

## Automated Vehicles: Consultation Paper 3 – A regulatory framework for automated vehicles

Highways England's response to the Law Commission call for evidence

Mike Wilson  
Chief Highway Engineer  
Safety, Engineering and Standards Director  
Highways England

Highways England plans, designs, builds, operates and maintains England's motorways and major A-roads known as the Strategic Road Network (SRN). The SRN is arguably the biggest and most important piece of infrastructure in the country. Its 4,300 miles of motorways and major A-roads are at the core of our national transport system. It is acknowledged that digital connectivity is vital to our communities, business and essential public services, and will only become more important in the future and the Strategic Road Network (SRN) is no exception. We want our network to create a positive legacy for future generations and we are planning for advances over the next 30 years that will revolutionise transportation, road travel and personal and commercial mobility.

In delivering the Government's second Road Investment Strategy (RIS2) we are committed to our Digital Roads ambitions. We aim to enable a safer SRN, faster delivery and an enhanced customer experience for all, by harnessing data, technology and connectivity. This will improve the way the SRN is designed, built, operated and used.

I attach the brochure for Digital Roads which captures our vision for 2025. Our vision is sectioned into Digital Design and Construction, Digital Operations and Digital for Customer; there are subsequent ambition statements for each theme.

**Digital Roads vision:** *Digital Roads harness data, technology and connectivity to improve the way the SRN is designed, built, operated and used. This will enable a safer SRN, faster delivery, and an enhanced customer experience for all. These imperatives are embedded in our vision and ambition for Digital Roads.*

Connected and Autonomous vehicles is one of the 9 key trends within Connecting the Country ([Link](#)). The Digital Roads vision and strategy is a subset of Connecting the Country to explore Digital in greater detail. Though the Digital Roads vision does not go into detail with regards to CAVs, the vision and strategy for 2025 covers the following which could be seen as enabling functions for CAVs in the longer term. As we progress into the next phase of work and explore Digital Roads beyond 2025, we anticipate CAVs to feature more prominently, in the meantime the following is mentioned to build the foundations:

- **Roadside technology** – We will assess the impact of in-vehicle communication growth on our roadside technology, being clear on a plan for the future across the SRN.
- **Better quality data** – We will receive better quality data from our customers, which enhances our own asset and operational data to inform decision making.
- **Network trials** – Large scale connectivity trials will be informed by customer insights and preferences to improve customer experience and ensure the most appropriate digital channels are utilised.
- **Working with vehicle manufacturers** – We will improve customer awareness of the technology in their vehicles to improve their experience on the network.
- **Future connectivity** – We will work with industry partners to support larger connectivity trials and the testing of in-vehicle communication.

\*the above bullet points have been extracted from the brochure attached

We have responded to all questions within the call for evidence. Where we have given a 'no comment' answer, it is because it is not our area of expertise.

Links to relevant documents are at the end of this reply.

## The definition of self-driving (Chapters 2 to 5)

### Consultation Question 1.

We provisionally propose that:

1. a vehicle should not be classified as self-driving if, with the ADS engaged, the user-in-charge needs to monitor the driving environment, the vehicle or the way it drives;
2. it is nevertheless compatible with self-driving to require the user-in-charge to respond to a clear and timely transition demand which:
  - a. cuts out any non-driving related screen use;
  - b. provides clear visual, audio and haptic signals; and
  - c. gives sufficient time to gain situational awareness;
3. to be classified as self-driving, the vehicle must be safe enough even if the human user does not intervene in response to any event except a clear and timely transition demand.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

1) All vehicles which 'drive themselves' within the meaning of the AEVA 2018 should have a user-in-charge in a position to operate the controls, unless the vehicle is specifically authorised as able to function safely without one.

2) It is important that the user-in-charge is given sufficient time to comply with any demands and to re-orientate themselves. The user-in-charge should assume the responsibilities of a driver after confirming that they are taking over the controls, but only after a safe handover has taken place via an 'offer and confirmation' process to avoid any confusion as to who or what is controlling the dynamic driving task. This is important to avoid any confusion regarding the point at which liability transfers from ADS to driver.

This question does however highlight the need to make clear to AV owners the distinction between a driver and a user-in-charge, both to ensure road safety and

to promote trust and confidence in ADS. The process of hand over from machine to human must be clear and unequivocal. I would advocate the suggested process of 'offer and confirmation' before control passes from ADS to human and the status of the person in the driver's seat moves from user-in-charge to driver, at which point he/she assumes liability for the dynamic driving task.

3) What is the definition of 'safe enough' here? Government and Highways England is committed to driving down road fatalities and serious injury such that by 2040 they are approaching zero. Any new system should be safer than the one that precedes it.

An ADS will not necessarily react to an emergency situation in precisely the same way as a human. There is a risk that a user-in-charge who has completely disengaged from the dynamic driving task may intervene unnecessarily, thus making the outcome worse.

Any ADS that is authorised as being capable of 'driving itself' within the meaning of the AEVA 2018 should be able to react effectively in an emergency situation in accordance with how its algorithms have been programmed to prevent a collision or mitigate the outcome if a collision is unavoidable. Automated driving systems should therefore be designed so as to prevent users-in-charge from intervening with the dynamic driving task until there has been a clear and unequivocal handover from machine to human by means of an 'offer and confirmation' process.

### **Consultation Question 2.**

We welcome views on whether self-driving features should be designed to ensure that they can be used by people with hearing loss.

Please share your views below.

Yes, this is extremely important both for equality purposes and for safety reasons. We believe that any systems should be capable of use by anyone legally able to drive

### **Consultation Question 3.**

We provisionally propose that the decision whether a vehicle is sufficiently safe to "safely drive itself" should be made by the Secretary of State, as informed by advice from a specialist regulator.

- Yes
- No
- Other

Please expand on your answer.

Any new MOT test would need to perform a check of the automated systems to ensure they are operating correctly and do not contain any illegal modifications. A software check for malware, viruses, etc. would also be beneficial. However, this is not just about the MOT, there needs to be a way, following any work on the vehicle, from replacing the tyres to collision repairs that the ADS is operating correctly.

Currently road traffic legislation is managed by the Department for Transport (DfT) and enforced by the police.

#### **Consultation Question 4.**

We welcome observations on which of the following standards is most appropriate when assessing the safety of automated vehicles:

- as safe as a competent and careful human driver
- as safe as a human driver who does not cause a fault accident
- overall, safer than the average human driver
- none of the above

Please expand on your answer.

We would expect automated vehicles to enable a safer SRN.

#### **Consultation Question 5.**

We welcome observations on how automated vehicles can be made as safe as reasonably practicable.

Please share your views below.

A robust **safety case** supported by evidence and strict regulation should achieve a very strong safety standard before wide scale roll-out of AVs.

#### **Practicalities:**

One of the issues for Highways England would be the practicalities, dependant on the technology being used by AVs. They would need to be able to accommodate and roadworks, congestion and other features on a road. For example, road signs: If AVs are 'reading' signs and signals on the road, road authority responsibilities would increase because the standard of the road may need to be much higher. If a sign blows over, we would be required to repair it immediately for AVs to be able to operate safely. At the present time, we operate a cyclical maintenance regime and we maintain to a standard that is 'reasonable'. We would need to constantly monitor our soft estate and undertake more frequent vegetation maintenance.

There may be situations where for example there are incidents at red traffic lights or roundabouts which could involve some liability for HE if the car manufacturers make counter claims against HE.

Consideration into actions following a collision or breakdown to ensure that the appropriate action is taken. For example, the identification of a place of relative safety to stop the vehicle.

**User education:**

It will be vital that the user-in-charge understands the situations in which they will be directed to take over, so that there is no confusion or misunderstanding, i.e. do they need to be 'monitoring' or should they be 'receptive to alert' and the difference between the two. The user-in-charge must be given sufficient time to re-orientate themselves with their surroundings. Driver confusion about what the various automation features currently on the market can, and cannot do, must be addressed.

**Human / Machine interface:**

Research identified the 'confidence' AVs gives the driver in the technology. Meaning there is a potential for a diminishing in driver skill and further potential of complacency. This may have the effect of drivers not being able to take over from the vehicle or have the skill to intervene in a position where the AV has made an incorrect decision. For example, how would the algorithm react if it had to choose between killing a non-motorised user or the occupant due to the nature of the potential crash. It may take a different option to a 'trained' driver.

Another identified risk of AVs is mixed fleet where human drivers and autonomous / semi-autonomous vehicles mix. Driver cognitive underload in Level 3 or Level 4 autonomy is an issue, as is driver cognitive overload for connected vehicles.

**Technical:**

Catastrophic technical failure could lead to various risks of collision, and where failure occurs this could lead to large volumes of stranded vehicles. This would impact on the wellbeing of drivers and passengers as could external factors such as inclement weather conditions (extreme heat or cold in particular) with no refuge places to hand.

Research has shown that the industry does not fully understand the risks behind AVs yet or the failure mechanisms. Dependency on software for directional and speed control of the vehicle is a major vulnerability, without beginning to worry about cyber security. How well will AVs be maintained once they have passed down the second-hand route?

Cyber security or potential terrorist threat to road users or damage to the SRN, especially high-risk sections or road such as large river crossings and tunnels where access to respond and rescue people would be difficult.

The complexity of autonomous vehicles will create new ways to have accidents that we currently cannot predict or understand. The reliance on complex systems to control such vehicles will mean only the system manufacturer will fully

understand the hazards and risks to which users are exposed and it is not in the manufacturer's commercial interest to make such knowledge public. There are parallels to aviation regulation, where regulators are reliant on manufacturers to provide evidence of safety yet where it is not possible for regulators to understand in depth how systems work.

Effective safety testing and making the manufacturer of the control system liable for failure and liable in the country where the accident happened. It must not be possible for software firms to avoid responsibility for failure of products, as otherwise the model of software development and in-field beta testing will not change to something more robust and acceptable.

An increased level of 'connectivity' will bring an increased reliance on information and its accuracy. In turn, there is potential for this to conflict with other sources of similar information such as road signs. This presents risks of drivers taking actions that they should not, and this leading to incidents involving collisions with other vehicles, pedestrians etc. There is a risk that various in-car systems may not be compatible and provide incorrect information.

In the case of autonomous vehicles, these will be wholly reliant on sensors and GPS technologies so there is a big risk when these are not operational. The worst case could be a large scale cyber incident whether accidental or deliberate. There are also risks around the transition of these vehicles whilst other non-AVs are still on the road, as one set will be more reliable than the other. There will also be stages of autonomy before full autonomy and there is a risk that the human drivers rely on this sooner than they should (think "self-driving" Tesla's already in use).

That in the longer term, they will be greatly safer than current controls that are human-led, however the technology is not fully tested or operational. The risks are around loss of control / connectivity and actions of other human driver's pedestrians etc. There are also risks that the vehicles cannot fully "read" the road in some instances and still require human control at times.

HGV's on public roads, cause the greatest damage in the case of accidents. Work on AV HGV's needs to be controlled to ensure that safety is assured as far as possible.

Questions for consideration:

### **Social Impacts**

- How will society adapt to the loss of jobs that results from automated driving?
- How will AV ownership patterns evolve?
- Will there be geographical pockets of AV ownership in more affluent areas due to cost of purchase?
- How will 'transport as a service' fit into supply and value chains?



## **Legal Issues**

- When a collision occurs, how will Lawyers and Judges decide what behavior was negligent?
- Will there be an increase in the potential liability for the manufacturers?
- Who owns the personal data collected by the car?
- What effects will AVs have on car insurance and claims?
- Do we force AVs to adapt to the UK legal system and motor vehicle codes or does the UK change our legal and social infrastructures to encourage the adoption of AVs technology?

