national highways

Implementing the highest safe speed within road works

– Overarching safety risk assessment

28 March 2024

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Document history

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1.3	SPaTS2 Task 0083 updates	KB	DTK	JPD	JC	24/03/2022
1.4	Addressing client comments	KB	JPD	JPD		19/05/2022
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2.1	Minor updates to EQIA	KB	DTK	JPD	JH	26/08/2022
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3.0	Issued to client				JC	08/11/2022
4.0	Considers 60mph as HSS and hazard and risk assessment updated	RN	KB	JPD	JH	28/03/2024

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1. Introduction

With the rise in road work activity aimed at improving the capacity and performance of the Strategic Road Network (SRN), safety of all affected populations remains the top priority for National Highways. Customer satisfaction is also a key component of National Highways' vision for the future, and they are committed to improving the experience of road users when they are travelling in road works. The introduction of different speed restrictions through road works is one measure used to improve customer satisfaction.

Trials to monitor and evaluate the use of various speed restrictions within road works were carried out. The programme level safety risk assessment[1] was informed by previous relevant on-road trials, simulator trials, and associated safety risk assessments (in accordance with GD04/12) for 55mph and 60mph trials.

The successful completion of the trials has led to the adoption of 60mph as an option to be considered for highest safe speed (HSS). As the implementation of HSS has now become standard procedure, National Highways has subsequently commissioned safety risk specialists to review and update the overarching safety risk assessment, alongside the HSS guidance documents; and to gather evidence to build a robust evidence base.

Monitoring of the uptake of 60mph as a highest safe speed has shown that, for schemes greater than 15km, 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. 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.

Where it is not possible to design schemes to be safe at the permanent speed limit, then they need to be safe with the least reduction in speed. Table A1.8 in Traffic Signs Manual Part 3 provides guidance on determining a design speed for standard schemes.

Status: The safety risk assessment has been updated to reflect a change from the focus on 60 mph speed restriction, within road works, to a focus on HSS. The update (Revision 4) reflects the consideration of the National Highways guidance document for implementing HSS within road works.

1.1. Purpose

The purpose of this safety risk assessment is to evaluate the operational safety impact of implementing HSS restrictions in/through road works on standard schemes. This safety risk assessment, in conjunction with the other guidance documents [4][5], serves to enlighten designers and contractors about the general safety risks associated with HSS implementation, to affected populations, when compared to a traditional speed restriction of 50 mph in road works[2].

[1] The initial iterations of this document began as a safety risk assessment at a programme level for the trials. With the adoption of HSS as standard practice, the primary revisions initially focussed on increasing the speed restriction from 50mph to 60mph. Subsequent updates have been implemented to delve deeper into the nuances of operating under the framework of HSS.

[2] For schemes considering a safety baseline of no existing road works, the appropriate hazard and risk consideration will need to be made for this scenario.

2. Equality, diversity and inclusion

An equality impact assessment (EqIA) screening was carried out to determine the applicability of a full EqIA. Equality impact screening and assessments are a business requirement for National Highways and are applicable for projects that involve introducing, developing or changing a project, policy, process, function or service.

Undertaking the EqIA is a proactive measure, aimed at fostering good relationships with contractors, employees and external stakeholders. It is essential to ensure any changes to the network consider any potential discrimination as a result of implementation.

Each scheme will be required to undertake an initial EqIA screening to determine the applicability of a full EqIA and what impact, if any, the speed restrictions may have on the protected groups. These assessments will be validated through the National Highways equality, diversity and inclusion directorate who are able to provide further guidance and advice as well as chart progress where an issue needs managing.

The EqIA screening which determines the potential impact on the Protected Characteristic Groups outlined in the Equality Act 2010 was reviewed and updated, taking into consideration the HSS. The results of this screening suggested that a full EqIA was required. The outcomes is outlined in Appendix A.

