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Centre for Connected and Autonomous Vehicles: Safe Use of Automated Lane Keeping System (ALKS) Comments provided by Mills & Reeve LLP

INTRODUCTION

This document is in response to the *Safe use of Automated Lane Keeping System on GB motorways: call for evidence* issued by the Department for Transport and the Centre for Connected and Autonomous Vehicles in August 2020 (the "**Consultation Document**").

Mills & Reeve is a national UK law firm with 133 partners and a total strength of over 1,000 staff operating from six offices including London, Manchester, Birmingham and Cambridge. Mills & Reeve is one of the top performing law firms in the UK when it comes to client satisfaction, according to the latest editions of legal directories Chambers UK and The Legal 500, and has been named for a record seventeenth year running as one of the 100 Best Companies to Work For in The Sunday Times annual survey. Mills & Reeve acts for a range of clients who have an interest in the development of automated vehicles including automotive manufacturers and suppliers to automotive manufacturers, insurers as well as new entrants to the market that propose alternative automated transport solutions. We advise a range of clients on issues relating to automated transport and therefore have a close interest in seeing that a robust legal and regulatory framework is put in place.

We begin with general comments on the approach taken. We have also quoted selected headings from the Consultation Document followed by more specific comments.

GENERAL COMMENTS

Overall, we welcome the plans to permit ALKS-enabled vehicles on motorways. However, we consider that the overall approach in the Consultation Document is still overly constrained by considerations applicable to existing human-operated vehicles. Application to autonomous systems of rules designed for vehicles with human drivers leads to inconsistencies and difficulties for developers. Trying to adapt the rules currently applicable to drivers, and vehicle systems equipped to support and enable human drivers to carry out their task, does not lead, we believe, to the best outcome for developers of driverless technology.

For the purpose of this response, we are making a key distinction between a lane keeping system which is an Advanced Driver Assistance System (and therefore never in absolute control of the vehicle) and an Automated Lane Keeping System which is, at times, in absolute control of the vehicle and the dynamic driving task. Our response would be very different if it were only considering an ADAS feature (and indeed, we note that lane-keeping systems that constitute an ADAS feature are already approved for use).

We accept that active supervision of autonomous vehicles during their testing phase is appropriate. We also accept that as new autonomous features are introduced to vehicles there will be a time when vehicles are driven by the system at times and by the human driver at times. However, in our view, designating an individual as a "driver" whilst autonomous features are operative and expecting that "driver" to retain responsibility for compliance with existing rules applicable to in-vehicle drivers is not the best approach.

A better approach would be to develop a new system of regulation specific to driverless technology to enable innovative developers to move away from basing their designs on existing human driver-controlled road vehicles.

We would strongly encourage the development of rules to promote systems that do not rely on human override in an emergency situation, but instead incorporate autonomous systems to ensure safety. Expecting ordinary human drivers to react in a timely and appropriate way when they have previously been "out of the loop" is, we believe, hugely dangerous. We have explained these concerns in more detail elsewhere (for example, in our response to the Law Commissions' Joint Preliminary Consultation Paper on Automated Vehicles, available here.)

PART 2

Do you foresee any legal barriers to accessing data for incident investigation?

If yes, what are those barriers?

The Consultation Document includes an extensive list of information that is to be recorded and accessible to the police and to the manufacturer and insurer. It envisages that the manufacturer and insurer will set conditions on data recording, handling and sharing.

Although collection of data that is necessary for incident investigation purposes by law enforcement authorities is appropriate, gathering data for use beyond this immediate purpose is more problematic. Manufacturers and insurers may wish to gather data for a variety of different purposes. Insurers are likely to wish to gather data in order to price their product offering, and improve risk assessment. Manufacturers may wish to gather data to improve the functioning of the system, but also to understand the behaviour of individual drivers for other reasons. They may wish to influence the driver's behaviour where the system is not being used in situations where it could be used, for example.

There will be commercial sensitivities on the part of a manufacturer about the dissemination and use of the gathered data (particularly if the data shows any form of manufacturing flaw or would otherwise disclose confidential and proprietary information as to its systems). Achieving the degree of sharing necessary for incident investigation and analysis, and for other purposes deemed beneficial, will have to overcome these sensitivities.

In addition, public authorities may wish to access data for the purposes of improving road design and signage, and research to understand how well the system is operating.

Any collection of and access to data about identifiable individuals for purposes beyond incident investigation will need to be compliant with data protection law. Analysis of the basis for data processing will be required. Users will need to be made aware of what data is collected and for what purposes. Retention of data will need to be controlled, so that it is not kept for longer than necessary.

In the event of an incident where criminal or civil proceedings may follow, drivers and others involved in the incident are likely to need access to the data in order to bring or defend claims. Where data is within the control of law enforcement bodies, manufacturers and insurers it may not be straightforward for drivers/those involved in the incident to gain access to it. A system to make recorded data available to those who need to rely on it is needed, so that legal proceedings can be conducted fairly.

In addition, the degree of data recording may affect consumer acceptance. Drivers may be unwilling to accept extensive data recording, especially if it may be accessible by manufacturers and insurers.

How do you think the driver should be educated and informed to understand the abilities and limitations of the system to ensure they use it safely?

What role do you think manufacturers selling this system should play in providing this education and information?

What role do you think Government and its agencies should play in providing this education and information?

This group of questions addresses the need to inform and educate drivers to understand and use an ALKS.

Educating and informing drivers as to the automation features offered by a particular vehicle is, of course important. However, we consider there to be dangers in introducing to the consumer market vehicles with increasing degrees of automation, especially where these features vary across the fleet.

In our view, advanced driver assistance systems should be capable of safe use by a competent driver of currently available vehicles. The risk of requiring additional training for the use of advanced driver assistance systems is that it has the potential to raise the expectations the manufacturer/developer is entitled to place on the driver, which may increase the risks associated with their use.

Although some drivers will use the same vehicle for much of the time, drivers are likely to use different vehicles occasionally or frequently. It is unrealistic to expect them to become familiar with a new set of automation features every time. This will be unimportant in relation to many vehicle features, such as the operation of audio equipment. However, it becomes much more important where safety features are in issue. Familiarity with the degree of automation offered by a particular vehicle, and the circumstances in which a driver is expected to monitor its operation and take back control, is safety critical. Simplicity in relation to the kinds of automation that are available, and exactly what is expected of the driver, is of key importance.

There should be consistency across different manufacturers as to the features of ALKS, and the way in which they communicate with the driver. A consistent set of signals and icons would be necessary. Otherwise, training would need to be tailored to a particular type of vehicle, making it difficult and even dangerous for users to switch between vehicles. Non-professional drivers should not be expected to develop a new set of skills in order to manage and monitor a highly complex technology. A requirement for training may also prevent a wider adoption of the technology in that it could influence a driver's desire to adopt the products in the first place i.e. it becomes too "difficult". These are technologies that are designed to improve road safety and thus we need the use of the technology to be as smooth and as easy as possible to ensure ready and widespread adoption.

One area that might usefully be added to driver training is raising awareness of the limitations of advanced driver assistance systems. This would make drivers aware of the circumstances in which they retain responsibility for the driving task.

PART 3

Subject to the outcome of this call for evidence and subsequent consultation, would you have concerns about a scenario where any vehicle approved to the ALKS regulation would be automatically considered to be an automated vehicle under AEVA?

Yes.

If yes, what are those concerns?

Our concern here relates to the definition of a vehicle that is "driving itself". The Automated and Electric Vehicles Act 2018 (AEVA) section 8(2)(a) states that "a vehicle is "driving itself" if it is operating in a mode in which it is not being controlled, and does not need to be monitored, by an individual".

We note that the Consultation Document proposes further development of the "control" and "monitoring" tests, particularly when determining whether or not a vehicle is to be considered a vehicle capable of driving itself safely. We agree that these tests merit further development.

We would like to highlight an additional point.

The transition period envisaged for the ALKS could last for a number of seconds. There is potentially a grey area here in determining whether the vehicle is considered to be driving itself. There is also ambiguity in relation to the operation of an override system. As ALKS is designed for lower speeds and in traffic, this means there could be more transitions expected than from a full AV, making this an area of risk. The speed constraints of the ALKS could identify a need to hand back control to the driver, but the driver may be unresponsive. Visual, auditory and haptic stimuli may fail to alert the driver, leading to the vehicle beginning to slow down with a view to going into the minimum risk condition. The driver could then respond and try to resume control, but an accident could occur at that moment. It would be difficult, in a situation like this, to be clear as to whether the vehicle is "driving itself" or not. Clearly it is preferable that the driver remains responsive at all times, but in a scenario where that does not happen, the legal framework needs to be clear on whether the vehicle continued to drive itself or not and the point at which the vehicle ceased to drive itself.

The insurance framework set out in AEVA is based closely on whether the vehicle is "driving itself" at a particular point, and we think it is necessary for the transition points for ALKS to be clarified.

If this is not done, liability for a collision as between the driver and the insurer of the vehicle may remain ambiguous due to the uncertainty of who was responsible for the car at the time.

Do you agree that the criteria in the monitoring and control tests provide a reasonable framework for testing compliance with the AEVA definition of automation? Why?

Do you agree with our preliminary assessment of how ALKS meets the criteria set out in Annex A? Why?

These tests appear reasonable as set out, although will need input from manufacturers.

The Monitoring Test may also need to address specifically:

- taking note of road signage, including temporary signs such as road works and speed restrictions; and

- responding to the presence of emergency vehicles.

How do you think ALKS will detect and respond to a police or other enforcement vehicle approaching from behind signalling for the vehicle to pull over?

No response.

Do you think that 10 seconds is fast enough in the foreseeable circumstances to comply with the rules on responding to enforcement vehicles? If not, why?

There is a possibility that 10 seconds may not be sufficient for a driver to resume control effectively. Indeed, it may be dangerous for a driver to feel a sense of panic in needing to resume control. If the need to resume control is not time critical, then it may be safer for the driver to be given a longer period for responding. In our view, practical research and technical input is advisable before this response period is set.

How will ALKS detect a minor or low-energy collision, in order to come to a stop and alert the driver?

No response.

Do you foresee any risks should ALKS vehicles not stop for low-energy impacts?

No response.

If yes, what are these risks?

No response.

How will manufacturers ensure that ALKS vehicles deployed in Great Britain are able to recognise signage located above the road that may be unique to Great Britain?

No response.

Do manufacturers intend to offer automation as an optional package for customers at the point of purchase? Please provide details.

No response.

Do you have concerns about vehicles that are registered as AVs on the DVLA database but the keeper has chosen to have the functionality disabled so they are not capable of operating as an AV?

No response.

If yes, what are they?

No response.

PART 4

The Driver

In this section, there are assumptions made about a driver's ability to resume control promptly. In our view, there is a danger of placing unrealistic expectations on drivers. If the ALKS is operating effectively for a long period in heavy traffic, we consider that expecting constant driver engagement and ability to take back control in a few seconds is not a sensible reflection of the reality of the situation. A much clearer acceptance of likely driver disengagement would, in our view, lead to a safer system and one that will be more readily accepted by users. We cite, as an example, the accident in 2018 when a safety driver lost focus on their task with the result that a fatal accident took place. Detailed analysis by the US National Transportation Safety Board (NTSB) (report) identified the problem of "automation complacency", with the safety driver thought to have been viewing a TV program on a mobile phone at the time of the incident.

The better the ALKS operates, the more likely this problem is to arise. People are not robots, and drivers should not be penalised for relying on an approved and highly effective system. Indeed, this could lead to prosecutions in borderline situations, and a consequent loss of trust in increasing vehicle automation.

The Minimum Risk Manoeuvre (MRM)

In addition, we would advocate that far more work is undertaken in relation to the minimum risk manoeuvre (MRM) for an ALKS. We do not agree that coming to a slow stop in lane is an appropriate MRM. Such a situation would be highly dangerous if the traffic in other lanes and around the vehicle is in the process of speeding up and the vehicle has entered the minimum risk condition due to the driver's failure (or inability) to retake control as the maximum speed for the ALKS is reached.

In our view, the MRM should be an ability to move to the hard shoulder (or inside lane) and park with hazard warning lights, to leave the highway, park and apply hazard warning lights, or alternatively to move to the inside lane and continue at a permitted ALKS speed until a safe set of parameters is met.

If the ALKS was merely an ADAS feature then we would not have this concern. However, the call for evidence specifically states that the introduction of ALKS "is one step along in that journey, which is designed to allow a driver to disengage from the driving task for the first time" and therefore creates fundamental new challenges that need to be addressed. We do not think the "sticking plaster" of the currently proposed MRM is sufficient for a scenario where the human is permitted to disengage from the dynamic driving task.

Do you agree that it is appropriate to exempt the driver from prosecution – if the vehicle comes to an unjustified stop when ALKS is engaged – by creating a further exception in the Motorway Traffic Regulations? If not, why?

Yes.

This question raises a related point of whether a separate, more determinate "digital" set of road rules should apply to automated driving systems, and whether these "digital" road rules should replace the "analogue" rules currently in force. This is likely to depend on whether automated vehicles are ultimately developed to emulate current human driving or whether they emerge as an alternative transport system using the same regulated space. It is our firm view that automated vehicles should be seen as an emerging alternative transport system using the same regulated space; to suggest that automated vehicles should emulate human

driving is like suggesting that the automobile should have been designed to act like a horse when the horseless carriage was first introduced at the turn of the 20th century.

While a "digital" highway code is an attractive long-term objective, difficulties arise when road users include a mixture of human drivers and ADSs. An evolutionary approach towards fully digital and automated driving may be the best approach.

Do you agree that amending Rule 150 is sufficient to clarify that the driver may rely on the ALKS? If not, why?

For the reasons already stated, we think it unreasonable to expect drivers to retain an alert level of concentration when an autonomous feature such as ALKS is in active control. For an autonomous feature to be fit for purpose, it should be capable of retaining control of the dynamic driving task for as long as it takes either for the driver to retake control or for the vehicle to reach its minimum risk condition. It will therefore be necessary to make clear that a driver will not be considered to be at fault if they are not able to respond immediately to a transition request.

Amendments may also be necessary to other Road Traffic Rules, such as Rules 148, 149, 151 and 270, or include a generally applicable provision permitting reliance on ALKS when enabled.

Do you agree that not changing the Motorway Traffic Regulations, except for unjustified stops, ensures the driver is suitably incentivised to take back control when requested? If not, why?

Although incentivising the driver in this way makes sense from a safety perspective, it leaves the driver potentially exposed to ambiguity in situations where their attention is diverted or they are unable to retake control for some reason. Cases might arise where a driver is prosecuted for their inability to resume control promptly, in situations where many or most individuals would have been equally disengaged from the driving task.

Do you agree that the Highway Code should be changed so that drivers of ALKS must be alert to a transition demand? If not, why?

We would urge caution in requiring drivers to be continually alert to transition demands for the reasons expressed above.

Do you think that amending the Highway Code is sufficient to communicate to drivers their responsibility? Why?

No. We think that there are dangers inherent in imposing this responsibility, and further thought is needed to ensure the safety of road users as well as avoiding unrealistic expectations on individual drivers. Whilst drivers are legally responsible for ensuring they remain up to date on changes to the Highways Code, if the intention is to bring in significant changes to address emerging technology then more is required from a training perspective than simply updating a document. To do otherwise would be to disregard the reality that few drivers are aware of changes to the Highway Code once they become a qualified driver.

PART 5

Do you think the driver should be allowed to perform other activities when ALKS is activated if they must only be ready to respond to a transition demand? If not, why?

In our view, it is completely unrealistic to enable a system such as ALKS and expect drivers to refrain from other activities.

What other activities do you think are safe when the ALKS is activated?

The rules should factor in a wide range of possible activities that individuals might engage in. The riskier kinds of activity might be those where a person's attention is very highly engaged in an interactive medium for sustained periods, such as online gaming. It may be necessary to exclude such activities, although suspending them automatically where a transition demand occurs may be effective. Additional research may be necessary to determine how readily a range of drivers are able to respond to a transition demand when engaged in specified kinds of activity.

Overall, however, permitting drivers to engage in interesting infotainment, eating and drinking, etc may be more likely to keep them from falling asleep, and so be less dangerous than an entirely unstimulating environment.

Do you think that the driver should be allowed to undertake other activities if ALKS is not listed under AEVA? If not, why?

This would probably not be safe. However, this kind of partial monitoring seems very dangerous, particularly for drivers that are not very familiar with the ALKS in question.

If yes, what other activities could they safely perform?

Do you agree that an exception should be added to enable the use of the infotainment system for activities other than driving? If not, why?

Yes.

Are there any activities you consider unsafe to perform through the infotainment system?

If yes, what are they?

We mention above activities that might be riskier, such as online gaming. It may be possible to allow these however, if they are automatically suspended in response to a transition demand.

PART 6 – Use of ALKS up to 70mph

Do you agree with this approach? Why?

It seems counter-intuitive to suggest that the human driver is NOT required to actively monitor the driving task whilst the ALKS system is in control, yet to limit the design parameters of the ALKS in a way that can

only be designed to give the human driver more time to react. Surely, either the ALKS is able to manage the dynamic driving task or it is not. If it can manage that task at 70mph then to restrict it to 37mph seems self-contradictory.

In any case, we consider this approach to be potentially safer than a situation where vehicles move in and out of automated mode at different speeds. Limiting ALKS to 37mph/60kmh means that in certain types of slow-moving traffic the driver will be asked repeatedly to resume control for short periods of time. We believe that this has the potential to be annoying and fatiguing, and may lead to unexpected behaviour on the part of the driver and surrounding traffic.

Permitting sustained use of ALKS at all permitted speeds offers several potential advantages:

- smoother traffic flow;
- ability of the driver to engage in other productive activities;
- enhanced safety, if the system operates to the required standard.

We suggest that it may be necessary to identify potential danger points on existing motorways, in order to address in advance safety issues that may arise when ALKS is used at higher speeds.

However, if the UK adopts an approach that is significantly different from that in other European countries, then both the vehicle and its driver will encounter a different operational mode when travelling abroad. This presents its own set of dangers. Drivers will need to understand the new operational limits of the system, and ALKS-enabled vehicles will need to be equipped appropriately to comply with the prevailing rules.

Do you have any other comments you'd like to make?

The response of other drivers to the presence of ALKS-enabled vehicles should be considered. There may be confusion as to why a vehicle is responding in particular ways, for example when a vehicle undertakes a MRM. An information campaign and training in advance of the driving test may be needed to enable other drivers to understand why ALKS behave in particular ways.

The is a risk of other road users trying to take advantage of features of the ALKS-enabled vehicle, such as cutting in in front in the knowledge that the vehicle will slow down. However, the driver would be able to resume control voluntarily in such a situation.

Should you require more information on these responses please contact Stephen Hamilton or Ruth Andrew at Mills & Reeve LLP using the details below.

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