## **Engineering Control of AVs**

- How do companies' deal with an unplanned event (breakdown, collision etc.)?
- Is the existing SRN infrastructure suitably and sufficiently designed to accommodate AVs?
- How will AV's interact with SMART motorways?
- How will AVs and human driven vehicles interact at merging and diverging areas on the SRN such as junctions?
- Will AVs need a dedicated lane for themselves?

## **Risk Assessment**

- How are the risks of interaction between human driven cars and AVs during any transition period going to be controlled?
- How will computer simulations of AVs be transferred to real world scenario's?
- How will large platoons of AV's be managed to avoid delays and human driven vehicles wanting to maneuver between the vehicles in the platoon?

## **Management Controls**

- What safe systems of work / Code of Practice / operating guidelines are companies' using for AVs trials?
- What sort of compatibility is there between the SRN and AVs manufacturers?
- What sort of compatibility is there between different AVs manufacturers?

One of the key metrics for comparing the safety levels for AVs versus human controlled car systems is the number of fatalities per 100,000,000 miles driven. Cars driven under traditional human control are currently involved in approximately 1.18 fatalities for every 100,000,000 miles driven. According to many automotive

safety experts, much more data is yet required before any such clear and demonstrably higher levels of safety can be convincingly provided as the assurance of AVs safety is the largest challenge to their implementation.

### **Consultation Question 6.**

We welcome practical suggestions for how AV regulators can fulfil their public-sector equality duty.

Please share your views below.

The Public Sector Equality Duty (PSED) requires public bodies to have due regard to the need to eliminate discrimination (see Question 2 in relation to hearing loss for example), advance equality of opportunity and foster good relations between different people when carrying out their activities.

The AV regulator needs to be cognisant of the 'Brown Principles' in PSED and carry out an impact assessment for AV's. The regulator must base its impact assessment on evidence – this means there must be enough relevant evidence from testing to allow an informed decision to be reached on PSED. An impact assessment is not mandatory, only 'due regard'. How would a regulator prove 'due regard' without an impact assessment?

The regulator would need access to the ADSE test data if no impact assessment was carried out.

All roads are not created equal. Quiet side streets are typically easier to navigate than busy urban arterial roads. Turns across traffic at junctions without traffic lights or clear lines of sight are more difficult than turns at junctions with lights and good visibility in all directions. Narrow driving lanes with adjacent parked cars and/or overgrown roadside vegetation are more difficult to negotiate than wide lanes with a clear hard shoulder.

Regulators must be aware of the operational domains for AV's. Just because a vehicle achieves a successful trial in one area does not mean that other nearby areas would follow quickly. It is preferable to implement AV's in urban and suburban areas, with slow speeds and spread toward wider adoption on faster roads later when more evidence is available.

Whether a regulator has complied its PSED is fact-specific. The regulator should commission an impact assessment and set up a Working Group to oversee and contribute to the impact assessment, in the context of the consultation paper 3 responses.

Consideration should also be given as to whether the equality impact assessment or licensing / approval should be completed on a scale broader than national, such as with other countries within Europe through some type of agreements / joint impact assessments. This could allow for quicker adoption of AV's. For example,

an ADSE was granted a 'licence' by a partnering country which then allowed the 'licensee / ADSE' to operate in the UK, the upfront costs and time the UK regulator and ADSE would typically take to obtain a 'licence / approval' in the UK would be eliminated. Additionally, by partnering with countries, such as France, vehicles could flow more freely from one country to another. This would also provide evidence of 'due regard' under PSED.

# Safety assurance before deployment

(Chapters 6 to 8)

## Consultation Question 7.

We provisionally propose that:

1. safety assessment should use a variety of techniques;
2. manufacturers/developers should submit a safety case to regulators showing why
3. they believe that the automated driving system is safe;
  - a. regulators should:
  - b. provide guidelines for what is in the safety case;
  - c. audit the safety case;
  - d. prepare guidance for manufacturers and developers on preferred standards; and carry out at least some independent tests.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

Consideration of the criteria for a safety case contents:

- Minimum number of miles driven in testing?
- Joining and leaving motorway junctions, etc?
- The impact of the vehicle not just for the driver and other occupants but for all road users including pedestrians, equestrians etc.

For any type of assessment, particularly for a new regulator, there should be consideration for placing restrictions on items such as time, operations, and location, effectively creating a regulatory capture area in which innovation can take place but in a controlled and safe environment.

France has developed legislation which limits the time and location of autonomous vehicle trials on roads to help minimise risk to the public, and the Netherlands has also developed legislation which allows testing on public roads, subject to several conditions including road location, duration, a demonstration of reduced traffic safety risks, and the existence of a driver's licence for any remote operator.

**Consultation Question 8.**

We seek views on whether an approval authority that intends to use a scenario database as part of the testing procedure should consult road user groups on the range of scenarios to be included.

Please share your views below.

Early engagement with road user groups is advisable. Highways England would like to be involved.

**Consultation Question 9.**

We provisionally propose that:

1. unauthorised automated driving systems should be prohibited; and
2. this should be subject to an exemption procedure by which the Secretary of State may authorise unauthorised systems to be used in tests and trials.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

No comment

**Consultation Question 10.**

We provisionally propose that:

1. the Government should establish a domestic scheme to approve automated driving systems (ADSs) for use on roads in Great Britain (a “national ADS approval scheme”);
2. manufacturers should have a free choice to apply for approval under either the UNECE system of international type approvals or through the national scheme;
3. developers should be able to submit an ADS for national approval, even if they are not responsible for manufacturing the whole vehicle.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

ADS should be backed by a legal entity which takes responsibility for the safety of the system and is subject to regulatory sanctions and criminal liabilities.

Vehicle manufacturers are already required to have a UK representative to apply to the Vehicle Certification Agency for a certificate of conformity and to ensure that certain local requirements are met. A similar process could be used to ensure that the ADS complies with local requirements claimed by the ADSE.