3. Safety risk assessment planning and approach

3.1. Safety risk assessment

The purpose of the safety risk assessment is to assess (at a generic level) and document the likely safety risks posed to all affected parties on standard schemes[3] implementing HSS within road works.

The safety risk assessment has been carried out in accordance with the Design Manual for Roads and Bridges (DMRB) GG 104 Requirements for safety risk assessment [1] and it provides a generic, qualitative assessment for the consideration of HSS restrictions during road works. The safety risk assessment provides typical hazards, risks and control measures that can be provided to meet the safety objective and safety criteria.

The activity under consideration in this assessment is:

"The implementation of HSS restrictions in/through road works on standard schemes."

The question this safety risk assessment seeks to answer is:

"Is it acceptably safe to use the HSS restriction in/through road works on standard?"

The approach to risk management and the initial safety risk assessment were presented to the National Safety Control Review Group (NSCRG) for their acceptance prior to on-road trials (Revision 1.0). Following recent revisions (Revision 1.3 onwards), changes to the risk assessment have been reviewed by NSCRG as appropriate.

3.2. Scheme-specific safety risk assessment

This safety risk assessment does not replace the need for individual HSS scheme-specific safety risk assessments to be carried out; however, it can be utilised as a basis on which other safety risk assessment can be developed. The Step-by-Step Guide [2] also provides practical guidance on how to follow the safety risk assessment process.

Each scheme will be required to undertake an activity categorisation that will determine the oversight process or safety governance in accordance with GG 104. For instance, where a scheme categorisation outcome is a Type A, the National Highways Project Manager is responsible for accepting the safety work being done to manage risk. For a Type B categorisation, the schemes will be required to presented their safety risk assessments to SCRG prior to starting any road works. The group, comprising of key stakeholders, will ensure that appropriate actions are taken for the effective management of safety risk for the whole life operation of the use of HSS restriction. Type C categorisation will need to be escalated to the National Safety Control Group their acceptance.

[3] As defined in Traffic Signs Manual Chapter 8.

4. Categorisation of the activity type

The scope and complexity of this activity was determined by categorising the activity into Type A, B or C in line with GG 104. Each feature of the project was reviewed and individually assigned a category and then an overall activity type determined. A summary of the categorisation is as follows:

- One feature was categorised as **Type C** (Stakeholder impact and interest)
- Two features were categorised as **Type B** (Extent of prior experience of activity, impact on the organisation and activity scale)
- Three features were categorised as **Type A** (Statutory, formal processes and procedures; and technical)

On this basis, the categorisation is **Type A.** This means that associated safety governance can be managed within the project and for the Type B and C, consultation will be sought with NSCRG. Justification for this decision is detailed in Table 4-1.

Table 4-1. Categorisation of activity type

Feature	GG 104 description of categorisation	Cat.	Justification for selection
Extent of prior experience of activity	A - Activities for which there is significant experience within National Highways. Previous safety studies and data are available, and some activity features are codified in a standard or formal procedure. **B - Activities for which there is limited experience within National Highways but there is transferable experience elsewhere in the UK or internationally. Activities for which there is limited experience within National Highways but there is experience elsewhere in the UK or internationally, including in different industries, which is deemed sufficiently similar to the activity in question to be deemed relevant. Activities for which there is experience within National Highways, but that experience is in a different application of the activity and some adaptation will be required. There might also be local and site-specific issues to take into account that can affect the relevance of the available experience.** C - Activities for which there is no previous applicable experience from either National Highways or other industries.	**B**	Following the successful completion of the trials and long term monitoring, the initiative is to implement HSS as business as usual. While National Highways, and their delivery partners, have some experience in implementing the trials, HSS is still considered a novelty and because of lack of experience on a wider scale it is not always taken forward. **Type 'B' categorisation is therefore appropriate.**
Statutory and formal processes and procedures	**A - The activity is substantially or entirely within the scope of existing standards, guidance, formal processes or procedures and applicable legislation.** **The activity requires minimal or no safety related departures from standard or safety related changes to formal processes or procedures (including any legislation).** B - The activity is largely within the scope of existing standards, guidance, formal processes, or procedures. There can be some safety related departures from standards needed and/or safety related changes to formal processes or procedures. The activity can need minor changes to existing legislation. C - Activities that are not within the scope of existing standards, formal processes or procedures and require new ones to be developed. Activities which require significant changes to existing legislation or new legislation to be written. Activities for which significant departures from standards, formal processes or procedures are required. Activities which require significant changes to existing legislation or new legislation to be written.	**A**	The use of HSS in road works is substantially within the scope of existing standards, guidance, formal processes, or procedures including: • DMRB GD 904 [3] which contains the requirements for the use of HSS limits including advice on using 60mph at/through road works. • DMRB GG 117 [8] which contains the requirements for TTM design and implementation • Implementing the HSS within road works – Guidance [3].

