

Smart Motorways Briefing – January 2022

Overview

This briefing provides an update on smart motorways and the steps National Highways is taking to help ensure that people feel safe and are safer on these roads. This follows the Department for Transport's [stocktake and action plan](#) published in March 2020, which National Highways has been implementing, and [the recent recommendations](#) made by the Transport Select Committee, which [the government has accepted](#).

National Highways is committed to keeping parliamentarians and regional political stakeholders informed throughout the process.

National Highways

National Highways, formerly Highways England, is the custodian of the 4,500 mile Strategic Road Network (SRN), nationally significant infrastructure that comprises England's motorways and major A-roads. We are responsible for their operation, maintenance, and improvement, ensuring that our roads effectively and safely enable businesses to transport products and services, facilitate trade and investment across the country, and connect people and places. Care for the environment is embedded in everything we do, and we have recently published our plan for [Net Zero Highways](#) with milestones for 2030, 2040 and 2050.

What are smart motorways?

Smart motorways reduce congestion for millions of motorists and provide more reliable journey times on our busiest motorways. They increase capacity without the need to physically widen the road. They can be delivered more quickly than the alternative of road widening, meaning a shorter period of disruption for motorists and with reduced environmental impact. Through technology the flow and speed of traffic can be controlled. Information is fed back to control centres where National Highways staff direct the appropriate resources to manage traffic and respond to incidents. Drivers are notified of changes and given instructions via overhead gantries. There are three types of smart motorway:

- **Controlled:** Which add variable and mandatory speed limits to a conventional motorway to control the speed of traffic, while retaining a permanent hard shoulder. Overhead electronic signs display messages to drivers, such as warning of an incident ahead. There are just under 140 miles of controlled motorway on the SRN.
- **All Lane Running (ALR):** Which apply the controlled motorway technology, and permanently convert the hard shoulder to a running lane. Emergency areas provide places to stop at regular intervals¹¹. ALR achieves increased capacity without costly, environmentally damaging and complex road widening. Emergency areas are for when a driver has no alternative but to stop and it has not been possible to leave the motorway or reach a motorway service area. Other places to stop in an emergency include sections of remaining hard shoulder, such as on slip roads at junctions. There are just under 200 miles of ALR motorway on the SRN.
- **Dynamic Hard Shoulder (DHS):** Which provide additional capacity at peak times by temporarily allowing the full width of the road to be used. Drivers are informed by signs and signals. There are just under 65 miles of DHS motorway on the SRN.

¹¹ Emergency areas are places to stop in an emergency. They are approximately 110 yards long (the average length of a football pitch) by fifteen feet wide and set back from the left-hand edge of the motorway. An emergency telephone from which to alert National Highways of an issue and call for help is provided in each emergency area and they have orange surfacing to make them more visible. The average distance between places to stop in an emergency varies is approximately 1.2 miles which is around 70 seconds apart at 60mph.

Key changes on smart motorways

We welcome the Transport Select Committee's view that reinstating the hard shoulder could put motorists at risk and that we should instead focus on making existing smart motorways safer still. The hard shoulder is perceived to be a place of safety but, in reality, one in 12 motorway fatalities occur on a hard shoulder.

ALR

We are pausing the roll-out of new ALR schemes yet to start construction, until five years of safety and economic data is available for those sections introduced before 2020. This will allow an informed decision to be made on next steps.

The ALR schemes to be paused are: M3 Junctions 9 to 14; the M40/M42 interchange; the M62 Junctions 20 to 25; and the M25 Junctions 10 to 16. As a road safety improvement, we will be installing concrete central reservation barriers on the: M3 Junctions 9-14; M40/42 interchange; and M62 Junctions 20-25. Concrete barriers significantly reduce the risk of vehicles crossing over from one carriageway to another. Adding these barriers improves safety for road users and reduces congestion caused by incidents. They are also virtually maintenance free and will last twice as long as normal metal barriers, meaning there is far less need to close carriageways for routine repairs.

We will ensure all existing ALR motorways are equipped with best-in-class technology and resources and are as safe as they can possibly be. This includes launching a £390m programme to build more emergency areas (EA) on existing stretches of ALR. This will see around 150 additional EAs being added to ALRs in operation and construction by 2025. This means drivers will have more places to stop in an emergency. A decision on whether to retrofit across the remainder of ALR smart motorways will be considered as part of the formulation of the Government's third Road Investment Strategy (RIS 3), based on evidence of safety benefits.

We will complete the following six ALR schemes, which are currently in construction: M1 Junctions 13-16; M27 Junctions 4-11; M4 Junctions 3-8/9 (Junctions 8/9-12 is already open); M56 Junctions 6-8; M6 Junctions 13-15; and M6 Junctions 21a-26. Work on these schemes is more than halfway to completion and leaving the upgrade unfinished would see further disruption for road users. As set out in the Government's response to the Transport Select Committee, these schemes will all have technology to detect stopped vehicles when opened as well as some additional EAs, where possible.

DHS

We are pausing the conversion of DHS motorways – where the hard shoulder is open at busy times – into ALR motorways until the next road investment period, RIS 3, which starts in 2025. This is to enable Government and National Highways to consider alternative options for simplifying their operation for drivers, in line with the Transport Select Committee's recommendations.

We plan to roll out technology to detect stopped vehicles on these sections, install concrete barriers where they are not already in place, add extra places to stop in an emergency, and increase signage to give drivers more information about where they are.

Across the whole Strategic Road Network

We will:

- Continue to give drivers more information about how smart motorways work.
- Investigate further the emergency corridor proposal for the Highway Code.
- Consider alternative options for enhancing capacity on the Strategic Road Network.
- Revisit the case for controlled motorways – those with technology and a hard shoulder – and how it compares with ALR.

The Department for Transport will commission the Office of Rail and Road (ORR) to independently evaluate:

- The effectiveness of stopped vehicle detection technology, and other measures in place; and
- How successful the 2020 Stocktake action plan has been in:
 - Reducing live lane breakdowns on ALRs;
 - Reducing the time for which people who break down or stop in a live lane are at risk; and
 - Educating drivers on what to do if they break down in a live lane.

All these actions are in addition to our existing commitments we are delivering from the Government's Action Plan published in March 2020 including to:

- Complete the installation of radar technology to detect stopped vehicles on all existing ALR sections by the end of September 2022, to provide more reassurance to drivers;
- Complete the programme to upgrade enforcement cameras so they can be used to automatically detect vehicles passing illegally under a Red X or entering a lane beyond a Red X. This will enable the police to take enforcement action, again to give added reassurance to drivers who stop in a live lane. This will be complete by the end of September 2022; and
- Complete our programme to install around 1,000 extra signs to better inform drivers of the distance to the next place to stop in an emergency. This will also be complete by the end of September 2022.

Taken together, these measures will help our roads continue to be among the safest in the world, helping drivers not just to be safe, but crucially, to feel safe and confident when driving.

We are developing a detailed programme scheduling the works required to deliver these actions and we will brief you as soon as this is available.

For more information

To register your interest in attending a parliamentary briefing on smart motorways and/or to ask further questions on smart motorways, please email:

SmartMotorwayParliamentaryBriefing@nationalhighways.co.uk.

Relevant publications

[Written Ministerial Statement to Parliament – Government to pause rollout of All Lane Running Motorways](#) – Jan 2022

[Government's response to the Transport Select Committee's report](#) – Jan 2022

[The Transport Select Committee's report on Smart Motorways](#) – Nov 2021

[The Department for Transport's Smart Motorway Stocktake and Action Plan](#) – March 2020

ALR motorway

Scheme name

- 2 M1 Junction 16 - 19
- 3 M1 Junction 24 - 25
- 4 M1 Junction 28 - 31
- 5 M1 Junction 32 - 35a
- 6 M1 Junction 39 - 42
- 7 M3 Junction 2 - 4a
- 10 M5 Junction 4a - 6
- 11 M6 Junction 2 - 4
- 12 M6 Junction 11a - 13
- 14 M6 Junction 16 - 19
- 16 M20 Junction 3 - 5
- 17 M23 Junction 8 - 10
- 18 M25 Junction 5 - 7 *
- 19 M25 Junction 23 - 27
- 23 M62 Junction 10 - 12
- 24 M62 Junction 18 - 20

* Controlled motorway 4 lane:
Junction 6 to 7 eastbound

DHS motorway

Conversion to ALR paused

Scheme name

- 25 M1 Junction 10 - 13
- 26 M4 - M5 interchange **
- 27 M6 Junction 4 - 5
- 28 M6 Junction 5 - 8
- 29 M6 Junction 8 - 10a
- 30 M42 Junction 3a - 7
- 31 M62 Junction 25 - 30 ***

** Scheme full name
M4 Junction 19 - 20 M5 Junction 16 - 17

*** All Lane Running:
Junction 25 to 26 and Junction 29 to 30 (westbound)
Dynamic Hard Shoulder:
Junction 26 to 28 and Junction 29 to 30 (eastbound)
Controlled Motorway:
Junction 28 to 29

ALR schemes In construction

Scheme name

- 1 M1 Junction 13 - 16
- 9 M4 Junction 3 - 12
- 13 M6 Junction 13 - 15
- 15 M6 Junction 21a - 26
- 20 M27 Junction 4 - 11
- 22 M56 Junction 6 - 8

ALR schemes paused

Scheme name

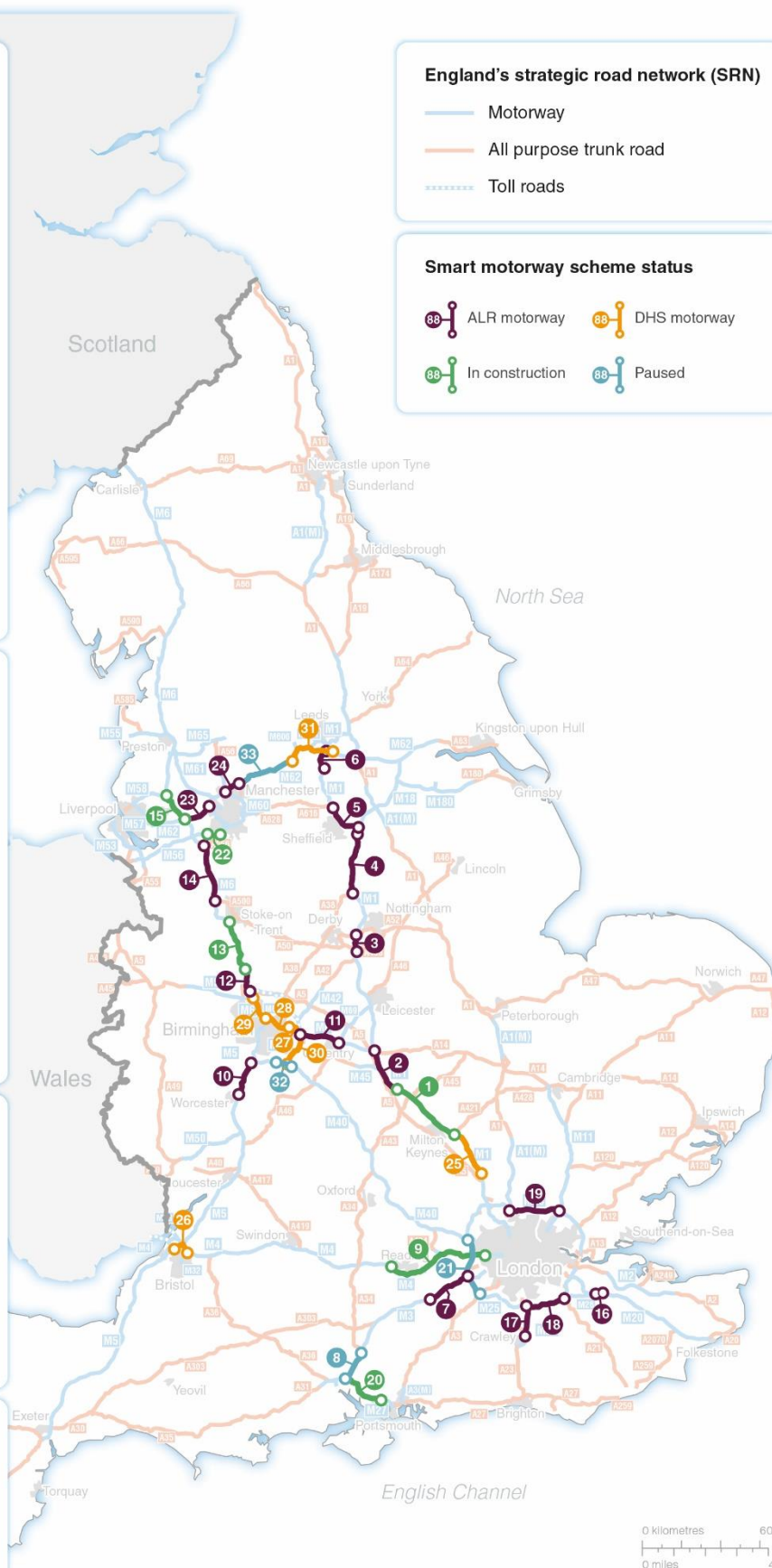
- 8 M3 Junction 9 - 14
- 21 M25 Junction 10 - 16
- 32 M40 - M42 interchange
- 33 M62 Junction 20 - 25

England's strategic road network (SRN)

- Motorway
- All purpose trunk road
- Toll roads

Smart motorway scheme status

- ALR motorway
- DHS motorway
- In construction
- Paused



0 kilometres 60
0 miles 40