim to deliver mobility solutions of this sort.[8]

1.21 Traditionally, road passenger services have been divided into taxis, private hire vehicles,[9] public service vehicles and rental cars, with separate regulatory systems applying to each. At one stage, these separate categories corresponded to clearly recognised market divisions: people understood the difference between a taxi, minicab, bus, coach or car hire. However, as we discuss in Chapter 3, these divisions are becoming blurred and may disappear altogether in an automated world. Therefore, we provisionally propose a new single system to license HARPS operators – that is, businesses which manage fleets supplying HARPS. In Chapter 4 we look in detail at how such an operator licensing system might work.

Privately-owned passenger-only vehicles

1.22 Some automated vehicles that are able to operate without a driver or user-in-charge may be personal vehicles, owned by individuals who have exclusive access to them. They may be adapted to a specific user's needs. In Chapter 5 we consider who would be responsible for insuring, maintaining and supervising such vehicles. To fulfil these obligations, we suggest that the vehicle owner might hold a contract with a third-party provider.

A focus on passenger transport rather than freight

1.23 Under our terms of reference, we have been asked to focus on passenger transport, as opposed to goods deliveries. Thus our provisional proposals are made for vehicles that carry people rather than goods.

1.24 However, we are aware that some form of regulation will be needed for highly automated vans and lorries which do not have people on board. Some service providers may offer a mix of passenger and goods transport. Often the safety issues will be similar, and it may be appropriate to apply similar solutions. We therefore welcome observations on our proposals from those involved in the freight industry, if only to highlight where passenger provisions may or may not be appropriate. We will pass these observations to the Department for Transport.

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7 In the terminology of the Society of Automotive Engineers, discussed later in this chapter, a "highly automated vehicle" is one that can perform all the driving tasks without needing to request a human driver to intervene.

8 See for example GATEway, Capri, MERGE Greenwich, Driven and Streetwise exploring different types of last mile and on-demand mobility services. We also note the £25M funds awarded by CCAV in November 2018 for public trials of automated passenger-only services to CAV Forth, Project Apollo (now known as Endeavour) and ServCity. These projects use safety drivers. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/737778/ccav-research-and-development-projects.pdf.

9 In Scotland these are referred to as private hire cars.

"PASSENGER-ONLY VEHICLES" WITHIN A CLASSIFICATION OF AUTOMATION

1.25 There is considerable controversy over how to classify automated driving. In Consultation Paper 1, we drew on the taxonomy developed by the Society of Automotive Engineers International (SAE).[10] The "SAE levels" aim to provide a common language to describe the relationship between automated driving systems and human users. However, they are not legal definitions. There is also a lack of consensus about the meaning of key terms referred to in the levels.

1.26 Since the publication of Consultation Paper 1, Thatcham and the Association of British Insurers have done further work in defining safe automation. In addition to elaborating on 12 key criteria, they have adopted a threefold classification to differentiate levels of driving automation: assisted, automated and autonomous driving.[11] In this project, we are also working on the basis of a three-fold legal classification: assisted driving (where the driver retains all the responsibilities of the driver); highly automated driving with a user-in-charge; and highly automated driving where the occupants of the vehicle may be mere passengers (passenger only). We outline these classifications below.

Assisted driving: the driver remains responsible throughout

1.27 Vehicles with driver assistance features (SAE Level 2) are already on the market. Often these features carry out both steering and acceleration/deceleration. However, the driver is responsible for monitoring the driving environment and must remain engaged at all times. Those using driving assistance features continue to be drivers and are subject to all the existing obligations of a driver.

1.28 Conditional automation (referred to as SAE Level 3) is not yet on the market. It requires a human "fallback-ready user", who must be receptive to the system's request to intervene, possibly at short notice. Conditional automation is controversial with no consensus about what happens if the user is unresponsive. Stakeholders responding to Consultation Paper 1 indicated a strong preference for a clear boundary distinguishing conventional driving (with or without automated assistance) and "high automation" (or "self-driving"). We agree that the boundary needs to be clear and intend to return to the definition of "self-driving" in our next consultation paper.

High automation *with* a user-in-charge

1.29 At "high automation"[12] (SAE Level 4), an automated driving system is able to undertake all the driving tasks for at least part of a journey. It does not rely on a human to intervene to guarantee road safety if a problem occurs. Instead the system will put the vehicle into a "minimal risk condition", such as bringing it to a safe stop.

1.30 However, a highly automated vehicle is not able to operate everywhere: it is confined within an "operational design domain" (ODD). In Consultation Paper 1 we explained that

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10 CP1, ch 2.

11 ABI and Thatcham Research, *Defining Safe Automated Driving: A detailed functional definition in the Highway domain* (September 2019), p 17.

12 The United Nation's Global Forum for Road Traffic Safety defines a highly automated vehicle as one that does not need "human intervention as a fall-back to ensure road safety". For the full definition, see CP1, para 3.20.

the domain is determined by the manufacturer and sets the conditions in which the system is designed to operate.[13] As the United Nations Economic Commission for Europe (UNECE) Resolution on the deployment of highly and fully automated vehicles puts it, the term refers to:

> the environmental, geographic, time-of-day, traffic, infrastructure, weather and other conditions under which an automated driving system is specifically designed to function.[14]

1.31 The domain may be limited to a place (such as a city); to a type of road (such as a motorway); to a speed (such as under 10 mph); or by dynamic conditions that can change quickly and unpredictably such as the weather (for example not in snow).[15]

1.32 Furthermore, the vehicle may still need to hand over to a human user present in the vehicle,[16] either in planned circumstances such as leaving a motorway, or after the vehicle has come to a safe stop if the ADS encounters an unexpected difficulty. We labelled this human "the user-in-charge". We proposed that automated vehicles should have a user-in-charge who is qualified and fit to drive, unless the vehicle is specifically authorised as able to function without one.

1.33 Highly automated vehicles that are only authorised to function with a user-in-charge may be used in the provision of passenger transport services. One can envisage, for example, an automated taxi, private hire or bus service provided with a professional human user-in-charge sitting at the controls, even if their main role is to look after passengers or take over in an emergency rather than to drive. We do not think that this requires a fundamental shift in the way that operators are licensed. There is still a person in the vehicle who is legally responsible for issues such as roadworthiness and insurance and who can move the vehicle if it comes to a halt inappropriately. Under our provisional proposals, the current law of taxi, private hire and public service vehicle licensing would continue to apply to such vehicles.

1.34 This paper focusses on the use of highly automated vehicles without a user-in-charge.

High automation *without* a user-in-charge (passenger-only)

1.35 Where a vehicle is authorised to operate without a user-in-charge the paradigm changes. The vehicle may travel empty or with only passengers who have no legal responsibility for the vehicle or for what it does. In some cases, the vehicle may be

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13 CP1, para 2.25.

14 UNECE "Global Forum for Road Traffic Safety (WP.1) resolution on the deployment of highly and fully automated vehicles in road traffic" (2018), Report of the Global Forum for Road Traffic Safety on its seventy-seventh session ECE/TRANS/WP.1/165 Annex 1, para 3(c).

15 For a detailed discussion of how the ODD may be limited, and how safe automated driving can be defined in a highway context, see ABI and Thatcham Research, *Defining Safe Automated Driving: A detailed functional definition in the Highway domain* (September 2019), pp 22 to 23 and 46 to 77.

16 Or at least in close proximity to it, as with some forms of remote parking: see CP1, para 4.33.

"dedicated" and lack in-vehicle driving controls.[17] We provisionally consider that the challenges posed by such operation require a new system of operator licensing.

1.36 This does not mean that services running empty or carrying only passengers would have no human supervision. In response to Consultation Paper 1, many consultees discussed plans for remote supervision through remote control centres. As we explore in Chapter 4, views differed on how such centres would work. Some saw control centre staff as remote emergency drivers, taking control of the vehicle to steer it directly. Others envisaged a different model, with humans responding when a vehicle requested an intervention: the human would not drive, as such, but could choose from a range of pre-programmed options.[18] This would include authorising a particular course of action (such as slowly mounting the pavement to let an ambulance pass).

1.37 In Chapter 4 we discuss how HARPS operators may be able to meet the safety challenges posed by remote supervision. In Chapter 5 we consider privately-owned vehicles. Here responsibility for safe remote supervision will need to be secured by other means, such as through a third-party provider.

DIFFERENT ROLES: THE ADSE AND THE HARPS OPERATOR

1.38 As mentioned above, in Consultation Paper 1 we provisionally proposed that every ADS should be backed by an entity, the ADSE.[19] The ADSE would having a continuing responsibility for the safe design of the system: if, for example, the ADS acted in breach of traffic rules, the safety assurance agency would discuss the matter with the ADSE to secure improvements.

1.39 We do not consider the ADS approval system in this paper. Instead we concentrate on a licensing system for those who operate HARPS and on the safe operation of privately-owned passenger-only vehicles. It is important, however, to clarify the dividing line between the two roles.

1.40 The ADSE is the entity which takes responsibility for the automated drving system and must ensure that the design is safe. The HARPS operator is the entity which runs the vehicles and must ensure that the operation is safe. They may be the same body or different bodies, depending on how the technology is brought to market: for example, a manufacturer might also provide mobility services. Under our provisional proposals, if an ADSE operates a HARPS without a user-in-charge, the ADSE will also need a HARPS operator licence.

1.41 At this stage of technological development, it is difficult to know how far automated vehicles will be safe-by-design and how far they will be safe through good operation. To explore this further, we take two examples: keeping within the operational design domain; and replacing the sensors.

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17 Discussed in CP1 at para 3.72.

18 See, in particular, the FiveAI response and the Mobileye response in the Analysis of Responses, paras 3.25 to 3.27.

19 CP1, para 4.124.

Keeping the vehicle within its operational design domain

1.42 As we have seen, an ADS will be designed to work within an ODD. In many cases, the design will be able to ensure that the vehicle does not stray from its ODD. For example, geofencing technology could ensure that the vehicle will not leave a geographic area. However, it is possible that other elements of the ODD, such as weather conditions, will not be enforced automatically. The operator may need to check weather conditions and forecasts before the vehicle sets out on its journey.[20]

1.43 Before the safety assurance agency approves an ADS, it will need to consider how the ODD is enforced. If the system uses geofencing, the safety assurance agency will need to check that the geofencing works. If the operator must take action to keep the vehicle within its ODD, the ADSE will need to communicate this to operators. We would expect the safety assurance agency to check the clarity of these communications. However, the operator will also need to show professionalism in taking care to understand the limits of the ADS it uses in its business.

1.44 Our proposed systems of ADSE regulation (in Consultation Paper 1) and HARPS operator licensing in this consultation paper are designed to minimise the risk of accidents. If something does go wrong, our twin goals are to ensure that the victim is compensated and that steps are taken to stop the problem from happening again.

1.45 Under the Automated and Electric Vehicles Act 2018, the vehicle insurer must pay compensation irrespective of who is at fault. The insurer may then bring a secondary claim against any person responsible for the accident.

1.46 It is also crucial to stop the same thing going wrong again. If the design was at fault, or if the ADSE has failed to communicate the limits of the system, we would expect there to be an investigation. If appropriate, the agency responsible for safety assurance would hold discussions with the ADSE to bring about improvements. The agency could also use a range of regulatory sanctions against the ADSE.

1.47 If, however, the operator failed to meet applicable standards or follow good practice, this would be a matter for the HARPS operator licensing authority. The licensing authority could provide better guidance or take regulatory action against the HARPS operator. In some cases, the operator may be criminally liable. For example, the operator may be guilty of using a vehicle on a road when its condition "involves a danger or injury to any person", contrary to section 40A of the Road Traffic Act 1988.

Replacing the sensors

1.48 We expect that when the safety assurance agency approves an ADS it will approve the software for use with a given number, configuration and quality of sensors.[21] Depending on how the technology develops, the ADS may generate an error message if a sensor fails, but this may not be failproof. Again, we would expect the ADSE to provide clear information about how the sensors are to be inspected and maintained and when they

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20 However, in response to CP1 the Met Office raised the possibility of weather geofencing: see Analysis of Responses, para 2.44.

21 These might include, for example, cameras, LIDAR and RADAR.

will need replacement. The safety assurance agency will need to check the clarity of this information, so that operators can rely on it.

1.49 If a sensor reaches the end of its life, the operator must replace it with another sensor of the approved quality. If the operator were to use a sensor of inferior quality, then the licensing authority would be able to take regulatory action against the operator. The operator may also be criminally liable under section 40A of the Road Traffic Act 1988. If, however, the sensor appears to meet the quality standards required and then fails, causing injury to a pedestrian, the insurer could bring a secondary action against the sensor manufacturer under the Consumer Protection Act 1987.[22]

Conclusion: safe-by-design or safe-by-operation?

1.50 Automated driving is a step into the unknown. We cannot predict how HARPS will work, or even who will operate them. There may be a variety of new entrants to the market, as well as a variety of novel services. As of now, we do not know how far systems will be safe-by-design and how far they will require skilled operators to oversee their safe deployment. It will be important for regulators to gather evidence from advanced trials, to inform the development of a more effective legal framework.[23]

1.51 Diagram 1, overleaf, illustrates the systems that we envisage for compensating the victim and ensuring that any mistakes do not happen again.

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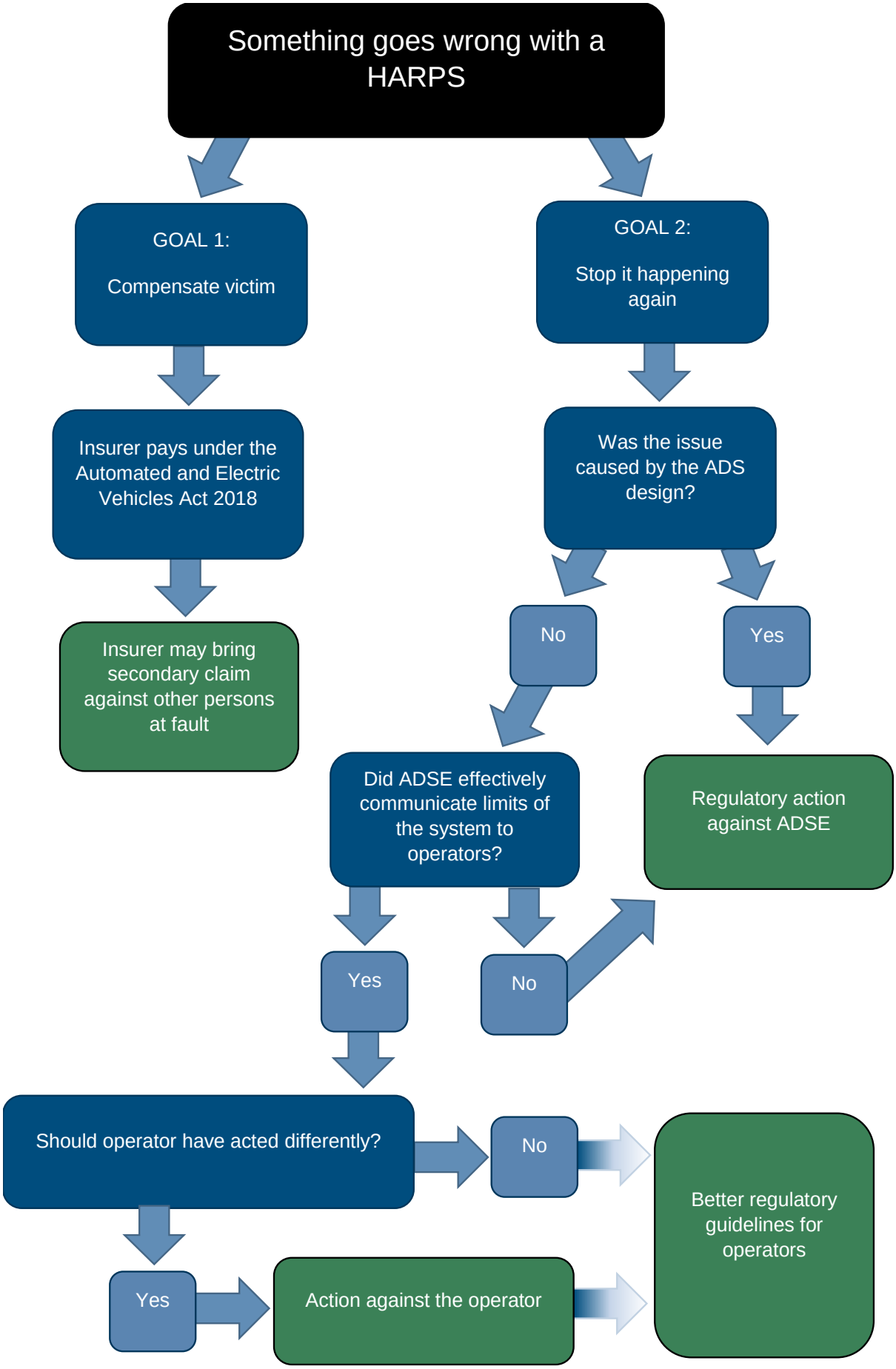
22 Discussed in CP1, paras 6.65 to 6.92.

23 The Code of Practice expects responsible trialling organisations to cooperate fully with the relevant authorities by providing access to any relevant data: see CCAV, *Code of Practice: Automated Vehicle Trialling* (February 2019), https://www.gov.uk/government/consultations/automated-vehicle-trialling-code-of-practice-invitation-to-comment, para 5.13.


Something goes wrong with a HARPS
GOAL 1:
Compensate victim
GOAL 2:
Stop it happening again
Insurer pays under the Automated and Electric Vehicles Act 2018
Was the issue caused by the ADS design?
Insurer may bring secondary claim against other persons at fault
No
Yes
Did ADSE effectively communicate limits of the system to operators?
Regulatory action against ADSE
Yes
No
Should operator have acted differently?
No
Better regulatory guidelines for operators
Yes
Action against the operator

ACHIEVING WIDER TRANSPORT GOALS

1.52 This paper is not simply about the challenges of how to get safe automated passenger services onto the roads. We also consider how such services can help achieve wider transport goals. In Chapter 2 we start by analysing the goals set by local and central Government. These show general agreement about what a good transport system should look like: it should provide accessible, reliable and affordable transport to take people where they want to go, but without compromising safety, air quality or the earth's climate.

1.53 We consider how HARPS could contribute to these goals (the positive vision) before looking at how HARPS could undermine these goals (the negative vision). Our aim is to encourage the benefits while guarding against the risks.

1.54 In this paper we are primarily concerned with the legislative framework. However, this is only one small piece of the jigsaw. Regulating these technological changes will require partnerships between different levels of government. As the Urban Transport Group explain, central and local government will need to work together:

> Rapid technological change is here and now and transforming the world of urban transport. If the benefits for cities and travellers are to be maximised and any downsides minimised then there needs to be a close working relationship with national government on research, development, investment and regulation.[24]

1.55 Local government in England is complex and has been subject to considerable change over the last decade, with the introduction of localism, mayors and combined authorities.[25] There are now a wide range of authorities responsible for transport. The policy outcomes which inform our discussion can only be achieved by the right mix of national, regional and local decision-making.

DEVOLUTION

1.56 As we explained in Consultation Paper 1, some issues covered by our review are reserved to the UK Parliament: others have been devolved to Scotland and Wales.[26]

1.57 For the purposes of this paper it is important to note that taxi, private hire and bus regulation are devolved, while public service vehicle operator licensing is reserved.[27]

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24 Urban Transport Group, *Policy Futures*, http://www.urbantransportgroup.org/system/files/general-docs/UTG%20%E2%80%93%20Policy%20Futures%20Update%202017_AW.pdf.

25 The Localism Act 2011 contains a range of measures to devolve more powers to councils and neighbourhoods. See also the Local Democracy, Economic Development and Construction Act 2009, as amended by the Cities and Local Government Devolution Act 2016. Sub-national Transport Bodies (STBs) established by local authorities under the Cities and Local Government Devolution Act 2016 will also play a role: see https://transportknowledgehub.org.uk/blog/stbs-another-acronym-add-list/.

26 CP1, paras 1.31 to 1.33.

27 Wales Act 2006, Schedule 7A, Section E1, para 113 as inserted by Schedule 1 of the Wales Act 2017; Scotland Act 1998, Schedule 5, Head E, Section E1(b).

RECENT UK GOVERNMENT INITIATIVES

1.58 Our review is taking place alongside various government initiatives, as set out below.

1.59 CCAV first issued guidance to support the safe conduct of trials on UK roads in 2015.[28] The guidance was updated in February 2019.[29] Among other things, the update gives more information on how to engage with relevant bodies and the public, and has more guidance on the technical aspects of access to vehicle data. The Code of Practice also discusses advanced trials:

> it is already possible to conduct trials without a human safety driver or operator in the vehicle, however there must be a safety driver or operator who can use a remote-control function to be able to exercise proper control of the vehicles if necessary.[30]

1.60 The Department of Transport's motoring agencies intend to develop and operate a process to support advanced trials on public roads.

1.61 The Government recently announced a new initiative called CAV PASS to set up a safety regime to ensure self-driving vehicles are safe and secure by design and to minimise any defects ahead of their testing, sale and wider deployment on UK roads.[31] This will be integral to developing the long-term legal framework for safety assurance covered in Consultation Paper 1.

1.62 Meanwhile Zenzic is a collaboration between Government and industry to promote self-driving technology in the UK. It has recently produced a "roadmap" setting out the various strands of work which would need to come together to ensure the successful introduction of automated vehicles.[32] Among other things the roadmap highlights the need to define licensing frameworks to fit with the wider future of mobility and promote appropriate travel options.

1.63 Our work is also taking place within the wider context of the Government's Future of Mobility Regulatory Review. Existing workstreams include work on zero emission vehicles, drones and maritime autonomy. The Government is also undertaking research

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28 CCAV, *The Pathway to Driverless Cars: A Code of Practice for Testing* (July 2015), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/446316/pathway-driverless-cars.pdf.

29 CCAV, *Code of Practice: Automated vehicle trialling* (February 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/776511/code-of-practice-automated-vehicle-trialling.pdf.

30 CCAV, *Code of Practice: Automated vehicle trialling* (February 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/776511/code-of-practice-automated-vehicle-trialling.pdf, para 2.5.

31 See https://www.gov.uk/government/news/new-system-to-ensure-safety-of-self-driving-vehicles-ahead-of-their-sale.

32 Zenzic state in the Roadmap Report that the Law Commissions' work will be a key part of enabling highly automated vehicles to be deployed on UK roads. Zenzic, *Roadmap to 2030* (September 2019), https://zenzic.io/content/uploads/2019/09/Zenzic_Roadmap_Report_2019.pdf, p 42.

in micromobility, Mobility as a Service (MaaS), sharing transport data and modernising bus, taxi and private hire legislation.[33]

STRUCTURE OF THIS PAPER

1.64 This paper is divided into eight further chapters.

- Chapter 2 looks at the aims of regulation, drawing on the Government's Future of Mobility Urban Strategy[34] and local transport plans. We consider how HARPS could contribute to these goals and then look at the dangers that HARPS could undermine them. We are not attempting to predict the future. Instead we use these rival visions to inform how to regulate HARPS, so as to promote the benefits while minimising the risks.

- Chapter 3 considers the current, highly fragmented, regulatory system applying to taxis; private hire; public service vehicles (PSV); and car hire. At one time, the distinctions reflected genuine market differences. However, these divisions are blurring and may disappear altogether in an automated environment. We do not think that it will be possible to shoehorn HARPS into the current regulatory structure. Instead we provisionally propose a single licensing system for all HARPS operators.

- Chapter 4 discusses the scope and content of a new scheme of HARPS operator licensing. It looks in detail at how PSV operator licensing currently works and asks how far these principles are relevant to HARPS.

- Chapter 5 considers privately-owned vehicles authorised for use without a user-in-charge. It asks who should be responsible for insuring, maintaining and supervising such vehicles.

- Chapter 6 discusses how to regulate HARPS to ensure that they provide an accessible service to older and disabled people.

- Chapter 7 addresses the potential problem that large numbers of new vehicles may be placed on urban roads before private car use has reduced, adding to congestion and pollution. The problem would be compounded if HARPS "cruise empty" - that is, circle around for no purpose. We therefore look at the tools for controlling this, including traffic regulation orders; parking charges; road pricing and phased deployment.

- Chapter 8 looks at how to integrate HARPS with mass transit. It considers how far HARPS should fall within existing bus regulation. It then asks how individual HARPS can be encouraged to feed into mass transit systems including through developments in MaaS. It suggests possible partnership arrangements in which

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33 See DfT, *Future of Mobility: Urban Strategy* (March 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786654/future-of-mobility-strategy.pdf, p 9.

34 DfT, *Future of Mobility: Urban Strategy* (March 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786654/future-of-mobility-strategy.pdf.

local authorities provide facilities for HARPS (such as priority lanes and parking near railway stations) in return for integrated information and ticketing systems.

- Finally, Chapter 9 lists the questions we ask. This list is not exhaustive: we welcome views on any aspect of the paper.

NEXT STEPS

1.65 In 2020 we intend to publish a third consultation paper which will draw on the responses to both previous papers to formulate more detailed proposals on the way forward. This will lead to a final report, with recommendations in 2021.

ACKNOWLEDGEMENTS

1.66 We have held more than seventy meetings with individuals and organisations during the writing of this paper, and we are extremely grateful to stakeholders for giving us their time and expertise. We have also attended conferences which have enriched our understanding of the diverse and ever-changing connected and automated vehicle ecosystem in the UK and internationally. We look forward to receiving responses from these stakeholders as well as from other stakeholders and the general public.

1.67 We would also like to express gratitude to the following groups for organising roundtables for the project during this phase of the project: Burges Salmon (23 January 2019, London), MobOx and Oxfordshire Country Council (16 January 2019, Oxford), techUK (25 January 2019, London), PACTS (28 January 2019, London), Appy Parking (7 August 2019, London).

1.68 Appendix 1 provides a full list of the stakeholders we have talked to and the conferences we have attended.

THE TEAM WORKING ON THE PROJECT

1.69 The following members of staff have contributed to this paper at various stages: Henni Ouahes (team manager); Tamara Goriely and Jessica Uguccioni (lawyers in the public law team at the Law Commission of England and Wales); Charles Garland (Project Manager, Scottish Law Commission) Scott Cormack and Alison Hetherington (research assistants, Scottish Law Commission); Connor Champ, Anna Holmes, Rose Ireland, Fiona Petersen, Alastair Richardson, Danielle Worden (research assistants, Law Commission of England and Wales).

Chapter 2: Aims of regulation

WHAT DO WE WANT TO ACHIEVE?

2.1 Respondents to Consultation Paper 1 emphasised that the regulatory framework for automated vehicles must be designed to achieve society's goals. As Paths for All said:

> The starting point in any consideration of this should be "how will we ensure that our response to [automated vehicles] makes our towns and cities better for the people who live and work there?"[35]

2.2 In this paper we are looking at Highly Automated Road Passenger Services (which we refer to as "HARPS"). Some services may resemble taxi, private hire, rental car or bus services; others may look and operate differently from our current conceptions.

2.3 We begin with the broad question: what should a regulatory system for HARPS be designed to achieve? There is general agreement about what a good transport system would look like. Safety is paramount and assuring the safety of automated vehicles was the focus of Consultation Paper 1. Further, a good transport system would sustain economic growth by providing accessible, reliable and affordable transport to take people where they want to go. It would do this without compromising safety, air quality or the earth's climate. The Wales Transport Strategy encapsulates these themes:

> A good transport system is central to achieving a vibrant economy and social justice through equality of access and greater mobility. Moreover, transport must play its part to safeguard the environment and improve the quality of life for everyone, whether or not they are travelling.[36]

2.4 The principles which underpin these goals have been set out in detail in the UK Government's Future of Mobility: Urban Strategy[37] and local transport plans. We begin by describing a few of these plans, focusing on the goals they set. We then consider how HARPS could contribute to these goals (the positive vision) before looking at how HARPS could undermine these goals (the negative vision). This discussion will underpin our subsequent proposals for how HARPS should be regulated: our aim is to encourage the benefits while guarding against the risks.

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35 Paths for All, a Scottish Charity founded in 1996, response to Law Commission's Consultation on Automated Vehicles (November 2018). The full response can be viewed at https://www.lawcom.gov.uk/draft-responses-to-the-automated-vehicles-consultation-2018-19/.

36 One Wales, *Connecting the Nation. The Welsh Transport Policy* (April 2019), https://gov.wales/sites/default/files/publications/2017-09/wales-transport-strategy.pdf. See also DfT, *Delivering a Sustainable Transport System: Main Report* (November 2008), http://www.southwest-ra.gov.uk/media/SWRA/RFA2%202008/dastsreport.pdf/.

37 DfT, *Future of Mobility: Urban Strategy* (March 2019).

2.5 Automated vehicles are only one of several technological changes in the way mobility is provided. Other changes include connectivity and zero emissions technology.[38] Connectivity enabling vehicles to communicate with infrastructure and other vehicles has the potential to transform road infrastructure,[39] leading to intelligent transport systems and smart motorways.[40]

2.6 On emissions, the UK Government has made a commitment to end the sale of new conventional petrol and diesel cars and vans by 2040.[41] Similarly, the Scottish Government intends to phase out the need for new petrol and diesel cars and vans by 2032.[42] The National Infrastructure Commission has recommended the roll out of charging infrastructure to support 100% electric new car and van sales by 2030.[43]

2.7 Although this paper focuses on automation, we need to be aware of how automation will interact with these other developments.

THE GOVERNMENT'S NINE PRINCIPLES OF FUTURE URBAN MOBILITY

2.8 In its *Future of Mobility: Urban Strategy*, the UK Government stated that its approach to innovation in urban mobility will be underpinned by nine principles. In summary, these are:[44]

(1) New modes of transport must be safe and secure by design.

(2) The benefits of innovation must be available to everyone.

(3) Walking and cycling must remain the best options for short urban journeys.

(4) Mass transit must remain fundamental to an efficient transport system.

(5) New mobility services must lead the transition to zero emissions.

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38 For discussion of these trends see McKinsey & Company, *The Trends Transforming Mobility's Future* (March 2019), https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-trends-transforming-mobilitys-future?reload.

39 See SMMT, *Connected and Autonomous Vehicles: 2019 Report* (2019), https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-CONNECTED-REPORT-2019.pdf.

40 In the UK, smart motorway technology enables regional control centres to change signs and vary speed limits, allowing the hard shoulder to be opened to traffic, either permanently or on a dynamic basis. See https://www.gov.uk/guidance/how-to-drive-on-a-smart-motorway.

41 HM Government, *Road to Zero* (July 2018), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf.

42 Scottish Government, *Renewable and Low Carbon Energy,* https://www.gov.scot/policies/renewable-and-low-carbon-energy/low-carbon-transport/.

43 See National Infrastructure Commission, *National Infrastructure Assessment* (July 2018), Chapter 4, Revolutionising Road Transport, https://www.nic.org.uk/assessment/national-infrastructure-assessment/revolutionising-road-transport/.

44 DfT, *Future of Mobility: Urban Strategy* (March 2019), p 8.

(6) Mobility innovation must help to reduce congestion, for example through sharing rides, increasing occupancy or consolidating freight.

(7) The marketplace for mobility must be open to stimulate innovation and give the best deal to consumers.

(8) New mobility services must be part of an integrated transport system combining public, private and multiple modes of transport.

(9) Data from new mobility services must be shared where appropriate to improve choice and the operation of the transport system.

2.9 In other words, innovative services should be safe, accessible and lead the transition to zero emissions. They should also feed into an integrated transport system which uses mass transit and increased occupancy to reduce congestion. They should do this in a way which encourages active travel, such as walking and cycling.

2.10 At present the strategy only covers urban areas, but the Government is committed to considering the needs of rural areas.[45]

LOCAL TRANSPORT PLANS AND STRATEGIES

2.11 Local transport authorities must produce transport strategies for their areas. In England and Wales, these are referred to as local transport plans.[46] In Scotland, they are known as local transport strategies.[47] Meanwhile, London has a slightly different statutory framework. The transport strategy is developed by the Mayor and implemented by each London borough through local implementation plans.[48]

2.12 Here we look briefly at some of these plans and draw out common themes.[49] All plans acknowledge the need to combat climate change,[50] improve air quality,[51] and encourage social inclusion.[52] They therefore emphasise active travel and healthy streets. Transport authorities also have duties to promote traffic flow: the plans aim to

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45 See DfT, *Future of Mobility: Urban Strategy* (March 2019), para 2.19.

46 In England, the requirement was introduced under Part II of the Transport Act 2000. In Wales, Local Transport Plans must implement the Wales Transport Strategy: Transport Act 2000, s 108(2A).

47 See the Transport (Scotland) Act 2001. Section 79(1)(d) enables the Scottish Ministers to issue guidance to local transport authorities on preparing local transport strategies and s 82 (1) defines a "local transport strategy" as one produced in accordance with this guidance. Regional Transport Partnerships are also required to produce Regional Transport Strategies under the Transport (Scotland) Act 2005, s 5.

48 Greater London Authority Act 1999, ss 141,142 and 145.

49 Many of these themes are also reflected in the work of POLIS, a network of European local and regional authorities that work to improve local transport. Several UK local authorities are currently members. See https://www.polisnetwork.eu/.

50 See, for example, the Transport Act 2000, s 108(2ZB) for England outside London.

51 See https://uk-air.defra.gov.uk/aqma/.

52 Social inclusion is expressly listed as one of the goals of transport strategies under the Transport (Scotland) Act 2005, s 5(2)(d)(iv). More broadly see transport authorities' public sector equality duty under the Equality Act 2010, s 29.

reduce congestion and provide a resilient network, able to withstand unexpected events and weather conditions.

2.13 These plans must be seen in the light of statutory requirements to reduce greenhouse gas emissions. Section 1 of the Climate Change Act 2008 states that "it is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline". The target was amended in June 2019 from 80% to 100% in the light of greater scientific knowledge about climate change and is referred to as net zero.[53] Similar duties are placed on Scottish and Welsh Ministers.[54]

Urban plans

2.14 Below we outline four transport strategies to give a flavour of the approaches taken by urban transport authorities.

Greater Manchester

2.15 The Greater Manchester Transport Strategy 2040 aims:

> To enable people to move seamlessly between services and modes of transport on a single, high quality, easy-to-use network; maximising choice and supporting low-car lifestyles, made possible by integrated land use and transport planning.[55]

2.16 The strategy has seven core principles:[56]

(1) integrated – allow customers to move seamlessly between modes and services;

(2) inclusive – provide accessible and affordable transport;

(3) healthy – promote walking and cycling for local trips;

(4) environmentally responsible – deliver lower emissions, better quality environment;

(5) reliable – give customers confidence in journey times;

(6) safe and secure – reduce road accidents and deaths; and

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53 Climate Change Act 2008 (2050 Target Amendment) Order 2019, art 2.

54 In Scotland, section 1 of the Climate Change (Emissions Reductions Target) Act 2019 was passed in September 2019 and amended section A1 of the Climate Change (Scotland) Act 2009 to set a net-zero emissions reduction target year of 2045, when the net Scottish emissions account is to be at least 100% lower than the baseline. There are also interim targets for the years 2020, 2030 and 2040: see section 2 of the 2009 Act, as amended by section 3 of the 2019 Act. In Wales, the net emissions target for 2050 remains "at least 80% lower" than the baseline: Environment (Wales) Act 2016, s 29. The Well-being of Future Generations (Wales) Act 2050 also obliges public bodies to "carry out sustainable development".

55 Transport for Greater Manchester, *Greater Manchester Transport Strategy 2040* (February 2017), https://tfgm.com/2040/elements-of-the-strategy, p 24.

56 Transport for Greater Manchester, *Elements of the Strategy*, https://www.tfgm.com/2040/elements-of-the-strategy.

(7) well maintained and resilient – able to withstand unexpected events and weather conditions.

West Midlands

2.17 The West Midlands Combined Authority (WMCA)[57] has the following vision statement:

> We will make great progress for a Midlands economic 'Engine for Growth'; clean air; improved health and quality of life for the people of the West Midlands. We will do this by creating a transport system befitting a sustainable, attractive and economically vibrant conurbation in the world's sixth largest economy. [58]

2.18 To achieve this, WMCA is investing in infrastructure "to reduce the reliance on cars for short distance trips".[59] Among other things, the West Midlands Strategic Transport Plan aims to:[60]

(1) introduce an integrated rail and rapid transit network which is connected to local bus networks;

(2) reduce transport's impact on our environment – improving air quality, reducing carbon emissions and improving road safety;

(3) ensure that walking and cycling are a safe and attractive option for many journeys, especially short journeys; and

(4) maintain and develop our transport infrastructure and services to ensure they are efficient, resilient, safe and accessible.

2.19 The plan emphasises the role of new technology, including measures to improve traffic management and the testing of Connected and Autonomous Vehicles (CAVs).[61] It also proposes a Mobility as a Service pilot, allowing people to plan and book a journey using different modes of transport through a single app.

London

2.20 The Mayor of London's transport strategy has the "central aim for 80 per cent of all trips in London to be made on foot, by cycle or using public transport by 2041".[62] It therefore stresses the importance of "a good transport experience" which makes public transport

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57 WMCA is made up of seven Metropolitan Authorities (Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall and Wolverhampton) together with representatives from the three Local Enterprise Partnerships and five non-constituent authorities.

58 West Midlands Combined Authority, *Movement for Growth: The West Midlands Strategic Transport Plan: Summary* (2016), https://www.wmca.org.uk/media/1371/2016-06-01-mfg-summary-document_wmca.pdf, p 2.

59 Above, p 2.

60 Above, p 7.

61 Transport for West Midlands, *Movement for Growth: 2026 Delivery Plan for Transport* (2017), https://www.tfwm.org.uk/media/2539/2026-delivery-plan-for-transport.pdf, p 4.

62 Mayor of London, Greater London Authority, *Mayor's Transport Strategy* (March 2018), https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf.

an increasingly attractive alternative to using a car. This can be done by better provision, more integrated planning and keeping fares affordable.[63]

2.21 The strategy also emphasises the importance of healthy streets where people feel relaxed and choose to walk, cycle and use public transport. These require clean air, easy crossings, shade and shelter, places to stop and rest, reductions in noise and things to do and see.[64]

2.22 A third aspect of the strategy is safety. The "Vision Zero action plan" sets goals that no one should be killed in or by a London bus by 2030, and that all deaths and serious injuries from road collisions should be eliminated from London's streets by 2041.[65] Vision Zero campaigners say that they do not advocate high visibility wear, cycle helmets, pedestrian barriers or laws that might deter vulnerable road users from getting about.[66] However, they do ask for:

> evidence based changes e.g. speed limit reductions, detailed crash investigations to determine effective prevention strategies, safety cameras and changes in road user priorities so that collisions are minimised.[67]

2.23 In mid-2019 Transport for London (TfL), published a statement on CAVs.[68] The statement emphasises that CAVs must be deployed in a way that is consistent with the vision of the Mayor's Transport Strategy. In particular, any deployment must support healthy streets, safety and data sharing, and prevent vehicles from circulating without passengers.

Glasgow

2.24 Glasgow's City Centre Strategy aims to ensure that the city centre is an attractive and sustainable place for residents, visitors and businesses.[69] It seeks to achieve a balance between the varying transport needs and preferences of different users of the city centre. It has five objectives:

(1) improve health by increasing active travel;

(2) support the economic growth of the city centre, by ensuring access for residents, blue badge holders, tourists and traffic essential to sustain economic functions;

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63 Mayor of London, Greater London Authority, *Mayor's Transport Strategy* (March 2018), https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf, p 15.

64 Above, p 37.

65 Above, p 23.

66 Vision Zero UK, *What is Vision Zero*, https://visionzerouk.wordpress.com/.

67 Above.

68 TfL, *Connected and Autonomous Vehicles: guidance for London trials* (2019), https://tfl.gov.uk/corporate/publications-and-reports/connected-and-autonomous-vehicles. TfL has also published guidance for those seeking to conduct CAV trials in London.

69 Glasgow City Centre, *Transport Strategy 2014-2024* (February 2015), https://www.glasgow.gov.uk/article/18276/City-Centre-Transport-Strategy, p 1.

(3) enhance the quality of main pedestrian spaces, key development areas and main access routes;

(4) reduce harmful traffic emissions and noise; and

(5) enhance road safety and personal security.

Rural plans

2.25 Rural areas face different transport challenges from urban areas. While congestion is a less pressing issue, rural areas are highly dependent on private car ownership. With less frequent bus services and a high proportion of the UK's older population, travel can be particularly difficult for those without a driving licence.[70] Rural councils have to consider how to keep their communities connected so that residents can access essential services and businesses can access trade centres.[71]

2.26 Here we outline two rural transport strategies, from Cumbria and from the Scottish Highlands and Islands.

Cumbria

2.27 The Cumbrian Transport Plan Strategy seeks to promote "a sustainable and prosperous low carbon economy" and enable people to live "independent and healthy lives".[72] Some of the key strands of the strategy are:

(1) to encourage greater use of buses, trains, taxis and active travel in towns;

(2) to promote accessibility – eg money will be spent on tactile surfaces, low-floor buses and raised platforms at stations;

(3) to reduce the severity of road accidents – eg the speed limit in residential areas, outside schools and in town centres will be brought down to 20 miles per hour;

(4) to ensure a good road network; and

(5) to support socially necessary bus services – eg the council runs a Rural Wheels service which allows people to get to shops, healthcare services and other facilities during the daytime.

The Highlands and Islands

2.28 The primary objective of the Transport Plan for the Highlands and Islands is "to improve the interconnectivity of the whole region … to enable the region to compete and support

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70 Cumbria County Council, for example, note that the proportion of elderly people in Cumbria is increasing more than elsewhere, due to in-migration of older people and out-migration of younger adults; approximately one in five people in Cumbria have a long-term limiting health condition, including a growing number of people with mobility problems: *Moving Cumbria Forward: Cumbria Transport Plan Strategy 2011-2026* (2011), https://www.cumbria.gov.uk/eLibrary/Content/Internet/538/755/1929/42150122647.pdf, p 8.

71 For example, Cumbria County Council note that its "distance from large cities… and some poor road and rail connections make it difficult for the county's economy to grow": above, p 28.

72 Above, p 5.

growth".[73] It seeks to: "enable people to participate in everyday life; to improve the safety and security of travel; to improve people's health; and to manage impacts on our environmental assets".[74] The main strands include:

(1) promoting active travel, improving health and reducing the use of cars for short journeys;

(2) investing in the region's bus services;

(3) improving community transport and demanding responsive transport for those who have poor access to mainstream public transport;

(4) improving and maintaining the rural road network which has suffered from under-investment in the past;

(5) investing in ports and ferries;

(6) developing initiatives for reducing the cost of transport and travel; and

(7) developing ways to reduce and mitigate the climate change impact of travel.[75]

ANTICIPATORY REGULATION: ALTERNATIVE SCENARIOS

2.29 To help us identify the opportunities and risks posed by HARPS we consider their potential positive and negative effects in turn. We start with the positive picture, focusing on the opportunities HARPS provide to achieve the national and local goals we have outlined. We then look at the negative picture and the risk that they could make things worse. Our aim is to propose a regulatory structure that emphasises the positive aspects of HARPS and guards against their negative ones.

2.30 We are not attempting to predict the future. We do not know how the technology will operate, or how it might transform society. Automation may lead to a transport system which is quite different from the present one, with a variety of new providers and novel services, which may not fit into existing regulatory categories. It is consequently important that any new regulatory structure focuses on outcomes and provides regulators with flexible tools to achieve those outcomes.[76] We have therefore followed recent advice to start with outcomes and to test regulatory proposals by considering different scenarios.[77]

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73 The Highlands and Islands Transport Partnership, *The Transport Strategy for the Highlands and Islands 2008-2021* (2008), p 3.

74 Above, p 3.

75 Above, p 4.

76 KPMG notes that the overarching changes in mobility require a flexible and responsive governance structure for companies. The same is true for regulators: See KPMG, *Mobility 2030: Transforming the Mobility Landscape* (2019), https://home.kpmg/uk/en/home/insights/2019/02/mobility-2030-transforming-the-mobility-landscape.html.

77 The Government Office for Science recommends scenario planning as a way of testing regulatory options*: Future of Mobility: A time of unprecedented change in the transport system* (January 2019). Nesta, an

THE POSITIVE VISION: POTENTIAL BENEFITS

2.31 HARPS have the potential to reduce dependency on privately-owned cars, by offering flexible, accessible alternatives. Properly managed, HARPS would feed into an integrated transport system which uses mass transit, such as trains and buses, to reduce congestion. If there is less car ownership, this would reduce on-street parking in urban and suburban areas. Instead, the space could be used for cycle lanes and healthy streets (with, for example, shade and shelter, places to rest and things to do and see).

2.32 At the same time, automation has the potential to reduce passenger transport operating costs, allowing more affordable, flexible bus services. Although initially HARPS are likely to be focused on urban areas, there is potential to expand services to rural areas, where reducing bus operating costs has particular relevance.

2.33 At present, many disabled passengers rely on taxis and private hire vehicles. HARPS could offer cheaper alternatives for those who do not currently have access to a vehicle of their own, including those unable to drive.

2.34 Additionally, HARPS have the potential to be safer. Unlike humans, they do not become drowsy or distracted. They can look in several directions at once and they can think more quickly than humans can. They also have the capacity to drive in more efficient and environmentally friendly ways.

2.35 We explore these themes below.

Reducing dependency on car ownership

Current dependency

2.36 As a society we are hugely dependent on cars. The Government Office for Science comments:

> The UK has seen a growing dependence on automobility during the 21st century, continuing the trend experienced in the 20th century. The national stock of vehicles has risen sharply, increasing by 40% in Great Britain between 1997 and 2017.[78]

2.37 In March 2017, there were 37.5 million cars registered in the UK.[79] As of July 2019, 76% of households had access to at least one car or van, while 35% had access to more than one.[80]

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innovation foundation, also advocates a focus on outcomes, using a range of future scenarios: see H Armstrong, C Gorst and J Rae, "Renewing regulation: 'anticipatory regulation' in an age of disruption" (2019), https://media.nesta.org.uk/documents/Renewing_regulation_v3.pdf.

78 Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), p 38.

79 See DfT, *Vehicle Licensing Statistics Quarter 1 (Jan – March) 2017* (15 June 2017), https://www.gov.uk/government/statistics/vehicle-licensing-statistics-january-to-march-2017, p 1.

80 See DfT, *NTS0205: Household car availability: England* (July 2019), https://www.gov.uk/government/statistical-data-sets/nts02-driving-licence-holders.

2.38 The majority of personal trips made and miles travelled are by car. In England in 2017, 61% of trips and 71% of miles travelled were by car or van, either as a driver or passenger.[81]

Rural areas

2.39 Residents in rural areas are particularly dependent on cars. In 2017/18, 76% of all trips in rural areas were by car, compared with only 52% in urban and suburban areas.[82] This dependency is exacerbated by reductions in rural bus services.[83]

2.40 The rural population is becoming older. The population aged 65 and over increased by 37% in rural areas between 2001 and 2015, compared with 17% in urban areas.[84] A major challenge is to provide transport options for those who are no longer able to drive. The Government Office for Science comments that the restriction on travel choices in rural areas has implications "for well-being and social capital".[85]

The economic pressures towards car use

2.41 There are many reasons for our dependency on cars. Habit, convenience and privacy all play a part.[86] Economic factors also skew choices towards private car use and away from public transport. This is because many of the costs of private cars (including purchase price, insurance, vehicle excise duty and MOT tests) are "sunk costs" unrelated to mileage travelled. When making a decision about any particular journey, people will tend to ignore these sunk costs and consider only the marginal costs (such as fuel).[87] If the marginal costs of car use are less than the perceived benefits, compared to the costs of alternatives such as public transport, people will tend to use the car.[88]

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81 See DfT, *National Travel Survey 2018*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/823068/national-travel-survey-2018.pdf, p 2.

82 Above, p 28.

83 For example, between 2010/11 and 2016/2017 the budget allocated to bus services was cut by 78% in North Yorkshire, 64% in West Sussex and 75% in Central Bedfordshire: Campaign for Better Transport, *The future of rural bus services in the UK* (December 2018), https://bettertransport.org.uk/sites/default/files/research-files/The-Future-of-Rural-Bus-Services.pdf, p 7.

84 Age UK, *Later Life in the United Kingdom 2019* (2019), https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/later_life_uk_factsheet.pdf, p 7 citing Defra, *Rural population 2014/15* (2015), https://www.gov.uk/government/publications/rural-population-and-migration/rural-population-201415.

85 Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), p 3.

86 See, for example, DfT, Kantar Public, *DfT Future Roads: Public Dialogue, Exploring the public's reactions to future road technologies, final report* (May 2018), https://www.gov.uk/government/publications/future-roads-public-dialogue, p 6.

87 People may also disregard other marginal costs such as tyre and engine wear because these costs tend to be "lumpy" and fall at other times.

88 B Gardner and C Abraham, "What drives car use? A grounded theory analysis of commuters' reasons for driving" (2007) 10F Transportation Research 187.

2.42 The result is that people who own cars tend to use their cars in preference to public transport because the upfront costs of car ownership have already been paid, and the additional costs of any given trip are (or seem) lower than the alternative.

2.43 This is true even of low-income households, who struggle to meet the upfront costs of car ownership. The Government Office for Science notes that dependency on cars "can lead to car-related economic stress", in which households with low disposable income are often forced to spend a disproportionately large proportion of their income on a car.[89]

2.44 Households will also ignore the wider "external costs", which fall on society as a whole. Yet these are substantial. In 2009 the Cabinet Office estimated the external costs of congestion, poor air quality, accidents and physical inactivity in English urban areas at around £10 billion per year.[90]

2.45 If car ownership is no longer essential, households face more comparable choices. For an individual household, public transport alternatives may be less costly overall if they do not have to incur the sunk costs of car ownership. Public transport is also much less costly for society as a whole.

Indications that car use is falling

2.46 Car use per person is now falling. Overall, people are travelling less, as communications technology is leading to more home working and more online shopping.[91] Between 2002 and 2018, there was a 11% and 13% fall in the number of car trips and the distance travelled by car per person respectively in England.[92] Overall, the mileage driven on UK roads continues to increase, but this reflects population growth, not use per person.

2.47 This fall in car use per person reflects global trends. The Government Office for Science comments:

> private car use per capita has lessened or plateaued in multiple countries and in some large urban areas. However, the reasons for this are not well understood.[93]

2.48 The greatest reductions are among the young. The number of car trips per year by persons aged 17-29 dropped by 36% between 1995-99 and 2010-2014.[94] Young people

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89 Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), p 64.

90 Cabinet Office Strategy Unit, *The wider costs of transport in English Urban Areas* (2009), https://webarchive.nationalarchives.gov.uk/+/http:/www.cabinetoffice.gov.uk/media/307739/wider-costs-transport.pdf.

91 Although online shopping has led to a reduction in the number of times people drive to the shops, it has contributed to a 35% increase in the use of light commercial vehicles since 2004. See Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), p 43.

92 DfT, *National Travel Survey 2018*, https://www.gov.uk/government/statistics/national-travel-survey-2018, p 15.

93 Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), p 49.

94 "Car driver trip" is a trip where the person was the driver of the car. Chatterjee and others, *Young People's Travel – What's Changed and Why? Review and Analysis. Report to the DfT,* UWE Bristol, UK (2018), p 3.

are also less likely to learn to drive. In 1992/4, 48% of 17-20 year olds and 75% of 21-29 year olds held a driving licence. However, by 2014 these percentages had dropped to 29% of 17-20 year olds and 63% of 21-29 year olds.[95]

2.49 It has been suggested that young people take a more pragmatic approach to cars, regarding them as necessary to access jobs, training and services, but less important for their status and prestige.[96]

2.50 The proportion of the population aged over 65 is set to rise sharply and this will also affect travel patterns.[97] Although older people tend to drive more today than in previous generations,[98] the amount of driving overall drops significantly after 60.[99]

New alternatives: car-sharing and ride-sharing

2.51 Those who do not own a car often rely on taxis, private hire vehicles and rented cars for trips which cannot be made in other ways. New technology is beginning to transform these services.

2.52 First, mobile phones have changed the way people book and pay for taxis and private hire services. This has led to a large increase in private hire, as typified by the expansion of Uber.[100] This trend has occurred in many urban areas,[101] but is most marked in London, where private hire services increased by 70% between 2013 and 2016.[102]

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95 Chatterjee and others, *Young People's Travel – What's changed and Why? Review and Analysis. Report to the DfT,* UWE Bristol, UK (2018), p viii.

96 J Green and others, "Automobility reconfigured? Ironic seductions and mundane freedoms in 16-21 year olds' accounts of car driving and ownership" (2018) 13 *Mobilities* 14.

97 It is forecasted that over 80% of the proportion growth to 2041 will be in the over-65 age group: Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), para 4.2.1.

98 Between 1975/76 and 2017, the proportion of older people with driving licences increased significantly. For people aged 70 and over it rose from 15% to 64%, see DfT Transport, *National Travel Survey: England 2017* (2017), https://www.gov.uk/government/statistics/national-travel-survey-2017, p 11.

99 Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), see Figure 4.6.

100 Across England and Wales, the number of private hire vehicles increased by 22% between 2015 and 2018, while licensed taxi numbers slightly decreased (by 4%): See Dft, *Taxi and Private Hire Vehicle Statistics, England: 2018* (25 October 2018), https://www.gov.uk/government/statistics/taxi-and-private-hire-vehicle-statistics-england-2018, table 3. Scotland saw a 30% increase in the number of licensed private hire cars between 2015 and 2018, and a slight decrease in taxi numbers (1.7%): Transport Scotland, *Scottish Transport Statistics No 37* (2018), https://www.transport.gov.scot/publication/scottish-transport-statistics-no-37-2018-edition/sct01193326941-04/#tb14.

