

Technical Note - M42 new Solihull MSA mainline operating regime

Issue

1. Planning permission has been granted for a new Motorway Service (MSA) on the M42 adjacent to the new J5A which is currently in construction.
2. The introduction of the new MSA onto the SRN adjacent to J5A requires alterations to the mainline M42 between J5 and J6 which is an existing smart motorway with a dynamic hard shoulder.
3. The design proposed by the MSA promoter, Extra and their designer removes the dynamic hard shoulder between J5A and 6 and convert it to an additional fourth lane is acceptable. This will create a section of smart motorway of approximately 1.5 miles (2.5km) without a hard shoulder (see attached schematic drawing – sections annotated as Through Junction Running and Extended Through Junction Running).
4. In April 2023 the government announced that plans for new smart motorways would be cancelled in recognition of the lack of public confidence felt by drivers, and cost pressures¹. The scheme, which is the subject of this note, is not a new smart motorway, but rather the alteration of an existing smart motorway. Unless the developer Extra are advised otherwise, it is noted that the design of alterations to the M42 will proceed as set out in this note.
5. The Annex below sets out the details of the proposed operating regime between junctions 5A and 6.
6. The proposed operating regime for this section of the M42 has previously been taken through National Highways safety governance and is considered to provide the most effective design to accommodate the new MSA development.
7. From the end of November, the detailed design will be finalised and will progress through National Highways technical design approval for third party schemes.
8. The schedule for the design and construction of the Solihull MSA scheme is for outline design and technical approval by the end of 2023; procurement during 2024; and start of construction by 2025. To achieve these timescales, Extra plan to start finalising their design from November 2023.
9. The design, as per the granted planning permission, does not provide a hard shoulder between junction 5A and junction 6 in both directions. If this is not acceptable to DfT, then Extra, the promoter, need to be advised by the end of November.

¹ <https://www.gov.uk/government/speeches/plans-for-new-smart-motorways-cancelled>

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Annex

10. Extra received planning permission to build a new Solihull motorway service area (MSA) adjacent to the M42 motorway, between junction 5 (A41) and junction 6 (A45), in March 2022. Planning permission was granted following an appeal to the Secretary of State for Levelling Up, Housing and Communities and an inquiry by The Planning Inspectorate.
11. The Solihull MSA is to be built adjacent to the new M42 junction 5A which is currently being constructed by National Highways as part the M42 junction 6 scheme². This separate junction 6 scheme is providing a new connector road between the M42 new junction 5A and Birmingham International Airport and Birmingham International Railway Station.
12. As part of the junction 6 scheme, National Highways is constructing the new junction 5A which will provide the south-facing slip-roads only for the new junction. The MSA promoter, Extra will be responsible for adding the north-facing slip-roads that will enable access to the MSA for driver travelling south and re-entry to the motorway for those travelling north.
13. The section of the M42 between junctions 5 and 6 is an existing smart motorway with dynamic hard shoulders (DHS) that provide an extra traffic lane when the motorway is busy. The construction of the north-facing slip-roads at junction 5A will necessitate modification of the DHS arrangements at the new junction 5A and on the c.1.1km (0.7 miles) link that will remain between junctions 5A and 6, once the north-facing slips are added.
14. The MSA's planning permission is subject to planning conditions which were agreed between National Highways and the inspector during the inquiry, including conversion of the dynamic hard shoulder to a permanent running lane between junctions 5A and 6.

Dynamic hard shoulder (DHS) motorways

15. DHS motorways were first piloted on the M42 in 2006 and subsequently rolled out in six further locations between 2008 and 2014.
16. During the design development of DHS some local factors were identified that meant DHS could not be implemented across the entirety of all six locations. In some locations, the distance between junctions was too short to safely accommodate DHS. This was the case for MSAs including Hartshead Moor MSA on the M62 between junctions 25 and 26 and Toddington MSA on the M1 between junctions 11A and 12. In effect there is not enough room to accommodate a dynamic hard shoulder and the slip roads in these locations. The additional lane capacity was needed in these locations, so the hard shoulder was removed and the other features of DHS introduced, such as emergency areas and variable signs and lane specific signals.
17. These sections have variable mandatory speed limits, the defining feature of smart motorways, but do not neatly fit the definition of either DHS or ALR. These sections most closely match the signalling and emergency area infrastructure associated with DHS but without a solid white line demarking a hard shoulder.

² <https://nationalhighways.co.uk/our-roads/west-midlands/m42-junction-6/>

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M42 Solihull MSA J5A to J6 proposed new operating regime

18. The proposed new operating regime will be very similar to the existing situation on the M1 between junctions 11A and 12 which includes Toddington MSA.
19. The Solihull MSA development will add north-facing slip-roads to the new junction 5A that is currently being constructed. This will create a link length of approximately 1.1km (0.7 miles) from the new junction 5A northbound merge to the junction 6 diverge (and the same in the other direction). This will include one emergency area in each direction. The majority of the spacings between places to stop in an emergency along this section will be less than $\frac{3}{4}$ mile and all within 1 mile, therefore in accordance with the latest standard. The new north-facing slip-roads will include hard shoulders which will provide places of relative safety for road users.
20. Including junction 5A itself, the current, northbound scheme design has a length without a hard shoulder of approximately 2.5km (1.5 miles). This is from the end of the hard shoulder approaching the new junction 5A to the diverge to junction 6. The length of the southbound carriageway without a hard shoulder will be similar.
21. If this arrangement is not acceptable, the alternative would be to maintain a short section of dynamic hard shoulder running from the northbound merge at junction 5A to prior to the diverge for junction 6. This would be an approximate length of 500 metres (0.3 miles).
22. During peak periods (which are likely to often extend throughout the daytime) there would be no significance difference between the two possible operating regimes. Both would have 4 lanes operating with a speed limit of 60mph or less, depending on the volume of traffic.
23. The difference would be during the off-peak period. The current design would maintain 4 lanes at all times (unless lanes are closed for incidents or traffic management). The alternative would provide a short section of hard shoulder that would be opened and closed as required. Due to the short length between junctions, there would be a risk that drivers, particularly those joining at junction 5A and leaving at junction 6, illegally use the hard shoulder as a running lane when it is closed. This would present a road user safety risk related to stopped vehicles on the hard shoulder. It would also create a complex dynamic environment in a busy, short link.
24. As explained above, the current planned operating regime reflects examples elsewhere on the DHS network. In particular, the M62 between junctions 25 and 26 which is approximately 3.8km (2.4 miles) in length and has Hartshead Moor MSA in the middle of the link, and the M1 between junctions 11A and 12 which is approximately 3.7km (2.3 miles) in length and includes Toddington MSA. Both these sections have operated with 4 lanes and without a hard shoulder for more than 10 years. We are not aware of any issues on the M62 J25-30 section. There were some initial issues with the location of the start of the dynamic hard shoulder on the M1 section, but these have since been mitigated with the introduction of additional signage which will be present on M42 J5A.