Feature	GG 104 description of categorisation	Cat.	Justification for selection
	Whilst the number of safety departures from standards, formal processes or procedures can affect the categorisation, the most important element in determining this is the nature and type of the departures. For example, a large number of safety departures that can be addressed straightforwardly will have less impact on feature type than a single safety departure that cannot and requires a detailed risk assessment to support it.		• Implementing the HSS within road works – Hazard assessment guidance [5] **Type 'A' categorisation is therefore appropriate.**
Impact on the organisation	**A - The activity has no impact on National Highways. The activity has a minor impact on any of these for a finite period of time. Length of time National Highways is affected by decision to undertake the activity is short term.** B - The activity can lead to permanent minor changes to any of these. These minor changes can introduce new roles and responsibilities, policies, contractual and workforce arrangements. The activity can require a change to organisational arrangements. Length of time National Highways is affected by decision to undertake the activity is medium term. C - The activity has significant impact on any of these. The activity can change core safety roles and responsibilities. Length of time National Highways is affected by decision to undertake the activity is long term.	**A**	At a generic level, there is no impact on National Highways processes, procedures, structure, roles and responsibilities, competencies, policies and strategy, or contractual and workforce arrangements. **Type 'A' categorisation is therefore appropriate.**
Activity Scale	A - The impact of the activity is limited in nature or scale. **B - The impact of the activity is significant in nature or scale.** C - The impact of the activity is wide ranging across the network, and/or significantly impacts infrastructure, interventions or workforce.	**B**	SRN schemes will be expected to consider HSS restrictions during road works. This constitutes of all the major schemes. **Type 'B' categorisation is therefore appropriate.**
Technical	**A - An activity where any processes, techniques, methodologies and/or technologies involved are currently in widespread use and re-examination is unlikely to be needed.** B - There can be some experience of the processes, techniques, methodologies and/or technologies. The experience can be from use in either another application, or by another road authority, supplier, industry or perhaps from overseas in which case some additional work can be required to adapt them and/or to demonstrate that safety can be assured for the intended application. C - Activities that use new processes, technique, methodologies and/or technologies for which there is no previous in the UK or elsewhere.	**A**	The activity is unlikely to require re-examination of processes, techniques, methodologies and/or technologies currently being used. **Type 'A' categorisation is therefore appropriate.**

Feature	GG 104 description of categorisation	Cat.	Justification for selection
Stakeholder impact and interest	A - Activities for which the quantity and/or impact of stakeholders, their interest in and resulting ability to influence or impact the activity is low. B - Activities that have only a single or a few stakeholders but their impact, in terms of their attitude towards, or ability to influence, and/or interest in the successful achievement of the activities aim can be significant. Alternatively, it will represent an activity that has several stakeholders but the amount, or type, of safety issues involved are limited. **C - Activities for which there are a large number of stakeholders and their impact in terms of their attitude towards, or ability to influence can be significant. Stakeholders with a strong interest in the potential safety impact of the activity on themselves. Activities where there are conflicting needs arising from different stake holders or stakeholder groups.**	**C**	This activity has interest from a moderate number of stakeholders where their ability to influence the scheme plans and safety assessments could be significant (stakeholders include; National Highways, supply chain members, service providers, enforcement groups and emergency services). NSCRG will be updated on for significant changes made to the safety risk assessment. **Type 'C' categorisation is therefore appropriate.**

5. Identification of affected populations

A safety risk assessment completed in accordance with GG 104 shall clearly consider the safety of populations, described in Table1.3, and record how each is or can be affected by the activity.

For this safety risk assessment, the populations affected by the activity and descriptions are noted in Table 5-1.

Table 5-1: GG 104 populations, sub-population and description

Population	Sub-population	Description
Workers	Traffic Officers	Traffic Officers directly employed by National Highways to attend and manage incidents on the schemes.
	National vehicle recovery contract operatives	Operatives providing free vehicle recovery services within the road works on a standard scheme
	Traffic management operatives	Operatives setting out, maintaining, and taking down TTM equipment
	Maintenance operatives	Operatives undertaking routine or reactive maintenance of infrastructure within the scheme area
	Construction operatives	Operatives engaged in the construction of the scheme and present in the working areas; operatives accessing and exiting the TTM
	Other personnel	Personnel contracted by National Highways i.e., incident support units, personnel carrying out survey and inspection work
Users	Customers	Road users including drivers and their passengers travelling through the road works and those walking, cycling and riding (as permitted). This includes users driving for work or commuting (i.e., salesperson or delivery driver), but not at work on the relevant part of the road network (i.e., HGV driver who is driving on a specific part of the road network or taxi driver who is taking passengers around)
	Emergency services	Police, ambulance and fire and rescue services that may be required to attend and manage incidents on the scheme
	Private vehicle recovery operatives	Private vehicle recovery operatives recovering stranded vehicles from the highway network

The safety risk assessment does not consider the population categorised as ‘other parties’ as this risk assessment looks at the generic safety risks associated with the HSS through road works only. **However, the scheme-specific risk assessments may result in circumstances where the ‘other parties’ population is potentially impacted and so where necessary this population should be included in the assessment.**

6. Scope

The scope of this safety risk assessment is to evaluate if the activity being considered in this assessment has an impact on the safety risk to affected populations, at a generic level. The baseline considered is the speed restriction of 50mph which is being evaluated against a higher speed restriction of 60mph.

The following assumptions have been made during the development of this safety risk assessment:

- TTM is designed to be safe and efficient, in accordance with standards
- Long-term road works as per TSM Chapter 8
- Adequate signage, road markings, and temporary traffic control devices installed in accordance with standard to guide road users safely through the road works
- TTM layout does not incorporate contraflow traffic arrangements, maintaining a traditional flow of traffic during the road works
- Where necessary, standard barrier systems deployed to separate traffic from the work area and ensure the safety of both road users and workers
- Emergency access routes will be maintained according to TTM requirements to facilitate prompt response in case of incidents or emergencies

For scheme-specific safety risk assessments, schemes may wish to further consider other aspects such as road conditions, lighting provision, traffic officer presence, overhead signals and TTM layout.

7. Safety baseline and safety objective

7.1. Safety baseline

The safety baseline for this safety risk assessment will be the road layout with road works at 50mph. Individual schemes would be required to establish their own baseline based on their scheme specifications. The HSS Guidance [4] and HSS Hazard Assessment Guidance [5] provides more information on selecting a baseline.

For the purpose of this safety risk assessment, a review of previous work and the monitoring have been undertaken in order to understand the expected safety performance. This included the 60mph through road works safety risk assessment [7] which considered the safety risk for all relevant populations of rolling out a 60mph speed limit within road works. This 60mph safety risk assessment established that, in terms of the number and severity of collisions, the risk associated with driving in road works does not appear to be significantly different to the risk of driving elsewhere on the motorway network and is well within the 'tolerable' range[4] set out in GD04, which is the predecessor to GG 104.

7.2. Safety objective

No specific safety objective is set since this is an overarching safety risk assessment. However for scheme-specific safety risk assessments, the safety objective shall be set to demonstrate that the safety performance for road users is at least as good as the baseline.

For workers, no numerical safety objective is required, and the safety risk criteria is to reduce risks in accordance with the ALARP[5] principle. In addition, outside normal operations (i.e., during road works) schemes will need to show that the ALARP safety risk criteria for workers, users and third parties is satisfied, as per GG 104.

[4] The Tolerability of Risk Triangle from GD04 set out the levels of individual risk which were considered unacceptable, tolerable with mitigation and broadly acceptable. The source of the range data was from Health and Safety Executive's Reducing risks, protecting people guidance.

[5] In this document, the term ALARP is used and can be taken as being equivalent to SFAIRP which is used in the Health and Safety at Work etc. Act 1974 [9] 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.

8. Hazards and risk

8.1. Hazard identification and analysis

Hazards for this safety risk assessment were identified and then scored during two sessions of the HSS hazard workshops. The attendees included internal subject matter experts, technical reviewers and safety risk consultants. The workshops were based on previous schemes which have run at 50/60mph and previous HSS assessments. Further detail about the previous work is detailed in Appendix A.

The hazard identification focussed both on typical events that would occur during the activity and potential new events that result directly from the operation of the road works. The list is limited to reasonably foreseeable hazards that may occur and is not an exhaustive assessment. As part of the analysis the risks to safety, likely outcomes of injury and reasonable control measures have been listed for each potential hazard. The list of hazards are provided in Table 8-1 below.

8.2. Safety risk analysis

After identifying all the hazards, the related risks were assessed for the relevant affected populations. The risk values for likelihood and severity were based on the template scoring matrix seen in GG 104, Table D.1 of Appendix D.

All the hazards identified were analysed for the likelihood and severity of the undesired outcome of the hazard, to give a risk level and category of either low, medium, or high. In the absence of robust accident or frequency data, a quantitative risk assessment cannot be conducted to calculate actual risk levels. Therefore, the assessment was purely qualitative in nature, and the risk values or “scores” are purely indicators of the level of safety risk associated with a hazard, with the mitigation in place. For this safety risk assessment, the safety risks posed by all hazards have been analysed. The analysis is detailed in Table 8-1 where the expected level of risk was determined for each identified hazard. The outcome is based on a consideration of a baseline where the existing road layout has road works and a 50mph speed restriction was compared with the proposed higher speed restriction scenario (60mph).

Risk and tolerability decisions are based on generic assumptions and have been made by safety risk specialists and lessons learnt from previous works. Where possible, evidence documented in the Safety and Benefits Realisation reports [6] has used to inform priority decisions regarding risk levels and effectiveness of the associated mitigations.

The safety risks and associated mitigations are shown in Table 8-1.

Table 8-1. Hazard identification and risk analysis table

No.	Hazard	Primary affected population	Primary sub-population	Network wide causation factors	Location specific risk factors	Undesirable outcome (collisions)	Typical Risk (road works at 60mph) with mitigations				Comments	Layout mitigations	Operational mitigations
							L	S	R	Class.			
1	Single stationary vehicle in running lane	Users	All	- Vehicle fault - Vehicle runs out of fuel/power - Driver discretionary stop - Driver taken ill - Failure to look - Loss of control - Driving too fast for conditions - Driver distraction due to road works - Reduced forward visibility due to weather conditions	- Speed limits and restrictions - Actual vehicle speeds - Availability and useability of street lighting - Availability and useability of ERTs - Availability and useability of electronic messaging signs - Variation in conditions between peak and off-peak periods - Proximity of service areas and fuel - Availability and useability of places of relative safety/gaps in the safety barriers - