Written evidence submitted by the Royal Society for the Prevention of Accidents (RSM0082)

Introduction

This is the response of The Royal Society for the Prevention of Accidents (RoSPA) to the Transport Select Committee's call for evidence on the safety and roll-out of smart motorways. It has been produced following consultation with RoSPA's National Road Safety Committee. We have no objection to our response being reproduced or attributed.

The Transport Select Committee have called for written evidence on the safety of smart motorways and public confidence in their use as well as their impact upon congestion. The Committee are particularly interested in views on:

- the benefits of smart motorways, for instance to reduce congestion on busy sections of motorway, and how necessary they are;
- the safety of smart motorways, the adequacy of safety measures in place and how safety could be improved;
- whether All Lane Running is the most suitable type of smart motorway to roll out or if there are better alternatives;
- public confidence in using smart motorways and how this could be improved;
- the impact of smart motorways on the usage and safety of other roads in the strategic road network;
- the effectiveness of Highways England's delivery of the smart motorways programme, the impact of construction works, and the costs of implementation.

The benefits of smart motorways

Traditionally, a motorway had three (sometimes two) lanes of traffic and a hard shoulder for emergency use. With a predicted increase of up to 59% in traffic by 2050 on the strategic road network[1], ways of increasing capacity without widening motorways or building new ones road have been developed. This led to the introduction of what are now called Smart Motorways (previously known as Managed Motorways).

In 2005, an Actively Managed Hard Shoulder and Variable Speed Limits Regulation[2] came in to force covering junctions 3A to 7 of the M42. Originally

called an Active Traffic Management system, this enabled the hard shoulder to be opened as a running lane at times of peak congestion and electronic signage informed motorists when the hard shoulder may be used. Emergency Refuge Areas (ERAs) were situated along the nearside of the hard shoulder at intervals of 500 to 800 metres. This created an extra lane to provide additional capacity, without the expense and disruption associated with widening the road.

Later referred to as smart motorways, there are now three types in operation throughout England; Dynamic Hard Shoulder (DHS), All Lane Running (ALR) and Controlled motorways, although Dynamic Hard Shoulder smart motorways are to be scrapped.

One of the benefits of this type of motorway is the increase in capacity, leading to increased journey reliability and reductions in congestion. The development of smart motorways has raised the capacity of the busiest motorways by up to a third. According to the Department for Transport[3], a smart motorway can carry 1,600 additional vehicles an hour in each direction and studies on the M25 have shown that these roads have enabled an additional 11,000 journeys a day. On the M6 Junctions 16 to 19 smart motorway, around Crewe, the average commute over a week has reduced by 40 minutes and journey reliability has also demonstrably improved.

Smart motorways also have the potential to offer a safer way of travelling than conventional motorways; reducing speed limits at congested periods, allowing traffic speeds to become more consistent and reducing the speed differential between lanes.

Emergency Refuge Areas are also expected to be safer places to stop in the event of an emergency than a hard shoulder because they are offset from the motorway and wider than conventional hard shoulders. Despite the hard shoulder being a place to stop in an emergency, there is still a risk to the safety of vehicle occupants. On average, 1 in 12 (8%) fatalities on motorways occur on the hard shoulder[4]. Between 2014 and 2017 there were 27 fatalities on hard shoulders[5].Highways England's Smart Motorway All Lane Running Overarching Report[6] shows that there has been a reduction in the average annual number of personal injury collisions involving vehicles in places of relative safety, such as a traditional hard shoulder or ERA, following conversion to All Lane Running. However, the likelihood of personal injury collisions involving a vehicle stopped in a live lane has increased.

RoSPA believes that although improvements in journey reliability and reduction in congestion is desirable, safety must be a priority. These motorways must be at least as safe and ideally safer, than those they replace.

Safety of smart motorways

Recent research by BBC Panorama has found that 38 people have been killed on the smart motorway network in the last five years. This is highly significant as the network constitutes only a small percentage of total road miles. They also found that the number of near-misses on a section of the M25 had increased 20-fold since the removal of the hard shoulder six years ago.[7]

Despite this, the DfT evidence stocktake of smart motorways showed that in 2015, 2016 and 2018, the share of fatalities occurring on smart motorways was lower than the share of traffic carried, suggesting that a lower share of fatalities occur on smart motorways compared to the motorway network as whole[8]. Overall, the statistics suggest that fatal casualty rates are lower while injury rates may be slightly higher.

