

PROJECT REPORT MIS19

Implementing the highest safe speed
within road works - Hazard assessment
guidance

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Report details

Report prepared for:	Highways England, CSD		
Project/customer reference:	SPaTS 1-541 & 1-864		
Copyright:	© TRL Limited		
Report date:	September 2020		
Report status/version:	1.2		
Quality approval:			
C Booth (Project Manager)	<i>C Booth</i>	C Fowler (Technical Reviewer)	<i>ccfowler.</i>

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Contents amendment record

This report has been amended and issued as follows:

Version	Date	Description	Editor	Technical Reviewer
1.0	16/03/2020	Final	SG	CF
2.0	21/09/2020	Update to include additional information from trials of Contra-flow and Dynamic scenarios Update to Hazard log. Communication technique of likelihood and severity scores changed from a numerical system to adjectives, reflecting the qualitative nature of the original assessment.	CF	CF

Document last saved on:	22/09/2020 15:52
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1 Introduction

1.1 Foreword

This document has been prepared by TRL on behalf of Highways England. As such, the narrative, tone and writing style have been positioned from the point of view of Highways England rather than TRL.

2 Background

With the growing demand on the Strategic Road Network (SRN) and an increase in Government investment there will continue to be a rise in activity on our roads aimed at improving the capacity and performance of our network. Safety remains at the core of our work at Highways England and we are committed to ensuring the safety of all road users and road workers. Our vision is to achieve this at the same time as improving the experience of customers when they are travelling on our network. This includes looking at changing the way we work to improve road user satisfaction whilst travelling within our road works.

Studies have shown that the speed restriction within road works can be managed to maintain the safety of road workers and road users whilst having a positive effect on journey times for road users. Therefore, one of the objectives when designing any temporary traffic management is to select an appropriate speed restriction that maximises the road user satisfaction, whilst ensuring the risks posed to road users, road workers and third parties is reduced to as low as reasonably practicable (ALARP). Different speed restrictions may be required across different sections or phases of works within a scheme.

3 Scope

This document has been developed to assist the existing site-specific safety risk assessment process for identifying the appropriate speed restriction when undertaking any road work scheme on a high speed¹ road on the SRN. It should be used to support hazard identification and the selection of suitable mitigations to ensure risks are reduced ALARP for road users, road workers and third parties.

All assessments shall be performed in line with General Principles and Scheme Governance General Information (GG 104) requirements for safety risk assessment and be specific to the road works scheme. Further guidance on the selection of the highest safe speed within road works can be found in the Implementing the highest safe speed within road works (Glaze S., 2019²) document.

¹ In line with Traffic Signs Manual - Chapter 8, high speed is defined as roads with permanent speed limits of 50mph or above.

² **Glaze, S.** (2019). *Implementing the highest safe speed within road works*. TRL, Crowthorne, UK.

Appendix A provides a Hazard Log with details of the key hazardous events that schemes should consider prior to implementing any speed restrictions. A selection of possible design, operational and communications mitigations have also been outlined.

Future updates will be made to the Hazard Log by Highways England. Highways England will own the Hazard Log and therefore be responsible for its content, associated safety governance and oversight of the risks and mitigations identified.

4 Safety risk assessment supporting the selection of the highest safe speed within road works

A site-specific safety risk assessment must be conducted in line with GG 104 to evaluate and document all reasonably foreseeable hazards associated with the implementation of traffic management and the associated temporary speed restriction(s). It may be necessary to separately assess phases or sections of the scheme that utilise different temporary traffic management layouts.

The safety risk assessment must demonstrate that the safety and design objectives can be met. To improve road user experience, Highways England recommends that a design objective is set to select the highest possible safe speed within road works. A corresponding safety objective shall be set to demonstrate that the level of risk posed to road workers and road users remains ALARP and that safety remains a priority whilst determining and implementing the temporary speed restriction.

