

South Wales Trunk Road Agent

Managing and Improving
Motorways and Trunk Roads
through South Wales



Asiant Cefnffyrdd De Cymru

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a'r Cefnffyrdd yn Ne
Cymru

9025 - M4 J23a Magor Interchange Temporary Signals Combined Stage 1 & 2 Road Safety Audit Response Report



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25/SW/CSI/005
9025 - M4 J23a Magor Interchange Temporary
Signals
Combined Stage 1 & 2 Road Safety Audit
Response Report



Yn gweithio ar ran
Llywodraeth Cymru
Working on behalf of the
Welsh Government



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1 Introduction

This Road Safety Audit Response Report relates to the combined Stage 1 & 2 Road Safety Audit Report UK0029359.3987-Road Safety Audit 1-2 titled 9025-M4 J23a Magor Interchange Temporary Signals Scheme Combined Stage 1 & 2 Road Safety Audit dated 13/10/2025.

1.1 Scheme Summary

As a result of weight restriction and diversion route to be imposed on the M48 old Severn Bridge, all vehicles above 7.5 tonne will have to use J23a Magor Interchange as a diversion route if they wish to travel in the direction to and from Chepstow and surrounding areas.

The scheme proposed works include the installation of temporary traffic signals on M4 J23a Magor Interchange for an estimated period of 18 months as a temporary traffic control solution for managing traffic at the interchange and any joining roads, whilst National Highways undertake repair/remedial works on the M48 Old Severn Bridge.

There are currently three options being considered for this temporary solution. This Road Safety Audit assesses all three options, which are:

- Option 1 – Signalisation of M4 westbound exit slip road junction with the roundabout circulatory carriageway;
- Option 2 - Signalisation of M4 westbound exit slip road and the A4810 junctions with the roundabout circulatory carriageway; and
- Option 3 - Signalisation of A4810 junction with the roundabout circulatory carriageway
- The permanent speed limit for the M4, slip roads and circulatory carriageway at Magor Interchange and the immediate approach on the A4810 is national speed limit. The A4810 south of the existing speed limit terminal signs is subject to a 40mph. A temporary 40mph speed limit will be implemented throughout the site for the duration of installation, maintenance (operation) and removal of the temporary traffic signals.

1.2 Design Organisation Representative



Principal Engineer, WSP



2 Key Personnel

2.1 Overseeing Organisation



Welsh Government
SWTRA

2.2 Road Safety Audit Team



Audit Team Leader, WSP
Audit Team Member, WSP

2.3 Design Organisation

WSP
1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ



3 Organisation Statements

3.1 Design Organisation statement

On behalf of the design organisation, I certify that:

- 1) the RSA actions identified in repose to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation.

Name	
Signed	
Position	Principal Engineer
Organisation	WSP
Date	03 November 2025

3.2 Overseeing Organisation statement

On behalf of the Overseeing Organisation, I certify that:

- 1) the RSA actions identified in repose to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation; and
- 2) the agreed RSA actions will be progressed,

Name	
Signed	
Position	South East Wales Area Manager
Organisation	Welsh Government
Date	14/11/2025



4 Items Raised at this Road Safety Audit

This section covers the issues raised as part of this Combined Stage 1 & 2 Road Safety Audit.

4.1 Problem (General)

Location:	Options 1, 2 and 3	
Summary: Temporary traffic signal cables a collision hazard.		Recommendation
The temporary signals will result in large cables being provided as part of these works, with some of these cables being overhead. In the worst-case sagging cables could be hit by larger high sided vehicles, increasing the risk of collisions.		It is recommended that any overhead cables provided are in excess of high sided vehicles height and are adequately secured.
Design Organisation Response: The height of the above ground cables will be a minimum of 6.5 metres above ground level as specified on their datasheets.		
Overseeing Organisation Response: Agree with Design organisation response.		
Agreed Response: Overhead cables to be a minimum of 6.5m above ground at all times.		



4.2 Problem (Traffic signs, Road markings and Lighting)

Location:	Options 1, 2 and 3	
Summary: Temporary traffic signals restricting forward visibility towards traffic signs and restricted forward visibility to traffic signals		Recommendation
The temporary signals may restrict forward visibility to several existing signs, namely End of Motorway signs and No Entry signs this may lead to poor compliance to the restrictions increasing the risk of road users undertaking inappropriate manoeuvres, sudden lane changing increasing the risk of side swipe collisions. Also, some existing direction signs may restrict forward visibility towards traffic signal heads leading to harsh braking, rear end shunt collisions on the approach to the temporary signals.		It is recommended that the proposed traffic signals do not obscure visibility to other traffic signs and there is appropriate forward visibility towards temporary traffic signals.
Design Organisation Response: Agreed, reference to the signs that may need relocating are identified on the drawings.		
Overseeing Organisation Response: Agree with Design organisation response.		
Agreed Response: No action.		



4.3 Problem (General)

Location:	Options 1 and 2	
Summary: Lack of carriageway width for larger vehicles.		Recommendation
On the westbound off slip road approach to the roundabout the carriageway width narrows to 7m in close proximity to the stop line. With the increase in heavy vehicle movements on this approach, if two larger vehicles approach the signals side by side, they may be a potential for side impact collisions or collisions with adjacent street furniture including temporary signals. There is also visible evidence of adjacent verges being overrun by traffic indicating that these manoeuvres take place.		It is recommended that swept path analysis is undertaken, and the approach is modified if necessary to accommodate larger vehicles.
Design Organisation Response: The existing situation operates with a two-lane entry to the roundabout. PIC data doesn't indicate any vehicle conflict issues at this location. The number of additional HGV's is relatively low.		
Overseeing Organisation Response: Agree with Design organisation response.		
Agreed Response: TRA and Design organisation to monitor collisions while temporary signals are present.		



4.4 Problem (Traffic signs, Road markings and Lighting)

Location:	Options 1 and 2	
Summary:	Lack of information for road users.	Recommendation
On the westbound off slip road approach to the roundabout the adjacent hard shoulder area is marked with hatched road markings, with the road markings being barely visible. As a result, vehicles may choose to park in the hard shoulder (as observed during the site visit). Parked vehicles, particularly larger side vehicles may restrict forward visibility towards the temporary signals leading to late recognition of the signals and rear end shunt collisions.		It is recommended to reapply the hatch road markings in the hard shoulder.
Design Organisation Response: Remarking the hatched area is outside the scope of the scheme and an existing maintenance issue.		
Overseeing Organisation Response: Agree with Design organisation.		
Agreed Response: No action.		



4.5 Problem (Traffic signs, Road markings and Lighting)

Location:	Options 1 and 2	
Summary:	Inappropriate speeds approaching temporary signals.	Recommendation
It is not clear precisely where terminal 40mph signs will be positioned on the westbound off slip road approach. Traffic approaches the interchange on the off-slip road from the national speed limit and if the speed limit reduces to 40mph too close to the signals, it will unlikely slow down the traffic sufficiently before the junction. The collision records demonstrate a concerning pattern with 4 collisions on this approach in 5 years. This arrangement may lead to rear end shunt collisions.		It is recommended that the temporary 40mph terminal signs should be positioned further back from the traffic signals, prior to the gantry to give motorists more time to slow down on the approach to the signals. In addition, warning signs of traffic signal ahead/queuing vehicles should be provided.
Design Organisation Response: Agreed.		
Overseeing Organisation Response: Agree with Design organisation response.		
Agreed Response: Temporary terminal signs should be positioned in advance of the signals on IFC drawings.		



4.6 Problem (Traffic signs, Road markings and Lighting)

Location:	Options 1 and 2	
Summary: Lack of forward visibility towards vehicles queuing on the circulatory carriageway.		Recommendation
Traffic queues forming on the circulatory carriageway back from the temporary traffic signals may lead to rear end shunt collisions due to the road curvature and vegetation in the offside verge restricting forward visibility to the signals.		It is recommended that a mean maximum length of traffic queue should be calculated on the circulatory carriageway approach to the proposed signals and forward visibility toward the end of the queue should be cleared. In addition, warning signs of traffic signal ahead/queuing vehicles should be provided on the roundabout.
Design Organisation Response: Based on the traffic flows used in the analysis the predicted mean maximum queue on the circulatory carriageway is 6pcu (approximately 33 metres). Additional vegetation clearance further round the central island near the Services entry to the roundabout to be undertaken. Traffic signal ahead signs can be provided if required visibility not achieved.		
Overseeing Organisation Response: Agree with Design organisation response.		
Agreed Response: TRA and Design organisation to liaise with the Local Authority to gain approval to clear vegetation for areas outside of the TRA responsibility to achieve forward visibility or add warning signs if visibility cannot be achieved.		



4.7 Problem (Traffic signs, Road markings and Lighting)

Location:	Options 1 and 2	
Summary:	Lack of information for road users.	Recommendation
On the eastern roundabout circulatory carriageway there is no direction signing provided showing route A4810, whilst there is associated road markings provided for this destination. Queueing traffic may cover the worded road markings resulting in vehicles taking incorrect lanes when exiting towards the A4810. In the worst case, road users not familiar with the area may miss the information shown on the road markings and undertake sudden lane changing manoeuvres leading to side swipe collisions.		It is recommended to provide a wicket type sign incorporating the A4810 destination on the circulatory carriageway.
Design Organisation Response: Agreed		
Overseeing Organisation Response: Agree with Design organisation response.		
Agreed Response: Design organisation to modify signage drawing.		



4.8 Problem (Traffic signs, Road markings and Lighting)

Location:	Option 2	
Summary:	Traffic queuing leading to conflicts.	Recommendation
No MOVA detection zones are shown on the circulatory carriageway on the approach to the traffic signal junction with the A4810 entry. Traffic queuing at the red signal for stage C may block the exit to the A4810 leading to inappropriate manoeuvres and collisions.		It is recommended to provide MOVA detection zones.
Design Organisation Response: Initial thoughts are that MOVA detection zones in these areas would not be required. When the preceding M4 westbound off slip road signals (phase B) are at green it would force and hold the circulatory signals (phase C) at A4810 green to allow the M4 westbound traffic through. When the A4810 approach (phase D) is at green it would hold the circulatory approach (phase A) at M4 westbound off slip road at green. Additional MOVA detection zones could be added if the signal operation described required modification once operational.		
Overseeing Organisation Response: Agree with Design organisation response.		
Agreed Response: To be monitored while the scheme is operational and consideration to add additional MOVA detection zones to be added if required.		



4.9 Problem (Traffic signs, Road markings and Lighting)

Location:	Option 3	
Summary:	Traffic queuing leading to conflicts.	Recommendation
There are proposed virtual MOVA detection zones on the circulatory carriageway approach to the traffic signals. However, vehicles in the traffic queue reaching the zone AX1 could be obscured from vehicles circulating the roundabout in the inside lane due to the extensive vegetation in the offside verge, leading to rear end shunts.		It is recommended to clear visibility on the inside of the circulatory carriageway by cutting back all vegetation and provide additional traffic signals ahead/queuing traffic warning signs on the circulatory carriageway.
Design Organisation Response: Option 3 drawing UK0029359.3987-003 shows the vegetation being cut back to provide required visibility. If Option 3 is taken forward traffic signals ahead warning signs can be provided if the required visibility cannot be achieved.		
Overseeing Organisation Response: Agree with Design organisation response.		
Agreed Response: TRA and Design organisation to liaise with the Local Authority to gain approval to clear vegetation for areas outside of the TRA responsibility to achieve forward visibility or add warning signs if visibility cannot be achieved.		



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