101 In the West Midlands, for example, licenced private hire vehicles increased by 45% between 2015 and 2017 and by a further 22% between 2017 and 2019: DfT, *Taxi and Private Hire Vehicle Statistics, England: 2019* (25 September 2019), table 3.

102 London Assembly Transport Committee, *London Stalling: Reducing Traffic Congestion in London* (2017), https://www.london.gov.uk/sites/default/files/london_stalling_-_reducing_traffic_congestion_in_london.pdf, p 19. However, there are now signs that the increase is slowing, with a rise of only 0.2% in the number of licensed PHVs in London between 2018 and 2019: DfT, *Taxi and Private Hire Vehicle Statistics, England: 2019* (25 September 2019), table 3.

2.53 As we explore below, there is a risk that private hire could be used as a substitute for public transport, causing even greater congestion.[103] However, technological developments and changing public attitudes have the potential to encourage much more sharing of specific journeys (ride-sharing) and to reduce dependency on car ownership by sharing access to a vehicle (such as car clubs).

2.54 Ride-sharing is benefiting from technology which allows the route to change in response to demand, providing either a "door-to-door" or "corner to corner" pick up.[104] One example is Uber-pool. Another example is PickMeUp minibuses. As the Future of Mobility strategy explains, these:

> serve customers in Oxford's 'Eastern Arc', picking them up from a 'virtual bus stop' within a short walkable distance of where they are. The intelligent software works out the best way to take them and other passengers to their chosen destinations.[105]

2.55 There are plans for a similar service in the London Borough of Sutton. GoSutton is a 12-month bus trial: customers request a ride, select their pick-up and drop-off points and pay through an app.[106] The service aims to stop within 200 metres of the requested destination.

2.56 Meanwhile, car clubs give members access to a shared fleet of vehicles, which can be picked up and dropped off in specific zones. These services can be provided directly by large companies, such as SHARE NOW and Zipcar. Internet platforms also allow users to share their privately-owned vehicles on a peer-to-peer basis.[107] Transport for Greater Manchester is planning to expand the city's car clubs as shared mobility is a "key part of the toolbox" for the first and last mile of the journey.[108]

Can these alternatives reduce dependency on private car ownership?

2.57 These new services can cover trips to destinations which are presently hard to reach, except by private car. Examples include "last mile" trips to and from the traveller's door (for example, late at night, for those with walking difficulties or for trips involving heavy carrying). They can also be a convenient way of undertaking trips which are badly served by urban transport. They are therefore widely seen as one solution to dependency on private car ownership.

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103 Paras 2.103 to 2.104.

104 For example, ViaVan and Citymapper offer pick-ups and drop-offs that involve a short walk for the user, except in certain circumstances (such as late at night) where the service can be rendered door-to-door.

105 See the DfT, *Future of Mobility: Urban Strategy* (2019), p 43. PickMeUp is run by Oxford Bus Company.

106 It is run by TfL and ViaVan and operated by Go-Ahead London: see https://gosutton.co.uk/.

107 See DfT, *Future of Mobility: Urban Strategy* (2019), p 18 and https://www.acraorg.com/2018/06/the-american-car-rental-association-encourages-peer-to-peer-p2p-car-rental-and-car-sharing-operators-to-become-acra-members/. For an example of one such internet platform, see Liftshare: https://liftshare.com/uk.

108 See comments by Rafael Cuesta, Head of Innovation RoadSafe, Smart Transport Conference (March 2019), http://www.roadsafe.com/smarttransportconferencekeytopicsandconclusions.

2.58 On the other hand, these services currently face several obstacles. The first relates to social attitudes. Research suggests that people are psychologically attached to owning cars and have concerns about safety, comfort and privacy in shared vehicles.[109] The Government Office for Science comments that these attitudes may be age-related. Those under 30 tend to be more open to the sharing economy, "often choosing usership over ownership".[110] They are more likely to use app-based private hire vehicles, car clubs and ride-sharing as a substitute for car ownership, particularly in urban areas.

2.59 Another major barrier is cost, particularly for services which require a paid driver.[111] Automation could significantly reduce the costs of taxis and private hire, since the cost of the driver currently constitutes 40% to 50% of the operating costs.[112]

2.60 Car clubs do not incur the cost of a driver and can work well when people have discretion over when to travel. However, they currently work less well for trips which need to be undertaken at fixed times such as commuting and school runs, where immediate availability is crucial.[113] In London, only 3% of car club trips are commutes.[114] One problem with using a club car to commute is it would tend to be used only once each morning; once left in the centre of a town, the car is no longer available to people in the suburbs. Automation could solve this problem, as the car could return empty to the suburb for the next user.

2.61 We envisage that some HARPS vehicles could be used to drive empty or to deliver passenger-only services within their operational design domain but could be driven like a conventional vehicle outside that domain. These might therefore look more like a rental car than a taxi. Take an example in which a vehicle has the ability to drive itself

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109 R Belk, "Why not share rather than own?*"* (2007) 611*The Annals of the American Academy of Political and Social Science* 126; J K Park and D R John, "More than meets the eye: the influence of implicit and explicit self-esteem on materialism*"* (2011) 21 *Journal of Consumer Psychology* 73. See also work done by the Driverless Futures? project which aims to examine how driverless technologies will affect society, see https://www.ucl.ac.uk/sts/news/2018/oct/driverless-futures-new-esrc-funded-project.

110 Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019) p 59.

111 D Golightly and others, Government Office for Science, *Human Factors in Exclusive and Shared Use in the UK Transport System*: *Future of Mobility: Evidence Review* (January 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/773669/humanfactors.pdf.

112 Hara Associates, *Ottawa Taxi Cost Index 2011 Update* (2011), http://ottawa.ca/calendar/ottawa/citycouncil/occ/2011/09-28/cpsc/03%20%20Document%203%20Update%20Ottawa%20TaxiCostIndex.pdf, p 9; Taxi Research Partners, Glasgow City Council, *Glasgow Taxi Cost Model Application* (2019), www.glasgow.gov.uk/councillorsandcommittees/viewSelectedDocument.asp?c=P62AFQDNT18181ZLNT; Centre for International Economics, *Survey of taxi drivers and operators*: *Preliminary survey results for the Sydney metropolitan transport district* (2014), https://www.ipart.nsw.gov.au/Home/Search?q=&fr=2014-01-01&t=2014-12-31&i=transport&so=0&ty=&co=. On the other hand, we need to be mindful of higher purchase/lease/software licensing costs for automated vehicles and greater limitations in their service operations.

113 Or, when congestion means that you cannot be certain how long the journey will take. For example, you may face financial penalties if you get stuck in traffic and therefore cannot return the vehicle on time.

114 S D Gleave, *Carplus Annual Survey of Car Clubs 2016/17* (2017), https://como.org.uk/wp-content/uploads/2018/06/Carplus-Annual-Survey-of-Car-Clubs-2016-17-London.pdf.

without a user-in-charge within a particular town (such as Milton Keynes) but cannot drive itself outside its geofenced area. If dropped anywhere in Milton Keynes, it would be able to drive empty to any pick-up point in Milton Keynes. Customers in Milton Keynes would therefore enjoy the convenience of summoning the vehicle to their door. Once the vehicle arrives, the new customer could then drive themselves to other places in the UK. This would remove one obstacle to car hire, which is the inconvenience involved in pick-ups and drop-offs.

2.62 In summary, HARPS have considerable potential to offer alternatives for those trips which currently can only realistically be undertaken by private cars. Freed from the sunk costs of car ownership, people may then think differently about the range of transport options available to them. As we discuss below, HARPS can be used to funnel users towards other transport networks. They could also be used to provide occasional alternatives to other choices. For example, people may be more likely to use cycling as a regular commuting option if HARPS offer an alternative in wet weather.

Reducing congestion: integrating HARPS with public transport

2.63 HARPS can reduce congestion, provided they are shared or encourage people to use mass transport. At present, exclusive-use vehicles take up a disproportionate amount of road space. London is an example:

> Cars, taxis and PHVs take up nearly half of all the street space in central London, but account for just 13 per cent of the distance travelled. In comparison, buses and coaches take up less than 10 per cent of the street space but account for nearly 40 per cent of distance travelled.[115]

2.64 The average car occupancy in England is 1.6 people, even though the average car has five seats.[116] If, for example, 60 people currently travelling in a double-decker bus were spread across 60 separate automated pods, cities will not welcome the technology.

2.65 One answer to congestion is to encourage more "multi-modal trips",[117] where users change to a different type of transport for different parts of the journey. This enables the use of transport modes better-suited to each leg of the journey. It already happens when people walk to the bus stop or drive to the railway station. However, it has considerable potential to expand. It could include, for example, taking a shared four-person HARPS to the station; or using a hire bike to cycle across parkland to catch a flexible 10-person HARPS vehicle; or taking the 10 person HARPS vehicle to catch a conventional bus.

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115 Mayor of London, *Mayor's Transport Strategy* (2018), https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf, p 89.

116 See DfT, *NTS0205: Car occupancy, England: since 2002* (July 2019), https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy.

117 See, for example, Principle 8 of DfT's *Future of Mobility: Urban Strategy* (March 2019), which states: "new mobility services must be designed to operate as part of an integrated transport system combining public, private and multiple modes for transport users."

2.66 The key to encouraging multi-modal trips is good information about options, coupled with seamless ticketing and thoroughfares. Again, technology can enable people to use mobile phone apps to plan and book door-to-door trips using a single platform for different services.

2.67 This approach to travel planning is often referred to as "Mobility as a Service" (MaaS).[118] It is defined as the "integration of various modes of transport along with information and payment functions into a single mobility service".[119] One example, Whim, was launched in the West Midlands in 2018.[120] The app gives users information about public transport, taxi and car rental services available from its partners. It allows their services to be booked and paid for in one place. The service originated in Helsinki, Finland, where users can also opt for a monthly mobility subscription rather than the pay-as-you-go model.[121]

2.68 In London, TfL has opened up its data for use by over 600 travel apps and 42% of Londoners.[122] The Government Office for Science notes:

> Since early 2000s, government-enforced data standardisation, including transXchange, has enabled transport information systems such as Citymapper that users use to plan and optimise journey times.[123]

2.69 With good digital platforms offering unified planning and payment, shared rides could funnel people into other transport services. However, the benefits will only be fully realised if combined with other actions, such as encouraging the use of HARPS in under-served places; providing accessible interchanges so that people can move between transport modes; and discouraging single-occupancy HARPS in congested areas. We consider how regulation can contribute to reducing congestion and embed a better integration of HARPS with public transport provision in Chapters 7 and 8.

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118 DfT, Future of Mobility: Urban Strategy (March 2019).

119 Above.

120 The service is provided by MaaS Global (a Finnish Company), in partnership with Transport for West Midlands, National Express West Midlands, Sixt, Gett, and Enterprise: see https://whimapp.com/uk/.

121 Another example is NaviGoGo which enables young people in Dundee and North East Fife to plan, book and pay for a range of travel options using a single platform. A majority of trial participants agreed NaviGoGo made travel easier and resulted in an overall increase in use of all modes of transport, including taxi, bus and train: DfT, *Future of Mobility: Urban Strategy* (March 2019), p 47.

122 Deloitte*, Assessing the value of TfL's open data and digital partnerships* (July 2017), http://content.tfl.gov.uk/deloitte-report-tfl-open-data.pdf.

123 See Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), para 5.2. KPMG awarded the UK the highest score globally for data sharing and open data environment for automated vehicles: KPMG, *Automated Vehicle Readiness Index 2019,* https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/02/2019-autonomous-vehicles-readiness-index.pdf.

Reduced car parking

2.70 The average car in the UK is parked 96% of the time.[124] Automated vehicles could be used much more intensively, helping reclaim space which communities have ceded to parking.

2.71 The space currently occupied by parked vehicles could be used to promote active travel, enabling more cycling lanes or healthier streets. Walking would become a much more attractive option if parked cars were replaced by (for example) more green space, seating or points of interest. Alternatively, the space could be used for bus lanes to increase the reliability of public transport.

More affordable bus services

2.72 Employment costs of drivers currently comprise around 40% of the total running costs of buses.[125] Automation therefore has the potential to reduce operating costs and provide more affordable bus transport.

2.73 This is particularly significant as buses have become increasingly dependent on public subsidies which are now being withdrawn. From 2010-11 to 2016-17, government funding for bus services across England and Wales was cut by £103 million, representing a 32% budget cut overall.[126]

2.74 Problems over bus funding occur throughout the UK. However, rural buses are said to be "at the extreme edge of the spectrum" because they carry fewer people per mile operated and are therefore less secure economically.[127]

2.75 We anticipate that initially automated vehicles on public roads will be used in urban and suburban areas. However, in time, automation has the potential to benefit rural communities. In Scotland, Fusion Processing will be conducting a trial with self-driving buses across the Forth Bridge connecting Fife and Edinburgh's train and tram interchange.[128] Michael Matheson MSP, Cabinet Secretary for Transport, Infrastructure and Connectivity, has encouraged testing of self-driving technology in rural settings.[129]

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124 The RAC Foundation estimates that the average car spends about 80% of the time parked at home, and is parked elsewhere for about 16% of the time: J Bates and D Leibling, *Spaced Out: Perspectives on Parking Policy,* RAC Foundation (2017), www.racfoundation.org/wp-content/uploads/2017/11/spaced_out-bates_leibling-jul12.pdf, p 12.

125 Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), para 5.3.4 citing S Warburton, *Bus Industry Costs: Make-up and Trend*s (2015) TAS Partnership.

126 Campaign for Better Transport, *The future of rural bus services in the UK* (December 2018), https://bettertransport.org.uk/sites/default/files/research-files/The-Future-of-Rural-Bus-Services.pdf, p 7.

127 Above, p 7.

128 Stagecoach Group**,** "UK's first full-sized autonomous bus begins depot trials" (18 March 2019), https://www.stagecoach.com/media/news-releases/2019/2019-03-18.aspx.

129 See the interview provided at CAV Scotland 2018 for example, https://www.youtube.com/watch?v=Bq1lV9tkXgc.

Internationally, Japan is emphasising how automation can provide more accessible and affordable transport in rural areas.[130]

More flexible bus services

2.76 Automation can also change the way buses work. Without the fixed costs of a driver, it may become more economic to run smaller services at more frequent intervals. Technology also makes it possible to change the route in response to the needs of passengers, combining people who are travelling in similar directions and dropping them off near their door. It could also help local authorities manage traffic more efficiently, avoiding certain roads and the "bunching" of buses.

2.77 We envisage that one of the more advantageous uses for HARPS will be to provide "bus like" services, but they may look different from our current perception of a bus.

Benefits for those with disabilities

2.78 At present, disabled people travel less than the rest of the population. As noted in the London Mayor's Transport Strategy, "disabled people, who currently make up 14 per cent of London's population, on average make one third fewer trips than non-disabled Londoners".[131]

2.79 The number of people with mobility problems is set to increase as the population becomes older. In 2016, there were 1.6 million people aged 85 and over (2% of the population); this is projected to double to 3.2 million by 2041; and to treble by 2066.[132]

2.80 Older and disabled people are more dependent on taxis and private hire services. In 2018, in England, adults with mobility difficulties made an average of 21 trips per person per year in taxis or private hire vehicles, compared to 10 such trips for the general population.[133] The cost of these trips is a particular burden for those on low incomes. As we have seen, automated passenger services have the potential to be more affordable, allowing disabled people to travel more. We consider accessibility in Chapter 6.

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130 See for example, Roland Berger Focus, *Reconnecting the rural, autonomous driving as a solution for non-urban mobility* (March 2018), https://www.rolandberger.com/en/Publications/Reconnecting-the-rural-Autonomous-driving.html, p 7.

131 Mayor of London, *Mayor's Transport Strategy* (2018), p 25.

132 ONS, *Living Longer,* (August 2018), https://www.ons.gov.uk/releases/livinglongerhowourpopulationischangingandwhyitmatters.

133 DfT, *Taxi and Private Hire Statistics 2019* (25 September 2019), https://www.gov.uk/government/statistics/taxi-and-private-hire-vehicle-statistics-england-2019, p 15.

Safety benefits

2.81 From July 2017 to June 2018, 1,784 people were killed on the roads of Great Britain, and a further 25,511 were seriously injured.[134] HARPS have the potential to reduce this figure, possibly substantially. Diverse sensors, data sharing and faster-than-human reaction times could avoid some of the accidents currently caused by human error.[135]

2.82 Automated driving systems also model safe driving behaviour. Where, for example, automated vehicles observe speed limits, this could have a calming effect on other traffic.

Environmental benefits

2.83 The main environmental benefits stem from the changes we have already mentioned: fewer private cars; more shared vehicles; greater user of public transport; and more active travel. All these changes have the potential to improve air quality and reduce carbon footprint.

2.84 Automated vehicles also have the capacity to drive in more efficient and environmentally friendly ways. They can be programmed not to accelerate quickly away from traffic lights, brake sharply or keep the engine running when stopped. One limited practical test found that having just 5% autonomous vehicles decreased stop-start traffic waves and reduced fuel consumption.[136] Automated vehicles that behave in a safe and more predictable manner may also make people feel more comfortable to walk and cycle in urban environments.

2.85 Thirdly, HARPS will be part of the necessary move towards zero emission vehicles, which use electricity or alternative technologies such as hydrogen fuel cells. Some developers see self-driving and electrification as going hand-in-hand.[137] However, it cannot be assumed that all self-driving vehicles will necessarily be electric initially, given the current state of battery technology and charging infrastructure. It will be important to have policy levers to encourage the trend towards zero emission vehicles by 2050.

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134 DfT, *Reported road casualties in Great Britain: 2018 annual report* (26 September 2019), https://www.gov.uk/government/statistics/reported-road-casualties-in-great-britain-annual-report-2018, p 1.

135 McKinsey note that "a comparable analysis of Germany found that by 2040, self-driving vehicles could save the country €1.2 billion a year through lower costs for hospital stays, rehabilitation, and medication alone": McKinsey & Company, *The trends transforming mobility's future* (March 2019), https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-trends-transforming-mobilitys-future?reload.

136 R E Stern, "Dissipation of stop-and-go waves via control of autonomous vehicles: Field experiments" (2017) 89 Transportation Research Part C: Emerging Technologies 205-221, as cited in Government Office for Science, *Future of Mobility: A time of unprecedented change in the transport system* (January 2019), p 98.

137 Tesla and General Motors for example are only using electric vehicles. Waymo is also in partnership with Jaguar Land Rover's I-PACE for 20,000 electric vehicles.

Reclaimed time

2.86 Finally, some HARPS users may be able to reclaim time currently used for driving.[138] It is estimated that the average driver spends 236 hours behind the wheel each year, equivalent to six working weeks.[139] Freedom from driving could be especially valuable for those that do not enjoy driving, or in circumstances where driving is most stressful, such as stop and start traffic jams.

THE NEGATIVE VIEW: POTENTIAL RISKS

2.87 Although automated passenger services have considerable potential, realising these benefits will require all the parts of the system to work together. Here we look at what could go wrong, if HARPS are not regulated appropriately.

Safety concerns

2.88 Although automated vehicles have considerable potential to be safer than human drivers, this is not a given. Public trust could all too easily be undermined by even a few high-profile collisions. In Consultation Paper 1, we considered how to ensure that automated vehicles are safe by design. Here we consider how to ensure that HARPS are run in a safe way. Safety is therefore a guiding principle of both papers.

2.89 We envisage that operating HARPS safely will be a major undertaking, requiring (for example) a full understanding of how to update maps and software, maintain cyber-security and replace sensors. In Chapters 3 and 4 we consider how those running HARPS should be regulated to ensure that safety is maintained.

Inhibiting traffic flow

2.90 A second fear is that automated vehicles may stop too often. In meetings, software developers talked to us of "frozen robot syndrome", where the vehicle freezes in the presence of possible obstacles (including leaves, plastic bags or seagulls). The most obvious problems will be overcome during testing. However, at least in the early stages, HARPS vehicles may well have a tendency to stop when faced with unusual events, such as unexpected weather or inconsistent sensor information. This could have a disruptive effect on traffic flow.

2.91 In Consultation Paper 1 we gave a hypothetical example: all the automated vehicles of a particular type within a city break down on the same day, after a flurry of "the wrong sort of snow", causing widespread traffic disruption.[140] It is not necessarily possible to anticipate problems of this type. However, the regulatory system can make sure that operators respond quickly by removing stopped vehicles. Operators could also be required to learn from these incidents to prevent them from happening again. (In our hypothetical example, we suggested that the operator might receive and act on targeted weather warnings.)

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138 Researchers at the University of Michigan have however cautioned that motion sickness could become a bigger problem with self-driving vehicles. This is because the condition tends to flare when users are passengers rather than drivers, see https://news.umich.edu/measuring-motion-sickness-in-driverless-cars/.

139 DfT, *Future of Mobility: Urban Strategy* (March 2019), p 32.

140 CP1, paras 3.64 to 3.65.

2.92 Many local transport plans stress the importance of resilient transport networks that are able to withstand unexpected events and weather conditions. One aim of the regulatory system discussed in Chapter 4 will be to ensure that stopped vehicles are removed speedily and disruptive incidents are avoided in future.

Reducing access for older and disabled customers

2.93 We have already discussed how dependent older and disabled people are on taxis and private hire services that are able to come to their door to take them where they need to go. Demand for these services is set to increase as the population ages.

2.94 One obstacle to automated mobility is that older people depend not only on vehicles but also on drivers. Many frail and anxious people rely on a driver to escort them from their door to the vehicle, to help them board and to help them alight. Drivers provide a human presence and reassurance that will be difficult to replicate in an automated service.

2.95 Another concern is that some older people may not be able to book the service at all because they do not have internet access. In 2018 there were still 5.3 million adults in the UK (10% of the adult population) who had not used the internet in the last three months. Of these, over half were over 75, and over half were disabled. Even fewer older people use the internet "on the go", away from home or work: only 39% of over 65s used apps in this way, compared to 97% of 24 to 35-year-olds.[141]

2.96 In Chapter 6 we discuss how to regulate HARPS to ensure that they provide an accessible service to older and disabled people.

Too many vehicles

2.97 A further concern is that large numbers of new vehicles will be placed on urban roads before private car use has reduced, adding to congestion and pollution.

2.98 For a new service to be successful, it is important to provide vehicles as and when they are needed. Customers can easily be deterred if they place a booking only to find that no vehicle is available or that they face a long wait. It is therefore important for a service to achieve critical mass. One reason for the success of Uber in London, for example, is that it is able to draw on the services of around 50,000 drivers[142] in order to provide a fast response to bookings.

2.99 Once a large, well-resourced developer has succeeded in developing a workable automated driving system, they will be under commercial pressure to provide full coverage. One response might be to place thousands of vehicles on city streets to meet customer demand and dominate the market before a rival is able to establish a presence. If this is done before people give up private cars, these additional vehicles could add to the existing congestion.

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141 ONS, *Exploring the UK's digital divide* (March 2019), https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04#how-does-digital-exclusion-vary-with-age.

142 See https://www.ft.com/content/bcaecdb2-2839-11e8-b27e-cc62a39d57a0 and https://www.theguardian.com/technology/2018/aug/15/sadiq-khan-wants-to-restrict-number-of-uber-drivers-in-london.

"Empty cruising"

2.100 The problems caused by too many vehicles would be compounded if HARPS vehicles spend their time driving around empty or driving long distances to find parking spaces. The ability to drive empty is useful when vehicles have to relocate, but there is a danger that vehicles will also "cruise" - that is, they will circle around empty for no purpose. This becomes likely if the cost of driving is less than the cost of parking. A recent academic paper based on data from San Francisco concludes that:

> Autonomous vehicles (AVs) have no need to park close to their destination, or even to park at all. Instead, AVs can seek out free on-street parking, return home, or cruise (circle around).[143]

2.101 Furthermore, the incentive will be to cruise at low speed to save fuel, adding to city congestion. In Chapter 7 we look at the regulatory tools available to control numbers and prevent empty cruising.

Undermining mass transit

2.102 As we have seen, one of the Government's nine principles for the future of urban mobility is that mass transit must remain fundamental to an efficient transport system. We have painted a picture of how HARPS could be used to provide more affordable and flexible buses or could be used to feed people into a mass transit system, taking people to the train station or bus stop. However, there is a danger that once people get into a single-occupancy HARPS they take it to their final city centre destination. They will wish to avoid the inconvenience of waiting on a railway platform or at a bus stop, particularly in the cold or the wet, or if they have to carry heavy baggage up and down stairs.

2.103 In a 2017 report, KPMG discussed the way that large numbers of private hire vehicles could "cannibalise the bus service". They pointed to two reasons: firstly, private hire could draw away customers and, secondly, they could increase congestion, "thereby slowing bus speeds and making them less attractive as a mode of transport".[144] The result could be fewer bus services, reducing transport options for those who cannot afford private hire. HARPS used like private hire vehicles could give rise to similar concerns.

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143 A Millard-Ball, "The autonomous vehicle parking problem" (2019) 75 *Transport Policy* 99.

144 KPMG, *Reimagine Places: Mobility as a Service* (2017), https://assets.kpmg/content/dam/kpmg/uk/pdf/2017/08/reimagine_places_maas.pdf.

2.104 The issue is complex. The London Assembly has expressed concern[145] and research in the United States has highlighted the link between the growth of ride-hailing services and congestion.[146] On the other hand, the Urban Transport Group cite data showing that in London most Uber journeys are happening outside the conventional transport peaks, with a quarter of trips taking place between midnight and 5am.[147] The Group conclude:

> The relationship between public transport and taxis and PHVs (particularly in the light of emerging business models) is complicated, with the taxi and PHV markets and public transport having the potential to both challenge and complement each other.[148]

2.105 In Chapter 8 we look at the regulatory tools transport authorities will need to ensure that HARPS complement public transport rather than undermine it. This includes providing good information on multi-modal trips, through ticketing and well-designed transport hubs where people can wait in comfort.

The problems of rural roads

2.106 Although rural areas could benefit enormously from flexible and affordable automated services, there is a danger that they could be overlooked. With fewer passengers, rural areas are not seen as the most profitable markets. Furthermore, rural roads pose particular technological challenges, such as: fewer road markings; the negotiations required to back-up on single lane roads; and dealing with livestock on the road.[149]

2.107 A lack of connectivity also presents a potential problem. Although opinions differ on what level of connectivity will be necessary, it appears likely that HARPS vehicles will require a mobile network of at least 4G standard to communicate with their control centre and also (possibly) with surrounding infrastructure and other vehicles. At present, 4G coverage is patchy. Although it covers around 90% of motorways, it only extends to 58% of A and B roads in the UK.[150] Increased investment in connectivity is likely to be necessary before the benefits of HARPS can extend outside urban areas.

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145 See Recommendation 7 and Chapter 4 of the London Assembly Transport Committee, *London Stalling: Reducing Traffic Congestion in London* (2017), https://www.london.gov.uk/sites/default/files/london_stalling_-_reducing_traffic_congestion_in_london.pdf.

146 See B Schaller, *The New Automobility: Lyft, Uber and the Future of American Cities* (25 July 2018), http://www.schallerconsult.com/rideservices/automobility.pdf and R R Clewlow and G S Mishra, "Disruptive Transportation: the adoption, utilization, and impacts of ride-hailing in the United States" (2017) Research Report, University of California, Institute of Transportation Studies.

147 Urban Transport Group, *Taxi!* (December 2017), http://www.urbantransportgroup.org/system/files/general-docs/UTG%20Taxis%20Report_FINALforweb.pdf, p 29.

148 Above, p 28.

149 By way of example, the Orkney Electric Vehicle Strategy 2018-2023 acknowledges that "It is unlikely that autonomous vehicles will be first deployed in Orkney due to the rural location and the prevalence of single track roads with poor line markings." See http://www.oref.co.uk/wp-content/uploads/2018/04/20180327-Final-Orkney-EV-Strategy-2018-23.pdf, para 10.5.4.

150 SMMT, *Connected and Autonomous Vehicles, 2019 Report* (2019), https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-CONNECTED-REPORT-2019.pdf, p 12.

The effect on employment

2.108 Although the effect of automation on employment is outside our terms of reference, we note concerns that HARPS will have a negative impact on jobs. In 2018, there were 295,300 taxi and private hire drivers in England and Wales,[151] and 24,200 such drivers in Scotland.[152] In April to June 2018, there were also 138,000 bus and coach drivers in the UK.[153]

2.109 It has been argued that automated vehicles will lead to economic growth and increase employment overall. For example, one study estimated that automated vehicles could add up to £2.1 billion (gross value) to the UK economy by 2035 and support up to 47,000 jobs.[154] However, these additional job opportunities may be of little use to drivers who lose their employment.

2.110 The Government has made a commitment to support working adults to retrain where their current occupation is threatened by automation. In its 2018 Autumn Budget, the Government announced a £100 million initial commitment to a National Retraining Scheme to support people "to progress in work, redirect their careers and secure the high-paid, high-skilled jobs of the future".[155] Retraining following automation in the road vehicle sector is likely to require particular attention.

CONCLUSION

2.111 The positive and negative visions explored in this chapter are not predictions for the future. Rather, we outline these visions to inform our consultation on how to regulate HARPS. The regulatory system for HARPS must promote the benefits that they can provide while minimising the risks they pose. In the following chapters we consider the details of such a regulatory system.

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151 DfT, *TAXI0101: Taxis and PHVs and their drivers: England and Wales* (October 2018).

152 Transport Scotland, *Scottish Transport Statistics No 37* (2018), p 35.

153 Office for National Statistics, Labour Force Survey, *EMP04: Employment by occupation* (2018), https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyoccupationemp04.

154 Catapult Transport Systems, *Market Forecast for Connected and Autonomous Vehicles* (July 2017), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/642813/15780_TSC_Market_Forecast_for_CAV_Report_FINAL.pdf, p 5. Consultants have estimated that global revenues associated with AVs in urban areas could reach $1.6 trillion a year in 2030: McKinsey & Company, *The trends transforming mobility's future* (March 2019), https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-trends-transforming-mobilitys-future?reload.

155 See https://www.gov.uk/government/publications/good-work-plan.

Chapter 3: Operator licensing – a single national system

INTRODUCTION

3.1 Here we consider the licensing system for those who operate Highly Automated Road Passenger Services (HARPS).

Why regulate?

3.2 As discussed in Chapter 2, HARPS must be operated safely. The law should identify the person or organisation responsible for updating, insuring and maintaining the vehicles and for guarding against cyber-attacks. Regulation should then make sure that these responsibilities are carried out effectively.

3.3 We also identified a need to keep traffic flowing. This suggests that HARPS vehicles will need to be supervised so that (for example) they do not stop for too long in inappropriate places and that broken-down vehicles are removed. In response to Consultation Paper 1, many developers outlined plans to supervise vehicles from remote control centres. As yet, there is little experience of how such centres might work. It is clear, however, that they will rely on appropriate connectivity and sufficient trained and motivated staff.

3.4 These requirements point to the need to design a robust and flexible system of operator licensing.

The need for a single system

3.5 We start with a brief description of the current law. As we shall see, current regulation is highly fragmented, with separate systems for taxis, private hire vehicles and public service vehicles. The distinctions between these categories depend on vehicle size, fare structure and how the vehicle is booked. At one time, the distinctions reflected genuine market differences between a taxi, "minicab" and bus. However, as the Government comments, "traditional modal divisions, for instance between buses and taxis, are blurring".[156] These distinctions may disappear altogether in an automated environment.

3.6 We do not think that it will be possible to shoehorn HARPS into the current regulatory structure. There would be too much scope for "regulatory shopping", where operators choose which regulations to follow by adjusting the number of seats or fare structures. Instead we provisionally propose a single licensing system for all HARPS operators.

3.7 There are other problems with applying the current system to highly automated vehicles. Taxi regulation, for example, only regulates drivers and vehicles – not operators. Furthermore, taxi and private hire licensing is highly localised, with over 300 separate

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156 DfT, *Future of Mobility: Call for Evidence* (July 2018), https://www.gov.uk/government/consultations/future-of-mobility-call-for-evidence.

licensing authorities in Great Britain, leading to difficulties when vehicles cross between licensing authorities.[157] Small authorities may lack the resources to deal with the demands of new technology.

3.8 At first glance, the system of "public service vehicle" (PSV) operator licensing offers a good model for HARPS. The system of guidance and directions sets national standards while maintaining flexibility in the face of new problems. However, as we explore in the following chapter, the scope of the system will need to be reconsidered. The nature of the obligations will also need to change, with more emphasis on software updates, cyber-security and remote control centres.

TAXI AND PRIVATE HIRE REGULATION: AN OUTLINE

What is a taxi?

3.9 There is no single definition of a taxi. Instead, separate legislation governs each of: London; Plymouth; the rest of England and Wales; and Scotland. Since 2017, taxi legislation has been devolved to Wales,[158] and the Welsh Government is considering its own reformed scheme.[159]

3.10 In England and Wales, much of the legislation is Victorian.[160] It uses the archaic term "hackney carriage", defined as a "carriage" which "plies for hire".[161] "Plies for hire" is not defined in the legislation and there is some doubt about what it covers. The case law describes the "essence" of plying for hire as placing the vehicle "on view", so that the owner or driver expressly or impliedly invites the public to use it.[162] In practice, plying for hire is usually taken to be responding to hailing in the street or waiting for passengers at a taxi rank. Thus, unlike private hire vehicles, taxis do not have to be pre-booked.

3.11 The current Scottish legislation dates from 1982, and describes a taxi as a "hire car" engaged in a public place "for a journey beginning there and then".[163] There is little substantive difference between plying for hire and a taxi being engaged "there and

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157 For a discussion of numbers, see paras 3.24 to 3.26. The issues raised by cross border working are discussed at paras 3.27 to 3.35 below.

158 Wales Act 2017, Sch 7A, para 1, section E1, sub-para 116.

159 From December 2018 to March 2019, the Welsh Government consulted on a white paper that followed our 2014 reform proposals relating to taxi and private hire legislation: see Welsh Government, *Improving public transport: A Welsh Government White Paper on proposals to legislate for reforming the planning and delivery of local bus services and licensing of taxis and private hire vehicles* (10 December 2018), pp 38 to 47 and Taxi and Private Hire Services (2014) Law Com No 347, https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/03/cp203_taxi-and-private-hire-services.pdf.

160 Important Acts include the Metropolitan Public Carriage Act 1869 (in London) and the Town Police Clauses Act 1847 (in England and Wales outside London). In Plymouth, taxis are governed by the Plymouth City Council Act 1975, as amended by the Plymouth City Council Act 1997.

161 Metropolitan Public Carriage Act 1869, s 4 and the Town Police Clauses Act 1847, s 38.

162 *Cogley v Sherwood* [1959] 2QB 311, p 325. The Law Commission's 2012 Consultation Paper on Reforming the Law of Taxi and Private Hire Services comments that "although there is a great deal of case law on plying for hire' none of it is particularly strong authority since the question has to be decided on the merits of each case" (para 3.21).

163 Civic Government (Scotland) Act 1982, s 23.

then".[164] However, in Scotland, only "motor vehicles" may be taxis.[165] This differs from the position in England and Wales, where a taxi may be any "wheeled carriage", including a pedicab or horse-drawn carriage.[166] The Scottish test is also more specific in that a taxi must have a "driver" (so the definition would not apply to passenger-only automated vehicles).

What is a private hire vehicle?

3.12 Private hire vehicle regulation arose in response to the emerging market in "minicabs" in the 1970s. Regulation was introduced in Plymouth in 1975[167] and adopted in the rest of England and Wales (but not London) in 1976.[168] This required drivers, vehicles and booking operators to be licensed by local authorities. A "private hire vehicle" is defined as:

> A motor vehicle constructed or adapted to seat fewer than nine passengers, other than a hackney carriage or public service vehicle or a London cab or tramcar, which is provided for hire with the services of a driver for the purpose of carrying passengers.[169]

3.13 In London, regulations for private hire vehicle operators only came into force in January 2001.[170] The definition used is similar but refers to a vehicle being "made available with a driver" (rather than "with the services of a driver").

3.14 In Scotland, the issue is governed by the Civic Government (Scotland) Act 1982. This uses the term "private hire car" rather than "private hire vehicle". A private hire car is defined as a "motor vehicle with a driver… which is, with a view to profit, available for hire by the public for personal conveyance".[171] There are exclusions for taxis and PSVs.

3.15 All these definitions refer to a driver. They would not appear to apply to automated services without a human driver.

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164 For earlier formulations of the test, see *Blythswood Taxis Limited v Adair* (1945 SLT 17). *Leonard and Another v Burns* (1965 SLT 83) discusses the interchangeability of the Scottish terms and "plying for hire".

165 This follows from the definition of "hire car" under the Civic Government (Scotland) Act 1982, s 23(2).

166 For the position of pedicabs outside London, see: *R v Cambridge City Council ex parte Lane* [1999] RTR 182. In London pedicabs are not considered taxis: *Oddy v Bugbugs Ltd* [2003] EWHC 2865 (Admin); [2003] All ER (D) 156.

167 The Plymouth City Council Act 1975, as amended by the Plymouth City Council Act 1997, continues to apply to both taxis and private hire in Plymouth.

168 Local Government (Miscellaneous Provisions) Act 1976, Part II.

169 Local Government (Miscellaneous Provisions) Act 1976, s 80(1). In Plymouth, it is defined as a vehicle constructed or adapted to seat fewer than eight passengers: see Plymouth City Council Act 1975, s 2(1).

170 Private Hire Vehicles (London) (Operators' Licences) Regulations 2000 (SI No 3146). The first regulations for drivers and vehicles in London date from 1998: see Private Hire Vehicles (London) Act 1998. The full regime was not fully implemented until 2004: see Private Hire Vehicles (London) Act 1998 (Commencement No 3) Order 2004.

171 Civic Government (Scotland) Act 1982, s 23(2).

The division between taxis and private hire services: a two-tier system

3.16 From 2011 to 2014, the Law Commission reviewed the law on taxi and private hire services in England and Wales.[172] The report concluded that the differences between plying for hire and pre-booking justified retaining a two-tier system, which regulated taxis separately from private hire:

> Competitive forces do not work fully in the ranking and hailing markets. Although not legally required to do so, consumers will generally take the first available taxi at a rank or hail the first taxi to pass in the street. They are unable to make comparisons as to price and quality. Therefore, in the rank and hail market there is a legitimate reason for regulation to go further than for private hire services: not only ensuring an adequate level of safety, but also promoting quality and regulating fares.[173]

3.17 By contrast:

> A customer pre-booking a private hire vehicle has more opportunity to shop around, comparing factors such as price, reliability and availability. The customer may also have a choice between relatively cheap (but still safe) services, or luxury, executive services. This justifies light-touch regulation, although the licensing system must still ensure an appropriate level of safety.[174]

3.18 Taxi (but not private hire) fares are often regulated. Licensing authorities have the power to set maximum taxi fares: in practice, around 95% of authorities do so.[175] Fares differ between areas. In 2017, the Urban Transport Group compared the average taxi fare for a two-mile taxi journey in seven English city regions. The cost varied between £4.80 in Merseyside and £7.20 in London.[176]

3.19 That said, the widespread use of booking apps has placed the two-tier system under strain. Apps can make the booking process so quick and effortless that the user's experience may seem little different from hailing. Furthermore, some taxis, particularly in rural areas, may do little rank and hail work. The public often lack understanding of the difference between a taxi and private hire vehicle, which can undermine the

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172 The report and draft Bill were published in May 2014. See: Taxi and Private Hire Services (2014) Law Com No 347. Two taxi and private hire measures based on the Law Commission's recommendations were included in the Deregulation Act 2015. In 2017, the Government asked the Task and Finish Group on taxis and private hire vehicle licensing to consider the Law Commission's other recommendations. Following that Group's report, the Government in February 2019 declined a full replacement of the law in the short term, but suggested that this would be considered as part of its work on the Future of Mobility: https://www.gov.uk/government/publications/taxi-and-private-hire-vehicle-licensing-government-response-to-independent-report.

173 Taxi and Private Hire Services (2014) Law Com No 347, para 2.12.

174 Above, para 2.13.

175 Office of Fair Trading, *The Regulation of Licensed Taxi and Private Hire Vehicle Services in the UK* (November 2003) OFT 676, ch 6.

176 Urban Transport Group, *Taxi! Issues and Options for City Taxi and Private Hire Vehicle Policy* (December 2017), p 7.

usefulness of regulating them differently.[177] As already mentioned, the legal dividing line between plying for hire and pre-booking is far from clear.[178]

3.20 As we discuss in Chapter 4, we provisionally consider that consumers should have access to price and quality information before booking a HARPS journey.[179] On this basis we do not see a need for fare regulation.

3.21 There are two other main differences between taxis and private hire. First, taxis are "compellable": taxi drivers are not permitted to refuse jobs without a reasonable excuse. Once consumers have engaged a taxi at a rank or by hailing, the taxi must take them anywhere they wish to go within a prescribed distance.[180] Compellability does not apply to pre-booked services, and does not seem necessary for automated services, which lack the vagaries of human decision-making. Furthermore, we envisage that HARPS may provide a range of services, including some which are limited to particular groups (such as school buses).

3.22 Finally, there are differences over "quantity restrictions", by which the licensing authority may impose a cap on the number of vehicles licensed for hire. In England and Wales, taxis (but not private hire vehicles) may also be subject to quantity restrictions. In Scotland, *both* taxis and private hire cars may be subject to quantity restrictions. We discuss this in detail in Chapter 7.

3.23 Our current view is that there is no need to replicate the two-tier system for HARPS.

Local licensing

3.24 Responsibility for taxi and private hire licensing lies with local authorities, each with considerable discretion to set its own standards. In 2014, the Law Commission expressed concern about the fragmented nature of this regulation:

> There are over 300 different sets of standards across England and Wales. This means that passengers in some areas may be put at unnecessary risk because standards are too low, whilst licence-holders in other areas may be subjected to unduly burdensome requirements. It can also have a restrictive effect on business; for example, a provider seeking to expand into a neighbouring area will have to apply for separate additional licences; and drivers, vehicles and private hire operators may well have to meet different standards.[181]

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177 In its response to report of the Task and Finish Group, the Governments draws attention to comments by the Suzy Lamplugh Trust that over a quarter of people believe private hire vehicles can be hired directly through the driver: see Government Response, February 2019, para 3.12.

178 See para 3.10 above.

179 Ch 4, paras 4.129 to 4.132.

180 See the Town Police Clauses Act 1847, s 53; and in London the London Hackney Carriages Act 1831, s 35.

181 Taxi and Private Hire Services (2014) Law Com No 347, para 5.6.

3.25 Recently, there has been some consolidation between licensing authorities. There are now 284 authorities in England, 22 in Wales and 32 in Scotland (a total of 338 in Great Britain).[182]

3.26 The size of authorities differs. London is treated as a single area, with Transport for London as the licensing authority.[183] By contrast, in Greater Manchester, taxi and private hire licensing is dealt with by 10 separate district councils. In rural areas, some taxi authorities have only small populations: for example, Melton in Leicestershire has 51,000 people and 76 taxis and private hire vehicles.[184] We think that many existing licensing authorities would lack the resources to deal with the new regulatory demands of HARPS.

Cross-border working

3.27 This emphasis on small, local licensing authorities has led to problems when vehicles cross borders between authorities. As we explain below, the legal position on cross-border working is different for taxis and private hire. However, cross-border working causes enforcement problems for both.

Taxis

3.28 The basic principle is that a taxi may only ply for hire in the area in which it is licensed. However, this does not prevent taxis from taking passengers through or to other areas. Nor does it prevent taxis from undertaking pre-booked work in other areas.

3.29 In 2014, the Law Commission noted concerns that taxis could be licensed in an area with less exacting standards and then operate as private hire vehicles wholly or mainly in other areas.[185] It recommended national standards to address this problem. Both taxis and private hire vehicles would need to meet national standards, though local authorities would have powers to impose additional standards for taxis only.[186]

Private hire

3.30 In the private hire sector, the driver, vehicle and operator must be licensed by the same authority.[187] Before 2015, the driver and vehicle could pick up and drop off anywhere,[188]

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182 For published statistics, see DfT *Taxi and Private Hire Vehicle Statistics, England 2018* (25 October 2018), p 16; and Transport Scotland, *Scottish Transport Statistics No 37* (2018), p 42. Following changes in April 2019, there has been consolidation among authorities in Dorset, Suffolk and Somerset (private communication with DfT).

183 Metropolitan Public Carriage Act 1869.

184 Similarly Maldon has 64,000 people and 81 taxis and PHVs: see DfT, *Taxi and private hire vehicles statistics: TAXI0105* (March 2018).

185 Taxi and Private Hire Services (2014) Law Com No 347, paras 3.44 to 3.57.

186 Above, Ch 7.

187 See *Dittah v Birmingham City Council, Choudhry v Birmingham City Council* [1993] RTR 356.This follows from the definition of a "licence" under the Local Government (Miscellaneous Provisions) Act 1976, which ties it to the controlled district where it was issued (under s 80(2)) combined with the requirement that operators only work with such "licensed" vehicles and drivers (under section 46(1)(e)).

188 We note the Task and Finish Group on Taxi and Private Hire Vehicle Licensing's recommendation that private hire vehicle journeys should have to start and/or end in the home licensing area. We also note that

but the operator could only "make provision" for the invitation or acceptance of bookings in the area in which it held a licence.[189]

3.31 In 2014, the Law Commission commented on how difficult this test was to apply in practice:

> Recent years have seen the development and expansion of technological methods of booking, such as internet aggregators, which retrieve quotes from many providers, and smartphone applications. These often only take bookings and pass them on to an operator, and have no involvement or responsibility for dispatching a vehicle and driver.[190]

3.32 Reforms in 2015 allowed operators licensed outside London to sub-contract private hire bookings to another licensed operator.[191] According to a textbook on taxi law:

> This has resulted in some commercial freedom, but it has also led to a significant increase in vehicles licensed by other authorities being regularly used in areas where they are not actually licensed. This can make enforcement difficult, and undermine attempts by local authorities to improve local standards of vehicles, drivers and operators.[192]

Enforcement

3.33 There are two broad types of enforcement. First, criminal offences can be prosecuted by the police or local authorities. Secondly, administrative measures may be taken against licensees who contravene licence conditions. Local licensing authorities may suspend or revoke licences or refuse to renew them.[193]

3.34 One difficulty with the current system is that local licensing authorities are unable to undertake administrative enforcement against vehicles or drivers licensed in another area. The Government has accepted that there needs to be some national minimum standards, so that a licensing authority may take action against any taxi or private hire

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The Government "agrees with the principle of this recommendation, and will consider further (with a view to legislation) how it might best work in detail": *Taxi and Private Hire Vehicle Licensing: Steps towards a safer and more robust system* (January 2018), https://www.gov.uk/government/publications/taxi-and-private-hire-vehicle-licensing-recommendations-for-a-safer-and-more-robust-system, p 9; HM Government, *Government Response: Report of the Task and Finish Group on Taxi and Private Hire Vehicle Licensing, Moving Britain Ahead* (February 2019), https://www.gov.uk/government/publications/taxi-and-private-hire-vehicle-licensing-government-response-to-independent-report, p 13.

189 *Windsor and Maidenhead Royal Council v Khan* [1994] RTR 87.

190 Taxi and Private Hire Services (2014) Law Com No 347, para 3.137.

191 Deregulation Act 2015, s 11, inserting s 55A into the Local Government (Miscellaneous Provisions) Act 1976.

192 J Button, *Button on taxis: licensing law and practice* (4th ed 2017), pp xi to xii.

193 Local Government (Miscellaneous Provisions) Act 1976, ss 60 to 62; London Hackney Carriages Act 1843, s 25; London Cab Order 1934, para 30.

vehicle operating in their area in breach of the standards, irrespective of where it is licensed.[194]

Implications for HARPS

3.35 For HARPS, safety concerns are particularly acute. We would not wish to replicate the current system in a way that encouraged "forum shopping", allowing operators to choose to be licensed by an authority with less exacting standards. Nor would we wish to require operators to incur the considerable expense of adapting their fleets to comply with multiple licence conditions. As we discuss below, we provisionally propose a single system with national standards.

Regulating drivers, vehicles and operators in England and Wales

3.36 In England and Wales, taxi drivers and taxi vehicles each need to be licensed independently. For private hire, three forms of licence are required: for the driver, the vehicle and the operator which takes the booking.

Drivers

3.37 Both taxi and private hire drivers must hold the appropriate driving licence. In addition, they must also hold a special licence issued by a local licensing authority.[195]

3.38 The licensing authority must be satisfied that taxi and private hire drivers are "fit and proper" persons.[196] This is interpreted in a variety of ways. Most authorities set medical fitness criteria and require criminal record checks.[197] Some authorities also require proof of additional driving skills, topographical knowledge or disability awareness.[198]

3.39 Both taxi and private hire drivers are key legal actors, with (for example) primary responsibility for insuring and maintaining the vehicle.[199] Clearly, this emphasis on the role of the driver is not suited to HARPS.

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194 HM Government, *Government Response: Report of the Task and Finish Group on Taxi and Private Hire Vehicle Licensing, Moving Britain Ahead* (February 2019), para 2.27. The Government also agreed that drivers should be obliged to co-operate with requests from authorised compliance officers from other areas: para 2.26.

195 Local Government (Miscellaneous Provisions) Act 1976, s 59(1)(a); TfL, *Abstract of Laws: general guidance on hackney carriage law for London's licensed taxi drivers* (June 2011), p 5.

196 For taxi drivers, see Local Government (Miscellaneous Provisions) Act 1976, s 59(1)(a); in London, para 25 of the London Cab Order 1934 refers to a requirement to be satisfied that an applicant is of "good character and fit to act as a cab-driver". For private hire drivers, see Local Government (Miscellaneous Provisions) Act 1976, s 51(1)(a); in London, Private Hire Vehicles (London) Act 1998, s 13(2)(a).

197 See, for example, Local Government Regulation, *Taxi and PHV licensing criminal convictions policy* (September 2010); DfT, *Taxi and Private Hire Vehicle Licensing: Best Practice Guidance* (March 2010).

198 For examples, see Reforming the Law of Taxi and Private Hire Services (2012) Law Commission Consultation Paper No 203, https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/03/cp203_taxi-and-private-hire-services.pdf/, paras 4.23 to 4.30.

199 For private hire, operators may also be liable if they knew that a vehicle or its driver was not appropriately licensed: see para 3.44 below.

Vehicles

3.40 For both private hire and taxis, local authorities have considerable discretion to set their own vehicle standards. Legislation requires that the licensing authority must be satisfied that a private hire vehicle is "not of such design and appearance as to lead any person to believe that the vehicle is a hackney carriage".[200] This means that licensing authorities set different standards for taxis on the one hand and private hire on the other.

3.41 Standards for taxis tend to be more onerous. The London Conditions of Fitness, for example, require taxis to be wheelchair accessible, have a turning circle of no more than 7.62 metres and a partition separating driver from passenger.[201] The London standards have been adopted by several other local authorities.[202]

3.42 The law gives licensing authorities considerable scope for setting other conditions. These may extend to the number of wheels (ruling out the use of motorcycles, for example) and the age of vehicles (as a proxy for quality and emissions standards). Some local authorities also impose colour or livery requirements, which can make taxis "an iconic part of the city's identity".[203]

For private hire only, "operators" must be licensed

3.43 A private hire vehicle cannot undertake work except through a licensed operator.[204] Operators must satisfy the licensing authority that they are fit and proper to hold such a licence.[205] The term is not defined in the relevant legislation and it is for each authority to determine how this is to be assessed.

3.44 Operators are also subject to various record-keeping requirements.[206] They are liable for breaches of regulatory requirements in respect of their vehicles and drivers if they knew that a vehicle or its driver was not appropriately licensed.[207]

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200 Local Government (Miscellaneous Provisions) Act 1976, s 48; Private Hire Vehicles (London) Act 1998, s 7(2).

201 TfL, *Construction and Licensing of Motor Taxis for Use in London, Conditions of Fitness* (1 January 2007). The accessibility requirements are discussed in Ch 6.

202 Including, for example, Reading, Liverpool, Bristol and Manchester: see Cardiff Council, *Review of Licensed Hackney Carriages and Private Hire Vehicles - Maximum Age Limits, Testing Frequency, And Prestige Status* (4 December 2012), para 6.1.

203 Urban Transport Group, *Taxi! Issues and Options for City Taxi and Private Hire Vehicle Policy* (December 2017), p 35. For example, Bristol requires taxis to be blue; Leeds requires taxis to be predominantly white with a black boot and bonnet, while Bradford taxis are white with a diagonal green stripe.

204 Local Government (Miscellaneous Provisions) Act 1976, s 55 and Private Hire Vehicles (London) Act 1998, s 2. There is no equivalent licensing requirement for intermediaries (such as booking platforms or aggregator websites) taking bookings for licensed taxi services.

205 Local Government (Miscellaneous Provisions) Act 1976, s 55(1) and Private Hire Vehicles (London) Act 1998, s 3(3)(a).

206 Local Government (Miscellaneous Provisions) Act 1976, s 56 (2); in London, Private Hire Vehicles (London) Act 1998, s 4(3)(c).

207 Local Government (Miscellaneous Provisions) Act 1976, s 46; and in London, the Private Hire Vehicles (London) Act 1998, s 4(2). In London, operators have a due diligence defence; see Private Hire Vehicles (London) Act 1998, s 4(6).

Regulating drivers, vehicles and operators in Scotland

3.45 In Scotland, the approach to taxi and private hire regulation is broadly similar. As in England and Wales, taxi and private hire car licences are issued by local authorities. Although Scottish Ministers have the power to set mandatory licence conditions,[208] local authorities have a large degree of freedom in setting additional standards.

3.46 The most notable difference is that in Scotland, operators of booking offices need a licence to use premises to take bookings for either taxis or private hire cars.[209] The holder must be a fit and proper person and is required to keep records of every booking.