The first activity in the safety risk assessment process, as outlined in GG 104, is to conduct a site-specific hazard assessment where all reasonably foreseeable hazards associated with the activity are identified, and then analysed to understand the resulting safety risks and consequences, if those risks are realised. The following sections have been developed to aid the identification and analysis of hazardous events that may be associated with the implemented temporary speed restriction.

5 Populations affected by hazardous events

The populations that are affected by the hazardous events detailed in Section 6 are;

- Vehicular road users, including vulnerable road users, of the road on the SRN and any intersecting roads. This includes the emergency services and those not in a contractual relationship with Highways England.
- Pedestrian road users, including any persons outside of vehicles, emergency service personnel or vehicle recovery or repair personnel.
- Road workers that are directly employed to work on the SRN either permanently or temporarily (e.g. Traffic Officers, road workers and vehicle recovery contractors).

As detailed in GG 104, sub-populations of the categories above should be considered independently as they may be affected in different ways.

6 Hazardous events

This section outlines some of the key hazardous events that may need consideration when carrying out a site-specific safety risk assessment for evaluating the implementation of a temporary speed restriction. The list is not exhaustive, and the hazard identification process should also consider all reasonably foreseeable hazards specific to the scheme as well as all hazards associated with undertaking the activity.

A description of potential causes of these hazardous events is detailed in Section 7.

The hazardous events are organised for ease of understanding and the structure does not indicate a priority or severity.

6.1 Collisions between vehicles

Collisions between vehicles can encompass a number of hazardous events covering a combination of both moving and stationary vehicles. The list below gives some examples for consideration, but care should be taken to also include any that are specific to the site and/or activity undertaken.

6.1.1 *Collisions between two or more moving vehicles where all vehicles are road users*

When assessing collisions between moving vehicles, all categories of road users that are permitted within the road works should be considered. This may include pedal cycles and motorcycles in addition to cars, Heavy Goods Vehicles (HGVs), emergency service and vehicle recovery vehicles (that do not have a contractual relationship with Highways England). The level of risk and corresponding mitigations for different categories of road users may differ and therefore would require separate assessments.

6.1.2 *Collisions between two or more moving vehicles including works vehicles*

Collisions involving works vehicles could include collisions between a road user and a works vehicle (that may have, for example, slowed down to enter the works site or be joining the carriageway from the works site), or between works vehicles within the road works due to the reduced working space. Works vehicles can include:

- Any vehicle used by those permanently employed in activities on the SRN, such as Traffic Officers.
- Parties contracted to work on the temporary traffic management.
- Supporting services such as vehicle recovery or impact protection where a contractor is engaged in the scheme.

6.1.3 *Collisions between moving and stationary vehicles*

It is appropriate to consider collisions between moving and stationary vehicles separately due to the unique causes and mitigations. Hazardous events that can occur between moving and

stationary vehicles include collisions due to the presence of traffic, or an incident such as a breakdown or road traffic collision (RTC).

6.2 Collisions between vehicles and pedestrians

6.2.1 *Collisions between road users and road workers*

A collision between a road user and road worker could occur due to the incursion of a road user into the road works or during live lane working, for example changing traffic signs or recovery of a vehicle (where the scheme employs a vehicle recovery contractor).

6.2.2 *Collisions between road user and pedestrian road user*

The scope of this document covers all high speed roads on the SRN and as such there may be roads with a pedestrian presence. A pedestrian in this instance can also be taken to include road users outside of their vehicle due to an incident, emergency services and recovery personnel.

6.2.3 *Collisions between road workers and works vehicle*

Collisions between road workers and works vehicles should be considered due to the available working space within the road works.

6.3 Collisions with temporary traffic management or roadside furniture

The risk of collisions with the implemented temporary traffic management, such as safety barriers, will be related to the speed restriction implemented and could affect road users and road workers. The design objective will influence the temporary traffic management design and therefore may introduce an atypical design with new or different hazards. For example, the preference for the use of a contraflow operation would place road users adjacent to roadside furniture but further away from road workers.

7 Causes of hazardous events

As part of the analysis, the cause of the hazardous event must be understood. The hazardous events detailed in Section 6 may be caused by a range of factors and the same causes may influence multiple hazardous events. For simplicity some of these causes have been broken down into three categories:

- the design or nature of the temporary traffic management,
- driver behaviour, and
- other factors.

7.1 Hazardous events introduced by the design of temporary traffic management

The following design aspects of the temporary traffic management may influence the level of risk associated with hazardous events and should be considered when conducting a site-specific safety risk assessment. This includes, but is not limited to;

- Contraflow operations
- Narrow lanes
- Access and egress of works traffic
- Unclear, insufficient or confusing lane markings
- Exposure of workforce to traffic
- Excessive, insufficient or confusing signage
- A change in proximity of roadside furniture
- Reduction, diversion or removal of footpath
- Location of road works relative to junction(s)
- Requirements to change speed restrictions for different phases
- Implementation or removal of traffic management exposing road workers to live lane working
- Speed restriction variations across the road works scheme
- Performance specification of traffic management devices (e.g. insufficient rating of safety barriers)
- Traffic management designs subject to regular and continuous change (e.g. moving access/egress points, closures, etc.).

Within the design of the traffic management the following conditions or occurrences should be considered as potential causes of hazardous events;

- Poor or extreme weather conditions and or visibility.
- Reduction in time or distance to react to a hazard such as debris, broken down vehicle in lane, recovery vehicle in lane, slower moving or stationary traffic.
- Speed differential between vehicles. This includes between vehicle categories such as cars and HGVs, but also between site traffic and flowing traffic.
- High traffic flow.
- Stationary vehicle due to incident (breakdown or RTC).

7.2 Hazardous events caused by driver behaviour

Driver behaviour which occurs within normal driving conditions or is exacerbated as a reaction to the road work environment should all be considered as potential causes of hazardous events. This includes;

- Confusion, distraction, frustration, fatigue or drug and alcohol use
- Poor lane discipline
- Non-compliance with speed restrictions, including as an affect from other road works sites across the SRN that have different speed limits
- Overtaking or weaving due to speed differentials between road users
- Tailgating
- Loss of control.

7.3 Hazardous events caused by other factors

Causes not included in the categories above but may also be a cause of a hazardous event include;

- Road worker compliance with working practices
- Emergency services personnel compliance with working practices
- Theft of speed restriction signs
- Error where one or more speed restriction signs are not changed correctly, this may be as a result of human error or due to faulty remotely operated signs.

8 Safety risk mitigations

As part of the safety risk assessment and when the hazards are understood, mitigations should be identified and implemented to ensure all risks are eliminated or controlled to be ALARP in line with the safety objectives. The following sections describe potential mitigations that may be considered in response to the risks encountered during the implementation of a temporary speed restriction. Investigations have shown that the use of appropriate design features and control measures can enable the implementation of the highest safe speed restriction within temporary traffic management whilst achieving the safety objectives.

New technology or development of processes that become established and shape best practice could be introduced in the future to help identify and implement further mitigations.

8.1 Design mitigations

The temporary traffic management should be designed in a systematic and comprehensive way adhering to current standards and guidance. Possible mitigations that can be incorporated into the design of the temporary traffic management include;

- Implementation of appropriate lane design with appropriate setback and widths for the temporary speed restriction in conjunction with clear and appropriate road markings. Lane widths (demarcating a wider kerbside lane) may be appropriate in conjunction with restriction on lane usage to allow extra space for larger vehicles and encourage appropriate lane distribution between vehicle types.
- Understanding of the activities to ensure there is sufficient working area.
- Careful consideration of works access and egress points with suitable locations that ensure good sightlines. The use of appropriate egress merging lengths designed to correspond with the implemented temporary speed restriction.
- Optimising the length of road works to minimise disruption to the road user and ensure the risk to all affected parties are ALARP.
- The use of a suitable signage strategy that is clear and coherent without causing road user confusion. The use of additional signage around any changes in speed restriction within the road works.
- Implement clear and sufficient contraflow guidance and signage where applicable.
- Careful consideration when designing works in close proximity to junctions with the use of suitable and clear signage.
- Inclusion of 'gates'/emergency access points within the safety barrier to allow stricken vehicles/debris to be removed from a live lane.
- Safety barrier specification, including appropriate impact attenuators (crash cushions) suitable for containing high speed errant vehicles. It may also be appropriate to consider the use of 'smart' barriers equipped with sensors to improve incident response times.
- Ensuring appropriate clearance to roadside furniture or traffic management devices in line with relevant regulations and appropriate for the implemented speed restriction. It is further advised that prior to the installation of temporary traffic management, a Road Restraints Risk Assessment Process (RRRAP) be undertaken to identify and mitigate the risk posed to road users by roadside furniture and unsafe roadsides.
- The use of traffic management devices that complies with visibility guidelines outlined in Chapter 8 Parts 1, 2 and 3 of the Traffic Signs Manual.
- In line with good practice, schemes may wish to conduct a road safety audit to help identify site-specific risks, and controls, and to inform the safety risk assessment process.

8.2 Operational mitigations

The following mitigations may be incorporated into the planning or implementation activities of the traffic management for the implemented temporary speed restriction;

- Activities within the works zone to be carried out away from potential incursion locations (e.g. works access points). Logistics planning should look to ensure that the

movement of vehicles and use of access and egress points within the works reduce interactions with road users.

- Use of variable speed restrictions or communications via existing or portable signs (e.g. Variable Message Signs) to warn approaching road users of road workers in the carriageway or when live lane working is required such as in a response to an incident.
- Use of signs and variable speed restrictions dependant on conditions (e.g. bad weather or reduced visibility etc.).
- Implementation of measures to identify stricken/stranded vehicles such as the use of CCTV cameras and stopped vehicle detection systems supported by signing to provide advanced warning.
- Support by on-call incident support and impact protection vehicles (with suitable crash cushions) who are able to respond promptly to any requests from emergency services or vehicle recovery.
- Plans for checking to ensure resilience is incorporated into the use of remotely operated signs (e.g. batteries regularly checked, signs regularly checked, spare signs in the event of any fault/damage/theft). Specific methodology for placing and changing signs to be developed and documented in contractor's risk assessment and method statement (RAMS).
- Development and implementation of a specific methodology for placing and changing signs that is in line with the temporary speed restriction (e.g. RAMS).
- Implementation of appropriate checks when signs are displaying the correct speed restriction or to ensure all signs have been changed correctly. This should be considered regardless of the type of signs used.
- Implementation of a speed enforcement strategy to promote compliance with the speed restriction where practicable.
- Review of current working practices including the incident management plan to ensure it is as safe as reasonably practicable to operate at the temporary speed restriction.
- All work undertaken by competent and appropriately trained road workers.

8.3 Communications mitigations

Highways England recognises that communication is a key element to successful risk management. The following mitigations may be considered, and if implemented, should be included in the scheme's communications plan;

- Implementation of clear speed restrictions signs to inform road users of temporary or variable speed restriction.
- The use of VMS and targeted communication strategies as communication tools to inform and warn road users of temporary or variable speed restrictions. This may include the use of online and offline media to inform road users about impending works on the network and implemented speed restrictions.

- Communication with Traffic Management Operatives, vehicle recovery operators, emergency services and Traffic Officers to trigger a review of working practices and method statements to ensure they are in line with the implemented temporary speed restriction and reflect the change in risks for live lane working.
- Communication of temporary speed restriction to road workers including any updates of relevant documentation and procedures.
- Identification of and engagement with all appropriate stakeholders.

9 Monitoring

As part of an appropriate risk management strategy, it is strongly recommended that schemes monitor any residual risks and the implemented control measures throughout the duration of the works activity undertaken. This should be in addition to the mandatory reporting of accidents to comply with Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 2013 (RIDDOR).