### **Consultation Question 11.**

We provisionally propose that:

1. an ADS approval scheme should be established through regulation under the Road Traffic Act 1988, without further legislative reform;
2. an ADS should be defined as a combination of software, hardware and sensors, which can be installed in a “type” of vehicle;
3. when an ADS is approved, the approval should be accompanied by specifications for:
  - a. the type of vehicle in which it can be installed; and
  - b. how the ADS is installed within the vehicle;
  - c. where an ADS is installed in a pre-registered vehicle, an example vehicle should be submitted to the regulator for approval of the installation.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

Outcomes based regulations and broad duties would give regulators flexibility, and would reduce the risk of the regulation becoming obsolete as technology develops.

This would encourage innovation. Enabling legislation could also be passed to allow regulations to be passed/amended in short order so the law can move quickly and track the change of technology.

### **Consultation Question 12.**

We invite observations on the appeal process in regulation 19 of the Road Vehicles (Approval) Regulations 2020, including:

1. how it works in practice; and

2. how well it is suited to the proposed national ADS approval scheme.

Please share your views below.

No comment.

**Consultation Question 13.**

We provisionally propose that:

1. once an ADS has received type approval at either international or domestic level, an Automated Driving System Entity (ADSE) would need to submit the vehicle to the UK safety regulator for categorisation as able to safely drive itself;
2. the safety regulator should make a recommendation to the Secretary of State for how the vehicle should be classified;
3. it should be open to the safety regulator to recommend that an ADS-enabled vehicle is classified in one of three ways: as not self-driving but driver assistance; as self-driving only with a user-in-charge; or as self-driving without a user-in-charge;
4. the safety regulator should only recommend classification as self-driving (either with or without a user-in-charge) if it is satisfied that:
  - a. an ADSE is registered as taking responsibility for the system;
  - b. the ADSE was closely involved in assessing safety and creating the safety case; and
  - c. the ADSE has sufficient funds accessible to the regulator to respond to improvement notices, to pay fines and to organise a recall.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

Automated driving systems should undergo rigorous testing to ensure that they are safe before they are authorised to be used on roads or other public places. This should apply both when the ADS comes equipped on the vehicle and when it is an aftermarket product.

An approval regime based on safety cases, self-certification and third-party testing should be able to evolve to ensure the safety of new automated driving systems as far as reasonably practicable. The three options can and should work together harmoniously and should improve consumer confidence and safety.

**Consultation Question 14.**

We provisionally propose that a new legislative framework should provide regulation-making powers to specify:

- a. who should assess whether a vehicle is capable of self-driving;
- b. the procedure for doing so; and
- c. criteria for doing so.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

As long as the structure is in place to efficiently handle this.

**Consultation Question 15.**

We seek views on whether the new legislation should include provisions for appeals against a categorisation decision. If so, should these be similar to those in regulation 19 of the Road Vehicles (Approval) Regulations 2020?

Please share your views below.

No comment.

**Consultation Question 16.**

We seek views on whether the regulator that classifies vehicles as self-driving should have power to allow their deployment in limited numbers, so as to gather further data on their safety in real world conditions.

Please share your views below.

The regulator should have the power to ensure any AV has been tested as safe with real world data over a specified number of miles.

Confidence in the safety of AVs is critical to public uptake. Large amounts of vehicle data require processing from various sources (ie Radar, Lidar and cameras), which needs to be compatible with other data sources such as maps, signs and traffic alerts to allow AVs to make safe decisions on speed and steering whilst on the road.

The software and algorithms required to predict and avoid collisions of AVs is extremely complex and involves collection of huge amounts of real time data and



the use of mathematical calculus for predicting a potential glancing or clipping collision.

To demonstrate positive results in terms of killed and seriously injured numbers (KSI's), AVs would have to be driven hundreds of millions more miles in full autonomous mode to establish collision data. This conflicts with the miniscule number of miles currently driven in UK testing.

# Assuring safety in use (Chapters 9 to 11)

## Consultation Question 17.

We provisionally propose that legislation should establish a scheme to assure the safety of automated driving systems following deployment, giving scheme regulators enhanced responsibilities and powers.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

A scheme regulator would be best placed to co-ordinate any potential regulatory actions and issue product recalls. It will be necessary to ensure that adequate policies, processes and procedures are in place post deployment, especially for software updates, and to remove unsafe software and ensure that such driving systems are no longer capable of being used.

## Consultation Question 18.

We provisionally propose that the enhanced scheme should give regulators the following responsibilities and powers:

1. scheme regulators should be responsible for comparing the safety of automated and conventional vehicles using a range of measures;
2. to do this the regulator should have power to collect information on:
  - a. leading measures (instances of bad driving which could have led to harm) and
  - b. lagging measures (outcomes which led to actual harm);
3. regulators should have power to require an ADSE:
  - a. to update software where an update is needed to ensure safety and continued compliance with the law;
  - b. to keep maps up-to-date, where an AV relies on maps to ensure safety and compliance with the law;
  - c. to communicate information about an ADS to users in a clear and effective way, including where necessary through training.

Do you agree?

- Yes

No

Other

Please expand on your answer. In particular, if you think the enhanced scheme should give regulators some but not all of the listed responsibilities and powers, please expand on your views.

We suggest monthly data collection around the following topics:

### **Reporting of incidents**

Any incident involvement an AV being used for test / work / pleasure purposes:

- Damage only collision
- Injury collision
  - Injury to driver
  - Injury to passenger
  - Injury to other colleagues not on the vehicle
  - Injury to member(s) of the public

### **Reporting of offences**

ADSE should also advise the regulator if an AV receives:

- a fixed penalty notice,
- summons for a driving offence,
- conviction for any driving offence

### **Confirmation required that AV:**

- vehicles have valid MOT (where applicable)
- vehicles are appropriately insured
- daily vehicle checks are carried out – software checks?
- vehicles are serviced at least as frequently as the ADSE guidelines
- drivers have valid licences for the vehicles they are driving
- drivers have received the correct training and are familiar with the vehicles they are driving
- records of crashes and investigation results,
- driver training or education supplied,
- vehicle checks, defect reporting and actions to rectify issues.