The stocktake also shows that in most ways, smart motorways are as safe as, or safer than, conventional motorways, but not in every way. Due to the hard shoulder not being in permanent use, the risk of a live lane collision between a moving vehicle and a stopped vehicle is greater on smart motorways. However, the risk of a collision between two or more moving vehicles is lower. This is because smart motorways have variable mandatory speed limits to smooth traffic flow and electronic signs to warn drivers of incidents ahead. This means less speeding, tailgating and fewer rapid changes of speed.

In January 2020, Transport Secretary Grant Shapps acknowledged these issues and stated that if smart motorways are not as safe (or safer) than traditional motorways, then we shouldn't have them at all.

An evidence stocktake of smart motorways was undertaken and in March 2020, the government announced an extensive action plan in response to the evidence stocktake, in order to tackle the aforementioned major safety issues brought about by smart motorways. The action plan includes 18 measures to be put into place, which aim to increase public confidence in smart motorways as well as making them safer. The key parts of the action plan are:[9,10]

- Dynamic hard shoulder smart motorways will be scrapped completely, in order to end public confusion about how to use them.
- Making the deployment of "stopped vehicle detection" (SVD) systems faster (the systems will be installed along the entire all lane running smart motorway network within 36 months – several years earlier than originally planned). The systems are radar-based and can identify stationary vehicles in around 20 seconds, automatically changing the electronic signs, and alerting a Highways England operator so a traffic officer can be dispatched. All current smart motorways already possess a MIDAS (Motorway Incident Detection and Automatic Signalling) system which monitors traffic volumes and can also change the electronic signs, however this system is not designed specifically to detect stationary vehicles.
- Measures to ensure that the distance between emergency refuge areas is one mile maximum, ideally ¾ of a mile. This means that motorists will reach a refuge every 45 seconds when travelling at 60mph.
- Emergency refuge areas will be made more visible: they will be given a bright orange road surface, dotted lines on the surface that indicate where to stop, more signs on the approach to the area to indicate where it is, and new signs inside the area that show what to do in an emergency.
- A £5 million national communications campaign to make motorists more aware of not only how to use smart motorways, but how to use them safely.
- Investigations are to be made into specific parts of the smart motorway network by Highways England, namely the M6 and M1, where there have been many incidents

One of RoSPA's main concerns with current smart motorways is that as they have developed, ERAs have been positioned further apart. The distance between places to stop in an emergency varies from 0.3 miles apart to 1.6 miles apart[11]. RoSPA is particularly concerned that following a breakdown, drivers may be forced to stop in a running lane if they are unable to reach the ERA in time. According to the DfT stocktake, looking at the first nine all lane running schemes before and after their introduction, total live lane collisions have increased from an average of three per year before the ALR was

introduced to an average of 19 per year after the motorway had been converted to ALR. This is broken down into: 2.3 slight, 0.3 serious and zero fatal live lane collisions on average before; and 9.1 slight, 7 serious and 2.8 fatal live lane collisions on average afterwards[12].

Design standards have been amended to reduce the distance between refuges to a maximum of 1 mile, and where feasible providing them every ¾ of a mile apart, but our understanding is that this currently only applies to new schemes and some existing ones. Due to the number of collisions reported where drivers have been unable to reach a place of relative safety, we are calling for ERAs to be situated every ¾ of a mile on all existing smart motorways as well as new schemes.

Should a vehicle break down in a live lane, the smart motorway technology gives Highways England a greater ability to close the lane, reduce vehicle speeds, and warn other drivers of a hazard. The Stopped Vehicle Detection (SVD) system currently being installed at a number of locations is designed to detect stationary vehicles within 20 seconds and inform the relevant Highways England control room so that a lane can be closed and traffic officers dispatched where necessary. Research[13] has shown that if SVD is not in place, it takes an average of 17 minutes and 1 second to spot a stationary vehicle in a live lane. It is worth noting that on a conventional motorway, there is still the possibility of a vehicle stopping in a live lane and without SVD there is the potential for collisions to occur. As the technology is available to enable smart motorways to offer a safer experience than conventional motorways, RoSPA strongly believes that Stopped Vehicle Detection should be installed on all smart motorways as a matter of urgency.

RoSPA also welcomes the commitment to faster attendance by more Highways England patrols, with additional patrols being posted in areas where the space between places to stop in an emergency is more than one mile. Being stranded in a live lane is a very frightening and daunting prospect for motorists, and the public must be reassured that if they do break down, help will be on hand fast. The aim to reduce average waiting times from 17 minutes to 10 minutes is a step in the right direction. We would like to see this reduced wait time apply on all sections of smart motorway.

RoSPA also welcomes Highways England's decision not to proceed with any new Dynamic Hard Shoulder schemes, such as that first installed on the M42. RoSPA believes that closing the hard shoulder when traffic is light but

permitting traffic to use it as a live running lane during busy periods often causes confusion for motorists. Contradictory road markings to cover both eventualities and concern as to whether the hard shoulder is only intended for those taking the next exit, often leads to drivers avoiding the lane altogether.

Britain's motorways are among the safest roads in the world and RoSPA believes that each smart motorway must be at least as safe as the traditional motorway it replaces. In the event of a breakdown, it is vital that motorists understand who to inform and exit the vehicle. Remaining in the vehicle should only be considered an option if the occupants would be required to cross live traffic. Therefore, part of the solution is a widespread education campaign to raise awareness of how to drive safely on a smart motorway and what to do in the event of a breakdown.

Public confidence

In recent months, there has been much media coverage, often negative, about smart motorways. Public confidence in their safety is seemingly low, with public concern focussed on fatalities occurring on these motorways. Many motorists do not know what a smart motorway is and would not necessarily be aware of whether they were driving on one or not.

We are hopeful that the delivery of actions outlined by the Department for Transport in their smart motorway action plan will play a vital role in improving public confidence and perception of smart motorways.

In particular, public confidence is likely to be improved through a better understanding of how to drive on smart motorways safely and widespread knowledge of what a motorist needs to do if they break down. We welcome the proposed updates to the Highway Code, which aim to improve the safety of motorways and high-speed roads. Although RoSPA promotes the need for motorists to keep up to date with the advice contained in the Highway Code, we know that not all motorists regularly review the advice, and in some cases, may not have looked at the Highway Code since they passed their test.

Therefore, campaigns will play a vital role in raising awareness of safe use of smart motorways. RoSPA welcomes the 'Go Left' campaign recently launched by Highways England, and previous 'Red X' campaigns. All motorists need to be aware that they must not drive in a lane with a red x above it, and although

many breakdowns can be avoided through regular vehicle checks, motorists need to know what to do in the event that their vehicle develops a fault when travelling on a stretch of smart motorway. These campaigns will need to be evaluated and improved as necessary.

RoSPA has no further comments to make on the consultation process, other than to thank the Transport Select Committee for the opportunity to comment. We have no objection to our response being reproduced or attributed.

April 2021

Endnotes

[1] Department for Transport (2018) 'Road Traffic Forecasts: 2018'
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873929/road-traffic-forecasts-2018-document.pdf

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https://www.legislation.gov.uk/uksi/2005/1671/made

[3] Department for Transport (2020) 'Smart Motorway Safety: Evidence Stocktake and Action Plan'
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[4] Highways England (2018) cited in Department for Transport (2020) 'Smart Motorway Safety: Evidence Stocktake and Action Plan'
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[5] Highways England (2019) cited in Department for Transport (2020) 'Smart Motorway Safety: Evidence Stocktake and Action Plan'
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[6] Highways England (2020) 'Smart Motorway All Lane Running Overarching Safety Report 2019'
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[7] BBC (2020) '38 killed on smart motorways in last five years'
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[8] Department for Transport (2020) 'Smart Motorway Safety: Evidence Stocktake and Action Plan'
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936811/smart-motorway-safety-evidence-stocktake-and-action-plan.pdf

[9] GOV.UK (2020) ' Action plan announced to boost smart motorway safety'
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[10] Department for Transport (2020) 'Smart Motorway Safety: Evidence Stocktake and Action Plan'
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[11] Department for Transport (2020) 'Smart Motorway Safety: Evidence Stocktake and Action Plan'
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[12] Department for Transport (2020) 'Smart Motorway Safety: Evidence Stocktake and Action Plan'

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[13] Highways England (2016) 'Stationary Vehicle Detection System (SVD) Monitoring' https://s3.eu-west-2.amazonaws.com/assets.highwaysengland.co.uk/Knowledge+Compendium/2016-17/Stationary+Vehicle+Detection+System+(SVD)+Monitoring.pdf