If qualitative data is used to inform the analysis, key assumptions made in the site-specific safety risk assessment need to be monitored and validated during the period in which a reduced speed restriction is implemented. This includes assumptions that are based on evidence from research, for example the validation of assumed driver behaviours. The on-road trials that implemented a 60mph speed restriction monitored road user behaviour metrics, such as speed and compliance with the speed restriction. It is advised that these metrics are monitored by schemes. In addition, it is advised that schemes monitor metrics which focus on understanding the quantitative impact of the change in speed restriction on the frequency and severity of incidents, including:

- Rate of collisions (Control Works)
- Personal injury collision rate (STATS19)
- Road worker accidents and near misses (AIRSweb)
- Road worker accidents and injuries (RIDDOR reports).

These metrics are also included in the Hazard Log in Appendix A.

Data gathered should be compared against a defined safety baseline. If behaviours do not meet the safety baseline, or do not support the initial assumptions made, additional control measures and mitigations shall be identified and implemented to reduce the risks posed to all affected parties.

Appendix A Hazard Log

Table 1 sets out key hazardous events schemes should consider prior to implementing the highest safe speed restriction alongside a selection of possible design, operational and communications mitigations to control the risk to road users and road workers. Schemes shall carry out a site-specific risk assessment prior to applying any speed restriction within temporary traffic management. The hazard log outlined below is not exhaustive. Furthermore, the risk ratings applied to each of the below events are based on expert opinion and should be updated with quantitative information at the earliest available opportunity.

Table 1: Hazard Log

Grouping	Identified hazardous event	Population at risk	Initial risk ³			Control measures	Residual risk ⁴			Comments	Expected monitoring metrics and safety baseline for long-term monitoring
			Likelihood	Severity	Risk		Likelihood	Severity	Risk		
Collisions between vehicles	Collisions between two or more moving vehicles where all are road users.	Vehicular road users	Occasional	Severe	Tolerable	D1, D2, D3, D6, D7, D8, D9, D11, D12, D13, D14, O3, O6, O8, O9, C1, C2, C5	Occasional	Critical	Tolerable	The collision severity between vehicles will be decreased if speed restrictions are implemented during the road works. This, however, can be further mitigated by selecting an appropriate speed and introducing measures aimed at improving driver behaviour and awareness. These control measures are based on a combination of design, operational and communications improvements that if implemented appropriately is anticipated to reduce the risk to as low as reasonably practicable.	The expected monitoring metrics should be: <ul style="list-style-type: none"> • Rate of collisions (Control Works) • Personal injury collision rate (STATS19) • Road worker and contractor accidents and near misses (AIRSweb) • Road worker and contractor accidents and injuries (RIDDOR reports). These metrics should be no greater than observed at 50mph.
	Collision between two or more moving vehicles including works vehicles.	Vehicular road users and road workers	Occasional	Severe	Tolerable	D4, D5, D6, D7, D8, D9, D11, D12, D13, D114, O2, O3, O6, O7, O8, O9, O10, O11, C1, C2, C3, C4, C5	Occasional	Critical	Tolerable		
	Collisions between moving and stationary vehicles.	Vehicular road users and road workers	Occasional	Severe	Tolerable	D1, D2, D3, D5, D6, D7, D8, D9, D10, D113, D14, O2, O3, O4, O5, O6, O7, O8, O9, O10, O11, C1, C2, C3, C4, C5	Occasional	Critical	Tolerable		
Collisions between	Collisions between road user and road worker.	Vehicular road users and road workers	Occasional	Severe	Tolerable	D1, D2, D3, D6, D7, D8, D9, D11, D13, D14, O2, O3, O6, O7,	Occasional	Severe	Tolerable	It is anticipated that the collision severity between a vehicle and a pedestrian (including emergency service personnel and road workers) would remain largely	The expected monitoring metrics should be:

³ Initial risk outlines the likelihood, severity and risk for hazardous events occurring within temporary traffic management with no speed restriction in place.

⁴ Residual risk outlines the likelihood, severity and risk of hazardous events occurring within temporary traffic management with an appropriate speed restriction in place and additional control measures.

