national highways

Implementing the highest safe speed within road works

- Guidance

27 March 2024

Notice

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Document history

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1. Introduction

1.1. Foreword

This document was prepared by TRL (2020) and updated by AtkinsRéalis Jacobs Joint Venture (AJJV) (2024) on behalf of National Highways to provide guidance on selection of the highest safe speed (HSS) within road works. As such, the narrative, tone and writing style have been positioned from the point of view of National Highways.

1.2. Primary definitions

In this document the word “must” is used to indicate a legal requirement which must be complied with. The word “shall” indicates an essential (or mandatory) course of action, and “should” indicates a course of action that is strongly recommended. The word “may” is used to indicate an option, which requires consideration depending on the circumstances.

1.3. Background

With the growing demand on the Strategic Road Network, safety of all road users and road workers remains our top priority. Satisfaction is also a key component of our vision for the future and we are committed to improving the experience of road users when they are travelling in our road works.

Continuous monitoring of the uptake of 60mph as a highest safe speed has 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. Furthermore, journey time savings, as a result of the change in speed restrictions, can be achieved in a way that maintains the safety of road workers and road users. The evidence collected to date demonstrates that, for schemes greater than 15km, compliance with the posted speed restriction is higher for a 60mph speed restriction than 50mph. Evidence has been compiled and summarised in the HSS Safety and Benefits Realisation Reports [1].

1.4. Strategic intent

In accordance with Design Manual for Roads and Bridges (DMRB) GD 904 The use of highest safe speed limits including advice on using 60mph at/through road works [3], standard schemes should consider and implement the HSS available as part of the road works and temporary traffic management (TTM) strategy. For motorways subject to the national speed limit, where safe to do so, the standard scheme TTM should consider HSS, specifically 60mph as a minimum. The monitoring evidence for schemes greater than 15km is available at 60mph limit through road works and can be used to inform design risk assessments. The same evidence was not captured for schemes below 15km due to the limited uptake of 60mph during the monitoring period.

All reasonable steps should be taken to ensure that the effects of the works on the normal running of the carriageway are reduced to a minimum. As such TTM shall be designed to reduce safety risks to all affected parties to ‘so far as is reasonably practicable’[1] (SFAIRP) level with a speed restriction that is appropriate. Maintaining safety performance and demonstrating SFAIRP means that if a measure is reasonably practicable it should be introduced unless the cost and trouble to implement it is grossly disproportionate to the benefit gained and this is no different with HSS.

This document provides guidance on how to incorporate the selection of HSS in/throughout road works on standard schemes. The document details the risk management process and the TTM design considerations to enable HSS to be considered and implemented safely. The requirements for the use of HSS in road works are also set out in GD 904 [3]. Furthermore, GG 117 The design and

[1] In the context of road and street works the term SFAIRP is used and can be taken as being equivalent to ALARP. SFAIRP is used in the Health and Safety at Work etc. Act 1974 [2] and ALARP is the normal parlance in the health, safety and risk domain. The two terms are interchangeable except when drafting formal legal documents when the correct legal phrase is to be used.

implementation of temporary traffic management and road works [12] provides requirements for the design and implementation of TTM.

2. Process for safely implementing HSS in road works

Temporary mandatory speed restrictions can be put in place to reduce the level of risk posed on National Highways roads. In order to keep traffic flowing as freely as possible, TTM should be designed to allow the highest speed that can be safely implemented. The HSS that is appropriate within road works should be considered but it is essential that the road works are designed to manage the level of risk to road workers, road users and other parties where applicable. Higher performing TTM equipment and design features should be used to minimise the level of risk from higher traffic speeds.

Decisions regarding the appropriate speed within road works should be made on a case-by-case basis and should be documented, alongside the risk mitigations within a scheme-specific risk assessment (in line with DMRB GG 104 - Requirements for Safety Risk Assessment [4]). All safety risks within a scheme's TTM must be evaluated against the SFAIRP in HASAWA 1974 [2]. Available guidance on the design of TTM is intended to support the designer through the design process to produce safe and effective TTM arrangements. It is recognised that such guidance, as outlined within Traffic Signs Manual Chapter 8, cannot cover all situations and it is for the designer to adopt, adapt or develop the required traffic management to suit the actual conditions.