### Consultation Question 19.

We welcome views on the following issues:

1. Should scheme regulators be empowered to approve software updates that apply only within the UK, without requiring the manufacturer to return to the original type approval authority?
2. Should the scheme should also deal with cybersecurity?
3. Are other powers needed? (Note that data is discussed in Chapter 17.)

Please share your views below.

If regulators are empowered to approve UK only software updates, extreme care would be needed to ensure it a) did not prevent the AV being driven abroad, or b) the UK only software contributed to the AV not being compatible with say, French software and an accident was caused. Liability could sit with the regulator.

Yes, cybersecurity should also be included, but this must be in a collaborative manner with the stakeholders. Any scheme that arises from this consultation should be the basis for cybersecurity as well. Safeguarding against the risk of data theft and hacking are vital if the public are to accept AV's onto the roads.

The cyber security standards published by the British Standards Institute BS ISO 27014:2020 and 27009:2020 should be part of the scheme to ensure the regulator can actually regulate the behaviours of stakeholders. However British Standards are only guidance documents and not statutory instruments so specific legislation and perhaps Approved Codes of Practices (ACoPs) are needed.

### Consultation Question 20.

Should the authority administering the scheme to assure safety while automated vehicles are in use be kept separate from type approval authorities (as is already the case)? Alternatively, should both functions be combined in a single body?

- Separate bodies
- Single body
- Other

Please expand on your answer.

Having two separate bodies has the potential to:

- Increased operating costs
- Extend decision making times
- Lead to confusion and misaligned objectives / deadlines.

A single oversight body would be the best option.

**Consultation Question 21.**

What formal mechanisms could be used to ensure that the regulator administering the scheme is open to external views (such as duties to consult or an advisory committee)?

Please share your views below.

A key role of oversight bodies is to coordinate and supervise, making sure that regulatory reform meets quality standards, complies with a general economic strategy and that Regulatory Impact Analysis (RIA) is undertaken appropriately. Perhaps there is a role for the Better Regulation Executive (BRE) here?

An Advisory Board, and Specialist Topic Groups to feed in to the Board would be beneficial.

**Consultation Question 22.**

We provisionally propose that a statutory scheme to assure AVs in-use should:

1. investigate safety-related traffic infractions (such as exceeding the speed limit; running red lights; or careless or dangerous driving);
2. investigate other traffic infractions, including those subject to penalty charge notices;
3. if fault lies with the ADSE, apply a flexible range of regulatory sanctions.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

No comment.

**Consultation Question 23.**

We provisionally propose that the regulator which assures the safety of AVs in-use should have powers to impose the following sanctions on ADSEs:

- Informal and formal warnings  
 Fines  
 Redress orders

- Compliance orders
- Suspension of authorisation
- Withdrawal of authorisation
- Recommendation of attendance at a restorative conference

Please select the sanctions which you think the regulator should have powers to impose, leaving blank those which you do not think the regulator should be able to impose.

Please explain the reasons for your selection above.

We assume this would be an amendment to the Road Traffic Act?

#### **Consultation Question 24.**

We provisionally propose that the legislation should provide the regulator with discretion over:

1. the amount of any monetary penalty; and
2. the steps which should be taken to prevent re-occurrence of a breach.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

1. This is similar to Sentencing Guidelines for Health & Safety Offences (see link below) and Schedule 3A of the Health and Safety (Offences) Act 2008.

<https://www.sentencingcouncil.org.uk/wp-content/uploads/Health-and-Safety-Corporate-Manslaughter-Food-Safety-and-Hygiene-definitive-guideline-Web.pdf>

2. This could be achieved in a similar way to The Coroners and Justice Act 2009 which allows a Coroner to issue a Regulation 28 Report to an individual / organisations / local authorities or government departments and their agencies, where the Coroner believes that action should be taken to prevent further deaths.

When an HSE Inspector goes to a duty holder, they have various powers to ensure there is no reoccurrence such as a Fee for Intervention Letter (Notification of Contravention), Improvement or Prohibition Notices, which can be served with required actions.

**Consultation Question 25.**

We provisionally propose that a specialist incident investigation unit should be established:

1. to analyse data on collisions involving automated vehicles;
2. to investigate the most serious, complex or high-profile collisions; and
3. to make recommendations to improve safety without allocating blame.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

The root causes of road traffic accident are well known, and in 94% of all current cases human error is to blame.

A specialist collision unit, similar to the Air Accident Investigation Branch (AAIB) with legislative powers sounds like a logical step. With the lengthy introduction of AV's onto public roads, the police force will have little to no knowledge of how to analyse relevant data acquired from AVs involved in accidents.

An example of how technology overtakes the emergency services is the issue of how we can safely remove electric cars from the road after a crash without the lithium batteries reigniting.

A specialist unit could establish root causes and produce recommendations to prevent similar accidents in future, rather than to establish blame and/or lay criminal charges, which would naturally tend to be the focus of police investigations.

**Consultation Question 26.**

We provisionally propose that the UK Government should establish a forum for collaboration on the application of road rules to self-driving vehicles.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

Highways England would like to be involved.

**Consultation Question 27.**

We welcome views on:

1. the issues the forum should consider;
2. the composition of the forum; and
3. its processes for public engagement.

Please share your views below.

- 1) Specific rules for different road types.
- 2) The regulators for the different road types (ie SRN – Highways England)
- 3) Road user groups.



# Responsibilities of the user-in-charge

## (Chapter 12)

### Consultation Question 28.

We provisionally propose that that the user-in-charge:

1. should be defined as an individual in position to operate the controls of a vehicle while an ADS is engaged and who is either in the vehicle or in direct sight of the vehicle; and
2. is not a driver while the ADS is engaged, and would not be liable for any criminal offence or civil penalty (such as a parking ticket) which arises out of dynamic driving.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

- 1) Yes.
- 2) No (parking might be a poor choice of example as you will be fully aware of where your vehicle is parked and whether or not it is parked, or is about to park, illegally)

What about options for a user-in-charge to retake control of the vehicle in order to edge through pedestrian traffic? If an AV will stop when a pedestrian is its' path, can you imagine an AV in London – it would never move as pedestrians would just keep walking in front of it.

### Consultation Question 29.

We provisionally propose that following the end of the transition demand period:

1. the user-in-charge should re-acquire the legal obligations of a driver, whether or not they have taken control of the vehicle; and
2. if, following a failure to respond to a transition demand, the vehicle stops in a manner which constitutes a criminal offence, the user-in-charge should be considered a driver and should therefore be liable for that offence.

Do you agree?

- Yes
- No

Other

Please expand on your answer.

Highways England has not undertaken any research or testing to establish how long it takes a driver to respond to a transition demand. We would like to see results of any research.

How long is the transition demand period? The transition demand will require a driver to act quickly to change the vehicle's motion. To design safe systems, the ADSE needs to be able to predict human performance in hypothetical scenarios that vary in criticality (i.e. how much time the driver has to respond before the situation becomes unsafe).

Different people have different reactions times and it will also depend on what the driver is engaged in prior to the transition period.

**Consultation Question 30.**

We seek views on whether a person with a provisional licence should be allowed to act as a user-in-charge, if accompanied by an approved driving instructor in a vehicle with dual controls.

Please share your views below.

The future of cars would suggest that having driving lessons in AVs would be a logical step, assuming the driving instructor is specifically qualified and approved.

**Consultation Question 31.**

We provisionally propose that legislation should create new offences of:

1. using an automated vehicle as an unfit or unqualified user-in-charge; and
2. causing or permitting the use of an automated vehicle by an unfit or unqualified user-in-charge.

Do you agree?

Yes

No

Other

Please expand on your answer.

Do we need to create new offences? The Road Traffic Act covers these topics already in terms of not allowing someone without a licence or insurance to drive your car.

**Consultation Question 32.**

We provisionally propose that persons carried without a user-in-charge should be guilty of a criminal offence. Do you agree?

- Yes
- No
- Other

Please expand on your answer.

No comment.

**Consultation Question 33.**

We seek views on whether the new proposed offence of being carried without a user-in-charge should only apply if the person:

1. knew that the vehicle did not have a user-in-charge; and
2. knew or ought to have known that a user-in-charge was required.

Please share your views below.

We believe that this is covered by current legislation with regards to passengers in a vehicle which is 'joy riding'.

**Consultation Question 34.**

We provisionally propose that a user-in-charge who takes over control of the vehicle:

1. should be considered a driver; but
2. should have a specific defence to a criminal offence if, given the actions of the ADS, a competent and careful driver could not have avoided the offence.

Do you agree?

- Yes
- No
- Other

Please expand on your answer. If you do not agree with the proposal, we welcome your views on alternative legal tests.

No comment.

**Consultation Question 35.**

We provisionally propose that the user-in-charge should be liable for criminal offences which do not arise from the dynamic driving task, including those related to:

1. insurance;
2. maintaining the vehicle in a roadworthy condition (including installing safety critical software updates);
3. parking;
4. duties following accidents to provide information and report accidents to the police; and
5. insuring child passengers wear seatbelts.

Do you agree?

- Yes, the user-in-charge should be liable for all offences not arising from the dynamic driving task
- No, the user-in-charge should not be liable for any offences
- The user-in-charge should be liable for some but not all of the offences listed
- Other

Please expand on your answer. If you indicated that you think the user-in-charge should be liable for some but not all of the offences which do not arise from the dynamic driving task, please indicate which offences you think the user-in-charge should be liable for.

No comment.

**Consultation Question 36.**

We provisionally propose that the legislation should include a regulation-making power to clarify those roadworthiness failings which are (and those which are not) the responsibility of the user-in-charge.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

No comment.

# Remote operation: no user-in-charge vehicles (Chapter 13)

## Consultation Question 37.

We provisionally propose that:

1. where an individual is exercising latitudinal and longitudinal control (steering and braking) over a vehicle remotely, that should not be regarded as a form of “self-driving”; and
2. where lateral and longitudinal control are exercised by an ADS, all other forms of remote operation should be regulated as “self-driving”.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

No comment.

We welcome views on whether the current definition of when a vehicle “drives itself” under the Automated and Electric Vehicles Act 2018 should be amended to deal with some forms of remote operation which may involve a degree of “monitoring”.

Please share your views below.

No comment.

## Consultation Question 38.

We provisionally propose that:

1. the regulation of self-driving vehicles should distinguish between an Automated Driving System Entity (which vouches for the design of the system) and an operator (responsible for the operation of individual vehicles);
2. all vehicles authorised for use on roads or other public places with no user-in-charge should either:
  - a. be operated by a licensed operator; or
  - b. be covered by a contract with a licensed operator for supervision and maintenance services;

3. it should be a criminal offence to use a NUIC vehicle on a road or other public place unless it is operated by a licensed operator or is covered by a contract with a licensed operator for supervision and maintenance services.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

No comment.

### **Consultation Question 39.**

We welcome views on whether NUIC operators should be required to demonstrate professional competence through a safety management system, as set out in a safety case.

Please share your views below.

Users should be able to demonstrate competence – including a programme of on-going training.

### **Consultation Question 40.**

We provisionally propose that, irrespective of the nature of the vehicle, a licensed operator should be under a duty to:

1. supervise the vehicle;
2. maintain the vehicle; insure the vehicle;
3. install safety-critical updates and maintain cybersecurity; and
4. report accidents and untoward events (as defined by the regulator).

Do you agree?

- Yes, a licensed operator should be subject to all the listed duties  
 No, a licensed operator should not be subject to any of the listed duties  
 A licensed operator should be subject to some but not all of the listed duties  
 Other

Please expand on your answer. If you think a licensed operator should be subject to some but not all of the listed duties, please indicate which listed duties you think should be placed on a licensed operator.

No comment.

**Consultation Question 41.**

We provisionally propose that legislation should include a regulation-making power by which some or all of these duties could be transferred to the registered keeper or owner, if it was shown that it was appropriate to do so.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

No comment.

**Consultation Question 42.**

We welcome views on how accessibility standards for Highly Automated Road Passenger Services (HARPS) might be developed.

Please share your views below.

The requirement for operators to conform with the Equality Act of 2010 is an effective route for accessibility standards and to make conforming with the Equality Act a requirement of any HARPS license.

Review intervals of the legislation should not be set in stone as flexibility is required for the fast-paced technology changes. Legislation should be broad enough to provide overall direction for the UK while still permitting individual devolved government to take into account their own specific requirements. A consistent approach towards traffic regulation in England, Scotland, and Wales could give the UK a competitive advantage from an implementation perspective against nations such as Germany and the US, with federal structures, where ADSE's may struggle with the patchwork of traffic rules across different states.

As a part of the consideration on minimum accessibility standards, any Advisory Panel needs to consider the potential impact on government agencies which will likely be operating vehicles. Any local authority / government agency would need to comply with all minimum requirements and if found to be non-conforming, could face the removal of their HARPS licence. This could result in the loss of key public services that rely on these vehicles such as trams, buses and taxi's.



We provisionally propose that:

1. an accessibility advisory panel should be formed to include:
  - a. the Equalities and Human Rights Commission; and
  - b. representative groups for disabled and older persons;
2. the Secretary of State should be obliged to consult with the accessibility advisory panel prior to setting any national minimum standards on HARPS;
3. there should be a duty to periodically re-consult the accessibility advisory panel at set intervals to ensure requirements keep pace with developing evidence of technical feasibility and changing needs.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

No comment.

We welcome views on what the set interval for periodically re-consulting the accessibility advisory panel should be.

Please share your views below.

No comment.

**Consultation Question 43.**

We welcome views on who should administer the operator licensing scheme.

Please share your views below.

The Department for Transport should administer the scheme.

There should be some sort of central body that should approve software in order to help ensure vehicles are acceptable for use on the roads. In the US, the Federal Aviation Authority (FAA) not only approves designs of aircraft, but also approves potential software and electronic hardware, such as autopilots, flight controls, and engine controls. The FAA certifies this software using set approval guidelines which includes not only procedures for inspection of the code, but also provides checks for proper uploads to aircraft. A similar body and related guidelines could be established in the UK for certifying and operating the licensing scheme.

# Criminal offences by ADSEs and their senior managers (Chapter 14)

## Consultation Question 44.

We provisionally propose that:

1. it should be a criminal offence for an ADSE to omit safety-relevant information or include misleading information when putting a vehicle forward for classification as self-driving or responding to information requests from the regulator;
2. the offence should apply to senior managers (where it was attributable to the manager's consent, connivance or neglect);
3. the offence should not apply to more junior employees;
4. the offence should carry a higher sentence if it is associated with a death or serious injury;
5. the offence should be prosecuted in England and Wales by either the regulator or the Crown Prosecution Service and in Scotland by the Procurator Fiscal.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

No comment.

## Consultation Question 45.

We seek views on the following proposed offences.

### Offence A: non-disclosure and misleading information in the safety case

When putting forward a vehicle for classification as self-driving, it would be a criminal offence for the ADSE to

1. fail to provide information to the regulator; or
2. provide information to the regulator that is false or misleading in a material particular

where that information is relevant to the evaluation of the safety of the ADS or the vehicle.

The ADSE would have a defence if it could show that it took reasonable precautions and exercised all due diligence to prevent the wrongdoing.

The penalty would be an unlimited fine.

### **Offence B: non-disclosure and misleading information in responding to requests**

When a regulator requests specific information from an ADSE (whether before or after deployment), it would be a criminal offence for the ADSE to

1. fail to provide information to the regulator; or
2. provide information to the regulator that is false or misleading in a material particular

where that information is relevant to the evaluation of the safety of the ADS or the vehicle.

The ADSE would have a defence if it could show that it took reasonable precautions and exercised all due diligence to prevent the wrongdoing.

The penalty would be an unlimited fine.

### **Offence C: offences by senior management**

Where offence A and/or offence B committed by a body corporate is proved—

1. to have been committed with the consent or connivance of an officer of the body corporate; or
2. to be attributable to neglect on the part of an officer of the body corporate, then that officer is guilty of the offence.

An officer includes any director, manager, secretary or other similar officer or any person who was purporting to act in any such capacity.

We see this as equivalent to offences under the Human Medicines Regulations 2012 and General Product Safety Regulations 2005, which carry a penalty of a fine and/or a maximum two years' imprisonment.

### **Offence D: aggravated offences in the event of death or serious injury following non-disclosure or provision of misleading information to the AV safety regulator**

Where a corporation or person commits Offences A to C, that offence is aggravated where the misrepresentation or non-disclosure:

1. related to an increased risk of a type of adverse incident; and
2. an adverse incident of that type occurred; and
3. the adverse incident caused a death or serious injury.

We see this as equivalent to the offence of causing death by dangerous driving, which carries a penalty of an unlimited fine and/or a maximum of 14 years' imprisonment.

Please share your views below.

We have made comment on penalties in an earlier question.

**Consultation Question 46.**

We welcome views on whether an ADSE should be under a duty to present information in a clear and accessible form, in which safety-critical information is indexed and signposted.

Please share your views below.

Yes, it should.

# New wrongful interference offences (Chapter 15)

## Consultation Question 47.

We provisionally propose that legislative amendment should clarify that the tampering offence in section 25 of the Road Traffic Act 1988 applies to anything that is physically part of a vehicle and any software installed within it.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

Section 25 already covers brakes and 'other mechanisms'. We would assume that there is an understanding that 'mechanism' would include equipment such as software, sensors etc.? If so legislative amendment is unlikely to be necessary as 'mechanism' covers all eventualities.

## Consultation Question 48.

We welcome views on whether the tampering offence should apply to external infrastructure required for the operation of the AV.

Please share your views below.

This would depend on whether 'mechanism' covers the external infrastructure.

Perhaps Section 1(1) of the Criminal Damage Act 1971 - A person who without lawful excuse destroys or damages any property belonging to another, intending to destroy or damage any such property, or being reckless as to whether any such property would be destroyed or damaged, shall be guilty of an offence, would suffice for any offences, including that pertaining to roadside infrastructure.

## Consultation Question 49.

We provisionally propose that there should be an aggravated offence of wrongfully interfering with an AV, the road, or traffic equipment contrary to section 22A of the Road Traffic Act 1988, where the interference results in an AV causing death or serious injury, in:

1. England and Wales; and

2. Scotland.

Do you agree?

- Yes, in both England and Wales and Scotland
- In England and Wales only
- In Scotland only
- In neither jurisdiction

Please expand on your answer.

No comment.

**Consultation Question 50.**

We provisionally propose that the appropriate mental element for the aggravated offence is intent to interfere with a vehicle, the road or traffic equipment.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

No comment.

**Consultation Question 51.**

We seek views on whether an approved work defence for repair or maintenance operations authorised by a vehicle manufacturer or Automated Driving System Entity is desirable.

Please share your views below.

The ADSE should provide a new safety case to the oversight body / regulator to get the work 'approved'.

# Civil liability (Chapter 16)

## Consultation Question 52.

We provisionally propose that the way the Automated and Electric Vehicles Act 2018 deals with contributory negligence and causation is:

1. adequate at this stage; and
2. should be reviewed by the UK Government in the light of practical experience.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

We note the reference at 16:12 that the AEV Act 2018 will need to be supplemented '*by other statutes and the common law*'. The obvious question is to what extent are additional statutes already under consideration, and when are they expected to be implemented by?

We anticipate a period of legal uncertainty until the full range of statutes to complement the AEV Act 2018 have been fully introduced. This view is supported by the reference to the need for common law to supplement the act. The issues of civil liability will only be truly settled once the Courts have had an opportunity to consider and decide upon contentious issues in litigation.

This could lead to an initial period of uncertainty for litigants on both sides of the case and could cause preliminary problems in the ability of legal advisers to provide effective advice to their respective clients on the more intricate questions of civil liability. We are conscious that litigation can come at considerable expense, and it is desirable to settle questions of civil liability at the earliest opportunity to avoid parties incurring potentially substantial costs which could otherwise be minimised or avoided entirely.

The Act makes it clear that established rules in respect of contributory negligence apply. In terms of causation, the UK government should review regularly after practical experience and be cognisant of case law developing in civil courts.

## Consultation Question 53.

We provisionally propose that measures should be put in place to compensate the victims of accidents caused by uninsured AVs.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

Measures should be put in place to compensate the victims of accidents caused by uninsured AVs. To do otherwise would cause severe prejudice to accident victims who are not at any fault and who would otherwise be seemingly left without any viable means of obtaining redress. Care should be taken to avoid such a scenario arising.

**Consultation Question 54.**

We provisionally propose that:

1. product liability law should be reviewed to take account of the challenges of emerging technologies;
2. any review should cover product liability as a whole, rather than be confined to automated vehicles; it should not, therefore, form part of this project on automated vehicles.

Do you agree?

- Yes
- No
- Other

Please expand on your answer.

Whilst not strictly applicable to Highways England we would be inclined to agree with the proposals outlined.



# Access to data (Chapter 17)

## Consultation Question 55.

We provisionally propose that:

1. for a vehicle to be classified as self-driving, it needs to record the location as well as the time at which the ADS is activated and deactivated;
2. the Government should work within the UNECE to ensure data storage systems for automated driving record these data; and
3. any national system to approve an ADS should require these data to be collected, subject to safeguards.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

We expect and anticipate information sharing associated with connected environments. Such as vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) and vehicle-to-other (V2X) as well as to protect the occupants (similar to e/bCall).

## Consultation Question 56.

We provisionally propose that legislation should impose a duty on those controlling AV data to disclose data to insurers, where the data is necessary to decide claims fairly and accurately.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

An industry standard data-set will be required wherever an automated vehicle is involved in an incident, to determine whether the ADS was activated at the point of collision. It should be provided within 24 – 48 hours to avoid deletion. A concern would be that drivers may become 'savvy' and decide that through their own actions as user-in-charge, they are about to have a crash, speed camera etc. and they will activate the ADS in an attempt to avoid blame.

**Consultation Question 57.**

We provisionally propose that:

1. initially, DSSAD data from self-driving vehicles should be stored for three years; and
2. the issue should be reviewed in the light of experience.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

GDPR obviously needs to be considered, as does the cost of storing data, it would be unreasonable to expect vehicle manufacturers to store data for long periods of time, in case a third-party claim is forthcoming.

The software and algorithms required to predict and avoid collisions of CAVs is extremely complex and involves collection of huge amounts of real time data and the use of mathematical calculus for predicting a potential glancing or clipping collision. It should be reviewed on an ongoing basis, as how will the ADSE know (in the absence of a claim), how long it is required to store the relevant data?

**Consultation Question 58.**

We provisionally propose that:

1. when an ADSE applies for categorisation of its vehicle types as self-driving, it should present the regulator with details on how data will be recorded, stored, accessed and protected;
2. the regulator should only categorise a system as self-driving if it is satisfied that that the ADSE has systems to abide by its obligations under the GDPR.

Do you agree?

- Yes  
 No  
 Other

Please expand on your answer.

No comment.

## **Documents and links you may find helpful:**

Highways England's Strategic Business Plan:

<https://www.gov.uk/government/publications/highways-england-strategic-business-plan-2020-2025>

Highways England's Delivery Plan:

<https://www.gov.uk/government/publications/highways-england-delivery-plan-2020-2025>

Road Investment Strategy 2: 2020-2025:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/872252/road-investment-strategy-2-2020-2025.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872252/road-investment-strategy-2-2020-2025.pdf)

Connecting the Country - Planning for the long term:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/666876/Connecting the country Planning for the long term.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/666876/Connecting_the_country_Planning_for_the_long_term.pdf)