PSV OPERATOR LICENSING: AN OUTLINE

3.47 Compared to taxi and private hire regulations, PSV operator licensing is much more centralised. The legislation is reserved under both the Scottish and Welsh devolution settlements[210] and much of it reflects EU law.[211]

Who needs a PSV licence?

3.48 A PSV is defined as a motor vehicle which

(1) is adapted to carry more than eight passengers; or

(2) (if it carries fewer passengers) charges separate fares.[212]

3.49 Under the Public Passenger Vehicles Act 1981, anyone who uses a PSV "on a road for carrying passengers for hire or reward" must do so "under a PSV operator's licence".[213]

3.50 These rules are then subject to a "small part exception". If a PSV operator mainly uses vehicles which carry more than 8 passenger and only a "small part" of their services involves smaller vehicles, their smaller vehicles can be licensed as PSVs in the same way as the larger ones. The private hire licensing regime would not apply.[214]

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208 Civic Government (Scotland) Act 1982, s 3A.

209 Under the Civic Government (Scotland) Act 1982 (Licensing of Booking Offices) Order 2009, art 2, a licence is required for carrying on a business which uses premises to take bookings from members of the public for either private hire vehicles or taxis. There is an exception if the operator takes bookings for no more than three vehicles (art 2(1)(b)).

210 Scotland Act 1988, Sch 5, Head E1(a); Government of Wales Act 2006, Sch 7A, Head E1(112).

211 Regulation (EC) 1071/2009 of the European Parliament and of the Council of 21 October 2009 establishing common rules concerning the conditions to be complied with to pursue the occupation of road transport operator and repealing Council Directive 96/26/*EC,* Official Journal L 300 of 14.11.2009, pp 51 to 57.

212 Public Passenger Vehicles Act 1981, s 1(1).

213 Public Passenger Vehicles Act 1981, s 12(1).

214 Public Passenger Vehicles Act 1981, s 79A; see definition of small bus in Public Passenger Vehicles Act 1981, s 1(1)(b). The term "small part" is not defined in the legislation, although guidance is available: Vehicle and Operator Services Agency, *Public Service Vehicle Operator Licensing, Guide for Operators* (revised November 2011) PSV 437, pp 7 and 28.

3.51 Below we consider the key statutory phrases. We then look briefly at types of licences and exceptions.

"Adapted to carry more than eight passengers"

3.52 Adapted does not mean "altered" but simply that the vehicle is "suitable".[215] The Upper Tribunal has emphasised that this issue does not simply depend on the size of the vehicle. For example, a stretch limousine may not be suitable for more than eight passengers, despite its size, if there is an expectation that passengers will be conveyed with a degree of luxury, with room for a bar.[216] Similarly, a minibus with four out of 11 seats blocked off was found not be a PSV.[217]

"Separate fares"

3.53 The term "fares" includes "sums payable in respect of a contract ticket or a season ticket".[218] When deciding whether separate fares have been paid, it is irrelevant who made the payment and who received it.[219] There are, however, two express exceptions to the concept of separate fares where:

(1) passengers in taxis or hire cars decide amongst themselves to pay separate fares, without any encouragement from the driver or other interested parties; or

(2) all the passengers were brought together by a person who had no commercial interest in the vehicle, and the journey was made without there having been any public advertisement of the journey. [220]

3.54 The Transport Act 1985 also includes two provisions by which a taxi or private hire service can charge separate fares without requiring a PSV licence:

(1) Under section 10, a licensing authority may make a special scheme which allows up to eight people to hire a taxi at separate fares. Various schemes have been made. For example, in London:

(a) a taxi may carry passengers at separate fares if it displays a sign saying "Shared Taxi". Specific provisions govern how each fare is calculated;[221]

(b) fixed fares are set for some defined shared journeys. For instance, during the tennis tournament, a taxi is allowed to take passengers from

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215 Upper Tribunal Decision 2012/053, *Clayton Car Sales Ltd*, discussed at Senior Traffic Commissioner, Statutory Document No 13, Small PSV Operations, para 18.

216 Above.

217 *Westacott v Centaur Overland Travel Ltd* [1981] RTR 182, DC, discussed at discussed at Senior Traffic Commissioner, Statutory Document No 13, Small PSV Operations, para 18.

218 Public Passenger Vehicles Act 1981, s 82(1).

219 Public Passenger Vehicles Act 1981, s 1(5)(b).

220 Public Passenger Vehicles Act 1981, s 1(3).

221 London Taxi Sharing Scheme Order 1987/1535.

Wimbledon station to Gate 4 of the All England Lawn Tennis Club for £2.50 each.[222]

(2) Under section 11, both taxis and private hire cars can charge separate fares provided that the journey was booked in advance. When booking the journey, each passenger must consent to sharing the vehicle on that occasion on the basis that a separate fare would be payable.

"Hire or reward"

3.55 In *Albert v Motor Insurers' Bureau*,[223] the House of Lords defined "carrying passengers for hire or reward" in terms of a "business test". The key question was: does the service for which payment is made go beyond the bounds of mere social kindness? We consider this test in more detail in Chapter 4.[224]

Eight or nine passengers: differences between the UK and EU law

3.56 There is an additional complexity in applying the definition of a PSV to automated vehicles. The UK legislation defines the size of a PSV in terms of "a vehicle adapted to carry more than eight passengers".[225] This is based on an EU definition which defines a "passenger transport operator" in terms of vehicles "suitable for carrying more than nine persons, including the driver".[226]

3.57 In conventional vehicles with a driver, there is no difference between "more than eight passengers" and "more than nine persons including the driver". In an automated context, however, there may be a difference. If a vehicle has seating for nine people without a driver is it not entirely clear whether it falls within the EU definition.

Types of licence

3.58 There are four main types of operator licence.[227] For the purposes of this consultation, we are mainly concerned with a standard licence to operate within the UK. We have not considered the added complexities of how an automated vehicle might be licensed to provide a service across international borders (where, for example, a British tour operator wishes to provide coach travel to the Alps).

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222 London Taxi Sharing Scheme Order 2005, Schedule 1 Table A. Fares are also set from Buckingham Palace garden parties and the Chelsea Flower Show. More permanent schemes exist for Euston and Paddington stations.

223 [1972] AC 301, 319.

224 Ch 4, paras 4.9 to 4.13.

225 Public Passenger Vehicles Act 1981, s 1(1)(a).

226 Regulation (EC) 1071/2009 of the European Parliament and of the Council of 21 October 2009 establishing common rules concerning the conditions to be complied with to pursue the occupation of road transport operator and repealing Council Directive 96/26/*EC,* Official Journal L 300 of 14.11.2009, pp 51 to 57, Article 2(2).

227 These are standard licence – national operations only; standard licence – national and international operations; restricted licence; and special restricted licence: see UK Government, *PSV (Public Service Vehicle) operator licences*, https://www.gov.uk/psv-operator-licences; Public Passenger Vehicles Act 1981, s 13; Transport Act 1985, s 12(2).

3.59 The PSV licensing scheme also allows operators to meet less arduous requirements in some limited circumstances:

(1) *Restricted licences* allow people to use one or two smaller vehicles as a side line to their main business.[228] An example would be a hotel offering a minibus.

(2) A *special restricted licence* applies to vehicles with more than eight seats which are licensed as taxis or private hire. The vehicle must be used to provide a local service, which does not, for example, include an excursion or a tour.[229]

(3) *Special permits* apply to organisations that benefit the community, such as religious organisations, social welfare groups and non-profit making schools.[230] We consider these in Chapter 4.[231]

Applications to Traffic Commissioners

3.60 There are eight traffic areas in Great Britain,[232] each with its own Traffic Commissioner appointed by the Secretary of State for Transport.[233] The Secretary of State has a wide power to give guidance to the Senior Traffic Commissioner, who in turn gives guidance and general directions to the other Traffic Commissioners.[234]

3.61 Applications for a PSV operator's licence are made to one of the Traffic Commissioners by either an individual or a corporate entity.[235] Applications must be submitted for every traffic area in which the applicant has an operating centre. However, PSVs can be used anywhere in the UK as long as they are usually kept in the traffic area that issued the licence.[236]

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228 Public Passenger Vehicles Act 1981, s 13(3) states that vehicles of 9 to 16 passengers may be operated under a restricted licence only where the operator's main occupation is not the operation of PSVs. Under s 16(1A), restricted licences do not allow the operation of more than two vehicles.

229 Transport Act 1985, ss 12(5) and (6). A local service is one where the stops are no more than 15 miles apart, and at least one stop is in the area of the district council that issued the relevant taxi or private hire vehicle licence: see Transport Act 1985, s 2.

230 There are two types of permit. Permits under the Transport Act 1985, s 19(5) covers community organisations which transport their members but does not allow the vehicle to carry members of the general public. By contrast, permits under the Transport Act 1085, s 22 allow a community bus to carry members of the public.

231 Transport Act 1985, s 19(2)(b). There is a limited exception to allow local authorities to use school buses to transport fare-paying passengers: Public Passenger Vehicles Act 1981, s 46(1)

232 Public Passenger Vehicles Act 1981, s 80; Traffic Areas (Reorganisation) Order 1990, Sch 1. The eight traffic areas are: Scottish, North-Western, North-Eastern, West Midlands, Eastern, South-Wales, Western, and South-Eastern and Metropolitan Area.

233 Public Passenger Vehicles Act 1981, s 4(2); Transport Act 1985, s 3.

234 Public Passenger Vehicles Act 1981, ss 4D and 4C, respectively.

235 Public Passenger Vehicles Act 1981, s 12(2).

236 Vehicle and Operator Services Agency, *Public Service Vehicle Operator Licensing: Guide for Operators*, PSV 437, Revised Nov 2011, p 8.

3.62 The Senior Traffic Commissioner's guidance and general directions play a central role and ensure that standards are similar across all eight areas. "Guidance" interprets the legislation and explains how to exercise discretion, while "directions" usually cover procedural issues.[237] Traffic Commissioners must "have regard to" guidance but must "act under" general directions.[238] Together, guidance and directions are referred to as "statutory documents", of which 15 have now been published.[239] These statutory documents introduce flexibility into the system and allow PSV operator licensing to keep up-to-date with changed circumstances.

3.63 Further flexibility is provided by a Traffic Commissioner's power to attach conditions to the licence, such as the maximum number of vehicles that the licence holder may use under the licence.[240] Traffic Commissioners may also require applicants to give undertakings relating, for example, to drivers' hours, record keeping and reporting of vehicle defects.[241]

Operator requirements

3.64 Applicants for a standard licence must demonstrate (among other things) that they: are of good repute; have appropriate financial standing; and have a suitable transport manager to oversee operations.[242] We look at these requirements in more detail in Chapter 4.

3.65 The transport manager is a central part of the regulatory scheme. The manager must be actively involved with the business, of good repute and professionally competent.[243] We discuss how professional competence is demonstrated in Chapter 4.[244]

3.66 Applicants for standard operator's licences must also satisfy the Traffic Commissioner that they have:

(1) "adequate facilities or arrangements" for maintaining vehicles "in a fit and serviceable condition"; and

(2) "adequate arrangements for securing compliance" with the law relating to driving and operating those vehicles.[245]

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237 Public Passenger Vehicles Act 1981, s 4C.

238 Public Passenger Vehicles Act 1981, s 4(4)(a).

239 Available at https://www.gov.uk/government/collections/senior-traffic-commissioners-statutory-guidance-and-statutory-directions. This includes the 14 substantive documents and an introduction (Statutory Document 0).

240 Public Passenger Vehicles Act 1981 s 16. Traffic commissioners have a broad discretionary power to attach such conditions as they think fit: s 16(3).

241 Public Passenger Vehicles Act 1981, s 14ZC.

242 Public Passenger Vehicles Act 1981, s 14ZA.

243 Public Passenger Vehicles Act 1981, s 14ZA(3); Regulation (EC) 1071/2009, Art 4, para 1. The meaning of good repute is discussed at Ch 4, paras 4.57 to 4.59.

244 Ch 4, paras 4.67 to 4.71.

245 Public Passenger Vehicles Act 1981, s 14ZC(1). In deciding this question, the Traffic Commissioner is entitled to have regard to any undertakings given by the applicant: Public Passenger Vehicles Act 1981, s 14ZC(2).

3.67 Providing evidence of the operator's policies and procedures is a central part of the licensing scheme. The Guide for Operators sets out a list of required arrangements, ranging from analysing and storing tachograph charts to checking insurance cover and timetabling MOT tests.[246] The Guide recommends that:

> each item in the list has a related procedure for checking the standard of compliance and a system for immediately acting on any non-compliance.[247]

THE LEGAL FRAMEWORK FOR CAR RENTALS

3.68 Although taxis, private hire and PSVs are all heavily regulated, there is no equivalent provision for car rental, where a vehicle is hired to a person without the services of a driver.

3.69 In this market, general consumer protections apply. For example, a rental business may need a consumer credit licence if its hiring agreements are capable of lasting more than 90 days.[248] Similarly, it must provide price information in accordance with the Consumer Protection from Unfair Trading Regulations 2008. In 2017, regulators used these provisions to improve fee transparency in this market.[249] However, there are no specific legal requirements for setting up a rental company beyond the normal legal requirements when setting up any other type of business.[250] This reflects the primary role of a driver under current law. The driver remains responsible for insurance[251] and roadworthiness (for example), though the car rental company may be criminally liable for causing or permitting breaches of these provisions.[252]

3.70 Instead, problems are dealt through a code of practice. The British Vehicle Rental and Leasing Association (BVRLA) is a trade body representing companies that lease cars and commercial vehicles.[253] All members must abide by the BVRLA code of practice.[254] This requires members to undertake proper maintenance and inspections of their

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246 MOT stands for "Ministry of Transport" and refers to the annual vehicle roadworthiness, emissions and safety tests for vehicles, see https://www.gov.uk/getting-an-mot/the-mot-test.

247 Vehicle and Operator Services Agency, *Public Service Vehicle Operator Licensing: Guide for Operators*, PSV 437, Revised Nov 2011, p 44.

248 Consumer Credit Act 1974, s 101.

249 In January 2017, after a two-year EU enforcement action led by the UK Competition and Markets Authority, car rental companies Avis, Europcar, Enterprise, Hertz and Sixt agreed to make their fees more transparent. This followed complaints that consumers who booked online found that they were charged more when they arrived at the rental desk: see http://europa.eu/rapid/press-release_IP-17-86_en.htm.

250 The British Vehicle Rental and Leasing Association, *Setting up a rental company*, https://www.bvrla.co.uk/advice/guidance/setting-rental-company.

251 For a full account of insurance obligations, see Background Paper 1 to CP1, para 1.19 - 1.28. The main responsibility for insuring a vehicle lies on the "user" under the Road Traffic Act 1988, s 143(1)(a), usually interpreted as the driver. In 2006 insurance requirements were also imposed on the registered keeper (Road Traffic Act 1988, s 144A). This registered keeper offence is less serious than the s 143 offence and may be dealt with by a fixed penalty notice under s 144C.

252 For the law in this area, see Background Paper 1 to CP1, paras 1.21 to 1.24 and 1.29 to 1.32.

253 BVLRA, https://www.bvrla.co.uk/about.

254 BVLRA, *Rental Code of Conduct,* https://www.bvrla.co.uk/resource/bvrla-rental-code-of-conduct.html.

vehicles.[255] Furthermore, members of the BVLRA must submit to unannounced inspections of vehicles available for immediate hiring.[256]

3.71 We do not think that this relatively relaxed legal position would be appropriate where vehicles travel empty or with passengers only. In these circumstances, the primary legal actor – the driver – is absent. Instead, the operator must assume primary responsibilities. We therefore see the operator licensing provisions as applying to HARPS which look like a development of car rental services as well as those which might previously have been thought of as buses, taxis or minicabs.

3.72 However, we need to distinguish between those services which are similar to car rentals and those which provide vehicles on a long-term leases, in a way which is more akin to private ownership. We address this issue in Chapter 5.

THE BOUNDARY BETWEEN A TAXI, PRIVATE HIRE VEHICLE AND PSV

Current problems

A distinction based on size

3.73 The Law Commission's 2014 report on taxi and private hire accepted the principle that larger vehicles should be regulated differently. However, discussions with stakeholders showed that the distinction between eight and nine passengers caused some problems in practice.

(1) The distinction could be difficult to apply to stretch limousines and other "novelty vehicles", with unusual layouts. As a result, some limousines were licensed as private hire vehicles, some as PSVs and some slipped through the net.[257]

(2) Several private hire businesses said that they would like to expand their fleets to include some larger vehicles of up to 14 passenger seats. They wished to meet demand from larger groups without having to deal with two separate regulatory regimes.[258]

3.74 The report recommended that stretch limousines should always be treated as taxis/ private hire vehicles and that private hire operators should have the option of using larger vehicles without falling under the PSV licensing regime.

A distinction based on fare structure

3.75 As far as the payment of separate fares is concerned, the Law Commission did not think that this adequately reflected the difference between taxis/private hire and buses. It was concerned that the distinction could be misused to allow taxi/private hire licensing to be "avoided too readily".[259] The distinction was particularly problematic for stretch

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255 Above, p 13.

256 Above, p 5.

257 Taxi and Private Hire Services (2014) Law Com No 347, para 4.56.

258 Above, para 4.62.

259 Law Commission, Taxi and Private Hire Services (Law Com No 347) (2014), para 4.67.

limousines and other novelty vehicles, which could fall between the taxi/private hire and PSV regimes. The report recommended a new distinction depending on whether the service was registered as a local bus service.[260]

Other difficult cases

3.76 The definitions of taxi, private hire and PSV have also proved difficult to apply to the variety of transport services now made available to the public. In 2009, the Department for Transport identified grey areas where licensing authorities were taking different approaches. These included:

> care services and childminders; and rental car (or other) services where a lift might be provided to a customer as an ancillary service; prison transport, but in particular the licensing of "ambulances" which covered a variety of modes of operation.[261]

3.77 The legislation specifically excludes vehicles used wholly or mainly in connection with weddings and funerals from private hire regulation.[262]

Future problems

3.78 The distinctions between taxis, private hire vehicles and private hire services are likely to blur further in the face of app-based technologies and automation. As we have seen, without the fixed costs of a driver, buses have the potential to be smaller and more frequent. At the same time, concerns about congestion are likely to lead to more calls for ride-sharing, causing private hire vehicles to become larger. Some manufacturers are even experimenting with "modular transport", where the seat configuration can change, so the number of passenger seats may change from journey to journey.[263]

3.79 At present, the most common use of HARPS is for small shuttle buses, with around 6 to 15 passengers. For example, the EasyMile EZ10 model that is currently deployed has up to 6 seats plus standing room for 6 people[264] and the updated Easy Mile EZ10 model will have space for 15 passengers in total.[265] The Navya shuttle has space for 11 seats and 4 standing passengers, but this is adaptable. In some jurisdictions, for

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260 Above, recommendation 25, para 4.68.

261 J Rogers and S Ridley, *Review of the Impact of the Repeal of the Private Hire Vehicle Contract Exemption* (4 November 2009), p 4.

262 Local Government (Miscellaneous Provisions) Act 1976, s 75(1)(c) and (cc).

263 At the Consumer Electronics Show in Las Vegas in January 2018, displays of modular vehicles included Mercedes Urbanetic Concept, Australia's AEV Robotic and, ZF's e.GO Mover. Vehicles may switch between passenger transport and freight, or between different forms of passenger transport.

264 See Easy Mile, "The future of on-airport ground transport lands at Darwin International Airport" (20 February 2018), https://easymile.com/ez10-touches-down-at-darwin-international-airport/.

265 Easy Mile, "EasyMile launches new EZ10 driverless shuttle featuring innovative safety architecture and enhanced passenger experience" (19 June 2019), https://easymile.com/easymile-launches-new-ez10-driverless-shuttle-featuring-innovative-safety-architecture-and-enhanced-passenger-experience/.

example, all passengers are seated.[266] We would be concerned if the decision over how many people are allowed on these shuttles reflected regulatory divisions rather than the needs of the business. We therefore think it would be arbitrary to attempt to replicate the current eight/nine passenger divide for HARPS.

3.80 It would be equally undesirable to introduce distinctions based on whether passengers paid separate fares. In Chapter 2 we identified the need to encourage ride sharing: one way of doing this might be an innovative approach to fare structures. Once an operator had decided on a particular regulatory regime we would not wish to stop it from implementing a new fare structure simply because of an arbitrary regulatory divide. This is particularly important where "Mobility as a Service" technology permits integrated fares covering different modes of transport which may not directly be broken down by each mode used. Subscription models may introduce further uncertainty into any regulatory division that depends on fare structure.

A SINGLE NATIONAL SCHEME

3.81 For these reasons we provisionally propose a single regulatory structure, which avoids arbitrary distinctions based on number of passengers or fare structures. We fear that such distinctions could warp decision making. They would be incompatible with the Government's seventh principle for the future of mobility, namely that the regulatory structure should stimulate innovation and give the best deal to consumers. We ask consultees if they agree.

Consultation Question 1.

3.82 Do you agree that Highly Automated Road Passenger Services (HARPS) should be subject to a single national system of operator licensing?

3.83 The main reason for licensing HARPS operators is to ensure that HARPS are operated safely, especially for issues related to updating, maintenance, insurance, cyber-security and remote supervision. We think all these issues should be subject to minimum national standards, irrespective of where the HARPS is based.

3.84 Attempting to use the current fragmented system of taxi/private hire licensing to regulate the safety standards of HARPS operators would introduce three risks:

(1) small local authorities may lack resources to deal with the new technology;

(2) differences between authorities could lead to regulatory shopping (allowing operators to choose authorities with less exacting standards) and make enforcement more difficult; or

[266] A Stocker and S Shaheen, "Shared Automated Vehicles: Review of Business Models" (2017) International Transport Forum Discussion Paper 9. These shuttles are used around the world, including Manchester, France, Australia, Japan, the USA: see https://navya.tech/en/autonom-shuttle/.

(3) operators could find themselves having to negotiate many different regulatory standards, placing unnecessary costs on operators.

3.85 We therefore provisionally recommend a national scheme and ask consultees if they agree.

Consultation Question 2.

3.86 Do you agree that there should be a national scheme of basic safety standards for operating a HARPS?

3.87 The PSV scheme provides a useful model for a new HARPS operator licensing scheme and there is much we can learn from it. However, there is a need to rethink the scope of such a scheme and the issues it should cover. We turn our attention to this in the following Chapter.

Chapter 4: Operator licensing – scope and content

4.1 In Chapter 3 we provisionally proposed a new licensing scheme for those who operate Highly Automated Road Passenger Services (HARPS). Here we explore how such a scheme might work. As noted in Chapter 2, HARPS may vary considerably, both in the size of vehicle used and the type of journey provided (whether door-to-door or along a fixed route for example). It is therefore important to provide a flexible legal structure able to accommodate a wide range of different services.

4.2 Our thinking has been heavily influenced by the current scheme for Public Service Vehicle (PSV) operator licensing.[267] PSV legislation is often phrased in terms of broad principles, with detail fleshed out in guidance. The Secretary of State has a wide power to give guidance to the Senior Traffic Commissioner.[268] In turn, the Senior Traffic Commissioner can give general direction and guidance to the other Traffic Commissioners.[269] We think that any legislation for HARPS operators will also need to combine outcome-based principles with flexible guidance over how those outcomes are met.

4.3 In the discussion that follows, we look in more detail at how PSV operator licensing works and ask how far these principles are relevant to HARPS.

4.4 At present, PSVs are subject to EU standards for all vehicles carrying more than nine persons.[270] At the time of writing, the future relationship between the UK and EU is uncertain. As long as the UK follows EU standards in this area, HARPS within the definition would need to comply with EU law on (for example) financial standing and transport managers. Our provisional proposals would be compatible with EU law.

4.5 We also note parallels between the role of a HARPS operator and an "automated driving provider" set out in the model legislation recommended for enactment by States in the USA by the National Conference of Commissioners on Uniform State Laws. Like HARPS operators, an automated driving provider is responsible for the proper maintenance, insurance and registration requirements for the automated vehicles it operates.[271]

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267 See paras 3.47 to 3.66 above.

268 Public Passenger Vehicles Act 1981, s 4D.

269 Above, s 4C.

270 Regulation (EC) 1071/2009 of the European Parliament and of the Council of 21 October 2009 establishing common rules concerning the conditions to be complied with to pursue the occupation of road transport operator, Official Journal L 300 of 14.11.2009, pp 51 to 57.

271 See section 9 (d), Uniform Automated Operation of Vehicles Act, National Conference of Commissioners of Uniform State Laws, Annual Conference, Anchorage, Alaska, July 2019. However, unlike a HARPS operator, an automated driving provider (ADP) must also be involved in the development of the automated driving system and vouch for its safety. An ADP therefore combines two roles we see as potentially separate: operator and Automated Driving System Entity (ADSE).

SCOPE OF THE NEW SCHEME

4.6 As we explained in Chapter 1, the scheme is designed to cover services provided in vehicles which can travel empty or with only passengers on board. Unlike conventional vehicles, there would be no responsible person in the vehicle to ensure safety, either as a driver or a user-in-charge.

4.7 We provisionally propose to define a HARPS operator as any business which carries passengers for hire or reward using highly automated vehicles on a road without a human driver or user-in-charge in the vehicle (or in line of sight of the vehicle). We start by considering what we mean by "business which carries passengers for hire or reward"; "highly automated vehicle"; "road"; and "without a human driver or user-in-charge".

"Business which carries passengers for hire or reward"

4.8 As we have seen, PSV licensing is limited to "carrying passengers for hire or reward".[272] The legislation states that if payment is made, it does not matter who made or received the payment. Nor does it matter if payment also covered other matters (such as a concert or shopping trip).[273] Thus the PSV definition could include a "free" hotel minibus if the minibus service is included within the general payment for hotel accommodation.

The courts' interpretation of "hire or reward"

4.9 In *Albert v Motor Insurers' Bureau*, the phrase "hire or reward" was defined in terms of a "business test".[274] The case concerned a dock worker who regularly carried fellow workers to and from work in his car on the expectation that they should pay him something in cash or kind. The question was whether the dock worker should insure his car on the basis that he carried passengers for hire or reward. The House of Lords found it was unnecessary to have a legally binding contract. It was enough that the car owner expected to receive something and the passengers expected to pay something for each lift.[275] The key question was: does the service for which payment is made go beyond the bounds of mere social kindness? The court found that it did.

4.10 Similarly, in *DPP v Sikondar,*[276] a father regularly carried school children to and from school in his minibus. He received occasional sums of money from parents to cover his petrol costs, but he did not demand payment. Applying the test in *Albert*,[277] the court found that there had been a systematic carrying of passengers that went beyond mere social kindness, amounting to a business activity. Therefore, the defendant came within the meaning a PSV operator.

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272 Public Passenger Vehicles Act 1981, s 12(1).

273 Above, s 1(5)(b).

274 *Albert v Motor Insurers' Bureau* [1972] AC 301, p 319.

275 [1972] AC 301, p 302 B.

276 [1993] RTR 90.

277 *Albert v Motor Insurers' Bureau* [1972] AC 301, p 319 C.

4.11 In *Rout v Swallow Hotels Ltd.,*[278] a courtesy coach and minibus were provided without charge to run between hotels, points of arrival and departure, and places of entertainment. The vehicles could be used not only by hotel guests but also by friends of guests, though no one had a right to travel. Again, it was held that the vehicles were PSVs. They were a part of the hotel business and were included in the payment by guests for the room or the meal.[279]

Should HARPS operator licensing apply a similar test?

4.12 Our provisional view is that HARPS operator licensing should also be confined to carrying passengers for hire or reward. The test has the advantage of familiarity. It would also cover a wide variety of business models, such as where an employer provides a bus to employees and their families, or a shopping centre provides "free" transport to those using the shops. These models all raise similar concerns about road safety.

4.13 However, the test is not entirely certain. A leading textbook on road traffic law gives the problematic example of a group of parents who acquired a minibus.[280] They ran the bus as a joint enterprise to take their children to school. The parents took it in turns to drive, no fares were collected and each met their own share of the expenses. The parents argued that it was a joint enterprise which did not meet the PSV test. In the end no prosecution was brought and the issue has not been decided by the courts. We therefore welcome views on whether the test is sufficiently clear to be replicated in new legislation.

"Highly automated vehicle"

4.14 In Consultation Paper 1 we described highly automated vehicles as vehicles which are able "to safely drive themselves" within the definition of the Automated and Electric Vehicles Act 2018. Under that Act, a vehicle is driving itself if it is "operating in a mode which is not being controlled, and does not need to be monitored, by an individual".[281] In other words, a human does not need to be detecting objects and events in the driving environment or responding to them on an ongoing basis. Instead, if a problem occurs, the vehicle itself would achieve a "minimal risk condition", usually by coming to a safe stop.[282] We provisionally proposed that all such vehicles should have a user-in-charge, unless they were specifically authorised to function safely without one.[283]

4.15 In this context we are considering those vehicles which are authorised to operate without a user-in-charge in the vehicle or in sight of the vehicle. There would be no

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278 [1993] RTR 80.

279 Above, pp 88L to 89A.

280 K McCormac, P Brown, P Veits, N Watson and J Woodhouse (eds), *Wilkinson's Road Traffic Offences* (28th ed 2017), pp 13 to 135.

281 Automated and Electric Vehicles Act 2018, s 8(1)(a), discussed in CP1, para 2.55.

282 Monitoring can be distinguished from "supervision", which is about dealing with problems after the vehicle has achieved a minimal risk condition.

283 CP1, para 3.44.

human in the vehicle who carries legal responsibility for insuring or maintaining the vehicle or for removing it from inappropriate places.

"Road"

4.16 Some road traffic provisions (such as the main driving offences) apply to "a road or other public place".[284] Others, such as construction and use offences, apply only to a road.[285] For the purposes of HARPS licensing we provisionally propose to use the narrower category of "a road". A road is defined slightly differently in England and Wales compared to Scotland.

Definition of a road in England and Wales

4.17 The Road Traffic Act 1988 defines a road as "any highway and any other road to which the public has access, and includes bridges over which a road passes".[286] This definition is echoed in other statutes, including the Public Passenger Vehicles Act 1981.[287]

4.18 In 1998, the House of Lords considered these words in joined appeals concerning accidents in car parks: *Clark v General Accident Fire and Life Assurance Corporation Plc* and *Cutter v Eagle Star Insurance Co Ltd*.[288] Lord Clyde hesitated to formulate a comprehensive definition of a road but thought that "some guidance should be found by considering its physical character and the function which it exists to serve".[289] As far as the physical character of a road was concerned:

> It should always be possible to ascertain the sides of a road or to have them ascertained. Its location should be identifiable as a route or way. It will often have a prepared surface and have been manufactured or constructed. But it may simply have developed by the repeated passage of traffic over the same area of land. It may be continuous, like a circular route, or it may come to a termination, as in the case of a cul-de-sac.[290]

4.19 As far as function is concerned:

> Essentially a road serves as a means of access. It leads from one place to another and constitutes a route whereby travellers may move conveniently between the places to which and from which it leads.[291]

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284 See, for example, dangerous driving (Road Traffic Act 1988, s 2) or careless driving (Road Traffic Act 1988, s 3).

285 See, for example, Road Traffic Act 1988, s 41.

286 Above, s 192.

287 Public Passenger Vehicles Act 1981, s 82. See also Goods Vehicles (Licensing of Operators) Act 1995, s 58; Road Traffic Offenders Act 1988, s 98; and Transport Act 1982, s 75.

288 [1999] RTR 153; [1998] 1 WLR 1647.

289 *Clarke v General Accident Fire and Life Assurance Corporation Plc and Cutter v Eagle Star Insurance Co Ltd [Conjoined Appeals]* [1999] RTR 153, [1998] 1 WLR 1647, pp 1652 to 1653.

290 Above, p 1652.

291 Above, pp 1652 to 1653.

4.20 On this basis, a car park is not a road but may have roads within it.

4.21 The next question is whether the public has access to the road. In *Clarke,* Lord Clyde approved an earlier case which stated:

> There must be, as matter of fact, walking or driving by the public on the road, and such walking or driving must be lawfully performed—that is to say, must be permitted or allowed, either expressly or implicitly, by the person or persons to whom the road belongs.[292]

4.22 The issue of public access has been considered in two further cases, concerning airport roads and a university campus.

4.23 In *DPP v Cargo Handling Ltd,* the roads in question led to Heathrow Airport. They were owned by the British Airport Authority and an order prevented vehicles from driving on the roads "except for the purpose of the conveyance of persons or goods to or from any premises situated on or adjacent to those roads". The Court of Appeal held that it was irrelevant whether the roads were maintainable at public expense. The question was whether the public had access.[293] On the facts, it was found that the public did have access: users of the airport did not constitute a special class distinct from members of the general public.[294]

4.24 *Cowan v DPP* concerned a University campus.[295] Mr Justice Mitting applied a two-part test. To show public access, the prosecution must prove that:

(1) the public in general, and not a special class of members of the public, have access to the road concerned; and

(2) they had this at least by the tolerance of the road's owner.[296]

4.25 The judge then commented:

> There are no doubt many campuses upon which members of the public are accustomed to exercise their dogs, or simply to go for a walk themselves. In that event, evidence of such use … would amply satisfy the first of the two requirements...[297]

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292 *Clarke v General Accident Fire and Life Assurance Corporation Plc and Cutter v Eagle Star Insurance Co Ltd [Conjoined Appeals]* [1999] RTR 153, [1998] 1 WLR 1647, p 1652, citing *Harrison v Hill*, 1932 JC 13, p 16.

293 *DPP v Cargo Handling Ltd* [1991] 12 WLUK 4, [1992] RTR 318, at [21] per Leggatt LJ, Owen J agreeing.

294 Above, at [27] to [29] per Leggatt LJ, Owen J agreeing, citing *DPP v Vivier* [1991] 4 All ER 18 at p 24 per Simon Brown J.

295 *Cowan v DPP* [2013] EWHC 192 (Admin), [2013] All ER (D) 116 (Jan).

296 Above, at [9] per Mitting J, citing *Deacon v AT* [1976] RTR 244 by May J.

297 Above, at [11] per Mitting J.

4.26 However, on the facts there was no such evidence.[298] It was held that students, staff or visitors to the University were not to be treated as members of the public.[299]

Scotland

4.27 The Road Traffic Act 1988 refers to the Roads (Scotland) Act 1984 for the following definition of "road" as it applies in Scotland:[300]

> *"road"* means … any way (other than a waterway) over which there is a public right of passage (by whatever means) and whether subject to a toll or not and includes the road's verge, and any bridge (whether permanent or temporary) over which, or tunnel through which, the road passes.

The Road Traffic Act 1988 then adds that in Scotland a "road" also includes "any other way to which the public has access".[301]

4.28 This means that the definition of a road in Scotland is at least as wide as the definition in England and Wales but may be wider. In one case, a private drive leading to a house was held to be a road,[302] though this has since been doubted.[303]

Conclusion

4.29 In practice, most places where HARPS will drive will be roads. A route is a road if it has a prepared surface and identifiable edges and is open to members of the public to walk or drive along it. It is not necessary to show that the road is maintained at public expense or that other vehicles have access to it.

"Without a human driver or user-in-charge"

4.30 The new operator licensing scheme is designed to cover vehicles which can travel empty or where the only people in the vehicle are "passengers" with no legal responsibility for the vehicle. It would not cover vehicles with a driver or user-in-charge.[304]

4.31 As we discussed in Chapter 1, we see a clear division between vehicles which have a responsible person in or near the vehicle and those which do not. In our view, a person should only be considered a "user-in-charge" if they are in the vehicle or in direct sight of the vehicle (as with automated parking functions). The legal position changes when the supervising human is in a remote-control centre. Without a responsible person in or near the vehicle, the operator assumes a much more central role. There will be challenges in running remote supervision centres safely, in a way that does not disrupt

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298 *Cowan v DPP* [2013] EWHC 192 (Admin), [2013] All ER (D) 116 (Jan), at [19] per Mitting J.

299 Above, at [17] and [18] by Mitting J.

300 Road Traffic Act 1988 s 192; Roads (Scotland) Act 1984, s 151.

301 Above, s 192.

302 *Davidson v Adair* 1934 JC 37. For discussion, see *Wilkinson's Road Traffic Offences* (28th ed 2017), para 1 to 145.

303 *Hogg v Nicholson* 1968 SLT 265 at p 268.

304 See discussion from para 1.25 above.

traffic flow. Operators will need to learn from future experience and adopt best practice in this area.

4.32 We think that that the new operator licensing system should apply if the vehicle operates without a human driver or user-in-charge at any stage in the process. For example, one form of service may allow customers to summon an automated vehicle, which would drive empty to their door.[305] This service would need a HARPS operator licence even if the customer could only use the service by driving the vehicle themselves or by acting as a user-in-charge. It is possible that some services may have a steward or customer care assistant onboard. If so, a HARPS operator licence would still be required unless that person was also a "user-in-charge", fit and able to take over driving in an emergency.

Consultation Question 3.

4.33 Do you agree that a Highly Automated Road Passenger Services (HARPS) operator licence should be required by any business which:

(1) carries passengers for hire or reward;

(2) using highly automated vehicles;

(3) on a road;

(4) without a human driver or user-in-charge in the vehicle (or in line of sight of the vehicle)?

Consultation Question 4.

4.34 Is the concept of "carrying passengers for hire or reward" sufficiently clear?

EXEMPTIONS

4.35 The existing system of passenger transport regulation is subject to many exemptions. For example, private hire legislation includes statutory exemptions for wedding and funeral cars.[306]

4.36 Similarly, even if a service meets the PSV definition, a PSV operator's licence may not be required if the vehicle is being used by a not-for-profit community group or school.

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305 A human-driven version of this type of service already currently exists in the luxury segment with Jaguar Land Rover's car rental service The Out (https://www.theout.com/). A human driver drops the vehicle off at the customer's home when they need it. The customer drives the vehicle during the rental period and at the end, a person comes and picks the car up from the customer's home.

306 Local Government (Miscellaneous Provisions) Act 1976, ss 75(1)(c) and (cc).

As discussed below, these services may apply for special permits under sections 19 and 22 of the Transport Act 1985.

Community groups who do not transport the public

4.37 A "section 19 permit" provides an exemption from PSV operator licensing to bodies that benefit the community. This includes religious organisations, social welfare groups and non-profit making schools that operate buses for their pupils.[307] Section 19 permits cannot be used to make a profit or to carry members of the general public.[308]

4.38 There are two types of section 19 permits:

(1) "standard permits" for vehicles that can only carry up to 16 passengers; and

(2) "large bus permits" for vehicles that can carry 17 or more passengers.

4.39 A large bus permit is harder to obtain than a standard permit, because there are stricter maintenance conditions.[309]

Community bus services

4.40 "Section 22 permits" can be granted to not-for-profit organisations that are "concerned for the social and welfare needs of one or more communities".[310] Unlike a section 19 permit, a section 22 permit is designed for community bus services, carrying fare-paying members of the general public.[311]

4.41 A community bus permit allows for vehicles that carry more than eight passengers.[312] The driver must have the appropriate licence,[313] but cannot be paid. However, drivers may be reimbursed for reasonable expenses and, in exceptional cases, loss of earnings.[314]

Are similar exemptions needed for HARPS?

4.42 We seek views on whether similar exemptions should apply to HARPS operator licences.

4.43 Overall, we would be wary of too many exemptions. In the long term, community groups may benefit from automated services. We can also see the advantages of automated

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307 Transport Act 1985, s 19(5). However, private schools which profit from providing education cannot be granted a section 19 permit.

308 Above, s 19(2)(b). There is a limited exception to allow local authorities to use school buses to transport fare-paying passengers: Public Passenger Vehicles Act 1981, s 46(1).

309 Above, s 19(6).

310 Above, s 22(1).

311 Even when the vehicle is not travelling on a local bus service route, the community bus permit can still be used to carry fare paying passengers as long as the fares collected are used to help fund the provision of the community bus service: above, s 22(1)(b).

312 Above, s 22(1)(c).

313 This may be a passenger-carrying vehicle driver's licence, a passenger-carrying vehicle Community licence, or a public service vehicle driver's licence: above, s 23(2)(b).

314 Above, s 23(2)(a).

school buses, where staff can concentrate on supervising children rather than driving. However, it will be important to show that those operating such services abide by the highest standards of professional competence, and are able to ensure safe, well maintained services. At this stage, our tentative view is that those running these services should apply for full licences.

4.44 Similarly, in the longer term, the use of automated community bus services may be particularly valuable. However, community groups without professional transport managers may struggle to meet the challenges of ensuring safety in the early stages of automated services.

4.45 Our tentative view is that community groups who operate HARPS should apply for full licences. To justify an exemption, we would need to be convinced that a service did not raise safety concerns, was socially desirable and might be hindered by the need to apply for a licence.

Consultation Question 5.

4.46 We seek views on whether there should be exemptions for community or other services which would otherwise be within the scope of HARPS operator licensing.

Trials

4.47 We also seek views on whether there should be an explicit exception for organisations running trials with a limited number of vehicles, or in a limited area, and which are subject to a stringent safety case.

4.48 The Code of Practice for Automated Vehicle Trialling issued in February 2019 opens the possibility of having a remote-control operator outside the vehicle. However, the Code emphasises that those conducting remote-controlled trials "will need to assure themselves that the remote-control system is able to deliver the same level of safety as having a driver inside of the vehicle".[315] Furthermore, the remote operator must have "real time supervision of the vehicle and its surroundings".[316] This suggests continuous monitoring of the vehicle at all times.

4.49 The Code explains that there is a demand for more advanced trials, without continuous human supervision:

> The Government is aware of the growing desire to conduct more advanced trials on public roads. Such trials may currently be outside of the law and may require support and facilitation from the Department for Transport to proceed. As a result, the Department's motoring agencies will develop and operate a process to support advanced trials on public roads. This process will be

315 CCAV, *Code of Practice for Automated Vehicle Trialling* (February 2019), para 5.8.

316 Above, para 5.9.

available for trialling organisations that are ready to conduct such trials. Those planning such trials should contact CCAV as far in advance as possible.[317]

The emphasis will be on the manufacturers to present a safety case, which the agencies will then scrutinise.

4.50 Under the current law, these advanced trials would not be allowed to carry fee-paying passengers. However, in future, developers may wish to carry out trials which carry such passengers, without the burden of applying for a HARPS operator licence. We have therefore considered whether there should be explicit provisions to exempt such trials in controlled and limited circumstances.

4.51 In Consultation Paper 1 we noted powers under section 44 of the Road Traffic Act 1988 to make "special vehicle orders". These allow the Secretary of State to authorise exceptions or modifications to regulations on construction and use where vehicles are constructed "either for special purposes or for tests and trials".[318]

4.52 Similar provisions allow for exceptions in respect of PSVs. Under section 6 of the Public Passenger Vehicles Act 1981, vehicles adapted to carry more than eight passengers must have a certificate of initial fitness or equivalent to be used on a road.[319] Section 11 then allows for modifications to section 6 for experimental vehicles. It specifies that the Secretary of State may dispense with the prescribed conditions "where it is expedient to do so for the purpose of making tests or trials of a vehicle or its equipment".[320] An order under section 11 specifies how long it remains in force and may contain conditions relating to the construction, equipment or use of the vehicle.[321]

4.53 These provisions apply to vehicles, not operators. However, it would be possible to include a similar type of provision within the legislation on HARPS operator licensing. This would permit the Secretary of State to provide exemptions from the scheme (or modifications to the scheme) where an operator wished to trial an automated passenger service which did not include a user-in-charge.

Consultation Question 6.

4.54 We seek views on whether there should be statutory provisions to enable the Secretary of State to exempt specified trials from the need for a HARPS operator licence (or to modify licence provisions for such trials).

317 CCAV, *Code of Practice for Automated Vehicle Trialling* (February 2019), para 2.5 and 2.6.

318 Road Traffic Act 1988, s 44(1)(a). The provision permits exemptions to the Road Vehicles (Construction and Use) Regulations 1986. For more details of this provision, see CP1, para 4.82 to 4.84.

319 The section specifies five possible certification schemes, including an EC certificate, a national small series certificate or an individual approval certificate.

320 Public Passenger Vehicles 1981, s 11(1).

321 Above, s 11(3).

OPERATOR REQUIREMENTS

4.55 Under current legislation, applicants for standard PSV operator licences must demonstrate that they:

(1) are of good repute;

(2) have appropriate financial standing;

(3) have an effective and stable establishment in Great Britain; and

(4) are professionally competent/have a suitable transport manager to oversee operations.[322]

4.56 We consider each in turn. We ask if similar requirements should also apply to HARPS operators.

Good repute

4.57 This is a very general requirement. In considering whether an applicant is of good repute, Traffic Commissioners are to have regard to all relevant evidence and, in particular, relevant convictions.[323] In the case of a company, this includes any convictions of its officers, employees or agents.[324] Commissioners should also have regard to any fixed penalty notices under the Road Traffic Offenders Act 1988, as well as any past conduct which relates to operating vehicles.[325]

4.58 Applicants will not be considered of good repute if they have been convicted of a serious offence more than once or have been convicted of road transport offences.[326] The Senior Traffic Commissioner has issued detailed guidance and directions on how to apply these provisions, dealing (for example) with the effect of spent convictions and other old convictions.[327]

4.59 We seek views on whether similar provisions should apply to HARPS operators.

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322 Public Passenger Vehicles Act 1981, s 14ZA.

323 Above, Sch 3 para 1(1) to (2).

324 Above, Sch 3 para 1(2). Where the applicant is an individual, this includes convictions against the individual and their employees and agents (Public Passenger Vehicles Act 1981, Sch 3 para 1(1)).

325 Above, Sch 3 para 1(1) to (2).

326 Above, Sch 3 para 1(3) to para 1(4). An offence is considered serious if the sentence was of more than three months' imprisonment, more than 60 hours of community service or a fine of more than £2,500.

327 Senior Traffic Commissioner, Statutory Document No 1, Good Repute and Fitness, November 2018. "Spent" convictions are those that can be disregarded for most purposes under the Rehabilitation of Offences Act 1974.

Appropriate financial standing

4.60 Under the relevant EU Regulation, an operator must show that it has at its disposal capital and reserves totalling at least 9,000 euros when only one vehicle is used, and 5,000 euros for each additional vehicle used.[328]

4.61 Under UK law, operators may show that the money is available in a variety of ways. As an alternative to submitting audited accounts, the operator may provide other evidence, such as bank guarantees, credit facilities or insurance policies. The Senior Traffic Commissioner has issued detailed guidance on the issue, stressing that the finance must be truly available on an ongoing basis.[329]

4.62 In 2011, the Competition Commission conducted a market study of local bus services. In the course of this study, it considered whether the financial standing provisions had an anti-competitive effect. The Commission received some complaints that the requirements favoured larger operators, who could move funds between subsidiaries. One small operator said that it was difficult to access the necessary finance.[330] However, the Competition Commission stated that it "received little evidence from operators indicating that their ability to enter and expand had been restricted in practice". Noting that financial standing was an EU requirement, the Competition Commission concluded that the financial standing provisions did not have an adverse effect on competition.[331]

4.63 Again, we seek views on whether similar financial standing provisions should apply to HARPS operators. In a HARPS context, we can see a case for reducing the capital needed to operate large numbers of small vehicles, such as pods.[332]

Establishment in Great Britain

4.64 Operators must show that they have "an effective and stable establishment" in Great Britain in which they keep core business documents. These include documents relating to personnel management, driving time and safety inspections.[333] In addition, the operator must have one or more operating centres in the relevant traffic area.[334]

4.65 Together these premises must allow the operator to conduct its operations effectively. The Senior Traffic Commissioner's guidance points out that the legislation "clearly

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328 Regulation (EC) 1071/2009, establishing common rules for road transport operators, art 7(1). See Public Passenger Vehicles Act 1981, s 14ZA(2)(c). This is in addition to any requirement to insure the vehicle.

329 Senior Traffic Commissioner, *Statutory Document No 2: Finance* (March 2019) https://www.gov.uk/government/publications/traffic-commissioners-finance-march-2019, para 19.

330 Competition Commission, *Local bus services market investigation: A report on the supply of local bus services in the UK (excluding Northern Ireland and London)* (December 2011), para 12.37.

331 Above, para 12.38.

332 A pod is a small lightweight vehicle using an unconventional design.

333 Public Passenger Vehicles Act 1981, s 14ZA(2)(a); Regulation (EC) No 1071/2009 establishing common rules for road transport operators, art 5, para 5(a).

334 Above, s 20(3). See Senior Traffic Commissioner, *Statutory Document No 4*: *Operating Centres, Stable Establishments and Addresses for Service* (November 2018), para 31.

refers to vehicles being normally kept at the authorised operating centre".[335] Commissioners are therefore entitled to consider the suitability of the centre for keeping vehicles. For example, can drivers conduct a daily walk round check, and are the points of access or egress safe?

4.66 In a HARPS context, we can see merit in requiring operators to have suitable premises, including a stable establishment in Great Britain. However, the requirements would need to be applied flexibly. For example, HARPS vehicles may be small and may not need to be kept on premises. We are aware that under current trials, automated vehicles are equipped with sophisticated and valuable sensors and are therefore garaged when not in use. However, as the technology develops, it may become possible to leave vehicles on the street. We seek views on this.

Professional competence/transport manager

4.67 Both individuals and companies must show professional competence.[336] Individual applicants have a choice. They can either show that they are professionally competent in their own right or that they employ a suitable transport manager.[337] A company applying must show that it has one or more suitable transport managers.[338]

4.68 The transport manager must be a natural person, not a corporation.[339] Their role is to manage the operator's transport activities continuously and effectively. The transport manager must therefore show that they are actively involved with the business. They may be an internal manager (such as an owner or employee) or an external manager (a consultant hired under a contract on a part-time basis).[340] The EU Regulation sets out, in broad terms, what a manager's contract should cover.[341]

4.69 A transport manager must be of good repute and professionally competent.[342] To demonstrate competence, applicants must provide a Certificate of Professional Competence. This usually involves passing a written examination.[343] However there is a special "grandfathering scheme" for those able to show that they have continuously

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335 *Statutory Document No 4*: *Operating Centres, Stable Establishments and Addresses for Service* (November 2018), para 34.

336 Public Passenger Vehicles Act 1981, s 14ZA(2)(d), Sch 3 para 3.

337 Above, s 14ZA(2)(d), Sch 3 para 4 and 6.

338 Above, s 14ZA(2)(d), Sch 3 para 3.

339 Above, s 14ZA(3); Regulation (EC) No 1071/2009 establishing common rules for road transport operators, art 1, para 5; art 4, para 1.

340 Above, s 14ZA(3); Regulation (EC) No 1071/2009 establishing common rules for road transport operators, art 4, para 1(b). Vehicle and Operator Services Agency, *Public Service Vehicle Operator Licensing: Guide for Operators*, PSV 437 (Revised Nov 2011), p 11.

341 Regulation (EC) No 1071/2009 establishing common rules for road transport operators, art 4(2).

342 Public Passenger Vehicles Act 1981 s 14ZA(3); Regulation (EC) No 1071/2009 establishing common rules for road transport operators, art 4, para 1. Good repute is defined as in paras 4.57 to 4.59 above.

343 Above, Sch 3 para 6.

managed a road passenger transport operation for 10 years ending in December 2009.[344]

4.70 In a HARPS context, we can see merit in requiring operators to have a transport manager who is of good repute and professionally competent. However, the role may require different skills, including a technical understanding of automated driving systems. In the early days of HARPS, people will still be learning as they go. There will be no examinations on how to run HARPS. Nor will there be anyone who has 10 years' experience of doing so. To demonstrate professional competence, applicants might have to submit a detailed safety case rather than providing a Certificate of Professional Competence.

4.71 We seek views on how a transport manager should demonstrate professional competence. We are particularly interested in whether any new criteria would be needed.

Consultation Question 7.

4.72 Do you agree that applicants for a HARPS operator licence should show that they:

(1) are of good repute;

(2) have appropriate financial standing;

(3) have suitable premises, including a stable establishment in Great Britain; and

(4) have a suitable transport manager to oversee operations?

Consultation Question 8.

4.73 How should a transport manager demonstrate professional competence in running an automated service?

ADEQUATE ARRANGEMENTS FOR MAINTENANCE

4.74 In PSV legislation, applicants for standard operator's licences must satisfy the Traffic Commissioner that they have "adequate facilities or arrangements" for maintaining vehicles "in a fit and serviceable condition".[345]

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344 For details of this "Acquired Rights" scheme, see Senior Traffic Commissioner, *Statutory Document No 3, Transport Managers* (November 2018), paras 60 to 63.

345 Public Passenger Vehicles Act 1981, s 14ZC(1)(a). In deciding this question, the Traffic Commissioner is entitled to have regard to any undertakings given by the applicant: Public Passenger Vehicles Act 1981, s 14ZC(2).

4.75 As discussed below, this is a central part of the licensing scheme. In 2018, DVSA published an updated 110-page guide to maintaining roadworthiness for commercial goods and passenger carrying vehicles. It sets out 23 key points of a good maintenance system.[346] As discussed below, these emphasise the responsibilities of both the driver and the operator, regular safety inspections and record keeping.

Roadworthiness: a joint responsibility between the driver and the operator

4.76 The Guide states that the driver is "always legally responsible for the condition of the vehicle while in use".[347] Therefore:

> A driver or responsible person must undertake a daily walkaround check, preferably immediately before a vehicle is used. (Key Point 1)
>
> Drivers must report promptly any defects or symptoms of defects that could adversely affect the safe operation of vehicles. (Key Point 3)

4.77 However, operators also have a responsibility to ensure that vehicles are roadworthy. In law, responsibility lies with the "user", which applies both to "the driver and the person paying the driver to act for them". Thus:

> Operators must comply with the declaration they give to the relevant traffic commissioner that they will ensure that their vehicles are operated in a fit and serviceable condition.[348]

4.78 In Consultation Paper 1 we discussed who "uses" a vehicle for the purposes of offences related to insurance and roadworthiness.[349] We also gave further detail of the current law in a background paper.[350] We concluded that it was not clear how the term would apply in an automated environment. We provisionally proposed that the law should be amended to clarify that a user-in-charge is a "user" for the purposes of insurance and roadworthiness offences. As discussed below, we think that similar clarification is needed for HARPS operators.

Safety inspections

4.79 Operators must conduct regular safety inspections. Inspection frequencies normally range between 4 and 13 weeks, depending on: the age and use of the vehicle; the manufacturer's recommendation; the terrain covered, and the distance over which and speeds at which it travels. For example, a new, lightly loaded vehicle operating in easy conditions might be inspected every 13 weeks. A vehicle which is more than 12 years

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346 DVSA, *Guide to Maintaining Roadworthiness for Commercial Goods and Passenger Carrying Vehicles*, November 2018, pp 16 and 17.

347 Above, p 24.

348 Above, p 19.

349 CP1, para 7.75 to 7.58.

350 Background Paper 1 to CP1, paras 1.33 to 1.40.

old, used for regular mileage in standard conditions, would normally need to be inspected every 6 weeks.[351]

4.80 However, the system is flexible. It may be necessary to check some components more often. For example, a PSV used in urban areas may require a weekly brake component and adjustment check together with a steering and suspension inspection.[352]

4.81 The person undertaking safety inspections must be technically competent. This can be proved through experience, though DVSA now strongly recommends that inspectors obtain relevant technical qualifications such as IRTE Inspection Technician Accreditation.[353]

4.82 In addition, the operator must provide suitable facilities for inspections, including: accommodation which is protected from the elements, so that safety checks can be conducted satisfactorily in all weathers; under-vehicle inspection facilities; and access to brake, headlamp and emissions testing equipment.[354]

Record keeping

4.83 PSV operators are subject to detailed record keeping requirements. Records of safety inspections should include a list of items (including, for example, the date, name of inspector, full details of repair work and a signed declaration that any defects have been repaired satisfactorily). Safety inspection records and drivers' defect reports must be kept for at least 15 months.[355]

Relevance of these requirements to HARPS

4.84 The maintenance challenges posed by HARPS may be different. In responses to Consultation Paper 1, it was suggested that improved automated onboard diagnostic systems would reduce the need for some routine safety inspections.[356] For example, it might be that automated vehicles would not require a manual weekly brake adjustment check or sensor check, if the system is able to provide warnings of problems. Smaller vehicles may also require fewer checks. Therefore, some of these provisions may not be needed.

4.85 However, respondents also identified new challenges. First, without a driver, responsibilities fall entirely on operators and there will be no responsible human in the vehicle to notice problems. Operators will need to ensure that maps and systems are updated in a timely fashion. They will also need to check that systems are running correctly following an update, which may not be straight forward given the various sub-systems involved.

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351 DVSA, *Guide to Maintaining Roadworthiness for Commercial Goods and Passenger Carrying Vehicles*, November 2018, p 40.

352 Above, p 48.

353 Above, p 56. IRTE stands for Institute of Road Traffic Engineers.

354 Above, p 60.

355 Above, pp 16 and 17.

356 See, for example, detailed comments from Richard Morris in Analysis of Responses, paras 5.46 and 7.101 to 7.102.

4.86 It is too early to say what the challenges of maintaining automated vehicles and their software might be. That will need to be decided in the light of experience. Here we provisionally propose that legislation should incorporate the principle that HARPS operators should be under a legal obligation to ensure roadworthiness.

4.87 Using the existing statutory language, they must demonstrate "adequate facilities or arrangements" for maintaining vehicles "in a fit and serviceable condition". As discussed below, the content of these broad duties should be supplemented by guidance, so as to learn from experience and to share best practice within the industry.

4.88 At present, PSV operators are considered to be "users" for the purposes of insurance and roadworthiness offences under the Roald Traffic Act 1988. We think that it would helpful to clarify that HARPS operators are also users for the purposes of these offences.

Consultation Question 9.

4.89 Do you agree that HARPS operators should:

(1) be under a legal obligation to ensure roadworthiness; and

(2) demonstrate "adequate facilities or arrangements" for maintaining vehicles and operating systems "in a fit and serviceable condition"?

Consultation Question 10.

4.90 Do you agree that legislation should be amended to clarify that HARPS operators are "users" for the purposes of insurance and roadworthiness offences?

COMPLIANCE WITH THE LAW

4.91 Under PSV legislation, the Traffic Commissioner must be satisfied that "there will be adequate arrangements for securing compliance with the requirements of the law relating to the driving and operation of those vehicles".[357] Relevant rules include (among other things) speed limits, driver licensing, drivers' hours, and insurance.

4.92 The Guide for Operators sets out a list of required arrangements, ranging from analysing and storing tachograph charts to checking insurance cover and timetabling MOT tests. The Guide recommends that:

[357] Public Passenger Vehicles Act 1981, s 14ZC(1)(b).

each item in the list has a related procedure for checking the standard of compliance and a system for immediately acting on any non-compliance.[358]

4.93 Again, the nature of the legal obligations will be different for HARPS. Operators will no longer need to keep records of drivers, driver licences or drivers' hours - issues which consume considerable resources under the current system. However, some will remain, such as the need to insure vehicles. There will also be new challenges, as we explore below.

Remote supervision

4.94 In response to Consultation Paper 1, several developers shared plans to supervise vehicles through remote supervision centres. There were two broad views on how this would work. Some developers explained that remote supervisors will not monitor or steer vehicles. Instead, they will respond to a request and decide a course of action which the vehicle will then implement.

4.95 Mobileye, for example, explained that they did not regard the person in the control room as a standby driver: they would not engage in routine driving or intervene to avoid accidents. Instead, they would intervene only if the vehicle reached a complete stop and was unable to make a decision on the available data. The remote human would then choose from a pre-defined list of decisions.[359]

4.96 Similarly, FiveAI anticipated that a supervisor would be able to take control only at the vehicle's instigation and not under their own volition. The human would have "nonreal time situational awareness" of the vehicle and be in a position to advise the vehicle with plans to resume operation or achieve a safer stop.[360]

4.97 Nissan has also published its plans for "remote human support to help driverless autonomous vehicles make decisions in unpredictable situations such as obstructions on the road". If the automated driving system encounters an obstacle, it will bring itself to a safe stop and call the command centre. The human mobility manager then decides on the correct action. The path is set by the human (for example, by drawing it on a map), but the vehicle then drives itself.[361]

4.98 By contrast, other respondents saw remote supervisors as emergency drivers. For example, the Society of Motor Manufacturers said that "a remote operator must ... be in a position to assume control of the vehicle remotely and perform a manoeuvre". Dr Charles Fox saw remote humans as "a small group of highly trained emergency drivers" to take control of the vehicle.

4.99 For the purposes of this paper, we refer to the human in front of the screens as a "supervisor". This is to distinguish them from the operator (which is the licence holder that employs them or contracts for their services). Whereas remote traffic control is

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358 Vehicle and Operator Services Agency, *Public Service Vehicle Operator Licensing: Guide for Operators*, PSV 437 (Revised Nov 2011), p 44.

359 See response from Mobileye to CP1 in Analysis of Responses, para 3.27.

360 See response from FiveAI to CP1 in Analysis of Responses, para 3.99.

361 See Nissan Motor Corporation, *Seamless Autonomous Technology*, https://www.nissan-global.com/EN/TECHNOLOGY/OVERVIEW/sam.html.

commonplace, remote supervision for HARPS is a step into the unknown. We do not know what challenges it will pose. Several issues might arise, which we explore below.

Connectivity

4.100 Remote supervision relies on connectivity and operators will need to ensure that connectivity is adequate for the purpose. Currently, CCAV's Code of Practice of practice for trialling highlights that remote-controlled operation may have associated risks such as "latency and the loss of contact with the vehicle".[362] The Code states:

> Those conducting remote-controlled vehicle tests should mitigate and safely respond to risks associated with network access. Remote-controlled operation may fail if there is wider communication network failure, or if access to the communication network is throttled. Trialling organisations should have a full understanding of connectivity in chosen operational domains.[363]

4.101 The Code goes on to state that staff should be trained to mitigate and respond safely to any connectivity or control issues.[364] It also recommends that data on connectivity, network access, and latency should be recorded.[365] Similar considerations are likely to apply to commercial operation.

Cyber-security

4.102 Cyber-security is an issue of acute public concern. The Society of Motor Manufacturers and Traders has noted that failure in this area may "undermine public confidence in the technology" and also "present genuine risks to public safety".[366] Cyber-security will likely need to be considered by both the designer of an automated driving system and the operator of such a system.

4.103 At a high level, the UK Government has produced guidance on vehicle cyber-security for connected and automated vehicles.[367] This emphasises security-by-design: as Principle 8 puts it, the system must be "designed to be resilient to attacks". CCAV's Code of Practice for trialling recommends that this guidance should be followed.[368] It also suggests that trialling organisations consider adopting the British Standards Institute's PAS 1885 standard on automotive cyber-security.[369]

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362 CCAV, *Code of Practice: Automated vehicle trialling* (February 2019), para 4.13. Latency in this context refers to delays in transmitting data.

363 Above, para 5.11.

364 Above, para 4.13.

365 Above, para 5.14.

366 SMMT, *Connected and Autonomous Vehicles: Position paper* (February 2017), p 29.

367 HM Government, *Key Principles of Cyber security for Connected and Automated Vehicles* (2017), https://www.gov.uk/government/publications/principles-of-cyber-security-for-connected-and-automated-vehicles/the-key-principles-of-vehicle-cyber-security-for-connected-and-automated-vehicles.

368 CCAV, *Code of Practice: Automated vehicle trialling* (February 2019), para 2.17.

369 BSI, *The fundamental principles of automotive cyber security – specification*, PAS 1885: 2018.

4.104 As understanding of the issues develops, operators will need to follow the latest best practice in this area.

Staff

4.105 There are also questions about how supervisors will be trained and treated. For other safety critical control centres, such as air traffic control or railway operating centres, regulators have produced guidance on working hours. For example, an air traffic controller must be given a half hour break during or after every two-hour period.[370]

4.106 On the railways, tasks such as signalling, dispatching or "receiving and relaying of communications" are defined as "safety critical work".[371] Controllers must ensure that people carrying out such work (including control centre staff) have been assessed as fit for that work;[372] and do not carry out these tasks if affected by fatigue.[373] The Office of Road and Rail (ORR) has issued guidance to avoid fatigue.[374] Among other things, this sets standards for breaks where tasks "require continuous sustained attention, with no natural breaks in the task and where a lapse in attention can lead to safety implications". Minimum breaks are 10 to 15 minutes every two hours during the day and every hour during the night.

4.107 Supervising vehicles may be difficult, especially if long periods of passivity are interspersed with short periods of stress. At this stage, it is difficult to know how difficult the task will be. That will depend on how often vehicles seek assistance and how automated the supervision process becomes. At this stage, we are not attempting to suggest how many vehicles can be supervised at once, or what hours remote supervisors might work. However, we wish to introduce legislation which is sufficiently flexible to deal with such issues.

Protocols in the event of failure

4.108 Operators will need effective protocols to deal effectively with situations where their vehicles find themselves in the wrong place or subject to a systems failure.

4.109 When faced with a problem, vehicles will be programmed to achieve a "minimal risk condition", usually by coming to a safe stop. However, a stopped vehicle may still cause a hazard to oncoming vehicles or reduce traffic flow. Supervisors will need to act in a timely fashion to remove vehicles, provide assistance to passengers, alert emergency

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370 The Civil Aviation Authority has established a Scheme for Regulation of Air Traffic Controllers' Hours (SRATCOH). This also sets out rules for the maximum hours in a shift and for the hours which can be worked in a 30-day period. Rest breaks are expected to provide a certain detachment from the operation e.g. rest areas and quiet spaces. (CAP 670 – ATS Safety requirement, D27). Air traffic controllers are also subject to strict drink and drugs laws: see Railways and Transport Safety Act 2003, ss 92 to 94.

371 The Railways and Other Guided Transport Systems (Safety) Regulations 2006 SI 2006 No 599, reg 23. The regulations implement the European Railway Safety Directive 2004/49/EC 2004 into domestic law.

372 Above, reg 24(1)(a).

373 Above, reg 25(1).

374 ORR, *Managing Rail Staff Fatigue* (January 2012), https://orr.gov.uk/__data/assets/pdf_file/0005/2867/managing_rail_fatigue.pdf, pp 44 to 47.

services and prevent problems from occurring again. In some cases, they may also need to talk to other road users who have been involved in collisions with the vehicle.

Conclusion

4.110 Again, it is too early to say what challenges supervision will pose. Supervision will not necessarily involve a human sitting in front of a bank of screens in a remote-control centre: there may be other technical solutions.[375] However, many developers told us that they are working on the basis that remote-control centres will be required.

4.111 At this stage we think that the legislation should simply state the principle that HARPS operators should ensure that vehicles are adequately supervised. At its most basic, this means that operators should know where their vehicles are and (if they are stopped in inappropriate places) should remove them. In the event of failures, supervisors will need to reassure passengers and other road users. As experience from trials and commercial operation becomes available, the agency operating the licensing scheme should develop statutory guidance on how supervision can be done in a safe way that does not hinder traffic flow.

Reporting requirements

4.112 At present, drivers are under legal duties to report accidents. PSV operators are also under additional duties. Under section 20(1) of the Public Passenger Vehicles Act 1981:

> It shall be the duty of the holder of a PSV operator's licence, on the happening to any public service vehicle owned by him of any failure or damage of a nature calculated to affect the safety of occupants of the public service vehicle or of persons using the road, to report the matter as soon as is practicable to the Secretary of State in accordance with regulations [made under the Act].

4.113 This may extend to "near misses" or where a failure is "calculated to affect the safety" of occupants or others using the road. These incidents should be reported even if no damage actually takes place.

4.114 In Consultation Paper 1 we provisionally proposed that the new safety scheme should monitor the accident rate of highly automated vehicles, compared with human drivers.[376] Out of 126 people responding to this question, the great majority (83%) agreed.[377] We think that reporting untoward events will be an essential part of any strategy to ensure the safe deployment of automated vehicles.

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375 For example, we note research to address the issues of tele-supervision and infrastructure as part of the Innovate UK-funded project SWARM (Self-organising Wide area Autonomous vehicles Marshalling). The project is a collaboration between RDM Group, WMG at the University of Warwick and Milton Keynes Council started in 2016 to demonstrate a safe and effective fleet of self-driving pods in Milton Keynes. See https://warwick.ac.uk/fac/sci/wmg/research/cav/projects/swarm/.

376 See CP1, paras 5.74 to 5.85 and Consultation Question 15. We also sought views on how accidents involving driving automation should be investigated: see paras 5.58 to 5.71 and Consultation Question 14.

377 For responses to Consultation Question 15, see Analysis of Responses, paras 5.113 to 5.126.

4.115 It may be helpful if those operating automated mobility services also reported miles travelled *without* untoward events. This would put any injury statistics in context. For example, one developer suggested to us that operators should report miles travelled in a detailed taxonomy of operational domains (such as urban travel in the dark, or inter-urban travel in snow). This would allow regulators to interpret the data they receive to see how automated driving systems compare to human drivers, or if particular types of automated driving or operators cause more problems than others.

4.116 The Code of Practice notes that trialling organisations should keep reports on the performance of the trial vehicle, including any incidents. This requirement may be satisfied by publishing milestones and reports within a public safety case.[378] Transport for London has published guidance which sets out its expectations of those considering trials in London, in addition to those in the CCAV Code.[379] We would anticipate that reporting standards can be developed from experience gained in these trials.

Safeguarding passengers

4.117 We think that operators should bear some responsibility for safeguarding passengers from assaults, abuse and harassment while using their services. Research conducted on behalf of the Department for Transport by Sciencewise suggests that safeguarding will be a key element of public acceptance of these services. For example, some members of the public expressed particular concerns about using shared automated service at night, with only one or two other people in the vehicle.[380]

Criminal record checks

4.118 In some cases, the operator may employ humans in the vehicle to act as "stewards". The steward's role would be to look after passengers. Stewards would be particularly important when the service transports unaccompanied children, or older or disabled customers.

4.119 At present, taxi and private hire drivers are required to undergo criminal record checks. This is thought essential to protect passengers from attack. New provisions may be required to ensure that HARPS operators carry out criminal record checks on all staff who are alone with passengers in the vehicle, even if they do not drive.

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[378] DfT, *Code of Practice: Automated Vehicle Trialling* (February 2019), para 3.11. The reporting requirement is guidance (para 3.1) but a failure to follow the guidance could be relevant in legal proceedings (para 1.5).

[379] The TfL guidance documents states that CCAV's Code of Practice for trialling outlines the relevant legal framework for trials. However, it provides that those trialling in London need to inform TfL of details of the trials so that TfL can meet their duties and responsibilities concerning road network management. See TfL, *Connected and Autonomous Vehicles: guidance for London trials* (July 2019).

[380] DfT, Traverse, Sciencewise, UK Research and Innovation, CCAV, *CAV public acceptability dialogue: Engagement report* (2019), https://www.gov.uk/government/publications/public-attitudes-towards-self-driving-vehicles, pp 24, 64.

CCTV

4.120 There has been considerable debate on the use of CCTV in taxis and private hire vehicles. In February 2019, the Government published draft statutory guidance to licensing authorities on this issue, noting that "CCTV can provide additional deterrence to prevent harm" and has investigative value when harm occurs:[381]

> While only a small minority of licensing authorities have so far mandated all vehicles to be fitted with CCTV systems, the experience of those authorities that have has been positive for both passengers and drivers. In addition, the evidential benefits of CCTV may increase the level of reporting of sexual offences.[382]

4.121 At present, the issue is left for licensing authorities to decide. The Government notes:

> Imposition of a blanket requirement to attach CCTV as a condition to a licence is likely to give rise to concerns about the proportionality of such an approach and will therefore require an appropriately strong justification and must be kept under regular review.[383]

4.122 Audio recordings are particularly controversial. The draft guidance states that "audio recording should be both overt and targeted". In other words, they should only be made when the passenger or driver operates a switch. Everyone in the vehicle should be aware that a recording is being made.[384]

4.123 In our view operators should be under a general duty to take reasonable steps to safeguard passengers from assault or abuse. Guidance on how this should be done will need to be developed in the light of experience.

Consultation Question 11.

4.124 Do you agree that HARPS operators should have a legal duty to:

(1) insure vehicles;

(2) supervise vehicles;

(3) report accidents; and

(4) take reasonable steps to safeguard passengers from assault, abuse or harassment?

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381 HM Government, *Taxi and Private Hire Vehicle Licensing: Protecting Users - Statutory Guidance for Licensing Authorities* (February 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/784216/taxi-phv-licensing-protecting-users-draft-stat-guidance.pdf, para 2.104.

382 Above, para 2.105.

383 Above, para 2.109.

384 Above, para 2.107.

Consultation Question 12.

4.125 Do you agree that HARPS operators should be subject to additional duties to report untoward events, together with background information about miles travelled (to put these events in context)?

The need for guidance

4.126 We have provisionally proposed that the legislation should include a list of broad duties. For example, HARPS operators should have suitable premises and transport managers. They should also maintain and supervise vehicles, safeguard passengers and report untoward events.

4.127 It is important that the regulatory regime is flexible, so that it can learn from experience and encourage best practice. We therefore provisionally propose powers to issue statutory guidance to supplement these broad principles. We envisage these powers being used in a similar way to the statutory documents which are currently a central part of PSV operator licensing.

Consultation Question 13.

4.128 Do you agree that the legislation should set out broad duties, with a power to issue statutory guidance to supplement these obligations?

PRICE INFORMATION

4.129 In Chapter 3 we noted that taxi fares are often regulated while private hire fares are not. This is because consumers who take a taxi at a rank or by hailing it in the street often lack information to make price comparisons. By contrast, consumers pre-booking a private hire vehicle have the opportunity to shop around.

4.130 We do not propose to regulate fares for HARPS. Instead, we think that consumers should have the opportunity to compare prices before booking. It is therefore important that operators provide price information, either online, or before confirming a booking, or in some other accessible way.

4.131 The Consumer Protection from Unfair Trading Regulations 2008 already require traders to give consumers price information.[385] Under regulation 6 it is a criminal offence for a trader to omit material information which consumers need to need to make an informed decision about a transaction. Regulation 6(4) then lists information which will be regarded as material in invitations to purchase. This includes the price or "where the nature of the product is such that the price cannot reasonably be calculated in advance,

[385] SI 2008 No 1277. The Regulations implement the Unfair Commercial Practices Directive 2005/29/EC.

the manner in which the price is calculated".[386] As we saw in Chapter 3, these regulations have been used to improve the transparency of fees in the car rental market.[387]

4.132 Given the importance of price information in ensuring a competitive market, we seek views on whether the operator licensing agency should also have powers in this area. This might include a power to issue guidance about how to provide clear and comparable price information, or to withdraw a licence from an operator who failed to give such information.

Consultation Question 14.

4.133 We invite views on whether the HARPS operator licensing agency should have powers to ensure that operators provide price information about their services.

In particular, should the agency have powers to:

(1) issue guidance about how to provide clear and comparable price information, and/or

(2) withdraw the licence of an operator who failed to give price information?

WHO SHOULD ADMINISTER THE SYSTEM?

4.134 As we explained in our analysis of responses to Consultation Paper 1, we do not express a view on which agency should administer the safety assurance scheme. Instead, we left this decision to Government.[388] Equally, we are not well placed to decide who should administer the operator licensing scheme. We have therefore left this issue until last.

4.135 One possibility would be to place responsibility for administering the scheme on the Traffic Commissioners. The advantage of this approach is that Traffic Commissioners could draw on their experience of administering the PSV operator licensing scheme. It would also mean that an operator which ran both HARPS and conventional services would only need to deal with one body, which could reduce the costs of applying for licences.

4.136 An alternative would be to place responsibility on the agency responsible for authorising automated driving systems, discussed in Consultation Paper 1. This agency would be well placed to develop expertise in the challenges of automated driving. It would also be in a position to resolve problems of demarcation between the two schemes. An example might be where the sensor proved faulty and dispute arose between the ADSE

386 Consumer Protection from Unfair Trading Regulations 2008, reg 6(4)(d)(ii).

387 See para 3.69 above.

388 Analysis of Responses, para 56. The Government has subsequently announced (4 September 2019) a new safety assurance regime for self-driving vehicles called CAV PASS: https://www.gov.uk/government/news/new-system-to-ensure-safety-of-self-driving-vehicles-ahead-of-their-sale.

and the operator about whose fault it was, with the operator claiming that the sensor was defective and the ADSE claiming it was not maintained properly. On the other hand, these issues could be overcome by provisions for co-operation and joint working.

4.137 We welcome observations on this issue, which we will pass on to Government.

Consultation Question 15.

4.138 Who should administer the system of HARPS operator licensing?

FREIGHT TRANSPORT

4.139 Under our terms of reference, we have been asked to focus on passenger transport. Therefore the licensing scheme is designed to apply to services which transport people rather than goods. Freight vehicles may face similar challenges. Like passenger vehicles, freight vehicles may travel empty, so similar solutions may be needed. We welcome observations about how far the provisional proposals in this chapter may be relevant to freight transport.

Consultation Question 16.

4.140 We welcome observations on how far our provisional proposals may be relevant to transport of freight.

Chapter 5: Privately-owned passenger-only vehicles

5.1 This consultation paper is concerned with highly automated vehicles which are authorised for use without a driver or user-in-charge, which we refer to as "passenger-only" automated vehicles. So far, we have considered how such vehicles could be used to provide services to passengers. In that context we have provisionally proposed a new licensing system for those who operate Highly Automated Road Passenger Services (HARPS).

5.2 In this chapter we consider how to regulate the use of passenger-only automated vehicles that are privately-owned. We start by explaining what we mean by private ownership. We then consider who should take responsibility for the vehicle in the absence of a driver, user-in-charge or HARPS operator.

PRIVATE OWNERSHIP

5.3 The idea of private ownership has a strong psychological appeal, though the psychological effect may not be the same as the legal effect. Some stakeholders have that many people look forward to having their own self-driving car on their driveway, available for their exclusive use whenever they need it. One advantage is that the vehicle will be instantly available for their use, without the need to book a journey. People can also leave their possessions in the vehicle and will not be answerable to anyone else if the vehicle becomes untidy. The desire to own a fully self-driving car is particularly strong among those unable to drive for reasons of disability, who have, hitherto, lacked the access to car ownership enjoyed by others.

5.4 This idea of exclusive use does not necessarily require the consumer to invest capital in buying the vehicle outright – a move that carries financial risks that we discuss at the end of this chapter. In the initial phases of fully self-driving technology, we anticipate that consumers who want exclusive use of such a vehicle are more likely to enter into leasing arrangements,[389] paying ongoing charges for the use of the vehicle together with payments for matters such as servicing, software updates and remote supervision. The legal framework therefore needs to be designed with leasing arrangements as well as outright ownership in mind.

5.5 In a road traffic context, the term "owner" is not restricted to those holding legal title: it can include a person in possession of the vehicle under a hiring agreement. For example, both the Road Traffic Act 1988 and Road Traffic Regulation Act 1984 provide that, for vehicles subject to hire or hire-purchase agreements, "owner" means the

[389] Industry figures confirm that leasing arrangements area already a common way to acquire new cars. See, Reuters, "More UK cars bought on credit – data" (12 May 2017), https://uk.reuters.com/article/uk-britain-economy-autos-finance/more-uk-cars-bought-on-credit-data-idUKKBN1882AX.

person in possession of the vehicle under that agreement.[390] In other contexts, the term is defined as meaning the person by whom the vehicle is kept.[391]

SETTING A BOUNDARY BETWEEN HARPS AND PRIVATE LEASING

5.6 It is first necessary to set a clear boundary between vehicles made available as passenger services (which must be supplied by a licensed HARPS operator) and vehicles supplied on a long lease, in a way which is seen as equivalent to private ownership. People will generally distinguish between hiring a rental car for a week (which is not seen as equivalent to private ownership) and leasing a car for five years (which is). However, between these two extremes, the distinction becomes blurred. As we discuss below, taking responsibility for owning a highly automated passenger-only vehicle will at first be a novel undertaking. It will necessarily involve taking responsibility for matters which a HARPS passenger can leave to the HARPS operator; these will be important and possibly onerous. The law needs to be clear as to when these responsibilities attach to the private owner.

5.7 In the world of vehicles with drivers, the distinction between taxi, private hire and PSV services on the one hand, and rental and leasing on the other, depends partly on whether the vehicle is provided with a driver. In the world of fully driverless vehicles, that distinction disappears. It would be theoretically possible to set the boundary of a HARPS by reference to whether the transaction is for a specific journey or for the use of a vehicle over a period of time. However, it would then be easy to avoid the obligations that we provisionally propose to place on HARPS operators and cast responsibility for the vehicle on someone whose relationship with it may last for only a brief period of time.

5.8 We note that (in a slightly different context) the British Vehicle Rental and Leasing Association (BVRLA) operates a pragmatic distinction between "rental companies", which hire vehicles to individuals or businesses for less than six months, and leasing companies "which lease for more than six months on a permanent arrangement".[392] We provisionally propose to adopt this distinction in differentiating between HARPS and private leasing.

5.9 We therefore provisionally propose that those making "passenger-only" vehicles available to the public should be licensed as HARPS operators unless the arrangement provides a vehicle for exclusive use for an initial period of at least six months.

5.10 It is important to focus on the initial period of the agreement. If a family hired a vehicle for one month and then kept renewing the arrangement from month to month, we think that this should continue to be seen as a HARPS even if the arrangement lasts for more than six months in all. We would not wish for a consumer who thought they were just renewing an existing arrangement to suddenly become subject to onerous responsibilities.

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390 Road Traffic Act 1988, s 192 and Road Traffic Regulation Act 1984, s 142.

391 See, for example, Private Hire Vehicles (London) Act 1998, s35(1); Traffic Management Act 2004, s 92(1) and Road Traffic Act 1991, s 82(2) and (3).

392 BVRLA, *Guide to Road Traffic Offences* (May 2017), p 4.

5.11 In Chapter 3 we explained that, currently, rental companies providing vehicles for short term hire are regulated relatively lightly. This is because the driver takes legal responsibility both for driving and for ancillary matters such as insurance, roadworthiness and reporting accidents. However, drivers must be qualified and licensed, as well as fit to drive. By contrast, those using "passenger-only" vehicles are merely passengers. They need not be licensed or fit to drive and may be children. We provisionally consider that the absence of a responsible person in a passenger-only vehicle, together with the sophistication and safety-critical features of the vehicle, justify a more rigorous regulatory regime.

Consultation Question 17.

5.12 Do you agree that those making "passenger-only" vehicles available to the public should be licensed as Highly Automated Road Passenger Services (HARPS) operators unless the arrangement provides a vehicle for exclusive use for an initial period of at least six months?

ALLOCATING RESPONSIBILITY FOR A PRIVATELY-OWNED PASSENGER-ONLY VEHICLE

5.13 At present, drivers assume many responsibilities for vehicles which go beyond the driving task. In some cases these responsibilities are also placed on a person using the vehicle. In Consultation Paper 1, we looked in depth at the roles of "driver" and "user". We explained that many obligations regarding vehicles are placed on those who "use" them. For example, a person who uses a vehicle is criminally liable if the vehicle is not insured.[393] Similarly, a person who uses a vehicle is liable if the vehicle does not comply with construction and use requirements as to matters such as brakes, steering-gear or tyres.[394]

5.14 As currently interpreted, the term "user" covers the driver and the driver's employer (if the vehicle is being used for the employer's business). It has also been held to apply to an owner of a vehicle who is in the vehicle and using it for their own purposes.[395] However, the term may not apply to an owner when they are not in the vehicle, as where, for example, an automated vehicle carries family or friends or returns home empty.

5.15 We have already made proposals to extend user responsibilities to a user-in-charge.[396] With HARPS, the operator takes on these important responsibilities.[397] However, where

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393 Road Traffic Act 1988, s 143.

394 Above, s 41A.

395 *Cobb v Williams* [1973] RTR 113. For a discussion of who uses a vehicle, see Background Paper 1, paras 1.33 to 1.40, available on our website.

396 In Consultation Paper 1 (CP1) we proposed that the obligations which currently apply to users should also apply to the user-in-charge. In particular, we proposed that the user-in-charge should be responsible for insurance, roadworthiness, removing the vehicle from a prohibited place, and reporting accidents.

397 We discuss these in Chapter 4.

privately-owned HARPS vehicles are used without a user-in-charge there is a potential legal gap. In this case, the responsibilities will need to rest with someone else involved with the vehicle. Other categories of people who have legal responsibilities for vehicles under the current law are the owner, keeper or registered keeper. We start by looking at how these roles are currently used and defined in current road traffic legislation.

STATUTORY ROLES: KEEPERS, REGISTERED KEEPERS AND OWNERS

5.16 Road traffic legislation imposes a variety of obligations to pay excise duty, pay parking penalty charges or give information about who was driving the vehicle. These obligations are imposed either on the "owner", "keeper" or "registered keeper" of the vehicle.

5.17 These terms are not always used consistently and can be confusing. In places they appear interchangeable. For example, in some statutes (but not others) owners are defined as keepers or presumed to be the registered keeper. In many cases, the owner, keeper and registered keeper are the same person, but that is not necessarily so.

The keeper

5.18 A number of liabilities attach to a person who "keeps" a vehicle. Thus, a person is guilty of an offence if they either use or "keep" a vehicle which is unlicensed.[398]

5.19 This raises the sometimes difficult issue of who "keeps" a vehicle. In *R v Parking Adjudicator, ex parte Wandsworth London Borough Council,*[399] the Court of Appeal held that the term did not have its normal meaning. Instead it involved "both a degree of permanence and the right to use the vehicle on the road".[400] In that case, a vehicle had been left at a garage for a month for repairs. The garage had parked the vehicle on the street and parking penalty charge notices were issued. The Court of Appeal found that the garage proprietor was not "keeping" the vehicle, since he had no right to use it for his own purposes and the duration of his possession was insufficient.[401]

5.20 In 1997, a London Parking Tribunal considered how this definition applied to a variety of short-term rentals and long leases.[402] The Tribunal held that a lease of 30 months had a sufficient degree of permanence to mean that the possessor of the vehicle was the keeper. However, the status of keeper did not pass to a hirer as a result of a short-term hire of 28 days.[403]

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398 Vehicle Excise and Registration Act 1994, s 29(1). The section provides various defences, such as that the vehicle is not kept on a public road and an "off-road" notification has been made.

399 *R v Parking Adjudicator, ex parte Wandsworth London Borough Council* [1998] RTR 51.

400 Above, p 10.

401 Above, p 59.

402 *Autolease Limited and the London Borough of Barnet and Other Cases*, Parking Appeals Service, Decision of GR Hickinbottom (now Hickinbottom LJ) 18 June 1997, https://www.londontribunals.gov.uk/sites/default/files/keycases/Autolease29.pdf

403 Above, pp 29 to 32.

5.21 More recently, in *House of Cars Ltd v Derby Car and Van Contracts Ltd,*[404] the issue of whether someone is "keeping" a vehicle was held to be a question of fact and degree. Distilling the principles found in the case law, the judge identified the overall control of the vehicle as the key factor.[405] The owner of a vehicle may well be its keeper, but that is not necessarily so.[406]

The registered keeper

5.22 All vehicles must have a registered keeper, defined as the person in whose name a vehicle is registered under the Vehicle Excise and Registration Act 1994.[407] The registered keeper must pay the vehicle excise duty.[408] The vehicle must be registered by the keeper and should be registered in the name of the keeper, which means the person by whom the vehicle "is kept at the material time".[409] It is an offence to use an incorrectly registered vehicle.[410] The legislation nevertheless accepts that the registered keeper may not in fact be the person keeping the vehicle: if so, the person who actually keeps the vehicle will also be liable for the licence fee.[411]

5.23 In the case of long-term leases, it is common for the leasing company to be the registered keeper.[412] Though the registration document is not a document of title, appearing on the register gives the leasing company a degree of protection against unauthorised sale of the vehicle. The intending purchaser will ask to see the registration document and will be alerted to the leasing company's involvement. However, this is not the universal practice: for example, Mercedes-Benz Trucks allows for a lessor to become the registered keeper of vehicles leased under an "operating lease".[413]

5.24 As we have seen, the main requirement to insure a vehicle lies on the "user" under section 143 of the Road Traffic Act 1988. However, in 2006 new insurance obligations were placed on the registered keeper. Under section 144A of the Road Traffic Act 1988, if a motor vehicle does not meet the insurance requirements, the registered

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404 *House of Cars Ltd v Derby Car and Van Contracts Ltd* [2012] 6 WLUK 138, [2012] CTLC 62, HHJ Burgess.

405 *Secretary of State for the Environment, Transport and the Regions v Holt* [2000] RTR 309.

406 *Napthen v Place* [1970] RTR 248.

407 See, for example, Road Traffic Act 1988, ss 165B(5) and s 172 (10).

408 Vehicle Excise and Registration Act 1994, s 1(1C)(a).

409 Above, s 43C(7).

410 Above, s 43C. A person is guilty of this offence "if, on a public road or in a public place, he uses a vehicle" which does not have the name and address of the keeper recorded in the register, or if "any particulars recorded in the register are incorrect". It is a defence to show that there was no reasonable opportunity to correct the record, or that there were reasonable grounds to expect that the details were correct.

411 Above, s 1(1C)(b).

412 See, for example: Rosedale, "When leasing a car, who is the registered keeper?", https://rosedaleleasing.com/leasing-explained/leasing-faqs/when-leasing-a-car-who-is-the-registered-keeper/; Clear Car Leasing, Gill Warburton, "Who is the registered keeper of my lease car?" (20 March 2018), https://www.clearcarleasing.co.uk/registered-keeper-lease-car/; OSV, "Who is the registered keeper of a leased car?", https://www.osv.ltd.uk/registered-keeper-lease-car/.

413 See Mercedes-Benz, *Your Finance Agreement: Fines and Charges*, https://www.mercedes-benz-trucks.com/en_GB/owner/existing-finance-customers/frequently-asked-questions/your-finance-agreement.html.

keeper is guilty of an offence. This offence is less serious than the section 143 offence of driving uninsured and may be dealt with by a fixed penalty notice.[414]

The owner

5.25 The obligation to pay penalty parking charges is placed on the "owner". However, several statutes define the "owner" for these purposes (but not others) as the person who keeps the vehicle, which is presumed to be the registered keeper.

5.26 In England, outside London, the Civil Enforcement of Parking Contraventions (England) General Regulations 2007 set out a "notice to owner" procedure. Where a penalty charge notice remains unpaid, the enforcement authority "may serve a notice on the person who appears to them to have been the owner of the vehicle when the alleged contravention occurred".[415] These regulations are made under the Traffic Management Act 2004, which defines the "owner" as the person by whom the vehicle is kept. This is presumed to be the registered keeper, unless the contrary is proved.[416]

5.27 Similarly, in London the Road Traffic Act 1991 requires parking penalty charges to be paid by "the owner".[417] The Act then defines the owner as the person by whom the vehicle is kept, which is presumed to be "the person in whose name the vehicle was at that time registered under the Vehicle Excise and Registration Act 1994".[418]

Other obligations of keepers and registered keepers

5.28 "Keepers" are obliged to give information about who was driving the vehicle when an offence was committed. For example, section 172 of the Road Traffic Act 1988 requires the person keeping a vehicle to "give such information as to the identity of the driver as he may be required to give" by the police in response to a written notice.

5.29 In practice, many of these notices will be "notices of intended prosecution" under the Road Traffic Offenders Act 1988. Section 1 states that the notice must be served either on the alleged offender (that is, the driver) or on the person "registered as the keeper of the vehicle at the time of the commission of the offence".[419] In other words, one Act puts obligations on the keeper generally while the other treats the keeper as the registered keeper.

5.30 In Consultation Paper 1, we considered how the obligation to give information about who was driving the vehicle would operate for automated driving. We provisionally proposed that the registered keeper should provide evidence that the vehicle was in self-driving mode at the time of the incident in question. If the fault lay with the

414 Road Traffic Act 1988, s 144C.

415 Civil Enforcement of Parking Contraventions (England) General Regulations 2007, Regulation 19(1).

416 Traffic Management Act 2004, s 92(1).

417 Road Traffic Act 1991, s 66(2).

418 Above, s 82(2) and (3).

419 Road Traffic Offenders Act 1988, s 1.

automated driving system, the safety assurance agency should be able to apply a range of sanctions to the Automated Driving System Entity.[420]

Specific provisions for hire contracts

5.31 Section 66 of the Road Traffic Offenders Act 1988 sets out a special procedure to deal with penalty charges where a "notice to owner" is served on a vehicle hire firm. Where the vehicle was hired to another person under an "applicable" hiring agreement, and the firm can provide a copy of the agreement and a statement of liability signed by the hirer, then liability shifts.[421] The hirer is effectively treated as the "owner" (in the sense discussed at paragraphs 5.25 to 5.27 above). However, the hire must be for a fixed period of less than six months.[422] Furthermore, the hire agreement must meet 10 mandatory particulars, prescribed by regulation.[423] We have been told that it is common for hire agreements not to meet these particulars.

5.32 The BVRLA explains that each traffic offence is governed by its own legislation and process:

> This often leads to uncertainty as to whether a representation can be made to transfer the offence to the customer (referred to as a 'transfer of liability') or not. This has created additional burden and understandable confusion within the industry.[424]

5.33 By way of illustration, the BVRLA explain that the lessor can transfer liability for the London congestion charge only if the hire agreement is for *less* than six months. By contrast, lessors can transfer liability for driving in a bus lane in Greater London only if the agreement is for *more* than six months. For bus lane penalties outside Greater London, liability can be transferred regardless of the length of the agreement. [425] It is difficult to follow the logic behind these differences and the BVRLA has called for a review:

> To ensure that this fundamental problem does not continue into the future, the BVRLA has insisted that the government works towards harmonising both existing and future legislation to create a single process for members to be able to make representations.[426]

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420 CP1, para 7.36.

421 Road Traffic Offenders Act 1988, s 66(4)(a).

422 Above, s 66(7).

423 Road Traffic (Owner Liability) Regulations 2000/2546, Sch 2.

424 BVRLA, *Guide to Road Traffic Offences* (May 2017), p 3.

425 Above, pp 16, 20 and 23.

426 Above, p 3.

5.34 For parking charges on private land, hire firms are given more extensive protection under the Protection of Freedoms Act 2012.[427] The person hiring the vehicle is liable for parking charges if they have signed an agreement with the hire company accepting liability. The hire company is not liable if they provide a copy of the relevant hire agreement documents to the landholder within 28 days of receiving a notice to keeper.

PLACING RESPONSIBILITIES ON KEEPERS

5.35 Our aim is to provide clarity about who would be legally responsible for a privately-owned vehicle which is authorised for use without a user-in-charge. We wish to provide clarity as to who must insure the vehicle; keep it roadworthy; install safety-critical updates; report accidents; and remove the vehicle if it causes an obstruction or is left in a prohibited place.

5.36 We provisionally propose that these duties should be placed on the person who keeps the vehicle, with a statutory presumption that this is the registered keeper. This has the advantage of certainty. The registered keeper is a clearly identified person or company. Unlike other concepts used in road traffic legislation, such as owner, it is easy to discover whose name is on the register.

5.37 However, in some limited cases, the keeper may have failed to place their name on the register. Alternatively, administrative mistakes may have led to the wrong name being placed on the register. In these circumstances it would be possible to rebut the presumption and liability would fall on the actual keeper.

The effect on leasing contracts

5.38 Where (as we consider likely) a passenger-only vehicle is leased to a private individual, the effect of this proposal will be to make the leasing company responsible for these matters if it registers itself as the registered keeper. That strikes us as a satisfactory position: these are matters which the individual is likely to want to see performed by a professional organisation.

5.39 We nevertheless envisage the possibility that some leasing companies may wish to be registered as the keeper while devolving these responsibilities to the lessee. Alternatively, lessees may wish to contract for the services with another supplier. We therefore invite views on whether there should be a procedure for transferring the obligations to lessees, if (for example) the duties are clearly explained to them at the time and they sign a statement accepting liability. We are also interested to hear whether leasing companies that arrange for the lessee to the registered keeper should also be under an obligation to inform their lessees of their obligations.

[427] Protection of Freedoms Act 2012, Sch 4, para 13.

Consultation Question 18.

5.40 Do you agree that where a passenger-only vehicle is not operated as a HARPS, the person who keeps the vehicle should be responsible for:

(1) insuring the vehicle;

(2) keeping the vehicle roadworthy;

(3) installing safety-critical updates;

(4) reporting accidents; and

(5) removing the vehicle if it causes an obstruction or is left in a prohibited place?

Consultation Question 19.

5.41 Do you agree that there should be a statutory presumption that the registered keeper is the person who keeps the vehicle?

Consultation Question 20.

5.42 We seek views on whether:

(1) a lessor should be responsible for the obligations listed in Question 18 unless they inform the lessee that the duties have been transferred.

(2) a lessor who is registered as the keeper of a passenger-only vehicle should only be able to transfer the obligations to a lessee who is not a HARPS operator if the duties are clearly explained to the lessee and the lessee signs a statement accepting responsibility?

WILL CONSUMERS REQUIRE TECHNICAL HELP?

5.43 At this stage, it is not possible to say whether the technology will be sufficiently safe for individuals to be able to carry out remote supervision, updates to software and security for themselves, or whether these tasks will require specialist intervention.

5.44 In Chapter 4, we said that HARPS will need to be supervised and this could be an onerous responsibility. Take an example in which an individual consumer uses their "passenger-only" vehicle to take them to work and then sends the vehicle home empty, to be used by other members of their family. What if the vehicle encounters a problem while driving empty and comes to a stop in a busy street? It might be too difficult for the

individual to juggle work alongside responding to requests for intervention from the vehicle.

5.45 Individuals may also find it difficult to keep up with the technical challenges in updating vehicles and guarding against cyber-attacks. At this stage it is unclear whether these processes will be simple, or whether updating software will require technical skill. One solution to these challenges would be for consumers to "buy" supervision and maintenance services from a licensed provider.

5.46 To deal with these possible problems, we provisionally propose that the legislation should include a regulation-making power which would apply to passenger-only vehicles which are not operated by HARPS licence holder. This could be used to require all registered keepers to contract with a licensed provider for supervision and maintenance services for the vehicle. We envisage that the licensed provider would either be a HARPS operator or would be subject to similar licensing requirements in organising maintenance and supervision.

Consultation Question 21.

5.47 Do you agree that for passenger-only vehicles which are not operated as HARPS, the legislation should include a regulation-making power to require registered keepers to have in place a contract for supervision and maintenance services with a licensed provider?

PEER-TO-PEER LENDING

5.48 The growth of the sharing economy is a well-established trend across different sectors. For example, the concept of renting out one's home on platforms such as Airbnb has transformed the tourist accommodation sector. The comparative lack of regulation of accommodation rented through such platforms compared to hotels has led to concerns over safety and unfair competition.[428] Similarly, platforms that allow users to rent out their car to neighbours already exist.[429]

5.49 There is interest in peer-to-peer services using self-driving vehicles. One possibility is that a consumer who owns a "passenger-only" vehicle will place it on websites for "peer-to-peer lending". This would allow other people to use the vehicle for individual journeys or a series of journeys.

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428 The All-Party Parliamentary Group on Tourism, Leisure and the Hospitality Industry Inquiry into the Sharing Economy (July 2018) noted that "considerable concerns have been expressed that hosts providing accommodation via sharing economy platforms do not comply with health and safety regulations" and that a large number of businesses are using holiday rental platforms. The report recommended establishing a low-cost statutory registration scheme for tourism accommodation businesses and putting limits on the number of days a year that a property can be used for tourist accommodation. See http://www.tourismalliance.com/downloads/TA_398_426.pdf.

429 See, Drivy, *Car Hire*, https://www.drivy.co.uk/car-hire/london.

5.50 In most cases, we think that such peer-to-peer lending services will fall under the definition of HARPS, as set out in Chapter 4. In that chapter we have provisionally proposed defining a HARPS operator as any business which carries passengers for hire or reward using highly automated vehicles on the road without the services of a human driver or user-in-charge.[430] As we discussed, the phrase "carrying passengers for hire or reward" has been construed widely, to include any case beyond the bounds of "mere social kindness".

5.51 One possible exception to the need for a HARPS licence is where a group of people buy one or more passenger only automated vehicles jointly. In Chapter 4 when discussing the current definition of hire or reward, we gave the example of a group of parents who jointly acquired a minibus to run their children to school. The parents took it in turns to drive but, as no fares were collected, it did not clearly fall within the definition of a public service vehicle.[431] Applying the same logic, if a group jointly used a passenger-only highly automated vehicle in a similar way, the arrangement would not fall within the definition of a HARPS or require a HARPS operator licence. Instead, under our provisional proposal, the registered keeper would assume responsibilities for insurance, maintenance, installation and reporting accidents. If required, the group would then hire the services of a licensed third-party provider to provide technical skills and supervision.

5.52 We think that our proposals would be appropriate for most peer-to-peer and group arrangements, but we welcome views on this issue.

Consultation Question 22.

5.53 We welcome views on whether peer-to-peer lending and group arrangements relating to passenger-only vehicles might create any loopholes in our proposed system of regulation.

PROTECTING CONSUMERS FROM HIGH ONGOING COSTS

5.54 Consumers who may pay a significant purchase price for an automated vehicle may be faced with considerable ongoing updating and maintenance costs. At least initially, these may be difficult to anticipate and may not be subject to competitive pressures.

5.55 In view of this, a well-advised consumer may do better to lease a car, paying for the vehicle, maintenance and updating as they go, rather than to invest large sums in a vehicle which can only be run on payment of possibly substantial ongoing charges. We are nevertheless reluctant to hamper the sale of passenger-only vehicles to consumers, as we would not wish to interfere with a market that might develop in unforeseeable ways. However, it may be important that consumers thinking of buying

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430 See Consultation Question 3, Chapter 4, p 67.

431 See Chapter 4, para 4.13, citing K McCormac, P Brown, P Veits, N Watson and J Woodhouse (eds), *Wilkinson's Road Traffic Offences* (28th ed 2017), p 13 to 135.

a vehicle are given good information about the ongoing costs, particularly if these costs are uncertain and potentially high.

5.56 Currently, an EU Regulation requires vehicle manufacturers to provide independent providers of vehicle repair and maintenance services with easy access to vehicle repair and maintenance information.[432] The aim is to ensure competition in the vehicle aftermarket, allowing a range of parts manufacturers and repairers to compete with the manufacturer's own services. A report in 2014 found that compliance with the Regulation was generally high, despite problems in specific areas. The greatest difficulties were where data was critical to vehicle security.[433]

5.57 With highly automated vehicles, concerns about cyber-security and the protection of intellectual property are likely to reduce the access currently granted to independent aftermarket providers. This may limit consumer choice. A consumer who has paid £100,000 for a car made by Manufacturer X may have little control over charges for on-going software updates. They may also need to send the car back to Manufacturer X's own technicians for repair or servicing, meaning that there is little competitive pressure over aftermarket costs. Problems would also arise if Manufacturer X becomes insolvent and the software ceases to be updated.

5.58 Traders' marketing material is already regulated under the Consumer Protection from Unfair Trading Regulations 2008.[434] It is an offence to provide misleading information about (among other things) the need for "a service, part replacement or repair".[435] It is also an offence to omit material information which the average consumer needs to take an informed transactional decision.[436] These regulations are enforced by local trading standards and the Competition and Markets Authority.[437]

5.59 In Consultation Paper 1 we said that although powers to regulate marketing exist, the institutional structure for doing so is less than ideal. We noted that trading standards departments are under considerable financial pressure and may be reluctant to take on complex litigation with vehicle manufacturers.[438] We asked if the new safety assurance scheme that we proposed should include responsibilities for regulating consumer and

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432 Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on access to vehicle repair and maintenance information OJ L 171 of 29.6.2007.

433 European Commission, *Study on the operation of the system of access to vehicle repair and maintenance information: Final Report*, October 2014, https://publications.europa.eu/en/publication-detail/-/publication/c2c172a5-3f49-4644-b5bb-c508d7532e4a, p 5.

434 Consumer Protection from Unfair Trading Regulations 2008 SI 2008 No 1277.

435 See above, reg 5(4)(i).

436 See above, reg 6(3)(a).

437 Consumers also have private rights of redress against traders using misleading or aggressive practices under the Consumer Protection (Amendment) Regulations 2014, see BEIS, *Misleading and aggressive commercial practices: new private rights for consumers, Guidance on the Consumer Protection (Amendment) Regulations 2014* (July 2018), https://www.gov.uk/government/publications/misleading-and-aggressive-selling-new-rights-for-consumers.

438 CP1, para 5.11.

marketing material.[439] We are now seeking views on whether the safety assurance scheme should consider the issue of ongoing costs as part of this responsibility.

Consultation Question 23.

5.60 We seek views on whether the safety assurance agency proposed in Consultation Paper 1 should be under a duty to ensure that consumers are given the information they need to take informed decisions about the ongoing costs of owning automated vehicles.

[439] CP1, Consultation Question 12.

Chapter 6: Accessibility

INTRODUCTION

6.1 A transport system that works better for disabled and older people works better for all. In this chapter we consider how we can embed accessibility within the regulatory framework for Highly Automated Road Passenger Services (HARPS).

(1) First, we set out what we want to achieve: for the introduction of HARPS to help give disabled people the same access to transport as everyone else. We highlight the many roles of drivers beyond driving and some of the challenges that could arise when vehicles transporting passengers no-longer have a human driver. We refer to the Department for Transport's Inclusive Transport Strategy which guides our approach to HARPS regulation.

(2) Second, we look at definitions of disability, how disability and mobility relate to each other (particularly in the context of transport). We also consider the distinct but related issues for an ageing population, and the regulatory categorisation of HARPS.

(3) Third, we look at the legal protections for disabled people under existing law and how these might apply in the context of HARPS.

(4) Fourth, we consider co-design as it could apply to the accessibility of HARPS vehicles and services. Co-design being the idea of involving older people and people with disabilities in the initial design of HARPS.

(5) Fifth, we use the whole journey approach to identify some of the specific accessibility outcomes to help assess whether a journey is accessible from door to door. These could contribute to the development of guidance and national minimum accessibility standards for HARPS.

(6) Finally, we consider enforcement mechanisms and feedback loops to maximise the effectiveness of accessibility protections for users of HARPS.

What we want to achieve

6.2 The Government's Inclusive Transport Strategy sets the ambition "for disabled people to have the same access to transport as everyone else. They will travel confidently, easily and without extra cost".[440] The Future of Mobility Urban Strategy highlights the importance of widening access to mobility for disabled and older people as part of the

[440] DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), https://www.gov.uk/government/publications/inclusive-transport-strategy, p 14. This draws on the UN's 2030 Agenda for Sustainable Development, goal 11.2: https://sustainabledevelopment.un.org/post2015/transformingourworld.

development of automated vehicle policy.[441] Access to mobility services is key to accessing employment, and in tackling loneliness and isolation. It also acts as an enabler to lift people out of poverty, thus improving public health, growing the economy and, above all, enabling older and disabled people to lead fulfilling lives and participate fully in society.[442]

6.3 Technologies that can perform the entirety of the dynamic driving task and solely carry passengers who have no responsibility for the driving task have great potential to enhance the mobility and independence of people who are unable or unwilling to drive. Their potential modes of use fall into two major categories: (1) as services provided to the public (where individuals buy journeys); or (2) as vehicles that could be privately-owned or leased by individuals.