Figure 1 outlines the tasks which need to be undertaken in the course of the planning, design and implementation of TTM arrangements and as such should be considered at the earliest appropriate opportunity. These steps are explained in more detail in the following sections.

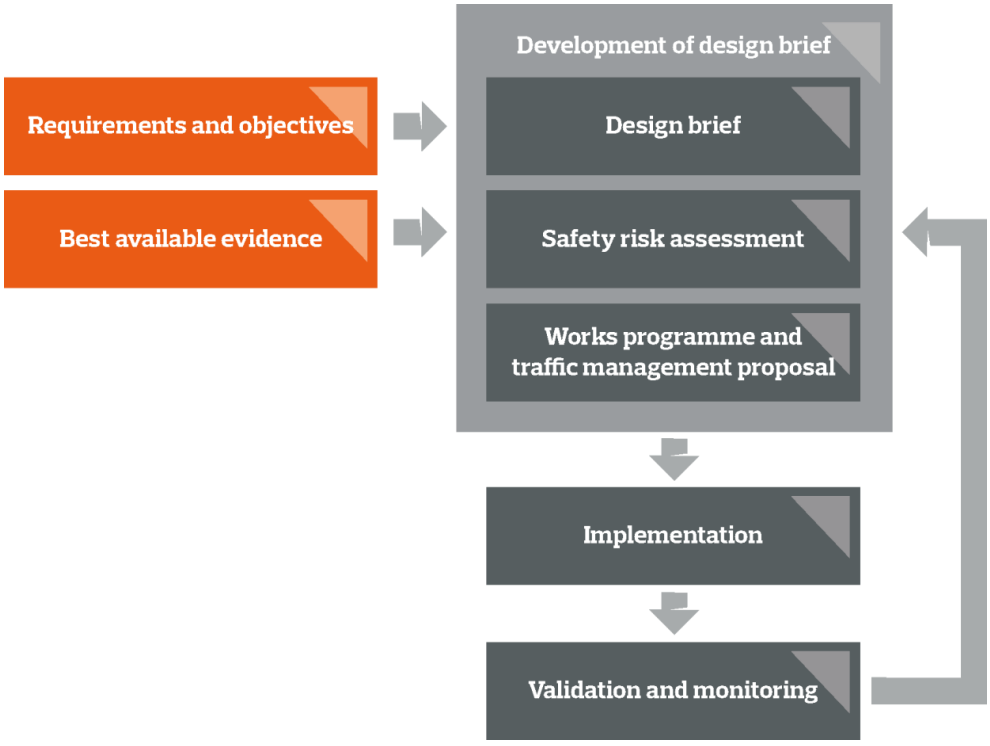

Figure 1: Process for safely implementing appropriate speed restrictions within road works

A checklist for implementing appropriate speed restrictions through road works has been included in Section 4.

2.1. Requirements and objectives for the design brief

In line with current good practice and guidance, project designers shall continue to consider primary and secondary objectives (in line with guidance outlined in the Traffic Signs Manual Chapter 8) as well as National Highways requirements when designing and planning TTM.

The key requirement is to achieve a level of safety and road user comprehension that is the same or better than when there are no road works on the carriageway. However, designers shall consider how TTM can be designed (using existing standards and guidance) to safely implement HSS. The speed restriction under TTM can be implemented across the entire scheme or on identified sections or phases where higher performing traffic management and safe design requirements can be incorporated.

2.2. HSS Safety risk assessment

Safety is our primary imperative and key value. The Design Manual for Roads and Bridges (DMRB) requires designers to conduct safety risk assessments in line with GG 104. GG 104 sets out the approach to be taken and shall be applied when undertaking any activity that does or can impact on safety on the trunk roads and motorways, either directly or indirectly. GG 104 provides a framework for identifying hazards, assessing, evaluating and managing safety risks and assuring safety risk governance.

It is noted that TTM could be subject to a risk assessment outside GG 104. The TTM implemented should conform to standard and subject to an appropriate risk assessment under the Health and Safety at Work etc. Act 1974 [2], The Management of Health and Safety at Work Regulations 1999 [7] and Traffic Signs Manual Chapter 8 [8], and undertaken by the contractor/maintainer.