<p>vehicles and pedestrians</p> <p>Collision between vehicular road user and pedestrian road user.</p> <p>Collisions between road workers and works vehicles.</p>	Road users (vehicular and pedestrian)			O8, O9, O10, O11, C1, C2, C3, C4, C5				<p>unchanged if speed restrictions are implemented during road works. This, however, can be further mitigated by selecting an appropriate speed whilst introducing measures aimed at improving driver behaviour, awareness and current working practices/ method statements. Given the application of identified mitigations it is anticipated that the risk level will remain tolerable.</p>	<ul style="list-style-type: none"> • Rate of collisions (Control Works) • Personal injury collision rate (STATS19) • Road worker and contractor accidents and near misses (AIRSweb) • Road worker accidents and injuries (RIDDOR reports) <p>These metrics should be no greater than observed at 50mph.</p>	
		Occasional	Severe	Tolerable	D1, D2, D3, D6, D7, D8, D9, D13, D14, O3, O4, O5, O6, O8, O9, C1, C2, C5	Occasional	Severe			Tolerable
	Road workers	Occasional	Severe	Tolerable	D4, D5, D6, D7, D13, D14, O8, O9, O10, O11, C3, C4, C5	Occasional	Severe			Tolerable
<p>Collision with temporary traffic management or roadside furniture</p>	Vehicular road users	Occasional	Severe	Tolerable	D1, D2, D3, D5, D6, D7, D8, D9, D11, D12, D13, D14, O3, O6, O8, O9, C1, C2, and C5	Occasional	Critical	<p>The collision severity between an errant vehicle and traffic management devices and/ or roadside furniture will be decreased if speed restrictions are implemented during roadworks. This, however, can be further mitigated through the implementation and positioning of safety barriers (including impact attenuators) appropriate for the implemented speed restriction. Likewise, the appropriate design of other traffic management elements (such as lane widths) in conjunction with an effective signing strategy can control the risk level to remain tolerable.</p>	<p>The expected monitoring metrics should be:</p> <ul style="list-style-type: none"> • Rate of collisions (Control Works) • Personal injury collision rate (STATS19) • Road worker and contractor accidents and near misses (AIRSweb) • Road worker accidents and injuries (RIDDOR reports) • Records of asset damage. <p>These metrics should be no greater than observed at 50mph.</p>	

9.1 Possible control measures

9.1.1 *Design mitigations*

- D1. Implementation of appropriate lane widths, variable lane widths (demarcating a wider kerbside lane) may be appropriate in conjunction with restriction on lane usage to allow extra space for larger vehicles and encourage instinctive organisation of vehicle types.
- D2. Clear and appropriate road marking.
- D3. Appropriate setback between lanes and works demarcation.
- D4. Understanding of the activities to ensure there is sufficient working area.
- D5. Careful consideration to works access and egress points with suitable locations of access and egress points that ensure good sightlines. The use of appropriate merging lengths designed to correspond with the implemented temporary speed restriction.
- D6. Optimising the length of road works to minimise disruptions to the road user and ensure the risk to all affected parties is ALARP.
- D7. The use of a suitable signage strategy that is clear and coherent without causing road user confusion. The use of additional signage around any changes in speed restriction within the road works.
- D8. Implement clear and sufficient contraflow guidance and signage.
- D9. Careful consideration when designing works in close proximity to junctions with the use of suitable and clear signage.
- D10. Inclusion of 'gates'/emergency access points within the safety barrier to allow stricken vehicles/debris to be removed from a live lane.
- D11. Safety barrier specification, including appropriate impact attenuators (crash cushions) suitable for containing high speed errant vehicles. It may also be appropriate to consider the use of 'smart' barriers equipped with sensors to improve incident response times.
- D12. Ensuring appropriate clearance to roadside furniture or traffic management devices in line with relevant regulations and appropriate for the implemented speed restriction. It is further advised that prior to the installation of temporary traffic management, a Road Restraints Risk Assessment Process (RRRAP) be undertaken to identify and mitigate the risk posed to road users by roadside furniture and unsafe roadsides.
- D13. The use of traffic management devices that complies with visibility and conspicuity guidelines outlined in Chapter 8 Part 1, 2 and 3 of the Traffic Signs Manual.
- D14. In line with good practice, schemes may wish to conduct a road safety audit to help identify site-specific risks, and controls, and to inform the safety risk assessment process.

9.1.2 *Operational mitigations*

- O1. Activities within the works zone to be carried out away from potential incursion locations (e.g. works access points). Logistics planning should look to ensure that the

- movement of vehicles and use of access and egress points within the works reduce interactions with road users.
- O2. Use of variable speed restrictions or communications via existing or portable signs to warn approaching road users of road workers in the carriageway or as a response to an incident.
 - O3. Use of signs and variable speed restrictions dependant on conditions.
 - O4. Implementation of measures to identify stricken/stranded vehicles such as the use of CCTV cameras and stopped vehicle detection systems supported by signing to provide advanced warning.
 - O5. Support by on-call incident support and impact protection vehicles (with suitable crash cushions) who are able to respond promptly to any requests from emergency services or vehicle recovery.
 - O6. Plans for checking to ensure resilience is incorporated into the use of remotely operated signs (e.g. batteries regularly checked, signs regularly checked, spare signs in the event of any fault/damage/theft). Specific methodology for placing and changing signs to be developed and documented in contractor's risk assessment and method statement (RAMS)
 - O7. Implementation of a specific documented methodology for placing and changing signs that is in line with the temporary speed restriction (e.g. RAMS).
 - O8. Implementation of appropriate checks when signs are displaying the correct speed restriction or to ensure all signs have been changed correctly. This should be considered regardless of the type of signs used.
 - O9. Implementation of a speed enforcement strategy to promote compliance with the speed restriction.
 - O10. Review of current working practices including the incident management plan to ensure it is safe as reasonably practicable to operate at the temporary speed restriction.
 - O11. All work undertaken by competent and appropriately trained road workers.

9.1.3 *Communications mitigations*

- C1. Implementation of clear and secure speed restrictions signs to inform road users of temporary or variable speed restriction.
- C2. The use of VMS and targeted communication strategies as communication tools to inform and warn road users of temporary or variable speed restrictions. This may include the use of online and offline media to inform road users about impending works on the network and implemented speed restrictions.
- C3. Communication with Traffic Management Operatives, vehicle recovery operators, emergency services and Traffic Officers to trigger a review of working practices and method statements to ensure they are in line with the implemented temporary speed restriction and reflect the change in risks for live lane working.

- C4. Communication of temporary speed restriction to road workers including any updates to relevant documentation and procedures.
- C5. Identification of and engagement with all appropriate stakeholders.

9.2 Level of risk

Table 2: Level of risk guide

			Severity				
			Negligible	Marginal	Critical	Severe	Catastrophic
			1	2	3	4	5
Likelihood	Improbable	1	L	L	T	T	T
	Remote	2	L	T	T	T	T
	Occasional	3	L	T	T	T	U
	Probable	4	T	T	T	T	U
	Frequent	5	T	T	T	U	U

Risk Rating	Score
Acceptable	A
Tolerable	T
Tolerable	T
Unacceptable	U

Implementing the highest safe speed within road works - Hazard assessment guidance



On our high-speed roads (with a permanent speed limit of 50mph or more) temporary mandatory speed restrictions can be put in place to reduce the level of risk posed. In order to keep traffic flowing as freely as possible, Temporary Traffic Management should be designed to allow the highest speed that can be safely implemented.

This document has been prepared by TRL on behalf of Highways England, to assist the existing site-specific safety risk assessment process for identifying the highest safe speed within road works.

Other titles from this subject area

MIS16 Implementing the highest safe speed within road works – Guidance. S Glaze. 2020

MIS17 Implementing the highest safe speed within road works – Case studies and supporting evidence. S Glaze and M Palmer. 2020

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ISSN N/A

ISBN N/A

MIS19