6.4 In Chapter 5 we focussed on the second category. Privately-owned vehicles may be highly adapted to their primary user's needs (both through physical adaptations and through software) and evolve from current highly adapted vehicles (providing driver assistance) to full self-driving capabilities.[443] Such vehicles are not shared with the public at large and therefore much of the discussion in this chapter (with the notable exception of the importance of co-design) will not be relevant to such vehicles. At least initially, such vehicles are likely to be expensive to acquire and onerous to look after, leading to more purchasing of journeys (which is the main focus of this chapter) than private ownership or leasing.[444]

6.5 It is critical that as HARPS are developed, designed and introduced, the interests of disabled and older people are taken into account from the start and that the whole journey, from point of departure to destination, is considered. Our discussion of co-design and the whole journey approach are intended to provide additional context and points of reference to assess the accessibility of HARPS.

6.6 Professional drivers of transport services do much more than the driving task itself, such as helping passengers on and off vehicles, or providing reassurance and information. Drivers are at the centre of accessibility policy and regulation, with disability awareness training being one of the key ways in which legislation and guidance makes services more accessible. Drivers also have a significant social role: for example, conversation

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441 DfT, *Future of Mobility: Urban Strategy* (March 2019), para 2.15.

442 For example, interim guidance on The Fairer Scotland Duty, which emphasises the importance of tackling poverty and alleviating socioeconomic inequalities, identifies access issues in terms of transport as particularly significant to disabled people: Scottish Government, *Fairer Scotland Duty: Interim Guidance for Public Bodies* (27 March 2018), https://www.gov.scot/publications/fairer-scotland-duty-interim-guidance-public-bodies/, p 27. A recent report by Demos focusses on the importance of enabling disabled people to reach their full potential: Demos, *Able to Excel: The case for enabling talents, young disabled graduates to realise their potential and reach the top* (July 2019), https://demos.co.uk/project/able-to-excel/.

443 See https://www.motability.co.uk/.

444 "Mobility-as-a-Service is an evolving concept of how consumers and businesses move away from vehicle ownership towards service-based transport": KPMG, *Mobility 2030: Transforming the Mobility Landscape* (February 2019), https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/02/mobility-2030-transforming-the-mobility-landscape.pdf, p 7.

with their driver may be a precious part of the day for the most socially isolated people.[445]

6.7 We note the continuing value and role of professional human drivers of conventional vehicles. In the future, professional "users-in-charge"[446] of highly automated vehicles that can drive themselves may transport passengers in buses, taxis and private hire services.[447] Some HARPS could in fact have staff on board with non-driving responsibilities, focussing on customer care for example. On the other hand, what distinguishes HARPS is that, as a matter of technological capability, they would not require the presence of a human driver or user-in-charge to provide the journey. As we noted above, drivers are at the centre of current accessibility regulation of road passenger services; HARPS need a different approach.

6.8 This chapter considers how we could regulate for accessibility guarantees in an outcome-based way that does not assume a human driver's presence in the vehicle.[448] Whilst some HARPS vehicles may have attendants or conductors on board, some HARPS operators may instead provide human assistance at the pick up or drop off point, or alternatively provide technological solutions. The regulatory framework needs to give clear guidance about what is expected in terms of accessibility and allow flexibility and innovation in respect of how this is delivered.

6.9 The Department for Transport's Inclusive Transport Strategy sets out five key themes which will guide our approach to HARPS regulation:

(1) promotion and raising awareness of passenger rights and enforcement of those rights;

(2) better staff training;

(3) improved information;

(4) inclusive physical infrastructure (for example, vehicles, stations and streetscapes); and

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445 The government recognises the problem of loneliness, especially for older people: see *PM commits to government-wide drive to tackle loneliness* (17 Janurary 2019), https://www.gov.uk/government/news/pm-commits-to-government-wide-drive-to-tackle-loneliness. Drivers can also provide reassurance and support to passengers who need it.

446 We introduced the concept of "user-in-charge" in CP1: see paras 3.24 to 3.79.

447 These are referred to as Private Hire Cars in Scotland.

448 ITS America recently noted that: "Removing the driver also implies new processes for automating passenger support. Whether in cars, taxis or buses, often it is the driver who supports riders with disabilities in troubleshooting issues associated with ingress/egress, seating, and securement. For future driverless vehicles to be accessible, automation of operations should not just apply to the driving task, but also to how the vehicle is dispatched, how it parks or docks, how it manages passengers entering and exiting, and how it secures passengers in seating. In a driverless future, that role may need to be filled by a combination of assistive technologies and possibly able-bodied fellow passengers who are sufficiently educated and willing to assist and troubleshoot when necessary." ITS America, Steven H Bayless and Sara Davidson, *Driverless Cars and Accessibility: Designing the Future of Transportation for People with Disabilities* (April 2019), p 3.

(5) ensuring future transport services are inclusive (i.e. embracing useful technological developments which should provide opportunities for all and are designed from the outset with disabled people in mind).[449]

6.10 Existing regulation of accessibility for road passenger services has emerged over many years across different transport modes. Over the last two decades, the law has helped to remove some of the physical barriers to travel. For example, the Public Service Vehicles Accessibility Regulations 2000 specify how a public service vehicle must be laid out to accommodate a wheelchair.[450] It is important to ensure that hard-won protections for disabled passengers are preserved as HARPS are introduced. It is also an opportunity to improve and ensure that mistakes from the past are not repeated.

Consultation Question 24.

6.11 We seek views on how regulation can best promote the accessibility of Highly Automated Road Passenger Services (HARPS)? In particular, we seek views on the key benefits and concerns that regulation should address.

KEY DEFINITIONS

Definitions of disability

6.12 The legal definition of disability is found in the Equality Act 2010: a physical or mental impairment which has substantial and long-term (lasting for more than 12 months) adverse effect on a person's day-to-day activities.[451] In 2016/2017, 22% of people in the UK (13.9 million) and 45% of adults of state pension age reported having a disability.[452]

6.13 Barriers in society can disadvantage people with impairments. The social model of disability encapsulates the idea that disability is created by social structures that treat impairments as abnormal, thus excluding people with impairments from fully participating in society.[453] Social barriers can be environmental (such as access to buildings), people's attitudes (such as stereotyping, discrimination and prejudice) and

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449 DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), para 1.8.

450 Public Service Vehicles Accessibility Regulations SI 2000 No 1970.

451 Equality Act 2010, ss 4 and 6. For guidance on the meaning of 'disability', see Office for Disability Issues, *Equality Act 2010 – Guidance on matters to be taken into account in determining questions relating to the definition of disability* (August 2010). Part 1 of the Equality Act 2010 came into force in Scotland in April 2018, in relation to which see: Scottish Government, *The Fairer Scotland Duty: Interim Guidance for Public Bodies* (March 2018), https://www.gov.scot/publications/fairer-scotland-duty-interim-guidance-public-bodies/.

452 Department for Work and Pensions, *Family Resources Survey 2016/2017* (22 March 2018), https://www.gov.uk/government/collections/family-resources-survey--2, p 7.

453 Foundation for people with learning disabilities, *Social model of disability*, https://www.mentalhealth.org.uk/learning-disabilities/a-to-z/s/social-model-disability.

organisational (such as inflexible policies and procedures).[454] The social model of disability can be contrasted with the medical model of disability, which views the cause of disability as the physical or mental impairment itself. The social model of disability is preferred by the Government's Office for Disability Issues[455] and a number of non-governmental organisations working for disability rights.[456]

6.14 Mental illness describes a broad range of mental and emotional conditions and includes anxiety disorders, mood disorders and schizophrenia disorders. Mental illness can constitute a mental impairment within the definition of disability. The term mental impairment is broader than the term mental illness, as mental impairment also covers such impairments as organic brain damage and learning disabilities.[457] It is also possible to talk of mental disorders, which is a term that encompasses mood disorders, intellectual disabilities and developmental disorders.[458] Some people and organisations prefer to talk of neurodiversity, especially in relation to learning differences, to promote the view that neurological differences are like any other natural human variation.[459] In this chapter we predominantly use the terms "disability" and "impairment", as this language aligns with the legal definition of disability in the Equality Act 2010. However, we acknowledge the rising prominence of the language of neurodiversity which aligns with the social model of disability and moves away from using terms such as "disability" and "disorder".

Disability and mobility

6.15 A wide range of impairments can affect mobility. Some impairments affecting mobility are physical, such as sight and hearing loss or conditions which require the use of mobility devices such as, for example, wheelchairs. Chronic pain, from conditions such as arthritis, also has a huge impact on mobility. Mobility can be affected by psychological conditions and mental health issues, such as dementia, agoraphobia, anxiety, autism and depression. This list of impairments is by no means exhaustive but is included to indicate the breadth of conditions which can affect mobility: it is not just about wheelchairs and mobility scooters. Whereas transport policy on disability has

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454 Department for Education, Government Equalities Office and Office for Disability Issues, *Policy Paper, 2010 to 2015 government policy: equality: Appendix 9: the social model of disability* (8 May 2015), https://www.gov.uk/government/publications/2010-to-2015-government-policy-equality/2010-to-2015-government-policy-equality#appendix-9-the-social-model-of-disability.

455 Office for Disability Issues, *About us*, https://www.gov.uk/government/organisations/office-for-disability-issues/about.

456 See, for example, Disability Information Bureau, *Definitions of Disability*, https://www.dibservices.org.uk/definitions-disability; Scope: Equality for disabled people, *Social model of disability*, https://www.scope.org.uk/about-us/social-model-of-disability/; Disability Wales: Anabledd Cymru, *Social Model: The Social Model of Disability*, http://www.disabilitywales.org/rights/social-model/.

457 Boston University Centre for Psychiatric Rehabilitation, *What is Psychiatric Disability and Mental Illness?,* https://cpr.bu.edu/resources/reasonable-accommodations/what-is-psychiatric-disability-and-mental-illness/.

458 World Health Organization, *Mental disorders*, https://www.who.int/news-room/fact-sheets/detail/mental-disorders.

459 British Dyslexia Association, *Neurodiversity and Co-occurring differences*, https://www.bdadyslexia.org.uk/dyslexia/neurodiversity-and-co-occurring-differences; ADHD Foundation, *Neurodiversity Celebration Week 2019: What is Neurodiversity?,* https://www.adhdfoundation.org.uk/2019/05/07/neurodiversity-celebration-week-2019/.

traditionally focussed on physical mobility impairments and overcoming barriers in the built environment, there is an increasing recognition that more needs to be done for people with mental impairments.

Older people and disability

6.16 Meeting the needs of an ageing society is one of the Government's Grand Challenges. It notes:

> the UK population is ageing, as it is across the industrialised world… Ageing populations will create new demands for technologies, products and services… We have an obligation to help our older citizens lead independent, fulfilled lives, continuing to contribute to society.[460]

6.17 While ageing is not synonymous with disability, the prevalence of disability rises with age,[461] and older people are the most likely to experience mobility deprivation.[462] Common conditions and illnesses that affect people later in life include dementia, osteoporosis, hearing and sight loss, depression and anxiety.[463] In England, 58% of people aged over 60 have a long-term condition for which there is no cure, such as diabetes, arthritis or hypertension.[464] It is also common for older people to have undiagnosed mental health problems.[465] Even if an older person does not have a condition that amounts to an impairment, they may still have days where they feel too frail or ill to travel easily. The UK's population is steadily ageing,[466] and so special attention needs to be given to opportunities and challenges for transport service provision to older people. This is particularly so given that social isolation and loneliness are significant issues for older people,[467] and accessible transport is an important part

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460 See BEIS, *Policy Paper: The Grand Challenges* (13 September 2019), https://www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/industrial-strategy-the-grand-challenges.

461 Age UK, *Centre for Policy on Ageing – Rapid Review* (2016), https://www.ageuk.org.uk/our-impact/policy-research/publications/reports-and-briefings/, p 2.

462 Government Office for Science, *How can transport provision and associated built environment infrastructure be enhanced and developed to support the mobility needs of individuals as they age?* (March 2015), https://www.gov.uk/government/publications/future-of-ageing-transport-and-mobility, p 5.

463 Age UK, *Conditions and illnesses*, https://www.ageuk.org.uk/information-advice/health-wellbeing/conditions-illnesses/.

464 The King's Fund, *Long-term conditions and multi-morbidity* (2019), https://www.kingsfund.org.uk/projects/time-think-differently/trends-disease-and-disability-long-term-conditions-multi-morbidity.

465 Public Health England, *Guidance: Living well in older years* (30 August 2017), https://www.gov.uk/government/publications/better-mental-health-jsna-toolkit/7-living-well-in-older-years; Royal College of Psychiatrists, *Suffering in silence: age inequality in older people's mental health care* (November 2018) CR221, https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/college-reports/college-report-cr221.pdf?sfvrsn=bef8f65d_2.

466 Office for National Statistics, *Living longer: caring in later working life* (15 March 2019), https://www.ons.gov.uk/releases/livinglongercaringinlaterworkinglife; Public Health England, *Guidance: Living well in older years* (30 August 2017), https://www.gov.uk/government/publications/better-mental-health-jsna-toolkit/7-living-well-in-older-years.

467 Public Health England, *Guidance: Living well in older years* (30 August 2017), https://www.gov.uk/government/publications/better-mental-health-jsna-toolkit/7-living-well-in-older-years;

of addressing this problem by enabling social connectedness and activity, while also helping older people maintain their independence, wellbeing and health.[468]

Defining HARPS

6.18 As we discussed in Chapter 3, HARPS do not readily fit within the existing legal categories of road passenger services such as public service vehicles (PSVs), private hire services or taxis. The absence of a user-in-charge in HARPS is the unifying concept and presents a new and difficult challenge. We have therefore suggested HARPS as a broad flexible category which could cover everything from point-to-point on-demand journeys in small vehicles to fixed routes in larger vehicles; and accommodate a wide variety of payment structures and ways of sharing services. We have provisionally proposed developing a new regulatory framework for HARPS, broadly modelled on (but separate from) PSV legislation which can ensure the new challenges presented by this technology are dealt with in a cohesive way. This approach avoids having different licensing regimes applying depending on the number of seats the vehicle may have, or on the basis of whether separate fares are charged (which is how regulation currently distinguishes between PSV and private hire services, for example). Safety, consistency of regulation and enforcement are paramount.

6.19 In this chapter we discuss existing accessibility regulations. Some of these duties are very broad and apply to service providers generally, while others have narrower application. As HARPS would be subject to a novel regulatory regime, regulations governing accessibility which are specific to existing modes of road transport would not automatically apply to HARPS. Such regulations would either have to be extended to cover HARPS, or regulators could introduce new standards and rules for HARPS. Any system will need to be flexible so that it may be efficiently updated and re-evaluated in the light of growing experience.

CORE OBLIGATIONS UNDER EQUALITY LEGISLATION

Background

6.20 Chapter 2 of Part 2 of the Equality Act 2010 defines discrimination, harassment and victimisation. Part 3 of the Act applies to "service providers": section 29 creates a duty not to discriminate, harass or victimise in providing a service, and imposes a duty to make reasonable adjustments for people with disabilities. The range of services covered is very broad and it is irrelevant whether the service is provided by a private, voluntary or public body and whether payment is taken.[469] However, these duties only apply to land transport if the vehicle used falls into one of the categories in the relevant statutory lists.[470] The lists expressly include public service vehicles, taxis, private hire

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Government Office for Science, *How can transport provision and associated built environment infrastructure be enhanced and developed to support the mobility needs of individuals as they age?* (March 2015), https://www.gov.uk/government/publications/future-of-ageing-transport-and-, p 5.

468 Flourish, *User needs final report* (June 2019) WP3 D10, http://www.flourishmobility.com/publications, p 3.

469 Equality and Human Rights Commission, *Equality Act 2010 Statutory Code of Practice on Services, Public Functions and Associations* (2011) (The Services Code), para 11.5, issued pursuant to Equality Act 2006, s 14.

470 The relevant statutory lists are Sch 3, para 34 and Sch 2, para 3. There is also an express power to amend the relevant statutory list by regulation: Sch 2 para 3(10).

services and hire-vehicles.[471] The statutory lists would need to be amended to include HARPS vehicles.

6.21 Below we outline the general prohibitions contained in Part 3 of the Equality Act in more detail.

Duties under the Equality Act 2010

6.22 Chapter 2 of Part 2 of the Equality Act 2010 defines direct and indirect discrimination. In the following paragraph, the discriminator is referred to as 'A' and a disabled person is referred to as 'B'. This follows the language of the Equality Act.

6.23 The following conduct relating to disability amounts to discrimination for the purposes of the Equality Act:

(1) **Direct discrimination:** A must not treat B less favourably than A treats or would treat others, because of B's disability.

(2) **Discrimination arising from disability:** A must not treat B unfavourably because of something arising in consequence of B's disability, if this is not a proportionate means of achieving a legitimate aim. There is a defence if A did not know, and could not reasonably have been expected to know, that B is disabled.

(3) **Indirect discrimination:** A must not apply a discriminatory provision, criterion or practice in relation to B's disability. A provision, criterion or practice is discriminatory if:

(a) it puts disabled people at a disadvantage when compared to non-disabled people;

(b) it puts, or would put, B at a disadvantage; and

(c) it is not a proportionate means of achieving a legitimate aim.[472]

(4) **Failure to make reasonable adjustments:** Service providers must comply with the following requirements:

(a) Where a provision or practice puts disabled people at a substantial disadvantage, the service provider must take reasonable steps to avoid the disadvantage. Where relevant, this includes providing information in an accessible format.

(b) Where a physical feature puts disabled people at a substantial disadvantage, the service provider must take reasonable steps to avoid the disadvantage or adopt a reasonable alternative method of providing the service.

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[471] A hire-vehicle is defined as a vehicle hired by way of trade under a hiring agreement to which s 66 of the Road Traffic Offenders Act 1988 applies: Sch 2 para 4(2).

[472] Equality Act 2010, ss 13, 15, 19 and 25(2).

(c) Where disabled people would, but for the provision of an auxiliary aid or service, be put at a substantial disadvantage, the service provider must take reasonable steps to provide the auxiliary aid or service. Where relevant, this includes providing information in an accessible format.[473]

6.24 In guidance on the concept of discrimination "arising from" disability the Equality and Human Rights Commission (EHRC) use as an example a shop barring a disabled person who uses an assistance dog, not because of their disability but because they have a dog with them.[474] This would only be lawful if either the shop owner did not know, or could not reasonably have been expected to know, that the person had a disability, or it can be shown that the shop owners treatment of the person with an impairment was a proportionate means of achieving a legitimate aim.[475] In practice, this has proved a sensitive issue where service providers have denied service to a person with an assistance dog on the grounds of culture, religion, or allergies.[476] The more detailed provision made under the Equality Act for taxis and private hire services, in particular the ability to apply for an exemption certificate, helps to resolve these issues in that context.[477]

The duty not to discriminate and to provide reasonable adjustments

6.25 Part 3 of the Equality Act 2010 deals with the obligations of service providers and those exercising public functions.

6.26 Service providers must not discriminate against disabled people by refusing to transport them. In particular, they must not discriminate against disabled people:

(1) as to the terms on which the service is provided (for example by charging disabled people more);

(2) by terminating the provision of the service to the disabled person;

(3) by failing to make reasonable adjustments; or

(4) by subjecting disabled people to any other detriment.[478]

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473 Above, ss 20, 21(2), 29(7), 31, Sch 2 paras 1 and 2, Sch 3 para 32 and 34. There are also powers to make regulations specifying what is and is not: a provision, criterion or practice; an auxiliary aid; a physical feature and an alteration to a physical feature (s 22(2)). See also Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations SI 2018 No 958.

474 Equality and Human Rights Commission, *Your rights to equality from businesses providing goods, facilities, or services to the public* (1 June 2015), https://www.equalityhumanrights.com/en/publication-download/your-rights-equality-businesses-providing-goods-facilities-or-services-public, p 9.

475 Equality Act 2010, s 15(1)(b) and (2).

476 Equality and Human Rights Commission, *Assistance dogs: A guide for all businesses*, (December 2017), https://www.equalityhumanrights.com/en/publication-download/assistance-dogs-guide-all-businesses, p 13.

477 We discuss this as part of Specific Accessibility Outcome 11 (The right to travel with an assistance dog) below. See paras 6.100 to 6.104 below.

478 Equality Act 2010, ss 29, 31(9) and (10), Sch 2 paras 1 and 2(1) and Sch 3 paras 32 and 34. In addition, A must not victimise B nor harass a recipient of the service nor a person who requires the service: s 29(3) and (4).

6.27 The duty not to discriminate does not apply to transport on land unless the vehicle concerned is of a type listed in paragraph 34 of Schedule 3 to the Act. The list includes taxis, private hrie services, PSVs and hire-vehicles, but would not cover HARPS vehicles unless it were amended.

6.28 The service provider must not require the disabled person to bear the cost of adjustments. However, the service provider is not required to fundamentally alter the nature of the service, alter or remove a physical feature, or provide a device which would permanently alter or affect the vehicle.[479]

6.29 Reasonable adjustments need not affect whether particular vehicles are provided, what vehicles are provided or what happens in the vehicle during a journey unless the vehicle is of a type listed in paragraph 3(3) of Schedule 2 to the Act. The list is similar but not identical to the list in paragraph 34 of Schedule 3 and includes taxis, private hire services, PSVs and hire-vehicles but would not cover HARPS vehicles unless it were amended.

6.30 Part 3 of the Equality Act 2010 is outcome-based and could apply in the absence of a human driver. We seek views on whether extending it to apply to HARPS would be a positive step, or whether it may lead to any unintended consequences.

Consultation Question 25.

6.31 We provisionally propose that the protections against discrimination and the duties to make reasonable adjustments that apply to land transport service providers under section 29 of the Equality Act 2010 should be extended to operators of HARPS. Do you agree?

Price discrimination

6.32 Legal protections that ensure disabled persons do not have to pay more for services are particularly important. We therefore consider these specifically. The relevant provisions regarding price discrimination can be found in the Equality Act 2010 and miscellaneous regulation and legislation specific to taxis, PSVs and private hire services.

6.33 As we outlined above, the Equality Act 2010 prohibits direct discrimination, discrimination arising from disability and indirect discrimination. Guidance by the EHRC states that one consequence of these prohibitions is that businesses:

> Must not give you [a disabled person] a service with worse terms than they would usually offer.

[479] Equality Act 2010, s 20(7), s 31(9) and Sch 2 para 2(7) and paras 3(1), (2), (3), (8) and (9).

For example: They [a business] must not charge someone with a particular protected characteristic a higher deposit when they hire something from the business.[480]

6.34 It follows that if a transport provider charged a disabled person more than a person without disabilities for the same journey – either because of their disability, something arising in consequence of their disability, or as a result of a provision, criterion or practice – this would be unlawful.[481]

6.35 It is lawful to treat a disabled person *more* favourably than a person without disabilities.[482] Hence, many transport providers in the UK lawfully provide concessions such as discounts or free travel for persons with disabilities and their carers.[483]

Specific legal provision made for taxis, private hire services and PSVs

6.36 Part 12 of the Equality Act 2010 makes specific provision for accessibility obligations relating to taxis and private hire vehicles. Taxi and private hire service providers cannot refuse to carry assistance dogs or make any additional charge for doing so.[484] Under section 165 of the Equality Act 2010 "designated" taxis and private hire vehicles must carry wheelchair users and must not charge them more than a non-wheelchair user. A taxi or private hire service is "designated" if it appears on a list maintained by its licensing authority. Charging a disabled passenger more is a summary offence, with a penalty of a fine not exceeding level 3. This provision regarding passengers with wheelchairs originates from section 36 of the Disability Discrimination Act 1995. [485]

6.37 In the year ending 31 March 2018, there were 31 prosecutions in England and Wales for offences committed by taxi and private hire vehicle drivers and operators under

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480 Equality and Human Rights Commission, *Your rights to equality from businesses providing goods, facilities, or services to the public* (1 June 2015), https://www.equalityhumanrights.com/sites/default/files/equalityguidance-businesses-2015-final.pdf, p 11.

481 Unlike direct discrimination, indirect discrimination or discrimination arising from disability can sometimes be justified. A transport provider could in theory lawfully impose an additional charge if it could be shown that the charge was a proportionate means of achieving a legitimate aim. In practice, it is difficult to envisage a situation where charging disabled people more than non-disabled people for the same service would be justifiable in that way.

482 Equality Act 2010, s 13(3).

483 For example, the Disabled Persons Freedom Pass allows free travel in London: London Councils, *Disabled Persons Freedom Pass*, https://www.londoncouncils.gov.uk/services/freedom-pass/disabled-persons-freedom-pass. The Disabled Persons Railcard gives a disabled person and a person they are travelling with one third off rail fares: Disabled Persons Railcard, https://www.disabledpersons-railcard.co.uk/.

484 Equality Act 2010, ss 168 and 170.

485 Above, ss 165 and 167, and Explanatory Notes, para 538. The Secretary of State has the power to issue guidance to licensing authorities as to any aspect of their functions under this section and the licensing authority must have regard to it: s 167(6) and (7). Licensing authorities can exempt individual drivers from these obligations on medical grounds (ss 166, 169 and 171). For Scotland: Taxi Drivers' Licences (Carrying of Guide Dogs and Hearing Dogs) (Scotland) Regulations 2003 SSI 2003 No 73, Private Hire Car Drivers' Licences (Carrying of Guide Dogs and Hearing Dogs) (Scotland) Regulations 2004 SSI 2004 No 88.

these provisions of the Equality Act 2010. Of these, 68% were for failing to accept bookings to carry assistance dogs. 84% of prosecutions led to a conviction.[486]

6.38 In *McNutt v Transport for London,* a conviction under section 165 of the Equality Act 2010 was upheld where a taxi driver activated the taximeter before helping a wheelchair user into the taxi.[487] It was held that the activation of the taximeter amounted to making a charge, even though the taxi driver did not demand immediate payment and the wheelchair user did not pay him or travel in the vehicle. The judge considered that the same logic would apply to taxis and private hire services inside and outside London.

6.39 In addition, international obligations mean that carriers, travel agents and tour operators (which could include bus service operators) must not charge disabled passengers more than non-disabled passengers.[488]

The public sector equality duty

6.40 The public sector equality duty requires public bodies to have due regard to the need to eliminate discrimination and remove disadvantages suffered by disabled people.[489] The Government's Inclusive Transport Strategy highlights the importance of ensuring that public bodies understand this obligation in relation to planning and delivering transport.[490]

6.41 This duty applies to Local Transport Authorities, which are generally responsible for providing accessible roadside infrastructure, such as bus stations and stops.[491] Such obligations would also apply in respect of any stopping points or roadside infrastructure for HARPS and to the agencies responsible for licencing HARPS.

CO-DESIGN

What is co-design?

6.42 Retrofitting accessibility features can be a lengthy process and incur high costs. This could particularly be the case where, for example, accessibility features must be added to the physical structure of the vehicle, as opposed to changes to software. Widely accessible HARPS could tap into unmet demand and bring financial benefits to manufacturers and service providers.

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486 DfT, *Taxi and Private Hire Vehicle Statistics, England: 2019* (25 September 2019), https://www.gov.uk/government/statistics/taxi-and-private-hire-vehicle-statistics-england-2019.

487 *McNutt v TfL* [2019] EWHC 365 (Admin), Mt Justice Julian Knowles.

488 Regulation (EU) No 181/2011 of the European Parliament and of the Council of 16 February 2011, OJ L55/1 28.2.2011 (Reg 181/2011), arts 2(1), 2(2) and 9(2). This applies to regular bus services however Member States may allow exemptions from these requirements provided "the level of protection of disabled persons and persons with reduced mobility under their national rules is at least the same as under this Regulation": art 18.

489 Equality Act 2010, s149. Disability is a "protected characteristic" within s 4 of the Equality Act 2010.

490 DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), para 1.9.

491 See, for example, TfL, *Accessible Bus Stop Design Guidance* (revised edition 2017), http://content.tfl.gov.uk/bus-stop-design-guidance.pdf.

6.43 In this chapter we refer to co-design as a method of design where people representing a diverse range of impairments, work together alongside designers, operators and regulators to ensure vehicles and services are accessible from the outset. This can help prevent barriers to mobility arising in the first place. Although we talk of co-design with a particular focus on older and disabled people, we note that co-design is also a broader concept which extends to involving all stakeholders, including people from various socio-economic and cultural backgrounds, for example. We are not suggesting that co-design should be a legal principle or outcome in itself. Rather we have found this user-centric methodology helpful in informing our understanding of what it means for a service or vehicle to be "accessible" to its diverse users.

6.44 Inclusive co-design is a means of achieving "universal design". ITS America explains that universal design "refers to technology design that can accommodate the widest range of potential users, including people with disabilities".[492] Universal design decreases the need for specialized adaptions after a product is placed on the market.[493]

6.45 The best way of ensuring that a transport system works for everyone is to take into account users' diverse needs from the outset. The Inclusive Transport Strategy provides that:

> With inclusivity designed in from the start, these new technologies and business models could transform mobility for disabled people. But without the right regulatory framework, people with reduced mobility could find themselves excluded from new models and find the existing services they rely on severely disrupted.[494]

6.46 Without co-design, there is a risk of "accidently 'designing out' sections of society who might benefit most".[495] As the disability equality charity Scope says:

> At Scope we know that technology has the potential to transform the world for disabled people and it's absolutely right that all future transport modes and technologies need to [be] accessible to everyone. However, disabled people must be involved in the design and testing of these technologies if they are to succeed.[496]

The risk of digital exclusion

6.47 Co-design principles extend not only to the vehicle but also to the service as a whole. For example, if the vehicle can only be summoned using an app, this might exclude those who do not have a smart phone or have difficulty with fine motor control. As we

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492 ITS America, Steven H Bayless and Sara Davidson, *Driverless Cars and Accessibility: Designing the Future of Transportation for People with Disabilities* (April 2019), p 7.

493 As to the importance of universal design, see also Ruderman Family Foundation and Securing America's Future Energy, *The Ruderman White Paper, Self-Driving Cars: The Impact on People With Disabilities* (January 2017), p 26.

494 DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), p 12.

495 DfT, *Future of Mobility Urban Strategy* (March 2019), p 41; DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), para 9.2.

496 James Taylor, Head of Policy, Campaigns and Public Affairs at disability equality charity Scope, *Accessibility must be at the heart of new transport tech* (14 May 2019), https://www.gov.uk/government/news/accessibility-must-be-at-the-heart-of-new-transport-tech.

noted in Chapter 2, in 2018, 10% of the adult UK population had not used the internet in the previous three months.[497] Older people are particularly at risk of digital exclusion: in 2018 over half of all adults not using the internet were over 75. Fewer older people use the internet "on the go", away from home or work: 39% of over 65s compared to 97% of 24 to 35 year olds. Across all age groups, disabled adults make up a large proportion of adult internet non-users. In 2017, 56% of adult internet non-users were disabled, much higher than the proportion of disabled adults in the UK population as a whole, which in 2016 to 2017 was estimated to be 22%.[498]

6.48 Some organisations developing automated vehicles are already involving disabled people in the design process. For example, Aurrigo and Blind Veterans UK have launched a joint venture. They are developing self-driving pods with brightly coloured edges and door openings and an external sound system that changes tone and rate when objects in the path are detected.[499] Similarly, Flourish (a multi-sector collaboration seeking to advance the successful implementation of connected and automated vehicles) has involved older adults and people with mobility-related needs in the design process.[500] The work of researchers at the Human Centred Design Institute at Brunel University of London, for example, will contribute to developing guidelines for the design of automated vehicles for disabled users.[501]

The protection of disabled road users

6.49 Co-design also has a safety-critical function. In Consultation Paper 1 we noted the importance of training automated driving systems with representative data sets. This reduces the risk of bias in the behaviour of automated driving systems.[502] Data sets should include models of a full range of vulnerable road user behaviour, and should

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497 Sustainable Development Goals, Indicator 17.8.1: *Proportion of individuals using the Internet*, https://sustainabledevelopment-uk.github.io/17-8-1/. The issues go beyond transport policy, see for example the UK Government's Policy Paper on Digital Inclusion Strategy (4 December 2014), https://www.gov.uk/government/publications/government-digital-inclusion-strategy/government-digital-inclusion-strategy.

498 Office for National Statistics, *Exploring the UK's digital divide* (4 March 2019), https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04#how-does-digital-exclusion-vary-with-age.

499 James Taylor, Head of Policy, Campaigns and Public Affairs at disability equality charity Scope, *Accessibility must be at the heart of new transport tech* (14 May 2019), https://www.gov.uk/government/news/accessibility-must-be-at-the-heart-of-new-transport-tech; Aurrigo, *Aurrigo teams up with Blind Veterans UK to launch the world's first driverless pods trial for disabled people* (6 March 2019), https://aurrigo.com/news/2019/03/aurrigo-teams-up-with-blind-veterans-uk-to-launch-the-worlds-first-driverless-pods-trial-for-disabled-people/.

500 See Flourish, *About FLOURISH*, http://www.flourishmobility.com/about-flourish.

501 During a meeting in July 2019, Shahab Gholizadeh, Researcher at the Human Centred Design Institute of Brunel University of London told us about his work: "the research aims to extend knowledge relative to disabled users and to disabled mobility by considering the needs and desires within the new context of autonomous vehicles. Autonomous vehicle user classifications and autonomous vehicle design guidelines will be developed. This will assist the development of new autonomous vehicles by adding the opportunity to evaluate the impact of individual design choices on this particular group of users. Finally, if disabled users are considered 'extreme users' as occurs in much current inclusive design practice, then the project output would provide a further tightening of the baseline ergonomic requirements relative to autonomous vehicles."

502 CP1, pp 165, 179 – 180.

contain information on a wide range of human impairments. Using this data, automated vehicles may be trained to adopt appropriate ways of communicating with all road users within their operational domain. As a result, those who are visually or hearing impaired, for example, would not be disadvantaged. It is imperative for safety and public acceptance that all road users should feel safe whether inside or outside a HARPS vehicle.

6.50 Bias in data sets can arise not only from the inclusion or exclusion of data, but the importance given to specific features of the data used in the automated driving system's decision-making process. For example, if an algorithm heavily weighted detection of leg movement in recognising vulnerable road users, then this could prejudice the safety of people using mobility scooters. Co-design is an important way of helping to ensure that data is weighted in a way that is protective of older and disabled people. Once an automated driving system has been designed, ongoing evaluation of automated driving systems is necessary because artificial intelligence continues to learn behaviour after it is first placed on the road.[503] Effective evaluation of automated driving systems, and how they perform in respect of disabled users, will require system outputs to be transparent and explainable.[504]

A WHOLE JOURNEY APPROACH

6.51 Designers of transport services need to think carefully about the "whole journey", from point of departure to the destination. For instance, it is no good ensuring that a disabled person can board and alight from a railway carriage if they cannot get from the platform to the exit of the station.[505]

6.52 The potential absence of human staff at different stages of the journey is particularly relevant in the context of HARPS. In the past, the reduction of the number of staff in the rail sector has been identified as having a particularly negative impact on disabled

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503 Dr Alison Gardner talked about the issue of data weighting and the need for ongoing evaluation at the conference entitled "Exploring the Power and Promise of AI and Robotics" held on 18 June 2019 at Park Plaza County Hall, Westminster. Zoe Porter, a PhD candidate at the University of York, has also explained that automated driving systems create a "moral responsibility gap". That is, the people who could seem most likely to bear moral responsibility for harm caused by an automated vehicle may have very little control over the relevant actions of the automated vehicle itself, thus creating a gap between causal responsibly and moral responsibly. Zoe Porter spoke at the conference entitled "Safety and Ethics of Autonomous Systems" held on 2 July 2019 at the Royal Aeronautical Society, London.

504 By this we mean that the automated driving system should produce outputs that clearly explain why, when faced with an array of options, the system took a course of action and excluded other options. Explainability allows for interrogation of system design, and allows for a public debate about the preferable result and ethical parameters. For example, Professor Michael Fisher from the University of Liverpool gave a presentation at the conference entitled "Safety and Ethics of Autonomous Systems" held on 2 July 2019 at the Royal Aeronautical Society, London.

505 ITS America writes that: "A 'fully accessible' and 'fully automated' vehicle must address challenges beyond the purview of the vehicle, extending into transportation infrastructure. For instance, for individuals with disabilities to – in practice – independently utilize an autonomous vehicle, problems associated with door-to-door wayfinding, signage, and street side pick-up/drop-off must also be dealt with." Intelligent Transportation Society of America (ITS America), Steven H Bayless and Sara Davidson, *Driverless Cars and Accessibility: Designing the Future of Transportation for People with Disabilities* (April 2019), pp 3 – 4.

people.[506] In addition, a study by Flourish found that some older people expressed concern about the implications of the lack of human support during the journey.[507] If there are no human staff in the HARPS vehicle, the service must be designed in a way that allows disabled people to be self-reliant and possibly provide additional assistance at different points in the journey. For example, a wheelchair user should activate the ramp themselves, and designers should take into consideration the fact that some wheelchair users also have mobility impairments affecting the upper body.

Illustration of the importance of a whole journey approach in practice

6.53 The findings in the report published in June 2019 by Professor Roger Mackett, Emeritus Professor of Transport Studies at University College London, *Mental health and travel*, can be used to illustrate the importance of a whole journey approach in practice.

6.54 Professor Mackett conducted surveys with respondents who all had mental impairments such as: anxiety, depression, post-traumatic stress disorder, obsessive-compulsive disorder, agoraphobia, bipolar disorder and autism. He found that a third of the 385 people who participated in the survey were "frequently" prevented from leaving home because of their health and over 90% were "sometimes" prevented from leaving.[508] According to the report, the most common barriers to travel for people with mental health conditions are as follows:

(1) Concerns about how the general public treat them.

(2) Sharing space with other passengers.[509]

(3) Having to talk to staff.

(4) Concerns about being able to find the way.

(5) Difficulties with obtaining help.

(6) Lack of suitable toilet facilities.

(7) Difficulties with using the ticket machines.

(8) Some people do not know in advance whether they will be well enough to travel on a given day. This often means they cannot buy the cheaper advance tickets.

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506 Gwyn Topham, 'Network Rail promises improvements for disabled passengers' (11 July 2016) *The Guardian*, https://www.theguardian.com/uk-news/2016/jul/11/network-rail-promises-improvements-for-disabled-passengers.

507 Flourish, *User needs final report* (June 2019) WP3 D10, http://www.flourishmobility.com/publications, p 12.

508 Roger Mackett, Centre for Transport Studies, *Mental health and travel: report on a survey* (June 2019), https://www.ucl.ac.uk/civil-environmental-geomatic-engineering/sites/civil-environmental-geomatic-engineering/files/mental_health_and_travel_-_final_report.pdf, pp 4 – 5 and 80.

509 DfT, *Future of Mobility Urban Strategy* (March 2019), p 41 states that it is important to cater for those who "due to certain mental health or developmental conditions, might not feel comfortable sharing with strangers."

6.55 Professor Mackett's report contained numerous practical recommendations to help overcome these barriers to travel. For example, many recommendations concerned the provision of better infrastructure and information, as well as travel training (a concept which is discussed below).[510] HARPS may provide advantages in respect of overcoming some barriers (for example, avoiding the need to speak with staff) but disadvantages in respect of others (for example disabled people may feel less confident they can obtain the help they need if there is no human staff on board).

6.56 We also recognise that effective and inclusive integration with public transport generally will be critical to developing whole journeys that are truly accessible. We will explore how HARPS operators can collaborate with regulators as well as Mobility as a Service innovations in the final chapter.

SPECIFIC ACCESSIBILITY OUTCOMES

6.57 Unlike legal reforms that have sought to redress accessibility problems after they have arisen, the introduction of HARPS as a new form of transport means we have the unprecedented opportunity to promote inclusion from the outset.

6.58 As discussed earlier, we have suggested that HARPS are a new category of road passenger transport and, accordingly, do not fall into pre-defined categories such as private hire services. This means that the regulatory framework governing accessibility which applies to those vehicles will not automatically apply to HARPS. We also note that HARPS can cover a very broad category of services and that a "one size fits all" approach would not be appropriate. Turn-up and go mass transit services on defined routes, for example, require a different approach in respect of accessibility compared to a purely pre-booked personal transport service.

6.59 We have used the whole journey approach to help us identify specific accessibility outcomes for HARPS. This is not an exhaustive list. We have grouped the outcomes into three categories: (1) those relevant to the period before and after travelling on the vehicle; (2) those relevant during transportation; and (3) those relevant to all aspects of the journey. These outcomes are intended as a practical framework to assess the accessibility of HARPS. They aim to highlight potential new issues raised by the absence of a human driver. They are not intended as requirements for every HARPS to meet. These outcomes may be promoted through best practice guidance, regulation or statute for example.

6.60 For each outcome, we consider some of the regulatory models which apply to existing vehicles and services or, in absence of regulation, the current accepted practice. We have focussed on PSV and private hire legislation as the more analogous forms of road transport to HARPS. However, we have also considered the experience derived from the increasing automation of trains and the emergence of entirely "driverless" railways

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510 For more information on travel training see: R L Mackett, *Building Confidence – Improving travel for people with mental impairment*s (November 2017), https://www.gov.uk/government/publications/exploring-the-barriers-to-travel-for-people-with-mental-impairments; D Brindle, "Travel training gives young people with learning disabilities a ticket to ride" (3 April 2018) *The Guardian,* https://www.theguardian.com/society/2018/apr/03/travel-training-young-people-learning-disability-cuts-council-costs.

(such as the Docklands Light Railway in London).[511] While road and rail transport are different, the emphasis on infrastructure and more controlled environments in the rail context may be influential in the development of HARPS. We also welcome views from aviation and maritime stakeholders, but we have focussed on land transport modes in our analysis.

Before and after travelling on the vehicle

Outcome 1: Information about services and the booking process should be accessible

6.61 In order to use HARPS, it must be possible for users to find out details about the service in the first place and, where these are on-demand, pre-booked services, to book these in advance. It is important that disabled and older people are confident that they can access the information they need and book their tickets before they embark on a journey.

6.62 Earlier in this chapter, we discussed the importance of co-designing the service. Minimum standards can also play an important role. For example, the Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations 2018[512] requires public bodies to make their websites and mobile applications accessible by making them "perceivable, operable, understandable and robust".[513] This might apply in respect of online journey planning and booking platforms provided by licensing authorities, for example.[514] The regulations also require public sector bodies to publish an accessibility statement, explaining which parts of the content are not accessible and the reasons why and, where appropriate, a description of any accessible alternatives provided.[515] Putting in place similar requirements for HARPS could be beneficial in enhancing digital accessibility. However, we note that non-digital solutions must always remain within the overall transport mix to prevent digital exclusion, and that the responsibility for ensuring this lies with regulators as part of their public sector equality duty.

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511 See also Jonathan Peter Powell and others, "Potential Benefits and Obstacles of Implementing Driverless Train Operation on the Tyne and Wear Metro: A Simulation Exercise" (2016) 2 *Urban Rail Transit* 114, p 125.

512 SI 2018 No 952. This implements the EU Directive on the accessibility of websites and mobile applications of public sector bodies, Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies OJ L 327, 2.12.2016, pp 1–15.

513 The Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations SI 2018 No 952, regs 3 and 6. This is the language used in the 4 design principles which underpin the international WCAG 2.1 AA accessibility standard.

514 A public sector body is not required to comply with the accessibility requirement if it falls in the list of exemptions or doing so would impose on it a disproportionate burden, see the Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations 2018, 952, regs 4(1) and 7(1). Examples are given in the guidance to the SI: Gov.uk, *Understanding new accessibility requirements for public sector bodies* (9 May 2018), https://www.gov.uk/guidance/accessibility-requirements-for-public-sector-websites-and-apps.

515 The Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations SI 2018 No 952, reg 8.

Outcome 2: Passengers must be able to board and alight the vehicle

6.63 Regulatory requirements calculated to ensure older and disabled people can get into and out of the vehicle safely and with reasonable ease and comfort are a key element of accessibility.

6.64 For example, the operator of a "regulated PSV" must, amongst other things, provide ramps or lifts, ensure that entrances are wide enough for wheelchair access, and make sure that the floors and steps are slip resistant. It is an offence to fail to comply with the numerous PSV accessibility regulations. A "regulated PSV" is defined in current law as a bus "with a capacity of more than twenty-two passengers … used to provide local and scheduled services."[516]

6.65 Special provisions exist to regulate long distance bus journeys of 250 km or more. At terminals, passengers must be able to obtain assistance in things such as boarding and alighting, loading and retrieving luggage, and proceeding to their seat.[517]

6.66 Drivers of "designated" taxis and private hire services must provide mobility assistance to wheelchair users, as may be reasonably required. It is an offence to fail to do so.[518] Other professional drivers that are not on specified local authority lists may choose to provide such assistance without being legally required to do so. Alternative ways of providing support for older and disabled persons entering and exiting HARPS will be needed if there are no human staff. For example, this should include ensuring that pick-up and drop-off points are safe and that any obstacles are pointed out to users so they may avoid them.

6.67 Rail operators must have an Accessible Travel Policy as a condition of obtaining a licence. This policy must comply with the minimum legal requirements on accessibility and provide various services regardless of whether they were pre-booked.[519] Trains must also be designed in a way that promotes accessibility, such as ensuring that train doors are a different colour from the rest of the exterior of the train, having audible warning before doors open and close, and providing handholds for passengers.[520]

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516 Equality Act 2010, ss 175 – 178; Public Service Vehicles Accessibility Regulations SI 2000 No 1970 (PSVAR), reg 4, Sch 1, Sch 2 and Explanatory Note. Additionally, in order to be a "regulated PSV", the vehicle must have been manufactured and first used after a certain date: reg 3. These Regulations remains in force as though made under the Equality Act 2010, s 174 (Equality Act 2010 (Commencement No 4, Savings, Consequential, Transitional, Transitory and Incidental Provisions and Revocation) Order 2010 No 2317, art 21 and Sch 7. This is also subject to s 19 permits.

517 Reg 181/2011, art 13 and Annex 1.

518 Equality Act 2010, ss 165 – 167. See para 6.36 to 6.39 above.

519 ORR, *Accessible Travel Policy: Guidance for train and Station Operators* (27 July 2019), https://orr.gov.uk/__data/assets/pdf_file/0018/41517/accessible-travel-policy-guidance-for-train-and-station-operators.pdf.

520 Rail Vehicle Accessibility (Non-interoperable Rail System) Regulations 2010 SI 2010 No 432, ss 5 – 6 and Sch 1.

6.68 Requirements to support safe entry and exit from HARPS of all sizes, including those having less than 22 passenger seats and for shorter journeys, could be developed through guidance which could evolve into national minimum standards.

6.69 Disabled passengers should not have to wait significantly longer for a vehicle than their non-disabled counterparts. HARPS could be supported by data, predictive algorithms and GPS technology so as to predict and anticipate demand and source the most appropriate vehicle to match the passenger's needs.

Wheelchair access

6.70 Only 56% of taxis and 2% of private hire services in Engalnd and Wales are wheelchair-accessible.[521] In Scotland, 47% and 2% of taxis and private hire services are wheelchair-accessible.[522] These figures are subject to regional variations. For example, all taxis in London have been wheelchair-accessible since 2005.[523] The entire fleets of Edinburgh's two main black cab firms are wheelchair-accessible, with over 900 taxis between them.[524] However, in 2017, the proportion of local authority areas with wheelchair accessibility rates of 5% or less was over a quarter for taxis and almost two-thirds for private hire services. The Task and Finish Group recommended that licensing authorities that have low levels of accessible vehicles in their taxi and private hire fleets should ascertain if there is unmet demand for such vehicles. If so, the licensing authorities should consider how this could be addressed, such as making it mandatory to have a minimum number of accessible vehicles in each fleet.[525]

6.71 The term "wheelchair-accessible" is often used to mean that a vehicle can accommodate a reference wheelchair (being a standard wheelchair as defined by the London Carriage Office standards). However, over time, many wheelchairs have become larger and heavier than the reference wheelchair.[526] This was an issue in the

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521 DfT, *Taxi and Private Hire Vehicle Statistics, England: 2019* (25 September 2019), https://www.gov.uk/government/statistical-data-sets/taxi01-taxis-private-hire-vehilces-and-their-drivers, table 3. In England alone, 58% and 2% of taxis and private hire services respectively are wheelchair accessible. In Wales alone, 36% and 6% of taxis and private hire services respectively are wheelchair accessible. In London, less than 1% of the total number of licensed PHVs are wheelchair-accessible: *Independent Workers Union of Great Britain v The Mayor of London* [2019] EWHC 1997 (Admin) [38] per Lewis J.

522 Transport Scotland, *Scottish Transport Statistics No 37* (2018), https://www.transport.gov.scot/publication/scottish-transport-statistics-no-37-2018-edition/sct01193326941-04/#tb14.

523 DfT, *Taxis, Private Hire Vehicles (PHVs) and their drivers by licensing area, type of vehicle and licence: England and Wales: TAXI0104* (31 March 2018); DfT, *Taxi and private hire vehicle statistics, England: 2018* (31 March 2018), https://www.gov.uk/government/statistics/taxi-and-private-hire-vehicle-statistics-england-2018, table 3.

524 See This is Edinburgh, *Accessible Edinburgh*, https://edinburgh.org/discover/edinburgh-city-guides/accessible/.

525 Task & Finish Group, *Taxi and Private Hire Vehicle Licensing Steps towards a safer and more robust system* (September 2018), https://www.gov.uk/government/publications/taxi-and-private-hire-vehicle-licensing-recommendations-for-a-safer-and-more-robust-system, p 41, para 5.4 and recommendation 30.

526 The Government has committed to reviewing the use of the reference wheelchair standard because it recognises that the size, shape and weight of wheelchairs has changed significantly over the years. It will issue recommendations in 2023. DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), para 9.5.

case of *R (on the application of Lunt) v Liverpool City Council.*[527] Liverpool City Council licensing committee had a general policy of only licensing taxis which satisfied the London Carriage Office Standards and it refused to authorise a Peugeot E7 type wheelchair accessible taxi which did not meet these standards. This decision was challenged by a local resident who was, due to the length of her chair, able to travel safely in an E7 vehicle but not a London-style vehicle. She argued that the licensing committee's decision constituted a breach of the council's public sector equality duty.[528] The High Court found that some wheelchair users could not access the London-style taxis and the licensing committee had failed to properly understand this issue. The decision of the licensing committee to refuse to license the E7 vehicle was quashed and remitted for reconsideration. This decision illustrates the importance of understanding the diverse range of needs of people who require wheelchair-accessible vehicles.

6.72 Section 161 of the Equality Act 2010 limits the circumstances in which quantity restrictions can be imposed on wheelchair-accessible taxis. This provision is not yet in force.[529] Nonetheless, even where authorities limit the number of licensed taxis in the area, those limits may not be applied to accessible vehicles.[530]

During transportation

Outcome 3: Passengers must be safe and reasonably comfortable during the journey

6.73 Safety will be a precondition for the deployment of all highly automated vehicles, and Consultation Paper 1 focussed on safety standards (which would also apply in respect of HARPS). In addition to safety, comfort and accessibility are closely linked. For example, softer suspensions in a vehicle can make a huge difference for persons with arthritis, for whom bumps in the road can be extremely painful. For a blind or partially sighted person, entering a saloon vehicle may be much easier than making their way into a London-style cab that is wheelchair-accessible.

6.74 Comfort and safety considerations are incorporated into the regulation of private hire services, taxis and PSVs. Legislation provides that private hire licences should not be granted unless the vehicle is safe and comfortable.[531] Wheelchairs need to be restrained appropriately. The Equality Act 2010 empowers the Secretary of State to make regulations to ensure that disabled people can travel in taxis in safety and reasonable comfort (although this provision is not yet in force).[532] The Public Service Vehicles Accessibility Regulations SI 2000 No 1970 imposes numerous accessibility

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527 [2009] EWHC 2356 (Admin).

528 The case was argued on the basis of ss 21 and 49A of the Disability Discrimination Act 1995.

529 Except in so far as it confers an implied power on the Secretary of State to prescribe the proportion of taxis which must be wheelchair accessible in a given area. Equality Act 2010 (Commencement No 4, Savings, Consequential, Transitional, Transitory and Incidental Provisions and Revocation) Order 2010, SI 2010 No 2317, art 2(12)(a).

530 See, for example *R v City of Newcastle ex parte James Michael Blake* [1997] EWHC Admin 162.

531 Local Government (Miscellaneous Provisions) Act 1976, s 48(a)(iv) and (v). See also Private Hire Vehicles (London) Act 1998, s 7(2)(a)(ii).

532 Equality Act 2010, s 160.

requirements on certain types of PSVs, designed to ensure comfort and safety as well as enabling disabled persons to access and use the vehicles.

6.75 Licensing conditions and national minimum standards for HARPS could provide for a range of different vehicles and services. For example, the London Conditions of Fitness for taxis impose a number of requirements in relation to cleanliness, facilities for disabled people, effective means of communication with the driver, lighting, and heating and ventilation.[533] Private hire services are subject to similar provisions as part of local licensing conditions.[534]

6.76 For HARPS, standards could cover everything from cleanliness, CCTV monitoring of the passenger space, on-board toilet facilities to temperature controls. These are all important aspects of a journey that can make it more accessible.[535]

Outcome 4: There must be suitable provision for wheelchair users and priority seats

6.77 Buses with a capacity exceeding 22 passengers have strict regulation surrounding the provision of wheelchair spaces and priority seats on the lower deck.[536] Rail vehicles are also required to provide priority seats and wheelchair spaces.[537] Significantly more taxis than private hire services are wheelchair-accessible. We noted above that all taxis in London have been able to accommodate a reference wheelchair since 2005, but that over time, many wheelchairs have become larger and heavier than the reference wheelchair. There is currently very little legislation covering the carriage of electric wheelchairs and mobility scooters. It would be extremely important to clarify their use in HARPS including specifications for dimensions and weight, for example.