A safety risk assessment shall be carried out prior to the commencement of road works, in which the highest speed that can be safely implemented shall be determined in line with GD 904 [3]. Sections 2.2.1 to 2.2.4 provide guidance for specific parts of the GG 104 framework. Furthermore the document, 'Implementing the highest safe speed within road works - Hazard assessment guidance' [5] provides more advice on how to undertake the scheme-specific safety risk assessments. Early consultation with key stakeholders should be undertaken, such as the workforce and emergency services, to support the development of the safety risk assessment.

2.2.1. Safety baseline and objectives

A safety baseline and safety objective relevant to the design and implementation of TTM shall be defined.

Safety baseline

The safety baseline should be the same level of safety or better than the selected baseline and should be established from the best available sources of information. Further detail about baselines is provided in the HSS Hazard assessment guidance [5]. Current or recent historic, in line with GG 104, safety performance data can be used, examples include personal injury collision rates; breakdown rates; incursions; traffic flows to understand the percentage of heavy goods vehicles or speed compliance; traffic management strikes and road worker injuries. Major Projects Instruction (MPI) 90 [6] provides details of the requirements for collecting data in road works schemes. The safety baseline presents the starting level of safety for the carriageway.

Safety objective

Where the road works have been designed to incorporate any speed restriction, a safety objective shall be set to demonstrate that the safety risk to affected populations is no worse than the baseline. There are a variety of metrics that can be used to determine if a safety objective is being met. The metrics used do not always need to be lag factors such as collisions, lead factors such as changes in driver behaviour or frequency of incidents can be used.

In addition to demonstrating whether the safety objective can be met, schemes will need to show that the safety risk to affected populations is SFAIRP.

2.2.2. Hazard identification

Scheme-specific risk assessments shall evaluate the operational safety impact of implementing HSS during road works and document all associated reasonably foreseeable hazards. Schemes should involve a wider group of stakeholders in the identification of hazards including representatives from identified affected parties, establishing information from a range of expert opinions.

Previous investigations, including a generic risk assessment [9], have identified hazards and undesirable outcomes that are affected when HSS is implemented within road works. Information on the hazards has been compiled within a hazard assessment guidance [5] and should be considered during the hazard identification process.

2.2.3. Hazard and safety risk analysis

Risk decisions shall be informed by available evidence including:

- Quantitative data (where available), and/ or
- Qualitative data, including:
    - Documented previous experience from schemes
    - Expert opinion informed by good practice
    - Research findings and relevant literature

National Highways completed trials to investigate the implementation of 60mph within road works at a variety of different schemes. The successful completion of the trials has resulted in the adoption of 60mph as an option to be considered for HSS. National Highways have collected robust evidence to support this HSS initiative and can be used to inform scheme-specific risk assessments and ensure appropriate mitigations are identified to minimise the safety risks.

2.2.4. Evaluation of safety risk and mitigations

The evaluation of the safety risk shall detail the comparisons between the safety baseline and safety objectives set for the activity. Hazards posed to all affected parties must be evaluated against the SFAIRP.

The design of the TTM shall be suitable for road users travelling at the posted speed restriction. Mitigations shall be identified and implemented to ensure all safety risks are SFAIRP and in line with the safety objective. Existing guidance and previous investigations have shown that design features and control measures can be employed on some schemes to enable HSS to be implemented within TTM whilst reducing safety risks to all affected parties SFAIRP and meeting safety objectives.

Possible mitigations that can be incorporated into the design of the TTM have been detailed in Implementing the HSS within road works – Hazard assessment guidance [5].

As outlined within GG 104, outputs and decisions for a Type A categorisation requires approval by the person responsible for managing the activity. Type B and C classifications require consultation before acceptance and approval can take place. In accordance with the governance procedures a safety control review group should be formed for the purpose of consultation on and reviewing and accepting of the activity categorisation. Further guidance on safety risk governance can be found in the Management Arrangement of Safety Risk for National Highways Activities [10] .

2.3. Works programme and traffic management proposals

The implementation of the HSS within TTM is reliant on suitable road works design and management of risk through a scheme-specific risk assessment. The complexity of road works design will vary from scheme to scheme. As such, each section and each phase of TTM shall be considered individually.

The safety risk assessment may conclude that it is not possible to implement the HSS across the entire length of the scheme or during particular phases of work whilst maintaining the safety baseline. However, different speed restrictions shall be considered for individual sections or work phases where the scheme design may vary.