6.78 It is also important that wheelchairs and mobility scooters carried in accessible vehicles are stable and safely secured during the journey.[538] Other design choices have safety implications, including whether wheelchairs may be loaded from the rear or from the side. For example, vehicles where wheelchairs must be loaded from the rear are only

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533 TfL, *Construction and Licensing of Motor Taxis for Use in London: Conditions of Fitness* (January 2007), http://content.tfl.gov.uk/taxi-conditions-of-fitness-update.pdf, paras 27.1, 15.1 – 15.10, 17.3, 10.1 – 10.2 and 19.1.

534 See for example Manchester City Council, *Private Hire Vehicle Proprietor Conditions* (March 2015), https://www.manchester.gov.uk/downloads/download/658/private_hire_vehicle-new-application_and_associated_guidance; Liverpool City Council, *Standard Conditions: Private Hire Vehicle Licenses* (January 2017), https://liverpool.gov.uk/media/1355884/private-hire-vehicle-conditions-2017.pdf; West Lothian Council, *Conditions of Fitness for PHVs in the West Lothian Council area*, https://www.westlothian.gov.uk/article/3182/Private-Hire-Car-Vehicle-Licences, pp 55 – 60.

535 See, for example, the Rail Vehicle Accessibility (Non-Interoperable Rail System) Regulations SI 2010 No 432, Sch 1.

536 PSVAR, reg 12 and Sch 1 paras 2 – 4. The case of *Paulley v Firstgroup plc* [2017] UKSC 4 concerned the requirement that there be a suitable policy for deciding who has priority to use the designated space.

537 Rail Vehicle Accessibility (Non-interoperable Rail System) Regulations 2010 SI 2010 No 432), Sch 1 paras 13, 18 – 20.

538 In the *Lunt* case, one of the grounds for successfully challenging Liverpool City Council's refusal to licence E7 vehicles as taxis, was that she could not be adequately secured in vehicles meeting the London Carriage Office standards (which had been adopted by Liverpool City Council). Due to the length of her wheelchair, Mrs Lunt had to be positioned either sideways or diagonally in such vehicles which was not safe. Mrs Lunt submitted that she could travel safely and more comfortably in the larger E7 vehicle, and was also able to be accompanied by more than one other person: [2009] EWHC 2356 (Admin).

accessible from the road (rather than the kerb) and also require longer ramps. These aspects could benefit from guidelines and regulation.

Outcome 5: Providing a reliable service and support in the event of disruption

6.79 Disruption to travel plans can be stressful and difficult for everyone. However, one stakeholder explained that disruption to travel plans will often have a disparate impact on disabled and older persons. For example, if the train is going from a different platform, a deaf person may not hear the announcement and a mobility impaired person may not be able to get to the new platform in time. A sudden change of plan can also induce anxiety.

6.80 Ensuring HARPS operators provide a dependable, reliable service will be critical in promoting public acceptance. Regulators may agree minimum service levels as part of their initial licensing arrangements. These could include, for example: timeliness of the services provided, making adequate provision for a wide range of disabilities, and providing appropriate support and alternative services to disabled and older persons when things go wrong or have to change.

Outcome 6: Passengers should have accessible information about their journey and the available facilities

6.81 It is important that disabled people get travel updates as required. These should not require the user to have a smart phone, for example. PSVs which can carry more than 22 passengers must have the route number and destination clearly displayed on the front, rear and side.[539] Long-distance bus journeys over 250 km are subject to requirements that journey information is provided in accessible formats.[540]

6.82 At the time of writing, the Government intends to introduce regulations which require PSV operators to provide audible and visible information on local bus services to ensure that passengers, particularly those who are disabled, have the route and upcoming stop information they need when travelling on those services.[541] Rail operators are obliged to provide up to date information about the accessibility of facilities and services, and must give aural and visual information on train departures and public announcements wherever possible.[542] Trials of automated vehicles undertaken by Flourish showed that passengers are more likely to trust and relax in the vehicle if it can communicate what it is doing in a sufficient amount of detail.[543]

6.83 Responses to the Accessibility Action Plan consultation showed that “clear, timely and accessible information … which was tailored to the needs of disabled people played an important role in giving people the confidence to travel”.[544] Whereas some services may

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539 PSVAR, Sch 2 para 8.

540 Reg 181/2011, art 11(5), 13(2) and Annex 1.

541 Gov.uk, *Bus Services Act 2017: accessible information* (June 2018), https://www.gov.uk/government/consultations/bus-services-act-2017-accessible-information.

542 DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018); Rail Vehicle Accessibility (Non-interoperable Rail System) Regulations 2010, Sch 1 para 11.

543 Flourish, *Final Report* (2019), http://www.flourishmobility.com/publications, p 14.

544 DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), para 7.1.

be provided exclusively through digital means and such digital infrastructure should be accessible, regulators have a responsibility to ensure that there are enough non-digital options to prevent digital exclusion.

Outcome 7: Disabled passengers should be able to communicate with transport staff

6.84 Various legal provisions in existing law assume the presence of human staff on board and are calculated to ensure that disabled passengers can communicate with transport staff. For example, in a regulated PSV, a communication device must be fitted in various places, including adjacent to the wheelchair space and within reach of the priority seat and adjacent to at least every third row of seats. There are also requirements that ensure adequate communication with the driver of a PSV.[545] Taxis with partitions separating the driver and passengers, like the traditional London Cab design, have two-way communication that can be activated by either the passenger or the driver.

6.85 There should always be an effective means of communicating to ensure passengers have the support and help they need in the event of a problem or emergency. Several participants in a Flourish survey on automated vehicles (more generally, not exclusively on HARPS) suggested that there could be a panic button which connects passengers to either emergency services or designated friends, relatives or a carer.[546]

6.86 In the future, there may be a shift away from communication with a driver or an actual person and a greater focus on communication with the human-machine interface. It is important that human-machine interface is designed to be inclusive and that it can deliver the necessary capabilities effectively and be dependable. For example, it should be possible for the human-machine interface to communicate both visually and aurally so as to cater for both vision-impaired and hearing-impaired passengers. In a report, Flourish suggested that the interface should be "uncluttered, highly intuitive, and require little input".[547]

6.87 Artificial intelligence that can provide information and support is already widely available and increasingly sophisticated. Until public acceptance and technology develop to allow a human-machine interface to be as effective as ordinary human interaction, the option to speak to another person, rather than a machine, is likely to remain important, especially to disabled and older people.

Outcomes relevant to all aspects of the journey

Outcome 8: Accessibility awareness training for transport staff

6.88 We noted that some HARPS may have transport staff on board and others may not. It is essential that where there is no on-board staff, effective safeguards are in place to deliver an equivalent level of accessibility; and where there is staff, they should have appropriate training.

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545 PSVAR, Sch 1 para 9 and Sch 2 para 6; TfL, *Construction and Licensing of Motor Taxis for Use in London, Conditions of Fitness* (1 January 2007), para 17.3.

546 Flourish, *Public Engagement Report 1* (March 2017) WP3 D14, http://www.flourishmobility.com/publications, p 22.

547 Flourish, *Final Report* (2019), http://www.flourishmobility.com/publications, p 5.

6.89 The Inclusive Transport Strategy states that "providing effective training to transport staff is one of the best ways to improve the travelling experience of disabled passengers". A key goal of the strategy is to develop a disability awareness training package, which will be incorporated into an "inclusive transport leaders' scheme through which transport operators will be expected to make further commitments to improve the services they provide to disabled people".[548] At present, there are some legal requirements in relation to disability awareness training for staff on some types of bus services.[549] The Inclusive Transport Strategy for rail also includes provision for the training of staff. In the year ending 31 March 2019, 44% of licensing authorities in England required taxi drivers to undertake disability awareness training, while 41% of licensing authorities required it for private hire drivers.[550]

6.90 There has been a growing emphasis on training drivers (and other staff) in how to assist disabled people effectively.[551] For example, on some buses, staff must be trained to help wheelchair users on and off the bus and escort visually impaired passengers.[552] Drivers can also help with difficult situations, such as helping anxious or disoriented passengers to get off at the right stop if they are travelling in an unfamiliar area. Some HARPS will continue to rely on human staff onboard or at stopping points for example, who can provide support to passengers. For such services, the emphasis on staff training should continue.

6.91 For example, HARPS operators could provide assistance to disabled people at stopping points. For on-demand services, it may be that such assistance would have to be pre-booked, though it could be provided without booking at major transport hubs and key locations like hospitals. Some assistance solutions may be technological, through artificial intelligence or linking to remote human staff, others may rely on the physical presence of staff providing assistance at stopping points, for example. Such staff would need accessibility awareness training to guarantee a consistent and reliable service to all. People who provide assistance remotely through a technological interface, such as via video link or on the phone, should also be trained to assist people with disabilities.

Outcome 9: Travel training for disabled users

6.92 Lack of confidence in using public transport is a barrier to access. The provision of practical travel training which is tailored to individual needs is an important step towards creating equality of access. A study by Flourish found that older people "who were not confident technology users, would need a greater level of reassurance, training and support" to be able to use automated vehicles".[553] Travel training assists all users of

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548 DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), at paras 6.2 and p 11.

549 Reg 181/2011, art 16 and Annex II.

550 DfT, *Taxi and Private Hire Vehicle Statistics, England: 2019* (25 September 2019), https://www.gov.uk/government/statistical-data-sets/taxi01-taxis-private-hire-vehilces-and-their-drivers, p 10.

551 See, for example, DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), p 16.

552 Reg 181/2011, art 16 and Annex II.

553 Flourish, *User needs final report* (June 2019) WP3 D10, http://www.flourishmobility.com/publications, p 11.

public transport, including people with disabilities, to make better use of public transport and so gain greater independence.[554]

6.93 Several charities and local authorities already provide free travel training schemes to help people gain confidence using the transport network. For example, Transport for London has travel mentors who assist users who wish to practise making a journey with support.[555] Derbyshire County Council runs a personalised travel training scheme aimed at young people who may face difficulties using public transport.[556] In Wales, Dewis Cymru provides intensive travel training to children and young people with disabilities.[557] In Scotland, Stirling Council provides travel training to adults with learning disabilities as part of its "Streets Ahead" education and support service.[558]

6.94 Brighton & Hove Buses, in conjunction with the charity Grace Eyre, runs a popular training session called "drama on the bus" where adults with learning disabilities can enact difficult situations. By role-playing situations like feeling ill, being bullied or getting lost, and then acting out possible resolutions, participants can improve their confidence taking public buses.[559]

6.95 It may be daunting for some first-time users of HARPS to know how to organise their journey and pay for a ticket, and so travel training will be especially important when HARPS become publicly available. Current programs could be extended to travel training for HARPS.

6.96 Consultation Paper 1 focussed on safety assurance for automated vehicles generally (including HARPS) and highlighted the importance of vetting marketing materials to ensure they are not misleading and do not create false expectations about a vehicle's capabilities.[560] Individually tailored travel training for older persons and those with disabilities could be a supplement to a public information campaign that educates people about how to safely and effectively use and interact with HARPS.

Outcome 10: Mitigating the risk of anti-social and discriminatory behaviour

6.97 HARPS with no human driver or staff on board may require additional regulation to help mitigate the risk of bullying and antisocial behaviour directed against disabled

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554 See, for example: DfT, *Travel training: Good Practice Guidance* (2011), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/705469/guidance.pdf. This guidance has now been withdrawn but discussions are underway concerning the publication of updated travel training guidance.

555 TfL, *Travel mentoring*, https://tfl.gov.uk/transport-accessibility/learn-to-use-public-transport?intcmp=5334.

556 Derbyshire County Council, *Independent travel training Scheme*, https://www.derbyshire.gov.uk/education/Schools/your-child-at-School/travel/independent-travel-training-Scheme/independent-travel-training-Scheme.aspx.

557 Dewis Cymru, *The Independent Travel Training Scheme (Families First) – Family support services* (updated 29 March 2019), https://www.dewis.wales/ResourceDirectory/ViewResource.aspx?id=1823.

558 Stirling Council, *Streets Ahead*, https://my.stirling.gov.uk/social-care-health/care-day-support/streets-ahead/.

559 Brighton & Hove and Metrobus, *Sustaining Bus Travel For The Future*: *Sustainability Report 2017*, https://assets.goaheadbus.com/media/cms_page_media/2754/sustain2017.pdf, Euan's Guide, *Brighton & Hove Buses*, https://www.euansguide.com/venues/brighton-hove-buses-hove-4823/information.

560 CP1, pp 80 – 81.

passengers. Anti-social and discriminatory behaviour is a pressing problem for disabled people, and the EHRC has written that public transport has been identified in focus groups as "a hotspot for disability-related harassment".[561] A recent Government report on the experiences of disabled rail passengers found that 31% of respondents had experienced anti-social or discriminatory behaviour from other rail passengers. The same report included the observation that "although most journeys are not likely to include instances of anti-social or discriminatory behaviour from fellow passengers, a single incident can put passengers off travelling by rail again for some time".[562] Relevant anti-social behaviour extends beyond the immediate vehicle itself. For example, local authorities must conduct a crime and disorder assessment of all new bus stops and shelters.[563] According to the legislation, the concept of crime and disorder includes anti-social and other behaviour adversely affecting the local environment.

6.98 Travel training for disabled users, discussed above, can help ensure disabled people know how to get help most effectively and to deal with some forms of minor anti-social behaviour; however, the onus should not be on disabled people to protect themselves from other people's unacceptable actions.

6.99 The Government report on the experiences of disabled rail passengers noted that it was suggested in focus groups that good behaviour could be encouraged by the following four measures. First, preventing alcohol consumption on trains. Second, putting up posters "nudging" other passengers to be considerate. Third, allowing passengers to activate CCTV, and for the activated camera to indicate that it was working. The CCTV feature was considered to act as a deterrent, although staff intervention when required was seen as critical to the success of the CCTV solution. Fourth, for there to be more staff on trains and at stations.[564] It will be necessary to consider how such recommendations may apply to HARPS.

Outcome 11: The right to travel with an assistance dog

6.100 More than 7,000 people in the UK rely on an assistance dog.[565] Assistance dogs are highly trained to help not only blind people, but also people with impairments such as

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561 Equality and Human Rights Commission, *Hidden in plain sight: Inquiry into disability-related harassment* (2011), https://www.equalityhumanrights.com/sites/default/files/ehrc_hidden_in_plain_sight_3.pdf, p 137. It was noted in this report at p 137 that underreporting of disability-related crimes on public transport was a problem, and that low reporting levels may be because disabled people think that behaviours are non-criminal or because they may also be unclear as to who to complain to. The Equality and Human Rights Commission defined "disability-related harassment" as "unwanted, exploitative or abusive conduct against disabled people which has the purpose or effect of either: violating the dignity, safety, security or autonomy of the person experiencing it, or creating an intimidating, hostile, degrading or offensive environment": p 12.

562 DfT, *Research on experiences of disabled rail passengers* (July 2019), https://www.gov.uk/government/publications/experiences-of-disabled-rail-passengers, p 37.

563 Crime and Disorder Act 1998, s 17. See also TfL, *Accessible Bus Stop Design Guidance*, (revised edition 2017), http://content.tfl.gov.uk/bus-stop-design-guidance.pdf, p 23.

564 DfT, *Research on experiences of disabled rail passengers* (July 2019), https://www.gov.uk/government/publications/experiences-of-disabled-rail-passengers, pp 37 – 38. For a discussion of CCTV regulation see paras 4.120 to 4.123 in Chapter 4.

565 Assistance Dogs UK, *Assistance Dogs UK*, http://www.assistancedogs.org.uk/. Researchers at the House of Commons write that "Assistance dogs are dogs that have been trained in order to provide assistance to disabled people or those with certain medical conditions such as epilepsy": Oliver Bennett and Previn Desai,

hearing difficulties, epilepsy, diabetes and physical mobility problems. Assistance dogs often wear a harness or a jacket so that they are easily recognisable, but it is not a legal requirement that they do so.[566] At present, the law seeks to ensure that assistance dogs can be carried on PSVs and in private hire services and taxis.

6.101 We discussed how the general prohibitions protecting disabled persons from discrimination apply in respect of the right to travel with an assistance dog. In addition, the Equality Act 2010 imposes specific duties on taxi and private hire service providers to carry assistance dogs at no additional charge.[567] Failing to do so is an offence, punishable by a fine.[568] Despite this, a survey by the organisation Guide Dogs showed that over half of guide dog owners had experienced a driver of a private hire services or taxi refusing to transport their dog in the previous year.[569] Such refusals can be distressing and make travel impossible. If the owner of the assistance dog wishes to assert their rights then they usually need to file a complaint and potentially even pursue the matter to court.[570]

6.102 If there is an appropriate medical reason for doing so, drivers of taxis and private hire services may be issued an exemption certificate by a licensing authority which enables them to lawfully refuse to carry an assistance dog in their vehicle.[571]

6.103 On PSVs, the driver, inspector and conductor must not prevent a disabled person from bringing their assistance dog on board, subject to there being suitable space

Assistance dogs: issues (12 August 2016), House of Commons Library, Briefing Paper Number CBP 7668, https://researchbriefings.files.parliament.uk/documents/CBP-7668/CBP-7668.pdf, p 3.

566 Equality and Human Rights Commission, *Assistance dogs: A guide for all businesses* (December 2017), https://www.equalityhumanrights.com/sites/default/files/assistance-dogs-a-guide-for-all-businesses.pdf, p 4.

567 Equality Act 2010, ss 168 and 170. Licensing authorities can exempt individual drivers from these obligations on medical grounds (Equality Act 2010, ss 168(2) and 170). For Scotland: Taxi Drivers' Licences (Carrying of Guide Dogs and Hearing Dogs) (Scotland) Regulations 2003 SSI 2003 No 73, Private Hire Car Drivers' Licences (Carrying of Guide Dogs and Hearing Dogs) (Scotland) Regulations 2004 SSI 2004 No 88.

568 Above, ss 168(3) and (4) and 170.

569 Guide Dogs UK, *Access Denied: A report into the frequency and impact of access refusals on assistance dog owners in 2019* (2019), https://www.guidedogs.org.uk/media/7236/access-report-2019.pdf, p 5. For background, see also House of Commons Library, Briefing Paper Number CBP 7668, Oliver Bennett and Previn Desai, *Assistance dogs: issues* (12 August 2016), https://researchbriefings.files.parliament.uk/documents/CBP-7668/CBP-7668.pdf, pp 5 – 7.

570 See, for example, Damon Rose, *Discrimination: 'I can't take your guide dog, I've got an allergy'* (6 February 2019), *BBC News*, https://www.bbc.co.uk/news/disability-47136278; BBC News, *Taxi driver who refused guide dog loses licence* (7 February 2019), https://www.bbc.co.uk/news/uk-england-nottinghamshire-47163883; Martyn McLaughlin, *Discrimination over guide dogs in UK branded 'shocking'* (12 June 2019) *The Scotsman*, https://www.scotsman.com/regions/discrimination-over-guide-dogs-in-uk-branded-shocking-1-4946405.

571 Equality Act 2010, ss 169 (taxis) and 171 (private hire vehicles).

available.[572] At designated terminals, carriers and terminal managing bodies must assist disabled people to carry an assistance dog on board.[573]

Outcome 12: Suitable provision should be made for carers accompanying disabled passengers

6.104 Currently, under the law, carers are given specific rights regarding accompanying disabled passengers only in certain contexts. For example, on regular long-distance bus journeys, if a disabled person requires the assistance of a carer in order to travel safely, their carer must be transported free of charge and, where feasible, seated next to the disabled person.[574] In addition, many transport providers voluntarily offer concessions to carers of disabled persons when they are travelling together.[575] Interest has already been expressed as to whether similar concessions will be provided for HARPS.[576]

6.105 Facilitating the ability of carers to accompany disabled people on HARPS vehicles is of great importance, particularly due to the potential absence of transport staff over the full duration of the journey. Specific provision should be made to ensure that the rights of carers are clear, and concessions for their travel costs when travelling with a disabled or older person should be encouraged.

Consultation Question 26.

6.106 We seek views on how regulation could address the challenges posed by the absence of a driver, and the crucial role drivers play in order to deliver safe and accessible journeys. For example, should provision be made for:

(1) Ensuring passengers can board and alight vehicles?

(2) Requiring accessible information and reassurance when there is disruption?

(3) Expansion of support at designated points of departure and arrival?

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572 Public Service Vehicles (Conduct of Drivers, Inspectors, Conductors and Passengers) Regulations SI 1990 No 1020, reg 5(7).

573 Reg 181/2011, art 13(1) and Annex I. This applies where the scheduled distance is 250 km or more (art 2(1)).

574 Reg 181/2011, art 10(4). This applies where the scheduled distance is 250 km or more (art 2(1)).

575 For example, the Disabled Persons Railcard gives a disabled person and a person they are travelling with one third off rail fares: https://www.disabledpersons-railcard.co.uk/. In the context of aviation, in a policy statement the ECAC suggested that air carriers should be encouraged to offer discounts for a person accompanying a person with disabilities, particularly where the presence of that person may be necessary for safety reasons: European Civil Aviation Conference (ECAC), Policy Statement in the Field of Civil Aviation Facilitation, Document 30, 12th edition, May 2018, para 5.5.4.1.

576 Flourish, *User needs final report* (June 2019) WP3 D10, http://www.flourishmobility.com/publications, p 11.

DEVELOPING NATIONAL MINIMUM ACCESSIBILITY STANDARDS FOR HARPS

6.107 As the technology and business models mature, it can be helpful if various aspects of journeys are standardised. For example, if the layout of the vehicles is the same, it may give a blind person confidence that they will be able to board the vehicle since they have boarded similar vehicles before. Knowing what to expect can help to make a journey more manageable for an anxious passenger. The Rail Vehicle Accessibility Regulations, discussed above,[577] seek to standardise key aspects of trains, such as the colour and height of buttons to open doors and the length of the beeps before the doors close. It is not just the physical layout which can be standardised. The booking system and the way the service is provided could also be standardised.

6.108 Of course, standardisation should not unduly inhibit innovation. By experimenting with new designs, developers may discover solutions which are more convenient for disabled passengers. A balance needs to be struck between ensuring a degree of consistency and allowing new solutions to be tried. One possible way forward would be to develop guidance, including standard layouts, which in time could be embedded in regulation.

Consultation Question 27.

6.109 We seek views on whether national minimum standards of accessibility for HARPS should be developed and what such standards should cover.

ENFORCEMENT MECHANISMS AND FEEDBACK LOOPS

Enforcement

6.110 Rights under the Equality Act 2010 can be difficult to enforce. A claim can be brought in the civil courts, either by way of judicial review or a statutory tort action, and delict in Scotland.[578] However, this process is "time-consuming, costs-consuming, emotion-consuming and will result in the delayed resolution of something that ordinarily ought to be resolved quickly".[579]

6.111 A case can be brought in the criminal courts where the Equality Act 2010 creates a statutory offence. For example, under section 175 of the Equality Act 2010, it is an offence to fail to comply with the requirements of the PSV accessibility regulations. If such an offence is committed by or with the consent of a responsible person (such as

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577 See para 6.67 above.

578 Equality Act 2010, s 113. K Monaghan QC, *Monaghan on Equality Law* (2nd ed 2013), paras 14.02 and 14.41.

579 Foskett J describing county court proceedings in *R (on the application of Maxwell) v The Office of the Independent Adjudicator for Higher Education* [2010] EWHC 1889 (Admin), para 78, cited by Mummery LJ in the Court of Appeal [2011] EWCA Civ 1236, para 19. See also House of Lords Select Committee on the Equality Act 2010 and Disability, *The Equality Act 2010: the impact on disabled people* (2015-16), para 376.

a director, manager or company secretary), that individual and the company is guilty of an offence. This is punishable by a fine of up to £2,500.[580]

6.112 The EHRC[581] plays an important role in the enforcement of some rights under the Equality Act 2010. If a person breaches a provision of the Equality Act 2010 (other than breaches of the public sector equality duty and Part 12 on disabled people and transport), the EHRC can conduct an investigation. The EHRC can require the person to prepare an action plan for remedying their unlawful act. If necessary, the County Court can order the person to produce such a plan and comply with it. Failure to comply with such order is a summary offence, punishable by a fine.[582]

6.113 The EHRC also has responsibility for enforcing the public sector equality duty. If it thinks that a public authority has not complied with a public sector equality duty, it may serve a compliance notice. If the EHRC believes that a person has failed to comply with a compliance notice, the EHRC may apply to the court for an order requiring that person to comply.[583]

6.114 Section 163 of the Equality Act 2010 provides that a taxi licence must not be granted unless the vehicle conforms with the taxi accessibility regulations. However, this section is not yet in force.[584] A similar approach could be used in respect of HARPS by making compliance with the Equality Act 2010 a condition of HARPS operator licences. This would allow the licensing authority to take more direct action against an operator which discriminates against people with a disability. It would make the process easier for the alleged victim because the procedure would be activated simply by lodging a complaint with the licensing authority. The complaint could then be dealt with through the usual channels put in place by that authority in the first instance. The possibility of suspension and loss of licence for a HARPS operator is very serious, and would of course be subject to evidential requirements and procedural safeguards, including recourse to the courts for appeals.[585]

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580 *Wilkinson's Road Traffic Offences* (28th ed 2017), paras 13-176 and 13-177.

581 The Equality and Human Rights Commission was established by the Equality Act 2006, ss 1-7.

582 Equality Act 2006, ss 20 – 24, 34 and Sch 2.

583 Above, ss 31 – 32. The public sector equality duty is found in: ss 149, 153 and 154. In relation to the duty under s 149, the relevant court is the High Court; in relation to the duties under ss 153 and 154, the relevant court is the county court (s 32(9)).

584 Similarly, in respect of PSVs, the Equality Act 2010 ss 176 and 177 provide that a regulated PSV must not be on the road unless it has been issued an accessibility certificate and an approval certificate, respectively. Such certificates are only issued if the vehicle conforms with PSV accessibility regulations. A person who is refused an accessibility or approval certificate can appeal this decision under s 179. Contravention of the PSV accessibility regulations is an offence, liable on summary conviction to a fine of up to £2,500 (s 177).

585 There are various statutory rights of appeal to a decision to refuse to grant a license, or conditions attached to a license, in relation to taxis and private hire services. For example: Local Government (Miscellaneous Provisions) Act 1976, ss 48(7), 52, 55(4), 59, 60, 62(3), 68 and 77; Transport Act 1985, s 17; Private Hire Vehicles (London) Act 1998, ss 3(7), 7(7), 13(6), 17(4), 25(6). With regard to PSVs, the decision of a Traffic Commissioner to grant or not to grant a license or to challenge the competency of a transport manager can be appealed: Public Passenger Vehicles Act 1981, ss 50 to 51, Sch 2A para 12, Sch 3 paras 7B(4).

Effective feedback mechanisms

6.115 Automated vehicles technology is evolving quickly. Inevitably unforeseen difficulties will arise. Therefore, it is crucial to have real-time and effective mechanisms for customer feedback. This will help operators to identify what needs to be done to make the service more inclusive.

6.116 Stakeholders have highlighted the added challenge that people who fall within the formal definition of disability may not self-identify as such. This makes it more difficult to capture the full scale of issues as they affect disabled people. Virgin Atlantic are taking an innovative approach to enable staff to provide adequate assistance to people with hidden disabilities, or those who do not wish to publicly share details of their disability, at airports. They have created bookmarks and badges with a special symbol which informs staff that the passenger needs extra assistance. Passengers can either slip the bookmark into their passport or wear the badge, which they can pick up at the airport.[586] In the future, this kind of subtle signposting could be done digitally.

6.117 It is also difficult to include the views of persons that do not travel at all because travel is so difficult. Feedback should therefore be sought from everyone, not just disabled people and as broadly as possible. There also needs to be a mechanism for ensuring that operators take the feedback on board and act on it.

6.118 As we mentioned at the beginning of this chapter, one of the key themes of the Government's Inclusive Transport Strategy is raising awareness of passenger rights. In particular, one of the Government's commitments is to:

> Ensure that disabled travellers are fully aware of their rights and the obligations of transport operators, and know how to raise complaints if needed, by the provision of easily accessible information in a variety of formats.[587]

6.119 The Department of Transport ran a public consultation in 2017 which found that many disabled people lacked awareness of the complaints and enforcement procedures available from transport providers. A consequence of this is that such procedures are not properly utilised. For feedback mechanisms to be truly effective, information on how to use the mechanisms and who to complain to must be accessible.

6.120 Passengers must also be aware of their rights and the obligations of transport service providers in order to know when to initiate a complaint. As well as public awareness campaigns, a passenger charter which clearly sets out what passengers can expect at different stages of their journey could be helpful in informing passengers of their rights and setting minimum expectations from HARPS. The creation of passenger charters in

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586 DfT, *Aviation 2050: The future of UK aviation* (December 2018), p 118.

587 DfT, *Inclusive Transport Strategy: Achieving Equal Access for Disabled People* (July 2018), pp 9 and 16.

the aviation sector is currently being pursued by the Government[588] and passenger charters have already been adopted by some rail companies.[589]

6.121 At present, to make a complaint about a journey, the passenger can contact the service provider directly, or regulators such as the Department for Transport, Traffic Commissioners (in respect of buses), local licensing authorities (in respect of taxi and private hire services) and the Rail Ombudsman.[590] Alternatively, passengers can seek help from consumer protection organisations such as Transport Focus,[591] Bus Users UK,[592] or London TravelWatch.[593] Each of these bodies have different approaches to dealing with complaints. Here we give two examples:

(1) If an issue is referred to the Rail Ombudsman and they decide that the issue is within their remit, the Ombudsman first tries to bring the parties to an agreement by mediating. If this is not successful, the Ombudsman makes an independent decision which is binding on the service provider if the passenger accepts it. The passenger can choose to reject the decision and take legal action instead.[594]

(2) If a suitable issue is referred to Bus Users UK, they contact the operator and give them 14 days to investigate the complaint and respond with a proposed solution. If the passenger accepts the solution, the operator has 14 days to meet their commitments. If the operator fails to do so, the passenger can refer the case to the final appeal panel, which makes a final decision. Bus Users UK monitor the case to make sure the operator complies with the decision. The decision is not legally enforceable, but if an operator consistently fails to abide by the panel's decisions, they will be referred to the Traffic Commissioner who can fine or disqualify the operator.[595]

6.122 We seek views on the best process to ensure complaints against HARPS operators are handled most effectively.

Data reporting requirements

6.123 The lack of data about disabled people's use of existing transport modes has hampered the ability to identify problems and monitor performance. In Chapter 4 we discussed

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588 DfT, *Aviation 2050: the future of UK aviation*, (December 2018) p 14: "The government is consulting on a new Passenger Charter to promote good practice in the sector, create a shared understanding of the level of service that passengers should expect, and communicate roles and accountabilities clearly".

589 For example, see Southern, *Passenger's Charter* (May 2019), https://www.southernrailway.com/about-us/our-commitments/passengers-charter.

590 See The Rail Ombudsman, *How do our processes work?*, https://www.railombudsman.org/about-us/our-process/.

591 See Transport Focus, *Advice and Complaints*, https://www.transportfocus.org.uk/advice-and-complaints/.

592 See Bus Users, *Complains Process*, https://www.bususers.org/complaints/complaints-process.

593 See London Travel Watch, *An introduction to complaining*, https://www.londontravelwatch.org.uk/complaints/an_introduction_complaining.

594 See The Rail Ombudsman, *How do our processes work?*, https://www.railombudsman.org/about-us/our-process/.

595 See https://www.bususers.org/complaints/complaints-process.

wide reporting obligations on operators of HARPS.[596] A duty on HARPS operators to collect data that can help assess the experiences of everyone, including older and disabled people in HARPS can be an important element in promoting better results for all.

Consultation Question 28.

6.124 We seek views on whether operators of HARPS should have data reporting requirements regarding usage by older and disabled people, and what type of data may be required.

CONCLUSION

6.125 As we noted at the outset, what we want to achieve for disabled and older people is the same access to transport as everyone else, and for the accessibility of HARPS to be much better than many of the existing forms of public transport. In this chapter we have outlined elements of the legal framework that could define HARPS operators' accessibility obligations. These services do not yet exist and there is much uncertainty regarding how they may develop and the extent and nature of continued human involvement. Throughout, we have focussed on accessibility goals and avoided prescribing the precise manner in which these outcomes should be achieved.

[596] See Chapter 4, paras 4.112 to 4.116 above. We also covered reporting requirements in CP1 as part of safety assurance, see in particular Chapters 4 and 5.

Chapter 7: Regulatory tools to control congestion and cruising

7.1 Here we discuss regulatory tools to manage the use of Highly Automated Road Passenger Services (HARPS) on UK roads. Initially, automated driving systems are likely to operate only in limited numbers in narrowly defined locations and conditions.[597] However, once the technological challenges have been met, the deployment of automated vehicle technology may be rapid.

7.2 In Chapter 2 we considered the potential benefits and risks of deploying substantial numbers of HARPS. One concern is that large numbers of new vehicles will add to congestion and pollution. Where the cost of driving is less than the cost of parking, there is a danger that vehicles will "cruise" - that is, they will circle around empty for no reason except to fill time between bookings. Transport for London (TfL) states that "it will be imperative" that licensed connected and autonomous vehicle (CAV) passenger services do not circulate without passengers. They have asked for consideration to be given to how fleet operators can be incentivised to refrain from deploying CAVs in this way.[598]

7.3 In this chapter we start by considering the regulatory tools to control traffic flow generally. We then look specifically at those tools which determine the cost of parking compared to the cost of driving. We describe these as "kerbside pricing" and "road pricing". Finally, we consider whether there should be a power to cap the number of HARPS in any given area - an issue often referred to as quantity restrictions.

TRAFFIC REGULATION ORDERS

7.4 Under the Road Traffic Regulation Act 1984 (RTRA), local highway authorities have wide powers to regulate the use of a given road, either by traffic generally or by a class of traffic. These regulations are implemented by "traffic regulation orders" (TROs).

7.5 TROs are commonly used to implement loading and parking restrictions and to designate priority lanes for buses.[599] However, in Consultation Paper 1 we noted that TROs could be used in new and experimental ways.[600] They could, for example, be

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597 The Society of Automotive Engineers International refers to this as the "operational design domain". These automated driving systems might rely on intense mapping of specific routes, limited speeds, good weather or simpler environments where there is no interaction with vulnerable road users, for example. See above, paras 1.19 to 1.20 and 1.33 to 1.34.

598 TfL, *Connected and autonomous vehicle statement* (2019), http://content.tfl.gov.uk/connected-and-autonomous-vehicle-statement.pdf, para 17.

599 They are also commonly used to restrict the movement of heavy goods vehicles in residential areas or to restrict traffic for the purposes of special events: see House of Commons Library, *Roads: Traffic Regulation Orders (fs)* SN6013 (2014), https://researchbriefings.files.parliament.uk/documents/SN06013/SN06013.pdf.

600 CP1, para 4.121.

used to restrict automated vehicles on a given road. Alternatively, TROs could be used to prohibit all vehicles other than automated vehicles, providing segregated lanes.

7.6 We envisage that, as automation takes off, traffic authorities will use these powers to make many decisions about how HARPS vehicles are used in their areas. At the most basic level, TROs will be used to decide where HARPS vehicles can stop, wait and park[601] and whether they can use bus lanes. There is also the possibility of HARPS-only roads or roads where HARPS vehicles are prohibited. As we explore below, TRO powers are already wide. We are interested to hear whether any additions are necessary to meet the challenges of HARPS.

7.7 The introduction of HARPS could bring many changes to urban streets, necessitating many new TROs. In response to Consultation Paper 1, PATROL (Parking and Traffic Regulations Outside London) Joint Committee[602] expressed concerns about the procedure for making TROs. They thought the procedure was cumbersome, expensive, and out of date. We consider initiatives to modernise and simplify TRO procedure below and seek views on whether HARPS raise any additional issues.

An overview of the powers

7.8 TROs can be temporary, experimental or permanent.[603] There are separate but similar provisions for roads outside the Greater London Area and those within it.

7.9 Outside Greater London, section 1 of the Road Traffic Regulation Act 1984 specifies the purposes for which TROs may be used. These purposes have been described as "relatively broad but not all-encompassing".[604] They include avoiding danger, facilitating the passage of any class of road user, or preserving or improving the amenities of the area.

7.10 Section 2 then gives traffic authorities powers to prohibit, restrict or regulate the use of a given road by traffic, a class of traffic, or pedestrians. Section 2(2) details specific provisions that can be made by a TRO. These include specifying the direction of traffic, specifying the part of the carriageway to be used by traffic, prohibiting the waiting and loading of vehicles, prohibiting the use of roads by through traffic, and prohibiting or restricting overtaking.[605]

7.11 In Greater London, section 6 allows for orders "similar to" TROs, often referred to as "traffic management orders". Schedule 1 then lists 22 separate matters about which

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601 Loading and unloading is distinguished from the boarding and alighting of passengers. Unless stopping or clearway restrictions are in place then boarding and alighting of passengers, even on double yellow lines, appears permissible. See Traffic Signs Regulations and General Directions 2016, part 6 (1) (2).

602 They represent more than 300 local authorities in England and Wales (outside London).

603 Road Traffic Regulation Act 1984 (RTRA), s1 (permanent orders), ss 9-10 (experimental orders), s 14 (temporary orders). Experimental traffic orders for roads in the Greater London area were previously provided for in s 12 of the Act but this section has now been repealed.

604 British Parking Association, *The BPA Traffic Regulation Orders Guide: Best Practice and a Path to the Future* (July 2019), p 10. The BPA represents those involved in parking and traffic management, including local government, commercial providers, consultants and academics.

605 RTRA, s 2(2) (a)-(e).

orders may be made, ranging from "prescribing streets which are not to be used … by vehicles of any specified class or classes", to rules relating to "vehicles, or vehicles of any class, when unattended". Importantly, in Greater London, orders can "apply to the whole area of a local authority, or particular parts of that area", rather than being limited to a given road.[606]

The procedure for making a TRO

7.12 The procedure for local authorities to implement a TRO is set out in schedule 9 to the RTRA 1984 and in regulations.[607] For permanent orders there are similar but separate regulations for England and Wales compared with Scotland.[608]

7.13 The secondary legislation sets out several distinct phases of the procedure for making permanent orders:

(1) *Preliminary consultation and publication of proposals:* Local authorities must consult with the police,[609] as well as freight and road haulage associations.[610] Depending on where and what the TRO relates to, the local authority may also have to consult with other authorities, concessionaires, service operators, ambulance and fire-fighting services.[611] Local authorities must also ensure that adequate publicity is provided to those likely to be affected, which may, for example, include displaying notices in the relevant area and distributing them to local residents.[612] In addition, notices must be published in a local newspaper and relevant documents must be held on deposit from the date that the notice of proposal is first published.[613]

(2) *Objections and inquiries*: The local authority must allow public objection,[614] to which they must respond.[615] A public inquiry only has to be held in certain circumstances; for example, if the proposed order affects loading and unloading

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606 RTRA 1984, s 6(3)(a).

607 In addition to the main regulations there are separate procedures for the Secretary of State to implement a traffic order; see Secretary of State's Traffic Orders (Procedure) (England and Wales) Regulation 1990 SI 1990 No 1656 (England and Wales Regulations). For the procedure for temporary traffic orders see Road Traffic (Temporary Restrictions) Procedure Regulations 1992 SI 1992 No 1215).

608 The procedure to make a permanent TRO for England and Wales (outside Greater London) is found in the Local Authorities' Traffic Orders (Procedure) (England and Wales) Regulations 1996 SI 1996 No 2489 (England and Wales Regulations). The procedure for a permanent TRO in Scotland is in the Local Traffic Authorities' Traffic Orders (Procedure) (Scotland) Regulations 1999 SI 1999 No 614 (Scotland Regulations). These are referred to below as the England and Wales Regulations and Scotland Regulations, respectively.

609 RTRA, Sch 9 para 20.

610 Local Authorities' Traffic Orders (Procedure) (England and Wales) Regulations 1996 SI 1996 No 2489, reg 6; Local Traffic Authorities' Traffic Orders (Procedure) (Scotland) Regulations 1999 SI 1999 No 614, reg 4.

611 Above, England and Wales, reg 6; Scotland, reg 4.

612 Above, England and Wales, reg 7; Scotland, reg 5.

613 They must also be held on deposit until six weeks after the order has been implemented.

614 Local Authorities' Traffic Orders (Procedure) (England and Wales) Regulations 1996 SI 1996 No 2489, reg 8; Local Traffic Authorities' Traffic Orders (Procedure) (Scotland) Regulations 1999 SI 1999 No 614, reg 7.

615 England and Wales, reg 13; Scotland, reg 12.

at certain times of the day or bus services.[616] If the authority decides to hold an inquiry it must give notice and the inquiry must begin within 42 days of the notice being published.[617] If a public inquiry was held, they must also consider the inspector's report and any recommendations made in it.[618]

(3) *Modifications:* An authority may modify an order in consequence of any objections or otherwise, before it is made.[619]

(4) *Making an Order:* Orders cannot be made before the statutory period for objections has ended. They also cannot be made later than two years after the initial notice has been published.[620] Within 14 days of an order being made, the authority must place a notice in the local press announcing the decision to make an order.[621] They must ensure that adequate publicity is given to the making of the order.[622] They must also write to those that have not withdrawn their objections and outline the reasons for the decision to proceed.[623] Any signage required for the order must be in place before the order comes into force.[624]

7.14 For some schemes the consent of the national authority may also be required, for example where the scheme affects a road for which the Secretary of State or Scottish Ministers are the Traffic Authority (such as a trunk road).[625]

Problems with the procedure

7.15 The cost of a TRO will vary but Gloucestershire County Council have estimated the average cost of implementation of a single TRO at between £10,000 and £15,000. They also estimate the usual timescale for implementation as between 12 to 18 months.[626]

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616 Local Authorities' Traffic Orders (Procedure) (England and Wales) Regulations 1996 SI 1996 No 2489, reg 9; for Scotland, it is a "hearing": Local Traffic Authorities' Traffic Orders (Procedure) (Scotland) Regulations 1999 SI 1999 No 614, reg 8.

617 Above, England and Wales, reg 10; for Scotland, it is a "hearing": Scotland, reg 9.

618 Above, England and Wales, reg 13; for Scotland, it is the "reporter's" report, Scotland, reg 12.

619 Above, England and Wales, reg 14; Scotland, reg 13.

620 Above, England and Wales, reg 16; Scotland, reg 16.

621 Above, England and Wales, reg 17; Scotland, reg 17.

622 Above, England and Wales, reg 17(4); for Scotland, if additional publicity is seen as necessary, the requirement is to publish a notice in the Edinburgh Gazette, Scotland, reg 17(1)(c) and (d).

623 Above, England and Wales, reg 17(3); For Scotland there is no 14-day time restriction, Scotland, reg 17(1)(b).

624 Above, England and Wales, reg 18; Scotland, reg 17(1)(f).

625 RTRA, Sch 9, Part II para 13(1)(b) and para 14(1). The Secretary of State and Scottish Ministers have the power to amend any orders for which their consent is required: see para 15 and para 15A.

626 See Gloucestershire County Council, *Traffic Regulation Orders (TRO) and Traffic Schemes*, https://www.gloucestershire.gov.uk/roads-parking-and-rights-of-way/traffic-regulation-orders-tro-and-traffic-schemes/what-is-the-traffic-regulation-order-tro-programme/.

7.16 In 2012, following complaints about the expense and time involved in advertising, the Government proposed removing specific advertising requirements.[627] However, after objections from newspaper groups, whose revenues would have been significantly impacted, and from MPs, the government dropped these plans in February 2013.[628]

The need for digital orders

7.17 There is already demand for TROs in digital form so that information about traffic regulations can be incorporated into mapping software. In 2018, the Department for Transport (DfT) commissioned a consulting firm, North Highland, to review local transport data.[629] The review drew attention to the "growing demand for open, machine-readable TROs" from both private sector developers and freight companies.[630] Yet TRO data were not in a standardised, machine readable format. Even where local authorities had digitised orders, they were not stored in a central place. This had led private sector organisations to collect this information manually, potentially resulting in duplication and misalignment with local authority records.

7.18 In an automated and connected environment, demand for TROs in digital form will grow. North Highland recommended that DfT should sponsor a programme of work to support local authorities to digitise their TROs, and to streamline the legislative process to implement or amend a TRO. This in turn led to the TRO Discovery Project, which is a collaboration between DfT, British Parking Association (BPA), Ordnance Survey and GeoPlace. The project is collecting evidence into the process by which TROs are made, and how TRO data is stored and used.

7.19 As part of the Discovery Project, the BPA produced a guide on TRO best practice.[631] This highlights the range of formats in which TROs are held, from type-written paper sheets held in filing cabinets, to text-based word documents, to various forms of partial and full digitalisation.[632] Some of the problems stem from the legislation. For example, the regulations require that proposals are published together with a "brief description of the road" and "a description of the length of it to which the order relates". The BPA comment that this appears to require a text-based schedule rather than a map-based one and even if the local authority produces a map "it is almost impossible to recreate in the pages of a newspaper".[633]

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627 DfT, *Traffic orders: simplifying the process consultation* (30 January 2012), https://www.gov.uk/government/consultations/traffic-orders-simplifying-the-process-consultation.

628 *Hansard* (HC) 7 February 2013, col 427W, https://publications.parliament.uk/pa/cm201213/cmhansrd/cm130207/text/130207w0003.htm#13020784000658.

629 DfT/North Highland, *Local Transport Data Discover* (2018), https://www.gov.uk/government/publications/local-transport-data-discovery-findings-and-recommendations.

630 Above, p 28.

631 British Parking Association, *The BPA Traffic Regulation Orders Guide: Best Practice and a Path to the Future* (July 2019).

632 Above, p 31.

633 Above, p 13.

7.20 The main problem, however, is the lack of a standard model for creating a TRO. The BPA comment that formal model orders were used in the past, but these models "have not been maintained into the 21st century".[634] The Discovery Project aims to produce "a draft Data Model for TROs", which will act as a standard model for a TRO in digital form.[635]

7.21 Problems in implementing TROs were also raised during the House of Commons Transport Select Committee's review of pavement parking. TROs can be used by local authorities to prohibit pavement parking. At a DfT convened roundtable in 2016, concerns were raised that TROs were too expensive and administratively burdensome and this disincentivised their use. In oral evidence to the committee, the Minister of State for Transport accepted that TROs needed "to be looked at, with a view to consideration of reform".[636] Other evidence from DfT highlighted the work of the discovery project in this regard.[637] As a result of the findings of the TRO Discovery, the DfT has launched a review of legislation associated with TROs – the TRO Alpha. The TRO Alpha will work with users of the TRO process to develop proposals for legislative changes and will conclude in late 2019.[638]

7.22 Given the initiatives in this field, we do not intend to carry out a full review of TROs as part of our own project. However, we welcome views on whether any particular changes to the statutory powers and procedures for TROs are needed to respond to the challenges of HARPS. We will pass these views to the DfT.

Consultation Question 29.

7.23 We seek views on whether the law on traffic regulation orders needs specific changes to respond to the challenges of Highly Automated Road Passenger Services (HARPS).

REGULATING USE OF THE KERBSIDE

7.24 The kerb is defined as "a stone edging to a pavement or raised path".[639] By "kerbside", we mean the area of road closest to the kerb. Kerbside space is a crucial public resource: the way it is used, regulated and priced has major implications for transport

634 British Parking Association, *The BPA Traffic Regulation Orders Guide: Best Practice and a Path to the Future* (July 2019), p 29.

635 See: https://www.geoplace.co.uk/documents/10181/76485/TRO+Discovery+Project/4ed4d4ac-0d21-4870-a600-4ef7b944a39a.

636 Transport Committee, *Oral evidence: Pavement parking,* HC 1982 (3 July 2019), Question 132.

637 Above, Question 134.

638 DfT, *Traffic Regulation Orders and Associated Data: Policy Alpha*, https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/9826.

639 *Oxford English Dictionary*, https://www.lexico.com/en/definition/kerb.

policy. This regulation will affect where HARPS can pick up and drop off passengers, and whether they park or cruise.

7.25 At present, a considerable proportion of urban kerbsides are used for parking private vehicles. In Chapter 2 we pointed out that the average private car in the UK is parked 96% of the time.[640] Automated vehicles could be used much more intensively, allowing the space currently occupied by parked vehicles to be used in other ways.[641] It is possible to imagine a wide range of ways in which this space could be re-purposed to promote active travel. Cycle lanes are one example. Walking would become a more attractive option, with (for example) more green space, seating or points of interest. Alternatively, the space could be used to increase the reliability of public transport though priority lanes.

7.26 On the other hand, HARPS will need to use the kerbside to stop, to wait for passengers, and to allow passengers to board and alight. They may also need to park between journeys. If the cost of parking is higher than the cost of driving, HARPS could be under pressure to "cruise empty". For electric vehicles with relatively low fuel costs that are travelling at low speeds, the cost of fuel on its own may be less than the cost of parking.

7.27 There are many ways in which empty cruising can be reduced. Flexible vehicles could take freight as well as passengers, to as to remain active when passenger numbers are low. Technology can also help ensure that vehicles go where they are needed most, so as to reduce the proportion of time vehicles are empty and not earning. This issue was considered in an analysis of empty cruising in Manhattan by taxis and app-based ride services, such as Uber and Lyft.[642] The report drew attention to the "rematch" dispatch system used at airports, which matched new trips to drivers who has just dropped off in the same area. The report argued that if a similar system gave priority to drivers who has just dropped off in central Manhattan it would reduce the number of vehicles which drove into the centre empty. It recommended that City authorities should mandate the outcome they wanted (reduced time between trips) and leave the method of achieving it to suppliers.[643]

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640 The Royal Automobile Club Foundation estimates that the average car spends about 80% of the time parked at home and is parked elsewhere for about 16% of the time: RAC Foundation, J Bates and D Leibling, "Spaced Out: Perspectives on Parking Policy" (2 July 2012), www.racfoundation.org/wp-content/uploads/2017/11/spaced_out-bates_leibling-jul12.pdf.

641 World Economic Forum in collaboration with The Boston Consulting Group, *Reshaping Urban Mobility with Autonomous Vehicles: Lessons from the City of Boston*, (June 2018), http://www3.weforum.org/docs/WEF_Reshaping_Urban_Mobility_with_Autonomous_Vehicles_2018.pdf, pp 17 to 18, 20 to 21 explains that with the introduction of automated vehicles in Boston, the number of vehicles on the road could decrease by 15% and there could be a 48% decrease in the number of parking spaces needed. It is suggested that the space freed up could be converted to driving lanes, bike lanes, dedicated surface mass transit lanes or green space.

642 Schaller Consulting, *Empty Seats, Full Streets* (December 2017), http://schallerconsult.com/rideservices/emptyseatsfullstreets.pdf. In the US app-based ride services are known as "transportation network companies".

643 Above, p 15. Instead, rematch technology would incentivise drivers to stay in peripheral areas and wait for paid trip into Manhattan, rather than driving into the city empty.

7.28 However, with peaks and troughs in demand, demand-responsive HARPS will inevitably have some idle time, in which they face choices between parking and cruising. One answer to the problem of empty cruising would be to charge more for cruising than parking. This would involve a major change in current practice. At present, far more money is collected from parking charges than from road pricing. The only major urban road pricing scheme in the United Kingdom is the London congestion charge which, in 2018-19, was budgeted to raise £168 million. This compares to £413 million that the 33 London boroughs have budgeted to raise from parking.[644] The RAC foundation found that English councils collectively are predicted to make a £913 million surplus from their parking activities in 2019-2020.[645]

7.29 Here we look briefly at the existing powers of local traffic authorities to control use of the kerbside, before considering the new challenges and choices which HARPS might bring.

Parking restrictions and civil enforcement

7.30 The starting point is that vehicles may be parked at the kerbside, so long as they do not obstruct a carriageway[646] and that no parking restrictions are in place. As we have seen, restrictions are created by TROs and are one of the most common uses of TROs.

7.31 Infringements of parking restrictions were originally criminal offences. However, under the Road Traffic Act 1991 they were decriminalised and made a civil matter. Where local authorities assumed responsibility for on-street parking, they could issue Penalty Charge Notices (PCNs) and retain the payment.[647] These powers proved popular. As at January 2018, only 21 local authorities in England had not taken up civil enforcement powers for parking.[648]

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644 RAC Foundation, *Local Authority Parking Finances in England* (10 January 2019), https://www.racfoundation.org/wp-content/uploads/Local_Authority_Parking_Finances_England_2017-18-Leibling_Final.pdf, p 7.

645 See RAC Foundation, *English councils parking operations budget forecasts 2019-20* (June 2019), https://www.racfoundation.org/research/mobility/english-councils-parking-income-budget-2019-20. The RAC foundation notes that historically councils have underestimated the money they will make from parking.

646 Several statutes make it a criminal offence to obstruct a road: see Road Vehicles (Construction and Use) Regulations 1986, reg 103 (causing or permitting a motor vehicle or trailer to stand on a road so as to cause any unnecessary obstruction of the road). In England and Wales, see also Highways Act 1980, s 137 (wilfully obstructing the free passage of a highway) and Town Police Clauses Act 1847, s 28 (wilfully causing an obstruction in any public footpath or public thoroughfare). In Scotland, see Roads (Scotland) Act 1984, s 129(2) (placing or depositing anything in a road so as to obstruct the passage of, or to endanger, road users). Under s 129(6) it is a specific offence to park a motor vehicle which obstructs a cycle track.

647 PCNs are enforceable in the civil courts as a civil debt. Drivers who dispute a PCN, should first go to the local authority. If not happy with the outcome, they can then go to the independent traffic adjudicator. For further detail see *Parking Policy in England*, House of Commons Briefing paper, SN02235, p 28.

648 DfT, *List of areas in England designated as a Civil Enforcement Area (CEA) for the purposes of enforcing parking contraventions* (2018).

7.32 The Traffic Management Act 2004 replaced the 1991 Act in England and Wales, applying civil enforcement to a wider range of contraventions.[649] It also allows authorities to apply to the Secretary of State to create a Special Enforcement Area (SEA), prohibiting the parking of a vehicle more than 50 centimetres from the kerb or at dropped footways.[650] These prohibitions can then be achieved without a TRO, though the local authority must inform the public of the SEA before starting enforcement.[651]

7.33 Subsequent secondary legislation has further amended local authority civil enforcement powers. Many of these regulations deal with practical matters (such as approval for cameras and other enforcement devices),[652] and guidelines on the levels of charges.[653] Recently, secondary legislation has restricted the circumstances in which CCTV alone can be used to enforce parking restrictions.[654] Additionally, a regulation mandates a "10 minute grace period" before a penalty notice is issued.[655]

7.34 Where every part of every road in an area is subject to the same restrictions, it is known as a "controlled parking zone".[656] This makes signage easier: as long as the individual roads within an area have appropriate kerb markings, the local authority need only provide upright signs at the entrance to the CPZ. In *R (Herron) v Parking Adjudicator,*[657] the Court of Appeal found that small irregularities in signage and markings within the Sunderland CPZ would not mislead a driver and did not invalidate the CPZ as a whole.

7.35 In practice, parking is also affected by planning policies, which may (for example) require developers to build a minimum or maximum amount of off-street parking.[658] However, planning issues are outside the scope of this review.

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649 For Scotland the RTA 1991 is still in force for parking (Sch 6) and there are separate bus lane regulations. The current position differs between London, England outside London and Wales.

650 Traffic Management Act 2004, Sch 10, section 85. Dropped footways, sometimes called "dropped kerbs" are parts of the kerb that are lower for easier access.

651 DfT*, The Secretary of State's Statutory Guidance to Local Authorities on the Civil Enforcement of parking conventions* (2016).

652 Civil Enforcement of Parking Contraventions (Approved Devices) (England) Order 2007 SI 2007 No 3486.

653 Civil Enforcement of Parking Contraventions (Guidelines on Levels of Charges) (England) Order 2007 SI 2007 No 3487.

654 The Civil Enforcement of Parking Contraventions (England) General (Amendment No. 2) Regulations 2015 SI 2015 No 1001.

655 The Civil Enforcement of Parking Contraventions (England) General (Amendment) Regulations 2015 SI 2015 No 561. Guidance on these regulations states that any PCN issued within 10 minutes of the expiry of a permitted parking period is illegal.

656 Traffic Signs Regulations and General Directions 2016, Sch 1.

657 [2011] EWCA Civ 905, [2012] 1 All ER 709.

658 For a discussion of the effect of these standards see Zhan Guo, "From Parking Minimums to Parking maximums in London" in D Shoup (ed), *Parking and the City* (Routledge 2018), pp 191 to 197.

Differential kerbside use and pricing

7.36 There has been innovation in parking charges. First, many councils now offer the option to pay for parking via mobile devices.[659] Furthermore, the pricing of on-street parking may vary depending on the vehicle. For example, in the City of London an electric or hydrogen or hybrid vehicle may be parked for £4 an hour, compared to £6.80 an hour for a petrol vehicle registered before 2005.[660]

7.37 Despite these innovations, however, parking charges still fall into two broad categories: parking permits available to residents and temporary on-street parking for everyone else. Generally, residents may apply for a permit to park on-street near their home which typically lasts for a year. Temporary on-street parking by contrast is usually charged by the hour and is available without prior arrangement.

7.38 More space is allocated to residents than to others.[661] Residents are usually charged less - often much less - than those that pay for temporary on-street parking. In the City of Westminster, for example, an annual resident permit for a vehicle with an engine of 1200cc or above costs £145. By comparison, the on-street tariff can be between £1.70 to £4.90 per hour depending on the area.[662] A person making use of temporary on-street parking, at a rate of £1.70 per hour, between the hours of 9am - 5pm on weekdays would pay more for parking within three weeks than a resident does for their annual permit.

7.39 Increasingly, urban local authorities are making space available for rental clubs and car sharing schemes. Organisations such as ShareNow and Zipcar have negotiated contracts with individual London boroughs to enable their vehicles to access on-street parking space. Stakeholders have indicated that these contracts, which allow parking throughout the respective authority's area of control, are "many times more expensive" than the price of a resident's permit. It was suggested to us that the requirement to negotiate separately with each London borough, together with the high charges, was one reason why car clubs have been slower to take off in London when compared to other European cities. In Berlin, for example, clubs negotiate with a single city authority.[663]

7.40 People with disabilities may qualify for a Blue Badge, under a scheme to help them access goods and services by allowing them to park close to their destination.[664]

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659 Examples are RingGo, *Parking Locator*, https://myringgo.com/whereitworks and PayByPhone, *How it works – parking*, https://paybyphone.co.uk/how-it-works/parking.

660 See https://www.cityoflondon.gov.uk/services/transport-and-streets/parking/Pages/on-street-parking.aspx.

661 Figures provided to the Law Commission by Appy Parking indicate that in London 66% of on-street parking TROs relate to resident parking bays. Only 16% relate to paid parking bays and 12% to business parking bays. The remaining 6% are used for different specialist purposes, including disabled parking bays (1.6%), taxi ranks (0.14%) bicycle bays (0.5%) and car club bays (0.02%).

662 See City of Westminster, *Parking zones and prices*, https://www.westminster.gov.uk/parking-zones-and-prices.

663 Bundesverband CarSharing, https://www.carsharing.de/.

664 The eligibility criteria for a Blue badge can be found at: DfT, *Can I get a Blue Badge? A guide from the DfT for people living in England* (2013) can be found at https://www.gov.uk/government/publications/blue-badge-can-i-get-one.

Parking for Blue Badge holders is usually free, although such rights do not extend to private land (such as airports). Disabled parking bays are not just about providing free or affordable parking to people with disabilities. They are also designed to be more accessible by, for example, allowing more space to get out of the vehicle and being near to dropped kerbs. If HARPS are to be accessible to those with disabilities, they will need similar bays and stopping points.

A new approach to kerbside pricing?

7.41 Kerbside space is clearly a highly valuable public asset. The way that it is priced involves difficult policy decisions, with implications for transport policy as a whole.[665]

7.42 In Chapter 2 we envisaged a move away from private car ownership towards integrated public transport and active travel, in which HARPS will play a part. The way in which kerbside space is priced will need to be rethought in the light of this vision. There are three potential changes:

(1) Parking for HARPS vehicles would need to be sufficiently cheap and available to disincentivise empty cruising and allow access to disabled people. This may involve reducing charges compared with those applied to current car clubs, and replacing parking charge income with some form of road pricing.

(2) As transport authorities struggle with the challenges of congestion, climate change and air quality, the balance between charges for private cars and shared cars will need to be rethought. Controversially, this could involve increases for private cars.[666]

(3) As the number of private cars reduces, kerbside space will be used for other purposes, such as cycle lanes and healthy streets. This has the potential to leave a hole in local authority finances, which will need to be filled.

7.43 These potential changes raise difficult political, social and financial issues, many of which are beyond the scope of this review. Our task is to review the legal framework. We therefore look at the current law on parking charges in more depth and ask if any legislative change is required.

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665 For a review of some of the issues see OECD International Transport Forum, *The Shared-Use City: managing the Curb* (2018), https://www.itf-oecd.org/sites/default/files/docs/shared-use-city-managing-curb_5.pdf.

666 In November 2009, an analysis of urban transport by the Cabinet Office expressed concerns about "free" parking or parking at heavily subsidised rates which do not take account of the opportunity cost of the land. They described this as inequitable: "those who drive – who tend to be more affluent - are subsidised by those who do not". See Cabinet Office, *An Analysis of Urban Transport* (November 2009), https://webarchive.nationalarchives.gov.uk/+/http:/www.cabinetoffice.gov.uk/media/308292/urbantransportanalysis.pdf, slide 64.

The law on setting parking charges

7.44 Authorities may impose charges for designated on-street parking places under sections 45 and 46 of the RTRA.[667] To impose a charge, the local authority must do so via a TRO.

7.45 When implementing on-street parking schemes, local authorities must have regard for the purpose of the powers. In *R (Cran) v Camden London Borough Council*, Mr Justice McCollough held that the RTRA:

> is not a fiscal measure. It contains no provision which suggests that Parliament intended to authorise a council to raise income by using its powers to designate parking places on the highway and to charge for their use.[668]

7.46 Rather, the purposes for which functions under the Act (including imposing parking charges) may be used are set out in section 122(1) of the RTRA, which reads as follows:

> to secure the expeditious, convenient and safe movement of vehicular and other traffic (including pedestrians) and the provision of suitable and adequate parking facilities on and off the highway or, in Scotland, the road.[669]

7.47 In *Djanogly v Westminster City Council,*[670] Lord Justice Pitchford stated that appropriate purposes:

> may include but are not limited to, the cost of provision of on-street and off-street parking, the cost of enforcement, the need to "restrain" competition for on-street parking, encouraging vehicles off-street, securing an appropriate balance between different classes of vehicles and users, and selecting charges which reflect periods of high demand.[671]

7.48 Thus, the permitted purposes of parking charges are relatively wide, but not unlimited.

The use of surplus funds

7.49 Local authorities are constrained in how they may use income from parking charges. Under section 55 of the RTRA, local authorities must keep a separate account of their on-street parking income and expenditures.[672] Section 55(4) then specifies the purposes for which the money may be used. These include:

(a) making good any parking deficit in the last four years;

(b) off-street parking;

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667 Off-street parking charges are provided for by RTRA, ss 35, 32 or 33(4).

668 [1995] EWHC 13 (Admin), [1995] RTR 346, McCollough J at [13].

669 RTRA, s 122(1).

670 [2010] EWHC 1825 (Admin), [2011] RTR 9.

671 Above at [13].

672 RTRA, s 55(1).

(c) public passenger transport services;

(d) highway or road improvement projects in the local authority's area;

(e) environmental improvement in the local authority's area; or

(f) in the case of a London authority, road maintenance or facilitating the implementation of the London transport strategy.

Case-law on setting parking charges

7.50 Three cases have examined the extent to which authorities are free to set parking charges.

7.51 In *Cran v Camden London Borough Council,*[673] a controlled parking zone scheme was successfully challenged, in part because its introduction constituted a revenue raising exercise. Residents and businesses were to be charged for parking permits even if the costs of the scheme could be met by pay and display machines and enforcement. The council argued that it was lawful for a local authority, when fixing its on-street parking charges, to "take into account such needs as there might be to expend money on any of the matters in section 55(4)".[674] This argument was rejected: raising money was not a legitimate purpose under section 122. The judge recognised that a surplus generated in pursuit of legitimate aims was not evidence of an improper purpose.[675] However, the charges cannot be set in order to generate such a surplus.

7.52 In *R (Attfield) v Barnet LBC,*[676] the claimant applied for judicial review of a local authority's decision to increase the charges for residents' parking permits and visitor vouchers in controlled parking zones. The claimant argued that the increase was unlawful because its purpose was to generate a surplus. On the facts, it was established that the charges were indeed raised to fund other transport expenditure, such as road repair and concessionary charges. The local authority argued that it was entitled to exercise its powers with a view to raising a surplus to use for any transport functions, provided that they came within the scope of section 122.[677] Again, the court rejected this reasoning. The RTRA was not a revenue-raising statute and authorities were not authorised to use it as such for other traffic purposes.[678]

7.53 In *Djanogly v Westminster City Council,*[679] the claimant challenged the validity of parking orders for motorcycle parking. However, here the charges were held to be lawful. The evidence demonstrated two clear objectives the authority sought to achieve: to improve on-street parking availability for motorcyclists to meet increased

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673 [1995] EWHC 13 (Admin), [1995] RTR 346.

674 Above at [63].

675 Above at [53].

676 [2013] EWHC 2089 (Admin), [2013] PTSR 1559.

677 *R (Attfield) v Barnet London Borough Council,* [2013] EWHC 2089 (Admin), [2013] PTSR 1559 at [48].

678 Above at [44].

679 [2011] EWCA Civ 432, [2011] RTR 9.

demand, and to terminate discriminatory treatment between motorcycles and cars.[680] Pressure on kerb-side parking spaces was created by both motorcycles and motorcars and the authority sought to balance the interests of both by introducing charges for motorcycles. In conjunction with the on-street measures, the authority also sought to address the balance by providing free off-street parking on its secure parking sites.

7.54 In *Djanogly,* budgeting for a surplus did not render the scheme unlawful or provide evidence of an ulterior motive.[681] The size of the surplus had initially been unexpectedly high, but this was eventually reduced accordingly. The court considered whether it would be feasible to remove the charges altogether, but crucially, felt that the charges were justified by traffic management reasons.[682] Therefore, the court found that the local authority had used its statutory powers for the legitimate purposes set out in section 122.

7.55 In the cases of *Cran* and *Atfield*, it was apparent, on the facts, that the local authorities were setting charges specifically to raise revenue. However, a surplus, even an expected surplus, does not render parking charges invalid. The case of *Djanogly* shows that courts will defer to local authority decisions on traffic management objectives, within the purposes of the Act.

Conclusion

7.56 Ultimately, local transport management and parking charges will be a matter for local authorities and highly dependent on the unique characteristics of each individual area. The transport strategy in rural areas, for example, will differ substantially from that in a metropolitan area.

7.57 However, we are keen to ensure that local authorities have sufficient powers to use parking charges effectively to support their traffic management objectives. This might include, for example, charging less for HARPS than for residents' parking, or increasing charges for privately-owned vehicles to encourage more shared use.

7.58 In our view, the existing legislation provides flexible powers to introduce these changes. Parking charges may be used to restrain competition for on-street parking, for securing an appropriate balance between different classes of vehicle and for managing "the expeditious, convenient and safe"[683] movement of traffic more generally. However, it is also clear that increases in parking charges have the potential to generate litigation. We therefore welcome views on this issue. In particular, we welcome views on whether the legislation should expressly allow a wider range of considerations to be taken into account when setting parking charges.

680 Above at [9].

681 [2011] EWCA Civ 432, [2011] RTR 9 at [30].

682 Above at [27].

683 RTRA 1984, s 10(2)(a).

Consultation Question 30.

7.59 We welcome views on possible barriers to adapting existing parking provisions and charges to deal with the introduction of HARPS.

In particular, should section 122 of the Road Traffic Regulation Act 1984 be amended to expressly allow traffic authorities to take account of a wider range of considerations when setting parking charges for HARPS vehicles?

ROAD PRICING

7.60 The most significant example of road pricing is the London congestion charge, introduced in February 2003 to control congestion in central London. Non-exempt vehicles entering the central area between 7am and 6pm on a weekday pay a daily charge, currently £11.50. In April 2019, the scheme was extended to address problems of air quality: vehicles entering the zone which do not meet specified emission standards must pay an additional £12.50. Unlike the congestion charge, this is not time limited and applies at all times.[684]

Statutory powers

7.61 Statutory powers to establish road charges exist in London, the rest of England, Wales and Scotland. No such powers exist in Northern Ireland.

7.62 In London, the powers are set out in the Greater London Authority Act 1999. The Act provides that the decision to introduce road charges in London belongs to the Mayor of London,[685] while Transport for London has the power to establish and operate a scheme.[686] All net proceeds from the scheme, for at least ten years, must be spent on improving transport in line with the Mayor's Transport Strategy.[687]

7.63 In England (outside London), the powers were introduced in the Transport Act 2000. They were then extended by the Local Transport Act 2008, which simplified the procedure for creating a scheme. Although there is a duty to consult persons who may be affected by the scheme,[688] there is no requirement to hold local referendums or

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684 See https://tfl.gov.uk/modes/driving/ultra-low-emission-zone. There is also a low emission zone for heavily polluting diesel vehicles: see https://tfl.gov.uk/modes/driving/low-emission-zone/about-the-lez.

685 Greater London Authority Act 1999, Sch 23, para 2.

686 Above, s 295 states that the role of TfL is to implement the Mayor of London's transport strategy. Sch 23, para 9 allows TfL to introduce road user charging across all or part of London. London boroughs may also establish schemes in their areas, with the approval of the Mayor.

687 Above, Sch 23, para 19.

688 It is likely that the exact extent of a local authority's duty to consult on such a scheme would follow the principles set out in *R v Camden LBC Ex p. Cran* (1996) 94 LGR 8. Specifically, the process must be fair and adequate time and information must be given to those affected. However the discretion the local authority has to carry out the process may be "comparatively wide" as Clarke LJ noted in In *R (Wainwright) v Richmond on Thames BC* [2001] EWHC Admin 1090. The council would not be acting unlawfully unless the

obtain approval from the Secretary of State.[689] The scheme may impose different charges based on (for example): time, road, distance travelled, and class of vehicle.[690] Proceeds from the scheme must be used for facilitating the transport policies of the authority.[691]

7.64 In Wales, the process is similar to that in England, though the Welsh Ministers retain the right to confirm a scheme order and can modify it.[692] Ministers can also initiate an inquiry into a scheme.[693]

7.65 In Scotland, the powers are set out in the Transport (Scotland) Act 2001.[694] A relevant authority may make an order for such a charging scheme provided that it facilitates the achievement of its local transport strategy. However, the authority must consult with emergency services, freight and motoring organisations[695] and must publicise the order in the prescribed manner.[696] An order must then be confirmed by Scottish Ministers.[697] Scottish Ministers have made regulations which exempt emergency service vehicles and vehicles with a Blue Badge.[698]

Literature on road pricing

7.66 In January 2019, the Government Office for Science reviewed the literature on road pricing. It concluded that road charges, when implemented well, are an effective measure. They shift traffic to off-peak periods, ease congestion and are relatively cheap to implement compared with their societal impact. For similar reasons the Royal Academy of Engineering reached the conclusion that road pricing is the best tool available to policymakers to tackle congestion.[699]

7.67 This follows Sir Rod Eddington's advice to Government in 2006, which concluded that "the potential for benefits from a well-designed, large-scale road pricing scheme is unrivalled by any other intervention".[700] He thought that road pricing would not only

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process was so narrow that no reasonable council complying with the aforementioned principles would have adopted it.

689 Transport Act 2000, s 170.

690 Above.

691 Above, Sch 12, para 11A.

692 Above, s 109A.

693 Above, s 170(4).

694 Transport (Scotland) Act 2000, part 3 and Sch 1.

695 Road User Charging (Consultation and Publication) (Scotland) Regulations 2003 SSI 2003 No 292, reg 3.

696 Above, reg 4.

697 Above, reg 6.

698 Road User Charging (Exemption from Charges) (Scotland) Regulations 2004 SSI 2004 No 519.

699 Royal Academy of Engineering, *Challenge Paper: The transport congestion challenge: getting the most out of the UK's road and rail networks* (2015), http://www.raeng.org.uk/RAE/media/Publications/Reports/The-Transport-Congestion-Challenge.pdf, p 18.

700 R Eddington, *The Eddington Transport Study. The Case for Action: Sir Rod Eddington's Advice to Government. Report to HM Treasury and DfT* (2006),

reduce congestion but would reshape infrastructure needs "as well as offering opportunities to price more appropriately for environmental costs and reduce emissions". He continued:

> Importantly, given the pace of economic change, pricing also offers considerable flexibility once in place. With pricing it becomes possible to respond to unanticipated change through changing prices much sooner – and at much lower cost – than bringing forward new infrastructure.[701]

Failed schemes

7.68 Despite these arguments, outside London the use of urban road charging powers has been limited to a small scheme in Durham and schemes in Brighton and Nottingham. Abandoned proposals in Cambridgeshire, Edinburgh and Greater Manchester illustrate some of the difficulties with using road charging powers in urban areas.

Cambridge

7.69 In 2007 Cambridgeshire County Council proposed a congestion charge as part of its £500 million bid to the Transport Innovation Fund to provide increased public transport and pedestrian facilities. The proposed charge would have operated for two hours during the morning peak hour rush (7:30-9:30am) and been between £3 and £5 per day.[702] The council stated, however, that this would only be considered "as a last resort" after other alternatives had been explored. Plans were dropped when specific funding was no longer available.

Edinburgh

7.70 In 2002, the City of Edinburgh Council began considering plans for a congestion charge as part of its local transport strategy. It suggested a £2 daily charge to enter the city centre. Following extensive consultation and a public inquiry, the council held a referendum on the issue in February 2005. The scheme was comprehensively rejected, by 74% of Edinburgh citizens (with a voter turnout of 62%). The scheme was therefore abandoned.

Greater Manchester

7.71 As in Cambridge, congestion charge proposals were developed as part of a Transport Innovation Fund bid for a loan to get a scheme up and running. The aim was to repay a £1.151 billion loan with revenue from the charging scheme over a 30-year period. Vehicles entering the area within the M60 in the morning peak would be charged £2, with a further £1 for those entering an inner cordon. In the evening, a further £1 would be charged to exit each cordon, generating a maximum daily charge of £5.

7.72 In June 2008, the Greater Manchester councils announced a public referendum on the issue. It was agreed that the ten councils would count votes separately: for the

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http://webarchive.nationalarchives.gov.uk/20090115123503/www.dft.gov.uk/162259/187604/206711/executivessummary.pdf, para 1.108.

701 Above, para 1.111.

702 Cambridgeshire County Council, *Congestion Charging,* http://web.archive.org/web/20090515144229/http:/www.cambridgeshire.gov.uk/transport/strategies/tacklingcongestion/ourproposals/charge.htm.

proposed charge to go ahead, at least seven out of the ten councils would need a majority "yes" vote. In December 2008 the plan was comprehensively rejected: 79% of votes were cast against the scheme (on a turnout of 53%). There was a significant "no" majority in each of the ten council areas. The Greater Manchester councils consequently dropped plans to introduce such a charge.

A new impetus for introducing road charging schemes

7.73 In 2011, the RAC Foundation examined the acceptability of road pricing in the light of these referendums.[703] The report acknowledged that in many countries, drivers have resisted road pricing. Drivers may regard it as an extra tax, may object to paying for something they think they have already paid for, and may sense that the benefits would go to public transport users rather than them.[704]

7.74 However, the report thought that much of the opposition arose from misapprehensions. The report concluded that road pricing is acceptable to public opinion, provided that it is equitable, does not have a high cost overhead, the public can see how it works, and revenues are reinvested in transport. This conclusion was reinforced by a 2013 study, which found that a majority of people approve road-pricing once its efficacy is seen.[705]

7.75 Recently, there has been renewed discussion of road pricing, partly as a result of elected mayors. Louise Bucher, in her House of Common briefing paper, suggests that elected mayors could encourage road charging:

> Elected mayors, for those areas which will get them, also present an opportunity to take forward potentially unpopular proposals – for example Ken Livingstone in London implemented the congestion charge without the need for the local referendum that scuppered Manchester's plans in 2008. The elected mayors of London have had the advantage of using their election as a democratic mandate to implement their transport manifestos.[706]

7.76 Air quality is another factor which may increase public acceptance of local road charges. The Government's 2017 Air Quality Plan highlighted the potential use of local road charges to improve air quality.[707] Several local authorities have now indicated a willingness to consider road charges in aid of lowering emissions. Newcastle, Gateshead and North Tyneside councils are currently consulting on the matter,[708]

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703 RAC Foundation, *The Acceptability of Road Pricing* (2011), www.racfoundation.org/wp-content/uploads/2017/11/acceptability_of_road_pricing-walker-2011.pdf.

704 Above, para 1.1.

705 DA Hensher and Zheng Li, "Referendum Voting in Road Pricing Reform: A Review of the Evidence" (2013) *Transport Policy* 25, p 185.

706 L Butcher, *Local road charges* (14 March 2018) House of Commons Briefing paper SN01171 https://researchbriefings.files.parliament.uk/documents/SN01171/SN01171.pdf, p 11.

707 Defra and DFT, *UK Plan for Tackling Roadside Concentrations of Nitrogen Dioxide* (July 2017), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633269/air-quality-plan-overview.pdf.

708 Gateshead Now, *Air quality consultation gets underway* (7 March 2019), https://www.gateshead.gov.uk/article/11190/Air-quality-consultation-gets-underway.

whilst the Mayor of Greater Manchester is considering plans to introduce a clean air zone. He has stressed that this will not act as a congestion charge: instead, only the most polluting vehicles will be penalised and the charge would not apply to private cars.[709]

7.77 In 2018, Cardiff Council consulted on a clean air zone to meet environmental targets. However, they recently announced a decision to drop these plans.[710] They reasoned that a charge in the central zone would not help overall air quality in Cardiff but would re-distribute emissions to other parts of the city.[711]

Road pricing and HARPS

7.78 We anticipate that, once HARPS become common, local authorities may consider introducing road pricing schemes specifically for HARPS. The purpose of such a scheme would be to control congestion caused by HARPS in town centres at busy times, especially where HARPS travel empty or with single occupants.

7.79 Automated technology enables a much more flexible approach to road pricing. One problem with a daily charge is that once the vehicle has paid the charge for the day, it can continue to circulate within the zone without further disincentive. However, if the vehicle can generate reliable data to show where it has travelled and at what time, it will be possible to introduce more sophisticated pricing schemes. We envisage that HARPS vehicles might pay a price per mile travelled, with the possibility of different mileage rates depending on the roads, occupancy and time of day. With a digitised system, there is also the possibility of dynamic pricing, where charges vary depending on the level of congestion in the city at that particular time.

7.80 The pricing mechanism could also be used to promote other transport objectives, for example, by charging less for zero emission vehicles or for those which meet certain accessibility requirements.

7.81 It is important that charges are not so great as to render HARPS uncompetitive. The aim is to influence the way they are used, not to prevent them. In particular, road pricing can shift use to less congested times and encourage shared use; parking rather than cruising between trips; and multi-modal trips, where people change to mass transit to enter the city centre.

7.82 Road pricing for HARPS is unlikely to suffer from the acceptability issues seen in Edinburgh and Manchester. With automated data, the costs of collection are likely to be less. Additionally, with a new charge for a new service, there will be less sense of paying more for an existing service.

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709 C Odgen, *Clean air plan for Manchester but Burnham rules out charges for private vehicles* (10 January 2019), https://airqualitynews.com/2019/01/10/clean-air-plan-for-manchester-but-burnham-rules-out-charges-for-private-vehicles/.

710 BBC, *Cardiff Council drops clean air proposal* (14 March 2019), https://www.bbc.co.uk/news/uk-wales-47570997.

711 Above.

A new statutory scheme?

7.83 The current legislation gives traffic authorities wide powers to introduce road pricing. However, we see benefits to a new statutory scheme specifically for HARPS. The first is to allow the funds raised to be used in a greater variety of ways. One important use of the funds may be to compensate for loss of parking income that may arise as HARPS are deployed. We are aware that within cities, road pricing schemes are set up by mayors and integrated traffic authorities. However, the lost parking income would come from more local level authorities, such as London or metropolitan boroughs. Any HARPS road pricing scheme, therefore, may need to involve a transfer of funds from one authority to another. This would require new statutory provisions.

7.84 The second reason for a new statutory scheme would be to keep administrative costs low by introducing national standards and procedures. The literature on road pricing emphasises the importance of reducing administration costs.[712] During initial discussions, it was suggested to us that costs would be greatly reduced if collection occurred centrally, on a national basis. This would still allow city authorities to set charges for their particular area, but the administrative costs would be shared.

7.85 We think that HARPS road pricing schemes will be sufficiently different from other forms of road pricing to benefit from specific legislative provisions. We ask consultees if they would support such a scheme, and welcome observations on how it might work.

Consultation Question 31.

7.86 We seek views on the appropriate balance between road pricing and parking charges to ensure the successful deployment of HARPS.

Consultation Question 32.

7.87 Should transport authorities have new statutory powers to establish road pricing schemes specifically for HARPS?

If so, we welcome views on:

(1) the procedure for establishing such schemes;

(2) the permitted purposes of such schemes; and

(3) what limits should be placed on how the funds are used.

[712] RAC Foundation, *The Acceptability of Road Pricing* (2011), www.racfoundation.org/wp-content/uploads/2017/11/acceptability_of_road_pricing-walker-2011.pdf.

QUANTITY RESTRICTIONS

7.88 Another possible regulatory tool is to impose a cap on vehicle numbers. There is a long history of attempts to impose limits on the numbers of vehicles licensed for hire. In 1654, for example, an ordinance limited the number of hackney carriages in London to 300, following complaints about the "many inconveniences" arising from the "late increase and great irregularity of Hackney Coaches".[713] This was the start of a long debate in which numerical controls on taxis have been imposed, increased, abolished and re-imposed.[714]

7.89 In England and Wales (outside London) licensing authorities still have the power to limit the number of taxi vehicle licences issued in their area.[715] To do this, the authority must be satisfied that there is no significant unmet demand for taxis in the area.[716]

7.90 In London, the numerical limit for taxis was abolished in 1832. Transport for London has no legislative powers to control numbers of taxi licences issued.[717] However, the stringent knowledge tests required of drivers in London and the costly vehicles required to meet the conditions of fitness may limit numbers in a way which is equivalent to quantity regulation.

7.91 Authorities in England and Wales, including London, have never had the power to limit the number of private hire vehicles.

7.92 In Scotland, local authorities may impose quantity restrictions on *both* taxis and private hire cars. To impose quantity restrictions on taxis, the licensing authority must be satisfied that there is no significant unmet demand in their area.[718] To impose quantity restrictions on private hire cars, the test is more stringent: the licensing authority must be satisfied that there is "overprovision of private hire car services in the locality".[719]

7.93 For the purposes of this paper, we distinguish two types of limits. The first is as part of a safety assurance scheme, to provide real world feedback about automated driving system performance in the early stages of deployment. The second is to prevent

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713 An Ordinance for the Regulation of Hackney-Coachmen in London and the places adjacent (June 1654) in CH Firth and R S Rait (ed), *Acts and Ordinances of the Interregnum, 1642-1660* (1911), pp 922-924.

714 For a discussion of international experience of quantity controls, see International Transport Forum, *Regulating App-Based Mobility Services* (1 and 2 November 2018) ITS Roundtable 175, pp 26 to 29.

715 Transport Act 1985, s 16.

716 See *R (Royden) v The Wirral Metropolitan Borough Council* [2001] EWHC 2484 (Admin), [2002] All ER (D) 256.

717 The power to limit the numbers of taxis in London was abolished by the London Hackney Carriage Act 1831, s IX. Although this provision has since been repealed, the power to limit numbers was never reintroduced.

718 Civic Government (Scotland) Act 1982, s 10(3). The test is similar to that in England and Wales.

719 Above, s 10(3A). A locality for these purposes may be smaller than the whole of the local authority area. Unlike a taxi licence, a licence for a private hire car in Scotland covers one or more localities, with the local licensing authority deciding on the breakdown of localities in their area, or whether their entire area should be regarded as the locality: Civic Government (Scotland) Act 1982, s10 (3B).

congestion following deployment. We see arguments in favour of the former but have concerns that any long-term cap on numbers would have an anti-competitive effect.

A phased approach to safety assurance

7.94 In Consultation Paper 1, we discussed the RAND Corporation's proposal for a "graded" approach to deploying automated vehicles, in which limited initial deployment is used to gather more safety data.[720] At first, manufacturers would provide regulators with evidence from their own trials, gained from track-based tests, virtual testing and road-trials with safety drivers. On this basis, the regulator would allow a small number of vehicles to be deployed commercially, on the condition that the deployment was used to gather data.[721] Once safety had been demonstrated, the number of vehicles would be increased. This approach is analogous to that taken in pharmaceutical trials, which gradually gather more data and use this data to help determine safety.[722]

7.95 We see benefits in taking a phased approach to automated deployment, starting with a small number of vehicles and then gradually increasing numbers to maximise safety and manage risk. We provisionally consider that the agency charged with licensing operators should have flexible powers to limit the number of vehicles any given operator can use within a given operational design domain for the first few years.[723] This number would then increase once the operator was in a position to show that the service could be managed safely, without disrupting traffic flow. This initial phase would provide information about how an automated driving system performs in the real world before full deployment is authorised.

7.96 We see this as separate from quantity restrictions which place a cap on the number of vehicles available to all operators following full deployment. As we explore below, "after the event" quantity restrictions are controversial, with strong voices both for and against such controls.

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720 See RAND Corporation, *Challenges and approaches to realizing autonomous vehicle safety* (2017). This document was created from recorded testimony presented by Nidhi Kalra (of the RAND Corporation) to the (US) House Energy and Commerce Committee, Subcommittee on Digital Commerce and Consumer Protection on 14 February 2017.

721 We discuss the challenges of monitoring the safety of automated vehicles following commercial deployment, see paras 5.35 to 5.39 above.

722 New drugs go through a multi-stage "discovery and screening phase", followed by clinical trials increasing the number of participants at each stage before safety and labelling are reviewed for final (unrestricted) approval. For an overview of the process in the European Union, see http://www.ema.europa.eu/ema/index.jsp?curl=pages/regulation/general/general_content_001772.jsp&mid=WC0b01ac0580b18a39.

723 In a PSV context, Traffic Commissioners have a broad discretionary power to attach such conditions as they think, including the number of vehicles an operator may use: see Public Passenger Vehicles Act 1981, s 16(3).

Consultation Question 33.

7.97 Do you agree that the agency that licenses HARPS operators should have flexible powers to limit the number of vehicles any given operator can use within a given operational design domain for an initial period?

If so, how long should the period be?

Controversy over quantity restrictions

7.98 In July 2017, the Competition and Markets Authority issued a guide for local authorities, which put the case against quantity restrictions:

> Quantity restrictions may cause harm to passengers through reduced availability, increased waiting times, reduced scope for downward competitive pressure on fares and reduced choice. They also may increase the risk to passenger safety if they encourage the use of illegal, unlicensed drivers and vehicles.[724]

7.99 This followed a market study by the Office of Fair Trading in 2003, which argued that quantity restrictions led to longer waits for consumers, increased use of less suitable modes of transport (such as unlicensed vehicles) and were a barrier to new entrants. This barrier is most obvious in high "plate values", whereby an owner can make an additional profit from selling a vehicle with the licence attached.[725]

7.100 One problem is how to decide what the cap on numbers should be. To satisfy themselves that there is no significant unmet demand for taxis, licensing authorities commission periodic "unmet demand" surveys. In 2012, the Law Commission described these surveys as "conceptually flawed".[726] On a practical level, they tend to concentrate on observational studies of taxi ranks, ignoring demand for hailing taxis on the street. They also fail to measure latent demand, where people fail to use ranks because of concerns about long waits.[727] Additionally, they do not take account of those who do not use taxis at all (because of disability or affordability, for example)

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724 Competition and Markets Authority, *Guidance: Regulation of taxi and private hire vehicles: understanding the impact on competition* (12 July 2017), https://www.gov.uk/government/publications/private-hire-and-hackney-carriage-licensing-open-letter-to-local-authorities/regulation-of-taxis-and-private-hire-vehicles-understanding-the-impact-on-competition.

725 Office of Fair Trading, *The regulation of licensed taxi and private hire vehicle services in the UK* (November 2003). For further discussion of this issue, see Diego Zuluaga, *Taxi and private hire vehicle regulation* (December 2018) Institute of Economic Affairs, https://iea.org.uk/wp-content/uploads/2017/12/Taxi-and-Private-Hire-paper.pdf.

726 Reforming the Law of Taxi and Private Hire Services (2012) Law Commission Consultation Paper No 203, paras 17.9 to 17.11. See also Office of Fair Trading, *The regulation of licensed taxi and private hire vehicle services in the UK* (November 2003), https://publications.parliament.uk/pa/cm200304/cmselect/cmtran/251/251.pdf.

727 Office of Fair Trading, *The regulation of licensed taxi and private hire vehicle services in the UK* (November 2003), https://publications.parliament.uk/pa/cm200304/cmselect/cmtran/251/251.pdf, paras 4.52 to 4.53.

but who might use a different service if it were available. More fundamentally, people find it difficult to imagine how they might use a service which is not currently available. This difficulty is particularly pronounced at a time of rapid technological change.

7.101 In practice, only a minority of licensing authorities use their powers to impose quantity restrictions to control the number of taxis: in 2014, only 88 out of 313 authorities in England and Wales did so (28%).[728] However, almost all major cities controlled numbers, including Birmingham, Bristol, Cardiff, Leeds, Liverpool, Newcastle and Sheffield.

7.102 The overwhelming majority of those responding to the Law Commission's 2012 consultation paper supported quantity restrictions. Furthermore, several councils who removed them later reinstated them, including Chesterfield, Watford, Welwyn Hatfield and the Wirral.[729]

7.103 In 2014, the Law Commission reported that the evidence of what happens when quantity restrictions are removed is mixed and can be difficult to predict.[730] Deregulation may lead to increased congestion and "over-ranking" (as too many taxis compete for too few spaces at ranks). The increased supply is more likely to be at times of peak demand, so shortages may continue at unpopular times. Furthermore, deregulation had sometimes led to increased fares: with less work to go around, drivers may seek to compensate for lost earnings by pressuring licensing authorities to increase maximum fares.[731] Overall, notwithstanding the significant problems with quantity controls on taxis, the Law Commission found there was insufficient support and evidence to justify change.

Limits on private hire cars

Glasgow

7.104 In April 2019, Glasgow City Council (GCC) became the first licensing authority in the UK to limit the number of private hire car (PHC) licences issued in its area. The statutory power to do this was introduced by the Scottish Government in May 2017. Section 10(3A) of the Civic Government (Scotland) Act 1982 allows a licensing authority to refuse a private hire car licence, but only if they are satisfied that there is "overprovision of private hire car services in the locality".

7.105 GCC instigated a review in November 2017, covering both demand for taxis and private hire cars.[732] In September 2018, the council commissioned an "unmet demand

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728 National Private Hire Association survey reported in Taxi and Private Hire Services (2014) Law Com No 347, paras 11.3.

729 Law Commission, Taxi and Private Hire Services (2014) Law Com No 347, para 11.4.

730 Above, paras 11.16 to 11.64.

731 The Law Commission concluded that it should only recommend a change to the existing legal position if it would lead to a clear improvement. In the light of the mixed evidence, it could not be confident that removing quantity restrictions would bring significant benefits: Taxi and Private Hire Services (2014) Law Com No 347, paras 11.59 to 11.60.

732 Glasgow City Council Licensing and Regulatory Committee, *Report by Director of Governance and Solicitor to the Council* (17 April 2019), para 1.6.

survey" from a consultancy firm, Local Transport Projects Ltd. The survey found that since 2015, PHC numbers increased by over 42%, from 2,638 to 3,759:

> It is considered that this rapid change can be largely attributed to changes in the PHC operating environment including the introduction of mobile technology and app-based booking systems.[733]

7.106 A survey of bookings and driver availability showed large differences between peak-time demand on a Friday and Saturday night (when 90-95% of PHCs were used) compared to other times (when only 60-80% of the fleet was used). A similar finding emerged from the public survey, which found that 13% of those questioned (63 people) had encountered difficulties in booking a car. Of these 63 people, 24 (38%) identified Friday or Saturday night as the time the problems occurred. The study also notes that on consultation, the Scottish Taxi Federation and Unite both thought there was significant overprovision.

7.107 On the basis of this evidence, the study concluded that "there is reasonable evidence to suggest an overprovision exists".[734] The study reasoned:

> The difference in PHC utilisation between the peak periods and wider day time periods indicates that the PHC fleet could be reduced by 15% (564) vehicles to 85% of its current value (3,195 vehicles) without impacting on the balance of supply and demand for PHC services outside of the Friday and Saturday peak periods.[735]

7.108 The report noted, however, that this might have wider impacts, including:

> Potential increase in risk taking behaviour by consumers who experience long wait times, particularly during late night weekend peak periods, such as walking home alone, drink driving, waiting in isolated areas.[736]

7.109 On 17 April 2019 the committee approved the PHC licence overprovision policy with immediate effect.[737] Under the policy, there is a rebuttable presumption against the grant of further private hire car licences until the number of private hire car licences falls from the current 3,759 to below 3,195.[738] When considering an application for the grant of a PHC licence, the Licencing and Regulatory Committee is to have regard to the following three factors:[739]

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733 Local Transport Projects, *Glasgow City Council: Taxi & Private Hire Unmet Demand Survey*, dated December 2018 but finalised on 2 April 2019 after additional information was sought, para 2.1.3.

734 Above, para 8.4.3.

735 Above, para 8.3.17.

736 Above, para 8.5.6.

737 Glasgow City Council Licensing and Regulatory Committee, *Minutes of meeting on 17 April 2019 in Glasgow*, https://www.glasgow.gov.uk/councillorsandcommittees/agenda.asp?meetingid=16214, p 2.

738 Above, p 5.

739 Above, pp 5 to 6.

(1) the number of private hire car licences in existence at that time;

(2) any evidence as to a material change in the demand for the services; and

(3) any submissions made by an applicant as to why he or she should be treated as an exception to the policy.

7.110 The policy does not affect the renewal of existing PHC licences.[740] New applications for a PHC licence will be considered in chronological order by reference to the date and time of receipt.[741]

England and Wales

7.111 There have been calls for a similar policy to be introduced in England and Wales, In September 2018, the Task and Finish Group drew attention to the rapid increases in private hire vehicles in some parts of the country, particularly in London and Wolverhampton, with effects on congestion and air quality. The rise of private hire vehicles in London has been particularly rapid, increasing from 49,355 in 2009/10 to 87,921 in 2017/18 - an increase of 78%.[742]

7.112 The group recommended new legislation to allow local licensing authorities to set a cap on both taxi and private hire vehicle numbers where this was in the public interest. The group thought that this could:

> help authorities to solve challenges around congestion, air quality and parking and ensure appropriate provision of taxi and private hire services for passengers, while maintaining drivers' working conditions.[743]

7.113 Unlike the Scottish Government, the UK Government has resisted these calls. In its response to the Task and Finish Group, the Government highlighted the differing opinions on this issue: while Transport for London strongly supported a cap on private hire vehicle numbers, other members of the group flagged concerns about the effect on competition. It would be difficult to calculate what the right cap should be, leading to a risk of undersupply. Undersupply could result in higher prices, increased waiting times and put vulnerable people at risk of unlicensed, unvetted drivers.[744]

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740 Glasgow City Council Licensing and Regulatory Committee, *Minutes of meeting on 17 April 2019 in Glasgow*, https://www.glasgow.gov.uk/councillorsandcommittees/agenda.asp?meetingid=16214, p 5.

741 Above, p 5.

742 See TfL, *Licensing Information*, https://tfl.gov.uk/info-for/taxis-and-private-hire/licensing/licensing-information.

743 Task and Finish Group, *Taxi and Private Hire Vehicle Licensing* (September 2018), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/745516/taxi-and-phv-working-group-report.pdf, recommendation 8.

744 DfT, *Government response to report of the Task and Finish Group* (February 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/775983/taxi-task-and-finish-gov-repsonse.pdf, para 2.22.

7.114 The Government said that it did not propose to take this recommendation forward. Instead, local authorities should address issues of congestion and air quality through their existing powers.

Avoiding "after the event" caps

7.115 We provisionally favour active management of the introduction of HARPS onto public roads led by safety standards (set nationally through a safety assurance scheme) alongside local measures such as traffic management, parking charges and road pricing. We also consider the integration of HARPS with public transport to be essential, as discussed in the next chapter.

7.116 However, we would not favour a scenario in which large numbers of HARPS are placed on the road, cause concern and then generate an "overprovision policy" which places a cap on numbers. We would have concerns about governmental decisions regarding how many HARPS constitute "too many" or the imposition of rebuttable presumptions against further licences being granted.

7.117 For conventional vehicles, such policies are controversial. There are practical difficulties in measuring demand, especially among disabled people and others who do not currently use the service but might use one if it were better suited to their needs. Those who are unable to access the service may use riskier options: young women, in particular, can be left vulnerable if they are unable to book a ride following a night out.[745] Furthermore, quantity restrictions can lead to a problematic market in "plates".[746]

7.118 If quantity restrictions were to be imposed in an automated environment, they could negate the benefits of innovation. We say this for the following reasons:

(1) For automated services, it is important to encourage competition. The first developer will not necessarily be the best.

(2) "After the event" caps protect incumbents against competitors. If the first one or two operators flood the market, an arbitrary cap would then prevent another competitor from entering the market. This is true even if the new operators are able to offer a better, safer or more innovative service.

(3) Existing techniques for measuring "unmet need" or "overprovision" are particularly unsuited to new technologies, where people may be unaware of how a new service may meet their needs until they have tried it.

7.119 While we sympathise with the many city authorities grappling with problems of congestion, pollution and climate change, we think that these would be better addressed preventively, in particular through road pricing rather than through after the event quantity restrictions. We ask consultees if they agree.

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745 See Suzy Lamplugh Trust, *Taxi and PHV safety*, https://www.suzylamplugh.org/taxi-and-phv-safety.

746 In its 2014 report, the Law Commission recommended that where new quantity restrictions were imposed, it should not be possible to transfer taxi licences at a premium: Reforming the Law of Taxi and Private Hire Services (2012) Law Commission Consultation Paper No 203, paras 11.104 to 11.109.

Consultation Question 34.

7.120 Do you agree that there should be no powers to impose quantity restrictions on the total number of HARPS operating in a given area?

Chapter 8: Integrating HARPS with public transport

INTRODUCTION

8.1 In Chapter 2 we discussed the UK Government's Future of Mobility: Urban Strategy.[747] Principle 4 is that "mass transit must remain fundamental to an efficient transport system". Mass transit is a US term, defined as:

> The transportation of large numbers of people by means of buses, subway trains, etc., especially within urban areas.[748]

8.2 Highly Automated Road Passenger Services (HARPS) may contribute to mass transit in two ways. First, they may form part of a mass transit system. In other words, large HARPS vehicles could be used to transport many people at once, acting as a form of automated bus. Secondly, HARPS could be part of an overall transport mix which encourages the use of mass transit.

8.3 In this chapter we start by describing the existing system of bus regulation in Great Britain. This is complex, with both regulated and deregulated elements. There are minor differences between England, Wales and Scotland, and major differences between London and the rest of the country. These complexities are best understood in their historical context. We therefore start with a short history before outlining the current regulatory framework.

8.4 We then consider HARPS as part of a mass transit network. From a regulatory point of view, the crucial question is when is it appropriate to treat HARPS as local bus services, and therefore subject to bus regulation. We discuss how the current definition of a local bus service might apply to HARPS.

8.5 Finally, we consider how HARPS can contribute to a transport mix which encourages the use of mass transit. In Chapter 2, we highlighted the need to encourage more "multi-modal trips", where users change to a different type of transport, better-suited to that leg of the journey. An obvious example would be taking a small HARPS vehicle to the station and a train to the city centre. Alternatively, mass transit could be used in one direction and a flexible HARPS in the other (such as taking the bus to a night out and a HARPS home). The key to encouraging this mix is to provide good information about the range of options available, coupled with seamless ticketing and through fares. We consider how regulation can assist these outcomes.

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747 See DfT, *Future of Mobility: Urban Strategy* (March 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786654/future-of-mobility-strategy.pdf, p 8.

748 See https://www.merriam-webster.com/dictionary/mass%20transit.

BUS REGULATION: A SHORT HISTORY

A regulated market: 1930 to 1980

8.6 The Road Traffic Act 1930 established a licensing system for passenger carrying motor-vehicles, controlled by regional Traffic Commissioners. This covered quality (regulating operators, vehicles and drivers) and quantity (regulating the number and types of services). The Traffic Commissioners awarded licences to operators to run a service defined by route and timetable with a specified fare scale.

8.7 As the use of the private car increased, bus patronage fell. Bus services increasingly relied on public subsidy, particularly in rural areas. By 1968, the great majority of local bus operations were publicly owned.[749] These included municipal bus companies controlled by district councils and the state-owned National Bus Company.

Deregulation in the 1980s (outside London)

8.8 The Conservative Government of the 1980s introduced legislation to deregulate the bus industry outside London. The Transport Act 1980 deregulated express coach services while the Transport Act 1985 deregulated local bus services.

8.9 Under the Transport Act 1985, the Traffic Commissioners lost their former powers to define routes, timetables and fares. Instead, a licensed bus operator merely needed to register its intention to set up a service, giving at least 56 days' notice. The operator was then obliged to run the service according to the specification in the registration.[750] New services depended on the operator's opinion of their commercial viability, with the operator responsible for the route, timetable and fares.

8.10 Local authorities were given powers to subsidise socially necessary services which were not provided by the commercial market, on the condition that they went out to open tender.[751]

"Bus wars"

8.11 The Transport Act 1985 led to a period of intense competition between operators for the most profitable bus routes, often referred to as "bus wars". The Competition Commission described instances of bus operators obstructing rivals by:

> deliberately blocking or delaying their services on the road, preventing them from using bus stops and stands, intimidating drivers, causing damage to a rival's vehicles, depots or other facilities, removing rival operators' publicity and timetables, providing misinformation about a rival's services to passengers,

749 Competition Commission, *Local bus services market investigation: a report on the supply of local bus services in the UK (excluding Northern Ireland and London)* (December 2011), para 2.2.

750 Public Service Vehicles (Registration of Local Services) Regulations 1986 SI 1986 No 1671.

751 Transport Act 1985, s 89.

> imitating a rival (such as copying its livery), or guiding passengers at a bus stop away from boarding a rival's services.[752]

8.12 The Competition Commission commented that this could "result in periods of intense short-lived rivalry, leading to the exit of one operator".[753] By the 21st century, the bus market had consolidated with six large companies dominating the market.[754]

London

8.13 The Transport Act 1985 did not apply to London. This was because London had undergone its own reform a year earlier under the London Regional Transport Act 1984. This Act required London Transport to set up a new subsidiary company, London Buses Ltd (LBL), as a precursor to privatisation. It also stipulated that, where appropriate, competitive tendering should be introduced. Transport for London explain:

> This required LBL to compete against privately owned operators for the opportunity to run individual bus routes.... The operators tendered on the basis of all the costs required to operate and maintain the specified service whilst London Transport retained the fares revenue. Routes were awarded to the operator who could run the best service at the most cost effective price. [755]

8.14 Meanwhile, LBL was divided into 13 subsidiary companies and sold to the private sector. The privatisation of LBL was completed by 1994.

8.15 The result is a bus franchise system in London which continues to this day. Details of routes, fares and service levels are specified by a public body and the right to run services is contracted out to private companies on a tendered basis.

8.16 In 2011, the Competition Commission commented that although there was only limited empirical investigation of London bus franchising, "those studies which do exist suggest that competition has been working well in London".[756] Similarly, "the quality of local bus service provision in London is generally regarded to be good".[757]

8.17 Since franchising, bus passenger numbers have increased in London despite a decline elsewhere. From 2005 to 2018, the number of passenger journeys increased by 23%

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752 Competition Commission, *Local bus services market investigation: a report on the supply of local bus services in the UK (excluding Northern Ireland and London), summary* (December 2011), para 39.

753 Above, para 2.

754 In 2011, the Competition Commission found that six operators accounted for 70% of the market, and 15 operators accounted for 82% of the market: above, para 3.1.

755 See TfL website: https://tfl.gov.uk/corporate/about-tfl/culture-and-heritage/londons-transport-a-history/london-buses.

756 Competition Commission, Local bus services market investigation, 2011, Annex B to Appendix 15.6, para 12. One study estimated the cost savings from the introduction of tendering to 1995 as 20%: Kennedy, *London bus tendering: the impact on costs* (1995). See also Amaral et al, *Auction procedures and competition in public services: the case of urban public transport in France and London'*(2009), Utilities Policy; KMPG*, Independent strategic review of the provision of bus services in Londo*n (2009); and National Audit Office, *Delivery chain analysis for bus services in England* (2005).

757 Competition Commission, *Local bus services market investigation* (2011), Annex B to Appendix 15.6, para 20.

in London, compared to a 4.2% decline in England outside London.[758] This increase partly reflects the high level of subsidy for buses in London. Projections for 2018 to 2019 show a £617 million subsidy to buses, partly financed by a £172 million profit from the London Underground.[759]

2000-2010: Quality Partnerships and Contracts

8.18 In 2000, the Labour Government made tentative steps towards franchising and greater partnership working outside London. The Transport Act 2000 introduced Quality Contract Schemes (QCS)[760] and Quality Partnership Schemes (QPS) in England and Wales).[761]

8.19 In Scotland, similar reforms were introduced in 2001. The Transport (Scotland) Act 2001 also makes provision for QCS and QPS.[762]

Quality Contract Schemes (QCS)

8.20 These schemes were intended to allow local transport authorities to commission the provision of bus services.[763]

8.21 However, a scheme could only be introduced after a lengthy process. Following consultation, the authority was required to submit its scheme to a QCS Board. The Board could only approve the scheme if it met the "public interest test". Furthermore, until 2008, authorities had to show that a QCS was the "only practicable way" of achieving their local transport scheme. This requirement was removed by the Local Transport Act 2008 since it made the process of creating a QCS too onerous.[764]

8.22 In the end, no QCSs were created in England. The North East Combined Authority tried to create a QCS in 2015 but it failed to secure approval from the QCS Board.[765] There have been none in Scotland either.[766] QCSs in England were subsequently abolished

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758 DfT, *Annual Bus Statistics 2017/18*, https://www.gov.uk/government/statistics/annual-bus-statistics-year-ending-march-2018.

759 London Assembly, *TfL Finances: the End of the Line?*, Budget and Performance Committee, November 2018, p 10.

760 Transport Act 2000, ss 124 to 134.

761 Above, ss 114 to 123 put QPS on a statutory footing. Although some provisions of the Transport Act 2000 apply to Scotland, they are not related to bus services.

762 (Scotland) Act 2001 – QPS found in ss3 to 12; QCS from ss13 to 27.