Where appropriate, the safety risks associated with varying speed restrictions within a scheme and the required risk mitigations shall be included in the safety risk assessment.

2.4. Implementation

The design programme should ensure there is enough time to obtain the required equipment from suppliers.

The finalised TTM design shall ensure the mitigations identified in the safety risk assessment are incorporated for the benefit of workers, users and other parties if applicable. If the mitigations are not brought into use, the safety risk assessment will need to be revisited.

It is noted that there is no requirement in GG 119 Road Safety Audit to apply the process to TTM. However, it may be useful to consider applying its principles to evaluate the safety management system. Otherwise, MPI-45 [11] provides one way of applying the RSA process to road works.

2.4.1. Enforcement of temporary speed restrictions

If enforcement systems are outlined as a required mitigation within the safety risk assessment, the design programme shall allow enough time to:

- Engage with enforcement agencies regarding visible speed enforcement and agree on appropriate enforcement methods especially when different speed restrictions are used across a scheme; and
- Obtain the appropriate temporary traffic regulation orders (TTROs) which are required to establish temporary mandatory speed restrictions at each scheme.

2.5. Validation and monitoring

As part of an appropriate risk management approach, the safety risk assessment shall be reviewed and updated throughout the life of an activity. Where data, particularly qualitative data, or expert opinion is used to inform the analysis of safety risk, key assumptions made in the safety risk assessment shall be monitored and validated during on-road use.

Data gathered shall be compared against the defined safety baseline. If behaviours do not meet the safety objective or do not support the assumptions made, additional mitigations shall be identified and implemented to reduce the safety risks to all affected parties. Mitigations may include a change in TTM design or changing the maximum speed restriction where applicable.

3. References

[1]	Safety and Benefits Realisation Reports, AJJV (2023)
[2]	Health and Safety at Work etc Act 1974
[3]	DMRB GD 904 - The use of highest safe speed limits including advice on using 60mph at/through road works, Revision 0
[4]	DMRB GG 104 - Requirements for Safety Risk Assessment, Revision 0
[5]	Implementing the highest safe speed within road works - Hazard assessment guidance, 2023
[6]	MPI-90-032021 Requirements for Collecting Data in Road Works Schemes, March 2021
[7]	The Management of Health and Safety at Work Regulations 1999
[8]	Traffic Signs Manual – Chapter 8, Traffic Safety Measures and Signs for Road Works and Temporary Situations
[9]	Implementing the highest safe speed within road works – Safety Risk Assessment, 2023
[10]	Management Arrangement of Safety Risk for National Highways Activities
[11]	MPI-45-012016 Road Safety Audit of SMP Temporary Traffic Management, February 2020
[12]	DMRB GG 117 The design and implementation of temporary traffic management and road works

4. Checklist

Development of design brief

- ☐ Incorporate associated DMRB road works requirements, including GD904 - The use of highest safe speed limits including advice on using 60mph at/through road works

Safety risk assessment

- ☐ Where speed restrictions are to be used, set a safety objective to ensure the safety baseline can be maintained at the earliest suitable point
- ☐ Review appropriate evidence to inform the analysis of risk
- ☐ Ensure the scheme specific safety risk assessment captures all reasonably foreseeable hazards
- ☐ Ensure stakeholders (including the workforce) have been engaged to support the development of the safety risk assessment

Work programme and traffic management proposal

- ☐ Ensure design of temporary traffic management is suitable for road users travelling at the proposed speed restriction
- ☐ Ensure design of temporary traffic management is suitable for road and construction workers at the proposed speed restriction
- ☐ Where the same speed restriction cannot be used across the entirety of the scheme, consider use of varying restrictions, where suitable

Implementation

- ☐ Consider undertaking additional safety audits to ensure that the required mitigations outlined within the safety risk assessment are implemented correctly during use.
- ☐ Where enforcement is required as part of a safety risk assessment, engage with enforcement agencies early
- ☐ Obtain the appropriate Temporary Traffic Restriction Orders required for the proposal

Validation

- ☐ Where assumptions in a safety risk assessment were informed by expert opinion or other sources of data, monitor suitable metrics to provide information on the performance of implemented mitigations
- ☐ Update the safety risk assessment and introduce new or make changes to existing mitigations to maintain safety baseline if required
- ☐ Capture lessons learned