763 Above, ss 124 to 134.

764 Local Transport Act 2008, ss 19 to 45.

765 Quality Contract Scheme Board, *Report on the proposed Tyne and Wear QCS* (November 2015), https://www.gov.uk/government/publications/quality-contract-scheme-qcs-board-report-on-the-proposed-tyne-and-wear-qcs. The QCS Board was concerned that the authority had exaggerated the benefits. In the Board's opinion, the scheme might not be affordable, so it was not certain that it would lead to an increase in bus use. It thought that the negative cash impact on existing operators outweighed the benefits likely to be delivered by the QCS.

766 "There have been no attempts to introduce a QC in Scotland, despite a number of recent calls for local franchising from some local authorities. Our feedback is that the QC system is felt to be too burdensome even to attempt.": Transport Scotland consultation on Local Bus Services in Scotland: Improving the

by the Bus Services Act 2017. The legislation continues to exist in Wales, but we are not aware of any instances in which it has been used.

Quality Partnership Schemes (QPS)

8.23 A QPS is a formal agreement between a local authority and one or more bus operators whereby:

(1) the authority provides particular facilities along the routes used by local bus services, such as priority measures, bus stations and shelters; and

(2) the operators agree to provide services of a particular standard.[767]

8.24 As of December 2006, no QPS had been made. The government thought this was because frequencies, timing and fares could not be included in a QPS.[768] Therefore, the Local Transport Act 2008 extended the range of standards that could be included.[769]

8.25 Following the 2008 Act, a handful of partnerships were established. One of the biggest partnerships was introduced in Birmingham in 2012.[770] The local authority provided bus shelters, way-finding and bus lane enforcement. In return, all bus operators who entered the city centre improved their quality standards, including exhaust emissions. Other schemes were made in South Yorkshire,[771] Merseyside,[772] and Greater Manchester.[773]

8.26 The Greater Manchester scheme included Selective Vehicle Priority, a form of technology which can shorten red lights or extend green lights to give priority to buses. This can help make bus journeys faster and more reliable. For example, when Selective Vehicle Priority was introduced in Hazel Grove, journey times fell by three minutes and the variability in journey times fell by 50%.[774]

Bus Services Act 2017

8.27 Since 2010, the main change has been the Bus Services Act 2017, which seeks to expand the range of options available to directly elected mayors and local transport

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Framework for Delivery (2017), https://www.transport.gov.scot/media/39681/local-bus-services-in-scotland-a-consultation.pdf, para 4.9.

767 Transport Act 2000, s 114(2).

768 DfT, *Putting Passengers First* (December 2006), p 30.

769 Local Transport Act 2008, s 13 to 18. See also Quality Partnership Schemes (England) Regulations 2009 SI 2009/445.

770 Campaign for Better Transport, *Three stages to better bus services using the Bus Services Act* (July 2018), p 20.

771 South Yorkshire Integrated Transport Authority Report of The Passenger Transport Executive (07 July 2010), http://www.buspartnership.com/_uploads/statutory/Update%20on%20Vision%20for%20Buses%20in%20S.Yorkshire.doc.

772 Introduced on 7 August 2011 Merseyside Route 14 Statutory Bus Quality Partnership Scheme (2011), http://www.buspartnership.com/index.php?fuseaction=statutory.route-14-croxteth-to-liverpool.

773 See https://www.intelligenttransport.com/transport-news/16122/tfgm-propose-quality-partnership-scheme-to-ensure-bus-standards/.

774 Campaign for Better Transport, *Three stages to better bus services using the Bus Services Act* (July 2018), p 7.

authorities. This Act only applies to England outside London, as bus policy in Wales and Scotland is now devolved.

Franchising

8.28 The Bus Services Act 2017 abolished CQSs in England and introduced franchising instead.[775] Franchising gives an authority very broad power to specify the details of the services to be provided, such as where and when they run, how they should look and payment options. The authority can let whatever contracts they consider appropriate and operators are willing to bid for. For example, a local authority could make a franchise bundle which invites tenders for exclusive rights to a profitable route on the condition that the bus operator also provides certain socially necessary routes.[776]

8.29 No other services can operate in the franchised area unless the authority agrees. No franchise has yet been made, but Transport for Greater Manchester is in the process of developing a business case.

Advanced ticketing schemes

8.30 Section 7 of The Bus Services Act 2017 strengthens the ability of local transport authorities in England to make a "ticketing scheme"[777], allowing for a more integrated approach to ticketing. Authorities may also require bus operators to accept forms of payment such as mobile technology or smart cards.[778]

8.31 In broad terms, tickets covered by such schemes include:

(1) through tickets covering journeys on more than one bus (whether or not operated by the same operator);[779]

(2) where a journey could be made on buses provided by two or more operators, tickets which entitle the holder to make the journey on whichever services they choose,[780] and

(3) tickets covering connecting rail or tram services.[781]

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775 Bus Services Act 2017, ss 4 to 6 and Sch 2.

776 Campaign for Better Transport, *Three stages to better bus services using the Bus Services Act* (July 2018), p 21.

777 Inserted at Transport Act 2000, s 134C (1).

778 Transport Act 2000, s 134C (7)

779 Above, s 134C (4)(a) and (b).

780 Above, s 134C (4)(c).

781 Above, s 134C (4)(d)

8.32 Subject to notice and consultation requirements,[782] local authorities may implement such schemes if they consider that it would be in the interests of the public and would contribute to their local transport polices.[783]

8.33 Examples of advanced ticketing schemes include the Swift smartcard in the West Midlands and the Walrus smart ticketing scheme in Merseyside.

Advanced Quality Partnerships (AQPs)

8.34 Advanced Quality Partnerships (AQPs)[784] build on previous quality partnership schemes. The Bus Services Act 2017 extends the measures which local authorities can offer as part of a partnership from purely infrastructure facilities such as bus lanes, to broader traffic management policies, such as parking restrictions. They also broaden the requirements that can be placed on operators to include the marketing of services, tickets and fares.

8.35 Under the 2017 Act, existing partnership schemes are renamed as AQPs, even if there is no change in the substance of the scheme.

Enhanced Partnerships

8.36 An Enhanced Partnership (EP) enables greater collaboration between authorities and operators than a QP or AQP scheme.[785] EPs expand the standards that the partnership schemes can cover, for example to include service frequency. There is also a strong emphasis on standardising the way that payments can be made, to include smart cards, multi-operator tickets and fare zones.[786] However, the authority cannot set fares.

8.37 The diagram below provides an overview of the different rules on fares for ticketing schemes, AQPs, EPs and franchising.[787]

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782 Transport Act 2000, s 134C (2) and s 134D.

783 Above, s 134C (1)(a)-(b).

784 Above, ss 113C to 113O as amended by Bus Services Act 2017, ss 1 to 3 and Sch 1.

785 Above, ss 138A to 138S as amended by Bus Services Act 2017 ss 9 to 15 and Sch 4.

786 DfT, *The Bus Services Act 2017: New powers and opportunities* (2017), https://www.gov.uk/government/publications/bus-services-act-2017-new-powers-and-opportunities, p 11.

787 Based on diagram in Campaign for Better Transport, *Three stages to better bus services using the Bus Services Act* (July 2018), p 13 and diagram provided by Burges Salmon LLP in December 2018. We thank both organisations for their help.

How the different options compare to each other in the Bus Services Act 2017				
Can a requirement be put on bus operators to:	**Ticketing schemes**	**Advanced Quality Partnership**	**Enhanced Partnership**	**Franchising**
Sell and accept a multi-operator or multi-modal ticket (including in a specific format, such as on a smart card)?	✓	✓	✓	✓
Market particular tickets in a certain way (including promoting multi-operator tickets, not just their own tickets)?	✗	✓	✓	✓
Sell all their tickets and fares on a standard set of 'zones' that apply to all operators?	✗	✗	✓	✓
Follow common ticket rules for their own tickets (such as a standard length of 'period' tickets or age to qualify for a youth concession if offered)?	✗	✗	✓	✓
Sell or accept any ticket on a particular technology (such as a smart card)?	✓	✓	✓	✓
Charge a set price for multi-operator ticket?	✗	✗	✓	✓
Charge a set price for their own, single-operator tickets?	✗	✗	✗	✓

Community transport in Great Britain

8.38 Commercial bus operators work alongside community transport. As discussed in Chapter 4, a not-for-profit organisation can apply for a "section 22 permit" to carry fare-paying members of the general public.[788] A community bus permit applies to vehicles that can carry more than eight passengers.[789] The driver must have the appropriate licence,[790] but cannot be paid. However, drivers may be reimbursed for reasonable expenses and, in exceptional cases, loss of earnings.[791]

8.39 The Community Transport Association describes community transport as:

> providing flexible and accessible community-led solutions in response to unmet local transport needs, and often represents the only means of transport for

788 Even when the vehicle is not travelling on a local bus service route, the community bus permit can still be used to carry fare paying passengers as long as the fares collected are used to help fund the provision of the community bus service: Transport Act 1985, s 22(1)(b).

789 Transport Act 1985, s 22(1)(c).

790 This may be a passenger-carrying vehicle driver's licence, a passenger-carrying vehicle Community licence, or a public service vehicle driver's licence: see Transport Act 1985, s 23(2)(b).

791 Transport Act 1985, s 23(2)(a).

many vulnerable and isolated people, often older people or people with disabilities. [792]

8.40 The Department for Transport does not collect figures on the number of community transport journeys taken.[793] However, a parliamentary research briefing noted that in 2013/14 over 15 million passenger trips were provided by at least 2,000 community transport organisations in England. [794]

8.41 One example of a community transport organisation is Hackney Community Transport, founded by local community groups in Hackney in 1982. It has since grown across London and into Yorkshire, the Channel Islands, the Northwest, Derbyshire and the Southwest. It provides services such as minibus hire, minibus driver training, mobility scooters, and a community-designed hail and ride route which is open to all but is focussed on older and disabled people.[795] Similarly, in Scotland, Community Transport Glasgow provides transport to vulnerable communities in Glasgow, East Dunbartonshire and Lanarkshire.[796] In Wales, funding for community transport has been secured too as part of the "Connecting Communities in Wales" rural development program.[797]

THE CURRENT SYSTEM OF BUS REGULATION

What is a local bus service?

8.42 The current system of bus regulation applies to "local bus services" as defined by section 2 of the Transport Act 1985. A local bus service uses a public service vehicle (PSV) to carry passengers by road at separate fares. The route can be of any overall length as long as a passenger can alight within 15 miles (measured in a straight line) of the point where they boarded.

8.43 The crucial question is whether the service charges separate fares. Clearly, the definition does not include free services, such as a supermarket bus. Nor would it include a shuttle from an airport car park if the fare was included within the parking charge.

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792 Community Transport Association, *What is Community Transport?,* https://ctauk.org/about-cta/what-is-community-transport/.

793 DfT's*, Annual bus statistics* are completed by PSV licence holders and do not cover section 22 permits.

794 Parliament UK, *House of Commons Library: Community Transport*, 14 December 2015, https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7426.

795 Hackney Community Transport, *About Hackney Community Transport*, http://www.hackneyct.org/hackney_community_transport/about_hackney_community_transport.

796 Nesta, *Community Transport Glasgow*, https://www.nesta.org.uk/feature/sharelab-scotland-meet-grantees/community-transport-glasgow/.

797 Community Transport Association, *Connecting Communities in Wales: Enhancing Community Transport in Wales*, https://ctauk.org/connecting-communities-in-wales/.

8.44 However, separate fares have the potential to cover a range of circumstances. As we saw in Chapter 3, when deciding whether separate fares have been paid, it is irrelevant who made the payment and who received it.[798] However, exceptions apply:

(1) where passengers in taxis or hire cars decide amongst themselves to pay separate fares; or

(2) the passengers were brought together by a person with no commercial interest in the vehicle, and the journey was not publicly advertised.[799]

8.45 In Chapter 3 we explained that if a service charges separate fares, it must be licensed as a PSV irrespective of seating capacity.[800] However, the Transport Act 1985 has two provisions by which a taxi or private hire service can charge separate fares without requiring a PSV licence:

(1) Under section 10, a licensing authority may make a special scheme to allow a taxi to be hired at separate fares.

(2) Under section 11, both taxis and private hire cars can charge separate fares provided the journey was booked in advance and each passenger consented to sharing the vehicle on that occasion on the basis of separate fares.[801]

8.46 Provided that the service falls within these criteria, the taxi or private hire vehicle does not become a PSV. Therefore, it does not fall within the definition of a local bus service.

8.47 Otherwise, in Great Britain (outside of London), all local bus services must be registered, unless they fall within one of the following five statutory exemptions.

Exception one: Group arrangements

8.48 Registration is not required if all of the following apply:

(1) someone other than the operator (or their agent) is responsible for arranging the journey and bringing the passengers together;

(2) the journey is not advertised in advance to the general public;

(3) all passengers travel together to or from the same place (such as a school or factory); and

(4) passengers pay the same fare no matter how far they travel.[802]

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798 Public Passenger Vehicles Act 1981, s 1(5)(b).

799 Above, s 1(3) See para 3.53 above.

800 Public Passenger Vehicles Act 1981, s 1(1). See para 3.48 above.

801 See para 3.53 to 3.54 above.

802 Traffic Act 1985, s 2(4), Public Passenger Vehicles Act 1981, Sch1 Part 3, paras 5 to 8.

Exception two: School buses

8.49 If a bus service is provided by a local education authority to or from educational premises, registration is not needed provided it only carries:

(1) those receiving education or training at the premises;

(2) those supervising or escorting such persons; or

(3) those involved with the provision of education or training at the premises.[803]

Exception three: Rail replacement bus services

8.50 Registration is not required when a train service is temporarily cancelled and a bus is used instead. The service must be provided under an agreement with the Secretary of State, the Scottish Ministers or the National Assembly for Wales.[804]

Exception four: Excursions

8.51 An excursion or tour is where passengers travel together, with or without breaks, from one or more other places to one or more places and back.[805] Traffic Commissioner's guidance clarifies that this does not include a "hop on/hop off" tour, where passengers may alight at any point along the route and re-join a later bus.[806]

8.52 Excursions or tours are exempt unless they operate at least once a week for at least six weeks in a row.

Exception five: Section 19 permits

8.53 A "section 19 permit" exempts groups that benefit the community from PSV operator licensing. It also exempts such groups from bus registration. This applies to community groups such as religious organisations, sports clubs and social welfare groups,[807] but cannot be used to make a profit or to carry the general public.[808]

Registering a bus route

8.54 All prospective operators of a local bus service must hold an unconditional PSV operator's licence, a special restricted PSV operator's licence or a section 22

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803 For England and Wales: Transport Act 1985, s 6(1), (1A), (1B) and (1C); Public Passenger Vehicles Act 1981, s 46(1).

804 For England and Wales: Transport Act 1985, s 6(1) and (1D) as amended by Bus Services Act 2017 s 20. Section 6(1) of Transport Act 1985 also applies to Scotland

805 Public Service Vehicles (Registration of Local Services) Regulations 1986/1671, reg 10.

806 Office of the Traffic Commissioner, *Operating registered local bus services in England (except London) and Wales Guide for Operators* (2018), https://www.gov.uk/government/publications/local-psv-service-registrations-psv353a, p 7.

807 Transport Act 1985, s 19(5). See above, para 4.37.

808 Above, s 19(2)(b).

Community Bus Permit.[809] They must then register a bus route and timetable with the Traffic Commissioners.

Bus registration in England (outside London)

8.55 To run a local bus service in England (outside London), the operator must:

(1) inform the local authority that they are starting a bus service 28 days before applying to the Traffic Commissioners:[810]

(2) apply to the Traffic Commissioners at least 42 days before the service starts;[811]

8.56 Holders of section 22 community bus permits must give at least 28 days' notice to the Traffic Commissioners.[812]

8.57 Additional notification procedures apply where a statutory partnership scheme is in place.[813] An operator who wants to start the service sooner can apply to the Traffic Commissioners who have the discretion to agree to this.[814]

Bus registration in Wales

8.58 In Wales, there is no requirement to inform the local authority first. Instead the operator must apply to the Traffic Commissioners 56 days before the service starts.[815] In other respects, the procedure is the same as in England.

Bus registration in Scotland

8.59 Again, the requirements are similar, with a few minor differences. To run a local bus service in Scotland, the prospective operator must:

(1) inform the local authority in Scotland that they are starting a bus service.[816] The operator must receive a confirmation notice or allow for the expiry of 28 days after the date of notification before applying to the Traffic Commissioner.[817]

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809 Office of the Traffic Commissioner, *Operating local bus services in England (except London) and Wales: Guide for Operators* (Revised 2018 PSV353A), p 8.

810 Bus Services Act 2017.

811 Transport Act 1985 s 6 and Public Service Vehicles (Registration of Local Services) Regulations 1986/1671 para 3 to 5, 7 and 8 and Sch 1 as amended by the Public Service Vehicles (Registration of Local Services) (Amendment) (England and Wales) Regulations 2004/10 Sch 1.

812 The Public Service Vehicles (Registration of Local Services in Enhanced Partnership Areas) (England) Regulations 2019, reg 5, para (2).

813 Transport Act 2000, ss 113C to 123 and 138A to 138S; Bus Services Act 2017, ss 1 to 3 and 9 to 15.

814 https://www.gov.uk/run-local-bus-service/how-to-register.

815 Transport Act 1985, s 6 and Public Service Vehicles (Registration of Local Services) Regulations 1986/1671, para 3 to 5, 7 and 8 and Sch 1 as amended by the Public Service Vehicles (Registration of Local Services) (Amendment) (England and Wales) Regulations 2004/10, Sch 1.

816 The Public Service Vehicles (Registration of Local Services) (Scotland) Regulations 2001, reg 4(1).

817 Above, reg 4(1A).

(2) apply to the Traffic Commissioner at least 42 days before the service starts.[818]

8.60 Holders of a section 22 community bus permit must give at least 56 days' notice to the Traffic Commissioner.[819]

8.61 For services in Strathclyde, the prospective operator must also give notice to the Strathclyde Partnership for Transport 28 days before applying to the Traffic Commissioner.[820]

Types of service

8.62 The Traffic Commissioners distinguish between the following service types.

(1) *A standard service*, which runs along a fixed route in accordance with a timetable. It must run at all times at which it is registered to do so.

(2) *A frequent service*, which operates at least every 10 minutes. This does not need a timetable, but the other requirements of a standard service apply.

(3) *A flexible service*, where it is not practicable to identify all the roads to be used in advance. It primarily carries passengers who have booked in advance and whose collective requirements determine the route of each journey.[821]

8.63 Flexible services can only operate in England and Wales, not in Scotland.[822] While a clear majority of passengers must have pre-booked, room may be made for some who have not.[823] However, passengers who have not pre-booked cannot alter the existing route of the vehicle to suit their journey.[824]

Changing or cancelling a bus service

8.64 Operators must also go through a notification procedure to change or cancel a local bus service.[825] The first stage is to inform the local authority in England or the local council

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818 Transport Act 1985 s 6(3) and Public Service Vehicles (Registration of Local Services) (Scotland) Regulations 2001/219 as amended by the Public Service Vehicles (Registration of Local Services) (Scotland) Amendment Regulations 2015/420.

819 Public Passenger Vehicles Act 1981 s 4C, Senior Traffic Commissioner Statutory Document 14 (Local Bus Services), para 4.

820 Strathclyde Partnership for Transport is the largest of the seven regional transport services created by the Transport (Scotland) Act 2005, which covers Glasgow and the surrounding areas. The other regional transport areas are: HITRANS (Highland and Islands), ZetTran (Shetland), NESTRANS (North East of Scotland), Tactran (Tayside and Central Scotland), SESTRAN (South East Scotland), and SWESTRANS (South West of Scotland).

821 Public Service Vehicles (Registration of Local Services) Regulations 1986/1671, reg 2A(a)(iii)

822 Office of the Traffic Commissioner, *The Registration of Flexibly Routed Local Bus Services: Guidance for Operators*, https://www.gov.uk/government/publications/local-psv-service-registrations-psv353a, p 8.

823 Above, p 6.

824 Above, p 6.

825 For England and Wales this provided for in section 6 of the Transport Act 1985 as amended by section 19 of the Bus Services Act 2017.

in Scotland.[826] After 28 days, the operator may notify the Traffic Commissioner. The operator must then wait at least 42 days before the service changes or stops.

Punctuality

8.65 Traffic Commissioners have powers to act against operators who fail to run punctual services. The Senior Traffic Commissioner has set punctuality requirements in directions and guidance.[827] Generally, 95% of buses on a service must run within a "window of tolerance".

England and Wales (outside London)

8.66 In England and Wales (outside London) the "window of tolerance" is defined in Statutory Document No 14.[828] For timetabled services, buses should not leave principal points more than 1 minute early or more than 5 minutes late; nor should they arrive at their final destination more than 5 minutes late.[829] It is acceptable for buses to arrive early at their final destination, but there should not be "undue recovery time" inserted into the timetable towards the end of a journey.[830]

8.67 For frequent services, scheduled to operate at least every 10 minutes, six or more buses should depart every 60 minutes and the interval between buses should not exceed 15 minutes. Again, in general, 95% of the buses should meet this standard.[831]

8.68 Where the punctuality compliance rate is between 80% and 95%, the case will probably be referred to the Traffic Commissioner. Where the rate is below 80%, a public inquiry is likely. The Traffic Commissioner has discretion to give the operator time to resolve punctuality issues and to request reports on improvement from the operator or an enforcement agency.[832]

8.69 Under section 155 of the Transport Act 2000, Traffic Commissioners have the power to impose penalties on operators that breach punctuality requirements or show "a flagrant disregard for compliance or fair competition". For services operating at under 80% compliance, the starting point is a fine between £400 and £550 for each vehicle.[833]

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826 Transport Act 1985s 6(7) for cancellation of local bus services in Scotland.

827 Such direction and guidance are issued under section 4C of the Public Passenger Vehicles Act 1981. See para 4.3 above.

828 Senior Traffic Commissioner, *Statutory Document No 14: Local Bus Services in England (outside London) and Wales* (2018), https://www.gov.uk/government/publications/traffic-commissioners-local-bus-services-in-england-outside-london-and-wales-november-2018.

829 Above, para 39.

830 Above, para 41.

831 Above, para 41.

832 Above, para 54.

833 Public Passenger Vehicles Act 1981, s 4C, Senior Traffic Commissioner, *Statutory Document no 14 (Local Bus Services),* para 60.

Where passengers have suffered "sustained poor performance" it may also be appropriate for the Traffic Commissioner to order compensation to passengers.[834]

Scotland

8.70 In Scotland the punctuality requirements are given in the Senior Traffic Commissioner's 2005 Practice Direction.

8.71 The requirements are largely the same as those in England and Wales (outside London). Therefore, for timetabled services, 95% of services should depart from timing points no more than 1 minute early or 5 minutes late.[835] For frequent services, six or more buses are expected to depart within any period of 60 minutes and the interval between consecutive buses is expected to be no more than 15 minutes.[836]

Traffic regulation conditions

8.72 Unlike a traffic regulation order (which applies to traffic generally) a "traffic regulation condition" relates only to the bus service.[837] The local council can ask the Traffic Commissioner to impose conditions on the service.[838] The Traffic Commissioner will decide if conditions are needed to prevent dangers to other road users, reduce traffic congestion or limit environmental pollution.[839] The conditions may limit the bus route, where buses can stop and for how long, where they may reverse, the level of noise pollution and the level of emissions.[840] If the operator disagrees with the conditions, they can ask for a public inquiry within 28 days.[841]

8.73 In Wales, the Welsh Ministers have a power to impose traffic regulation conditions on local bus services.[842]

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834 Senior Traffic Commissioner, *Statutory Document no 14 (Local Bus Services),* para 58.

835 Senior Traffic Commissioner, *Practice Direction: Standards For Local Bus Services* (2005), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485030/practice-direction-standards.pdf, para 8.

836 "Traffic authority" means in relation to England and Wales the council of any metropolitan district or non-metropolitan county and in relation to Scotland, the council of any local government areas. See section 7 (15) of the Transport Act 1985.

837 Transport Act 1985, ss 7 to 9.

838 Above, s 7.

839 Above, s 7(4) as amended by the Transport Act 2000, s 142 Sch 31 pt II and the Local Transport Act 2008, s 50(1) and (3).

840 Above, ss 7(6) and 26; Public Service Vehicles (Traffic Regulation Conditions) Regulations 1986, reg 3; Public Service Vehicles (Traffic Regulation Conditions) (England and Wales) Regulations 2004 SI 2004 No 2682, reg 4.

841 Public Passenger Vehicles Act 1981, s 54 as amended by the Transport Act 1985, s 4.

842 Transport Act 1985, s 7(16) as amended by Wales Act 2017, s 27(5).

London

8.74 Transport for London (TfL) runs a network of local bus services within Greater London,[843] which are normally put out to tender or operated by way of 'London Local Service Agreements'.[844] These services form the 'London bus network'.

8.75 Local bus services that are not part of the London bus network can only operate if they have a London Service Permit.[845] This requirement applies if any part of the journey is within Greater London.[846]

8.76 The decision to grant or refuse a permit is made by the London Bus Services Ltd, under powers delegated by TfL. London Bus Services Ltd consults with the London authorities, the Commissioners of Police, London TravelWatch, Traffic Commissioners and neighbouring authorities.

8.77 Permits last for up to 5 years.[847] Prospective operators must normally apply at least 3 months before starting the service (though a shorter notice period is possible if TfL agrees). If a permit is refused, an appeal may be made to the Secretary of State.[848]

HARPS AS MASS TRANSIT

8.78 There is considerable potential for HARPS to be used as part of a mass transit system, though they may not always look like conventional buses.

The dividing line between rail and road regulation

8.79 In China, tests are taking place for "trackless trams", also known as "rail-less trains".[849] The developer, CRRC, describes the vehicle as a 30-metre train, with three carriages, which runs on rubber tires rather than rails. It can move at a speed of 70 km/h and can carry up to 500 passengers.[850] The vehicle follows painted dashes on the road and can vary its route if an obstacle blocks its path. Professor Peter Newman at Curtin University in Western Australia comments:

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843 Greater London Authority Act 1999, ss 181, 183 and 184.

844 Above, s 182.

845 Transport Act 1985, ss 35 to 37 and 40; Greater London Authority Act 1999, ss 180, 185, 186 and 188.

846 Above, s 34 defines London local services; Greater London Authority Act 1999, s 179.

847 Above, s 41; Greater London Authority Act 1999, s 190.

848 Above, s 42.

849 XinhuaNet, Chinese rail maker develops smart bus, 2 June 2017, http://www.xinhuanet.com//english/2017-06/02/c_136335510.htm. Youtube, *ART – Autonomous rail Rapid Transit*, 26 September 2018, https://www.youtube.com/watch?v=diNVpth2vs0.

850 CRRC, *First railless train unveiled in CRRC Zhuzhou*, 6 July 2017, http://www.crrcgc.cc/en/g7389/s13996/t286142.aspx.

> Trackless trams are neither a tram nor a bus, though they have rubber wheels and run on streets. The high-speed rail innovations have transformed a bus into something with all the best features of light rail and none of its worst features.[851]

8.80 In particular, by avoiding the need for rails, they reduce the cost and disruption associated with extensive construction works.

8.81 This raises the issue of when a new form of "rail-less train" will be regulated as a train and when it will be more akin to a bus. At present, the safety regulations applying to railways also apply to "other guided transport systems". This means that they apply not only to passenger vehicles using "rails, beams, slots, guides" or other fixed apparatus, but also to those using "a guidance system which is automatic".[852]

8.82 It appears that vehicles which use an automatic guidance system on their own segregated lanes already fall within rail safety legislation, even if the lane uses tarmac rather than rails. An example would be the Heathrow pods, which use a dedicated guideway.[853] We have not been asked to make recommendations in respect of automated services regulated as railways.

8.83 If, however, the vehicle uses a road to which the public have access,[854] the vehicle is more akin to a bus than a railway. The question is how far the current system of bus regulation should apply.

When should a HARPS be regarded as a local bus service?

8.84 Under our terms of reference, we have not been asked to evaluate the current system of bus regulation in Great Britain. Instead, we start with the more limited question of when a HARPS should fall within the regulatory framework which currently applies to "a local bus service". In other words:

(1) Outside of London, when should a HARPS be required to register with the Traffic Commissioners and (for example) be subject to punctuality requirements?

(2) Within London or another franchised system,[855] when will a HARPS require either a Local Service Agreement or a Service Permit?

8.85 At present, section 2(1) of the Transport Act 1985 defines a bus service as "a service, using one or more public service vehicles, for the carriage of passengers by road at

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851 The Conversation, Peter Newman, *Why trackless trams are ready to replace light rail*, 25 September 2018, https://theconversation.com/why-trackless-trams-are-ready-to-replace-light-rail-103690.

852 Railways and Other Guided Transport Systems (Safety) Regulations 2006, SI 2006 No 599, reg 2.

853 See https://www.heathrow.com/transport-and-directions/heathrow-parking/heathrow-pod-parking-terminal-5. Another example of the use of guideways is the Cambridge Guided Busway: see https://www.thebusway.info/.

854 For a discussion of the meaning of road, see paras 4.14 to 4.27.

855 At present, bus franchising only applies in London, but as explained in paragraph 8.27 – 8.39, other schemes might be introduced under the Bus Services Act 2017.

separate fares". Under section 2(2), to be local, passengers must be able to alight within 15 miles, as measured in a straight line.

8.86 As discussed in Chapter 3, HARPS would not be PSVs, so they would not automatically fall within the definition. The question is: when are HARPS so like local bus services that the same policy considerations should apply?

8.87 The current definition depends crucially on fare structures. In Chapter 3 we said that it would be undesirable to introduce key distinctions based on fare structure alone. Instead, we wish to see greater flexibility and innovation in fare structures, to encourage ride sharing and multi-modal journeys. This might include not only separate fares but also through tickets, season tickets and subscription models. We would not wish to stop a service from implementing a different fare structure simply because of a regulatory divide.

8.88 In 1985, the distinction between bus, taxi and minicab services was sufficiently clear to be encapsulated in a simple definition, depending on the difference between bus fares (charged per person) and taxi or minicab fares (charged for the whole vehicle). However, as sections 10 and 11 of the Transport Act 1985 show, there was still a need to allow taxis and minicabs to charge separate fares in some circumstances. Section 10 is particularly complex, with its special schemes relating to specific places.

8.89 In practice, the effect of these various exceptions appears to be to exclude vehicles with eight or fewer passengers from bus regulation. These smaller vehicles tend to be regarded as taxis or private hire vehicles, even if they are shared and charge separate fares.

8.90 We provisionally propose that a HARPS should only be subject to bus regulation if it can transport more than eight passengers at a time and charges separate fares. Although distinction based on passenger numbers can be arbitrary, we think it would be less arbitrary to have a definition based on size and fare structure together than on only one of these criteria.

8.91 We also provisionally propose that the current exceptions should continue to apply in substance. In other words, a HARPS would not be a local bus service it if fell within the current exemptions applying to group arrangements, school buses, rail replacement bus services, excursions or community groups. We seek views.

Consultation Question 35.

8.92 Do you agree that a Highly Automated Road Passenger Services (HARPS) vehicle should only be subject to bus regulation:

(1) if it can transport more than eight passengers at a time *and* charges separate fares; and

(2) does not fall within an exemption applying to group arrangements, school buses, rail replacement bus services, excursions or community groups?

8.93 The next question is whether applying bus regulation to HARPS which fall within this definition will cause any problems. Some HARPS may be used on pre-determined routes, running to timetables like a traditional bus. Others may operate in more flexible ways. It is clearly difficult to register routes and apply punctuality provisions to services which do not run to routes and timetables. We therefore welcome views on whether bus regulation should only apply if the service runs a route with at least two fixed points with some degree of regularity.

Consultation Question 36.

8.94 We welcome views on whether any particular issues would arise from applying bus regulation to any HARPS which transports more than eight passengers, charges separate fares and does not fall within a specific exemption.

Consultation Question 37.

8.95 We welcome views on whether a HARPS should only be treated as a local bus service if it:

(1) runs a route with at least two fixed points; and/or

(2) runs with some degree of regularity?

MOBILITY AS A SERVICE AND ENCOURAGING USE OF MASS TRANSIT

8.96 In Chapter 2 we highlighted the need to reduce congestion by encouraging more "multi-modal trips", where users change to a different type of transport for different parts of the journey. We said that multi-modal trips already happen when people walk to the bus stop or drive to the train station. However, there is considerable potential for expansion. People could, for example, take a shared four-person HARPS to the station; or use a hire bike to cycle across parkland to catch a flexible 8-person HARPS; or take the 8-person HARPS to catch a conventional bus. There is also potential for more active or mass-transit trips in one direction and HARP point-to-point services in the other direction (such as walking to the shops and taking a HARPS back).

8.97 We also outlined the danger that once people enter a single-occupancy HARPS they will take it to their final city centre destination. They may wish to avoid the inconvenience of waiting on a railway platform or at a bus stop, particularly in the cold or the wet or if they have to carry heavy baggage up and down stairs.

8.98 We said that the benefits of HARPS would only be fully realised if actions were taken to discourage HARPS in congested areas; to improve interchanges; and to provide information about options, coupled with seamless ticketing and through fares. We thought that Mobility as a Service technology (MaaS) could be part of the solution by enabling people to use apps to plan and book door-to-door trips using a single platform for different services.

8.99 In Chapter 7 we outlined proposals for road pricing. This is a particularly strong regulatory tool to encourage people to switch from a single occupancy HARPS to mass transit before reaching congested city centres. It will have an even greater effect if some of the money raised is used to improve interchanges by (for example) providing warm, dry and pleasant places to change and wait at rail and bus stations.

8.100 Here we turn to the final tool, which is to provide good quality information about options together with seamless ticketing, using MaaS technology.

Mobility as a Service (MaaS)

What is MaaS?

8.101 MaaS is a digital platform which provides information on a wide range of transport options, often in real time. This platform is accessed via a smartphone app, so that the user has a straight-forward way to plan and pay for their transport, even if a journey involves more than one mode of transport. Generally, the app knows the user's location and is linked to the user's bank account to allow for easy payment.[856]

8.102 A key concept is that a user would only pay once for the entire trip, rather than paying separately for each leg of the journey. It is also possible to create subscription models so that it becomes unnecessary to pay separately for each trip. A goal of the MaaS movement is to create a unified transport market, so that users can travel freely and have a simple and consistent user experience.[857] However, making MaaS a reality is difficult, as it requires operators to share information and cooperate over fare structures to an unprecedented degree.[858]

MaaS regulatory models

8.103 There is no one model for MaaS implementation. The initiative can lie with the market or with government, or a hybrid of both.[859] As Deloitte notes, "too much regulation and the private sector may find it difficult to innovate or participate; too little regulation and the public interest is not served."[860]

8.104 The House of Commons Transport Committee commented:

> We recommend the Government take a more active and direct role in shaping MaaS to ensure it develops in a way that supports Government strategies and

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856 For descriptions of the concept of MaaS see, for example: House of Commons, Transport Committee, *Mobility as a Service, Eighth Report of Session 2017-19*, (19 December 2018), https://publications.parliament.uk/pa/cm201719/cmselect/cmtrans/590/590.pdf, p 9; KPMG, *Reimagine Places: Mobility as a Service* (August 2017), www.kpmg.com/uk/reimagine-maas, p 8; MaaS Global, *Mobility as a Service*, https://maas.global/maas-as-a-concept/; ITS Australia, *Mobility as a Service in Australia: Customer insights and opportunities* (2018), https://www.its-australia.com.au/wp-content/uploads/ITSA_MaaS18-Report_060818.pdf, p 20.

857 MaaS Alliance, *MaaS Guidebook (alpha), Introduction*, https://maas.guide/.

858 ITS Australia, *Mobility as a Service in Australia: Customer insights and opportunities* (2018), https://www.its-australia.com.au/wp-content/uploads/ITSA_MaaS18-Report_060818.pdf, p 46.

859 KPMG, *Reimagine Places: Mobility as a Service*, August 2017, www.kpmg.com/uk/reimagine-maas, p 14.

860 Deloitte, Deloitte Review, *The rise of mobility as a service: Reshaping how urbanites get around* (2017) 20, pp 125.

policies, and that the benefits to society are realised to the greatest extent possible. The Government must explicitly incorporate the development of MaaS into its relevant policies and strategies.[861]

Promoting collaboration

8.105 We have already outlined the statutory arrangements to encourage through ticketing and partnerships between bus operators and local authorities. Under our proposals, if a HARPS falls within the definition of a "local bus service", these provisions would apply to HARPS as well as to more conventional vehicles.[862]

8.106 Here we are interested in smaller HARPS which do not fall within this definition but could be used as part of the transport mix, for example to feed people into and away from mass transit. To fulfil the aim of a simple and consistent user experience, we would wish to see these services join MaaS schemes. We think that transport authorities should have powers to encourage HARPS operators to make information available and design fare structures which include through-tickets and a single way to pay.

8.107 The various quality partnership schemes we have outlined work on the basis that if the transport authority provides facilities, they should be able to set service standards for operators. One model would be to provide a similar statutory scheme, so that if the transport authority provides facilities for HARPS, they can place requirements on operators. This might involve a wide range of possible collaborations, such as the following:

(1) The transport authority could provide facilities such as use of priority lanes and waiting space near stations and other transport hubs. Membership of a scheme might also be reflected by lower road pricing in the surrounding area.

(2) In return, operators could be required to participate in a MaaS scheme, by making information available, allowing booking through a single app and co-operating over ticketing. This might include joint promotions of services; using a standard set of zones; or following standard ticket rules (such as standard age-related concessions).

8.108 We welcome views on whether there is a need to legislate for collaboration along these lines.

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861 House of Commons, Transport Committee, *Mobility as a Service, Eighth Report of Session 2017-19*, (19 December 2018), https://publications.parliament.uk/pa/cm201719/cmselect/cmtrans/590/590.pdf, p 18.

862 The Bus Services Act 2017 allowed the Secretary of State to make regulations requiring local bus operators in England (outside London) to provide information: see of the Transport Act 2000, s 141A. However, this does not apply to other smaller services, which could feed people to mass transit.

Consultation Question 38.

8.109 We seek views on a new statutory scheme by which a transport authority that provides facilities for HARPS could place requirements on operators to participate in joint marketing, ticketing and information platforms.

Chapter 9: Consultation Questions

CHAPTER 3: OPERATOR LICENSING – A SINGLE NATIONAL SYSTEM

A single national scheme

Consultation Question 1 (Paragraph 3.82):

Do you agree that Highly Automated Road Passenger Services (HARPS) should be subject to a single national system of operator licensing?

Consultation Question 2 (Paragraph 3.86):

Do you agree that there should be a national scheme of basic safety standards for operating a HARPS?

CHAPTER 4: OPERATOR LICENSING – SCOPE AND CONTENT

Scope of the new scheme

Consultation Question 3 (Paragraph 4.33):

Do you agree that a HARPS operator licence should be required by any business which:

(1) carries passengers for hire or reward;
(2) using highly automated vehicles;
(3) on a road;
(4) without a human driver or user-in-charge in the vehicle (or in line of sight of the vehicle)?

Consultation Question 4 (Paragraph 4.34):

Is the concept of “carrying passengers for hire or reward” sufficiently clear?

Exemptions

Consultation Question 5 (Paragraph 4.46):

We seek views on whether there should be exemptions for community or other services which would otherwise be within the scope of HARPS operator licensing.

Consultation Question 6 (Paragraph 4.54):

We seek views on whether there should be statutory provisions to enable the Secretary of State to exempt specified trials from the need for a HARPS operator licence (or to modify licence provisions for such trials).

Operator requirements

Consultation Question 7 (Paragraph 4.72):

Do you agree that applicants for a HARPS operator licence should show that they:

(1) are of good repute;
(2) have appropriate financial standing;
(3) have suitable premises, including a stable establishment in Great Britain; and
(4) have a suitable transport manager to oversee operations?

Consultation Question 8 (Paragraph 4.73):

How should a transport manager demonstrate professional competence in running an automated service?

Adequate arrangements for maintenance

Consultation Question 9 (Paragraph 4.89):

Do you agree that HARPS operators should:

(1) be under a legal obligation to ensure roadworthiness; and

(2) demonstrate "adequate facilities or arrangements" for maintaining vehicles and operating systems "in a fit and serviceable condition"?

Consultation Question 10 (Paragraph 4.90):

Do you agree that legislation should be amended to clarify that HARPS operators are "users" for the purposes of insurance and roadworthiness offences?

Compliance with the law

Consultation Question 11 (Paragraph 4.124):

Do you agree that HARPS operators should have a legal duty to:

(1) insure vehicles;

(2) supervise vehicles;

(3) report accidents; and

(4) take reasonable steps to safeguard passengers from assault, abuse or harassment?

Consultation Question 12 (Paragraph 4.125):

Do you agree that HARPS operators should be subject to additional duties to report untoward events, together with background information about miles travelled (to put these events in context)?

Consultation Question 13 (Paragraph 4.128)

Do you agree that the legislation should set out broad duties, with a power to issue statutory guidance to supplement these obligations?

Price information

Consultation Question 14 (Paragraph 4.133)

We invite views on whether the HARPS operator licensing agency should have powers to ensure that operators provide price information about their services.

In particular, should the agency have powers to:

(1) issue guidance about how to provide clear and comparable price information, and/or

(2) withdraw the licence of an operator who failed to give price information?

Who should administer the system?

Consultation Question 15 (Paragraph 4.138)

Who should administer the system of HARPS operator licensing?

Freight transport

Consultation Question 16 (Paragraph 4.140)

We welcome observations on how far our provisional proposals may be relevant to transport of freight.

CHAPTER 5: PRIVATELY-OWNED PASSENGER-ONLY VEHICLES

Setting a boundary between HARPS and private leasing

Consultation Question 17 (Paragraph 5.12)

Do you agree that those making "passenger-only" vehicles available to the public should be licensed as HARPS operators unless the arrangement provides a vehicle for exclusive use for an initial period of at least six months?

Allocating responsibility for a privately-owned passenger-only vehicle: placing responsibilities on keepers

Consultation Question 18 (Paragraph 5.40):

Do you agree that where a passenger-only vehicle is not operated as a HARPS, the person who keeps the vehicle should be responsible for:

(1) insuring the vehicle;
(2) keeping the vehicle roadworthy;
(3) installing safety-critical updates;
(4) reporting accidents; and
(5) removing the vehicle if it causes an obstruction or is left in a prohibited place?

Consultation Question 19 (Paragraph 5.41):

Do you agree that there should be a statutory presumption that the registered keeper is the person who keeps the vehicle?

Consultation Question 20 (Paragraph 5.42):

We seek views on whether:

(1) a lessor should be responsible for the obligations listed in Question 18 unless they inform the lessee that the duties have been transferred.

(2) a lessor who is registered as the keeper of a passenger-only vehicle should only be able to transfer the obligations to a lessee who is not a HARPS operator if the duties are clearly explained to the lessee and the lessee signs a statement accepting responsibility?

Will consumers require technical help?

Consultation Question 21 (Paragraph 5.47):

Do you agree that for passenger-only vehicles which are not operated as HARPS, the legislation should include a regulation-making power to require registered keepers to have in place a contract for supervision and maintenance services with a licensed provider?

Peer-to-peer lending

Consultation Question 22 (Paragraph 5.53):

We welcome views on whether peer-to-peer lending and group arrangements relating to passenger-only vehicles might create any loopholes in our proposed system of regulation.

Protecting consumers from high ongoing costs

Consultation Question 23 (Paragraph 5.60):

We seek views on whether the safety assurance agency proposed in Consultation Paper 1 should be under a duty to ensure that consumers are given the information

they need to take informed decisions about the ongoing costs of owning automated vehicles.

CHAPTER 6: ACCESSIBILITY

What we want to achieve

Consultation Question 24 (Paragraph 6.11):

We seek views on how regulation can best promote the accessibility of Highly Automated Road Passenger Services (HARPS)? In particular, we seek views on the key benefits and concerns that regulation should address.

Core obligations under equality legislation

Consultation Question 25 (Paragraph 6.31):

We provisionally propose that the protections against discrimination and duties to make reasonable adjustments that apply to land transport service providers under section 29 of the Equality Act 2010 should be extended to operators of HARPS. Do you agree?

Specific accessibility outcomes

Consultation Question 26 (Paragraph 6.106):

We seek views on how regulation could address the challenges posed by the absence of a driver, and the crucial role drivers play in order to deliver safe and accessible journeys. For example, should provision be made for:

(1) Ensuring passengers can board and alight vehicles?

(2) Requiring reassurance when there is disruption and accessible information?

(3) Expansion of support at designated points of departure and arrival?

Developing national minimum accessibility standards for HARPS

Consultation Question 27 (Paragraph 6.109):

We seek views on whether national minimum standards of accessibility for HARPS should be developed and what such standards should cover.

Enforcement mechanisms and feedback loops

Consultation Question 28 (Paragraph 6.124):

We seek views on whether operators of HARPS should have data reporting requirements regarding usage by older and disabled people, and what type of data may be required.

CHAPTER 7: REGULATORY TOOLS TO CONTROL CONGESTION AND CRUISING

Traffic regulation orders

Consultation Question 29 (Paragraph 7.23):

We seek views on whether the law on traffic regulation orders needs specific changes to respond to the challenges of HARPS.

Regulating use of the kerbside

Consultation Question 30 (Paragraph 7.59):

We welcome views on possible barriers to adapting existing parking provisions and charges to deal with the introduction of HARPS.

In particular, should section 122 of the Road Traffic Regulation Act 1984 be amended to expressly allow traffic authorities to take account of a wider range of considerations when setting parking charges for HARPS vehicles?

Road pricing

Consultation Question 31 (Paragraph 7.86):

We seek views on the appropriate balance between road pricing and parking charges to ensure the successful deployment of HARPS.

Consultation Question 32 (Paragraph 7.87):

Should transport authorities have new statutory powers to establish road pricing schemes specifically for HARPS?

If so, we welcome views on:

(1) the procedure for establishing such schemes;
(2) the permitted purposes of such schemes; and
(3) what limits should be placed on how the funds are used.

Quantity restrictions

Consultation Question 33 (Paragraph 7.97):

Do you agree that the agency that licenses HARPS operators should have flexible powers to limit the number of vehicles any given operator can use within a given operational design domain for an initial period?

If so, how long should the period be?

Consultation Question 34 (Paragraph 7.120):

Do you agree that there should be no powers to impose quantity restrictions on the total number of HARPS operating in a given area?

CHAPTER 8: INTEGRATING HARPS WITH PUBLIC TRANSPORT

The current system of bus regulation: HARPS as mass transit

Consultation Question 35 (Paragraph 8.92):

Do you agree that a HARPS vehicle should only be subject to bus regulation:

(1) if it can transport more than eight passengers at a time and charges separate fares; and
(2) does not fall within an exemption applying to group arrangements, school buses, rail replacement bus services, excursions or community groups?

Consultation Question 36 (Paragraph 8.94):

We welcome views on whether any particular issues would arise from applying bus regulation to any HARPS which transports more than eight passengers, charges separate fares and does not fall within a specific exemption.

Consultation Question 37 (Paragraph 8.95):

We welcome views on whether a HARPS should only be treated as a local bus service if it:

(1) runs a route with at least two fixed points; and/or
(2) runs with some degree of regularity?

Encouraging use of mass transit: Mobility as a Service

Consultation Question 38 (Paragraph 8.109):

We seek views on a new statutory scheme by which a transport authority that provides facilities for HARPS could place requirements on operators to participate in joint marketing, ticketing and information platforms.

Appendix 1: Acknowledgements

9.1 We would like to thank the following organisations, groups and people who have provided their thoughts and materials for us to consider during this phase of the project.

PUBLIC SECTOR

9.2 Centre for Connected and Autonomous Vehicles (CCAV), Department for Transport (DfT), Department for Business, Energy and Industrial Strategy (BEIS), Office of the Secretary of State for Scotland, Transport Scotland, Welsh Government, Department for Infrastructure (Northern Ireland), Transport Canada, Traffic Commissioners for Great Britain, Police Scotland, Transport for NSW, Olivier Raemy (Federal Roads Office, Switzerland FEDRO), Sae Mattori (National Police Agency Japan), Parliamentary Advisory Council for Transport Safety (PACTS), Crown Prosecution Service (CPS), Transport for London (TfL), Oxfordshire County Council, Driver and Vehicle Standards Agency (DVSA), Driver and Vehicle Licensing Agency (DVLA), Vehicle Certification Agency (VCA), Disabled Persons Transport Advisory Committee (DPTAC), Mobility and Access Committee for Scotland (MACS), Polis Network, Transport for Greater Manchester (TfGM), Zenzic, The Highlands and Islands Transport Partnership (HITRANS), Disability Equality Scotland, Chartered Institute of Highways and Transportation.

PRIVATE SECTOR

9.3 Adelard, FiveAI, Society of Motor Manufacturers and Traders (SMMT), The Automated Driving Insurance Group (ADIG), Bill Clare, AVIVA, Association of British Insurers (ABI), British Standards Institution (BSI), Bosch, BP, Technova Inc, Brake, Burges Salmon LLP, Burness Paull LLP, Squire Patton Boggs LLP, Addleshaw Goddard LLP, RAC, RAC Foundation, Sustrans, British Parking Association (BPA), Appy Parking, techUK, British Vehicle Rental and Leasing Association (BVRLA), CAPRI consortium, MaaS Global, Daimler AG, Campaign for Better Transport, Thatcham Research, Walking and Cycling Alliance, DriveNow, Royal Academy of Engineering, Gemserv, Stuart Revell of RTA Communication Systems, Future Coders, Stephen Brookes MBE, MobOx, Research Institute for Disabled Consumers (RiDC), Mobileye, OmniCAV, James Datson (Connected Places Catapult), Guy Carpenter & Company, Unite the Union, Towards Identifying and closing Gaps in Assurance of Autonomous Road vehicles Project (TIGARS), Mizuho, Heathrow Airport (Heathrow Pods team), London Living Labs, InMotion ventures, DRIVEN consortium, ENDEAVOUR consortium, KPMG, Reed Mobility, TRL, Edge Case Research.

ACADEMICS AND LAWYERS

9.4 Assuring Autonomy International Programme (University of York), Dr Adam Wyner (Swansea University), Dr Chris Elliott, Dr Bryan Reimer (MIT), Dr Bruce Mehler (MIT), Prof Bryant Walker Smith (University of South Carolina), Shahab Gholizadehdastjerd (Brunel University), Andrew Higgs (Setfords Solicitors), Alex Glassbrook (Temple Garden Chambers), Prof Sally Kyd (University of Leicester), Prof Paul Newman (University of Oxford and Oxbotica), Dr Micheál O'Flynn (University of Glasgow), Dr

Chris Tennant (London School of Economics), Prof Rebecca Williams (University of Oxford), Dr Charles Fox (University of Lincoln), Lucy McCormick (Henderson Chambers), Dr Matthew Channon (University of Exeter), Prof Gary Burnett (University of Nottingham), Prof Roger Mackett (University College London).

CONFERENCES

9.5 The team has also participated in the following conferences: techUK and MobOx event (22 November 2018, Oxford), ITS (UK) Summit 2018 (27 November 2018, Bristol), Council of Europe (28 November 2018, Strasbourg), Consumer Electronics Show (CES) 2019 (8-12 January 2019, Las Vegas), Meridian: Mapping the Road to Cyber-Secure Self-Driving Vehicles (5 February 2019, Warwick), Safety Critical Systems Club (SCSC) Symposium (5-7 February 2019, Bristol), MOVE conference (12-13 February 2019, London), SCSC Evolution of a Safety Assurance Case Workshop (4 April 2019, London), Westminster Insight Conference: Preparing the UK for CAVs (26 April 2019, London), The National Assembly for Wales' Economy, Infrastructure and Skills Committee meeting (1 May 2019, Cardiff), CAVEAT AV and Ethics CCAV Meeting (10 May 2019, London), Institute of Advanced Legal Studies (IALS) Impact and Law Reform Conference (11 June 2019, London), SCSC Learning from Accident Investigations Workshop (13 June 2019, London), Exploring the Power and Promise of AI and Robotics (18 June 2019, London), Institution of Mechanical Engineers: Automated and Autonomous Vehicles: Overcoming Engineering Challenges for Future Mobility (20 June 2019, Nuneaton), Connected Places Catapult - MUSICC Symposium (24 June 2019, Milton Keynes), Royal Academy of Engineering: Safety and Ethics of Autonomous Systems (2 July 2019, London), UK Insurer Safe Automated Driving Initiative Launch (11 September 2019, Nuneaton), DAC Beachcroft and Legalign Global: Automated Breakfast Seminar (20 September 2019, London), International Longevity Centre (1 October 2019, London), AVIVA Automated Vehicles Working Group Roundtable (1 October 2019, Thatcham), SMMT 16th Annual Automotive In-House Lawyers' Seminar (3 October 2019, London), BSI CAV Strategic Advisory Board Meeting (14 October 2019, London).

9.6 We are grateful to the UNECE Global Forum for Road Traffic Safety (WP.1) and the UNECE World Forum for the Harmonization of Vehicle Regulations (WP.29) for the opportunity to participate in their joint session (18 February 2019, Geneva), and to present our work at WP.1's 79th session (18 September 2019, Geneva). We are also grateful for the opportunity to participate in the UNECE's Informal Group of Experts on Automated Driving (IGEAD) meeting (21 April 2019, Paris) and to the European Commission's Joint Research Centre (JRC) for inviting us to their 5th Technical Workshop on new approaches for automated vehicle certification (13 September 2019, Brussels).

9.7 We also like to express thanks to the following groups for hosting and organising roundtables for the project during this phase of the project: Burges Salmon LLP (23 January 2019, London), MoBox and Oxfordshire Country Council (16 January 2019, Oxford), techUK (25 January 2019, London), PACTS (28 January 2019, London), Appy Parking (7 August 2019, London).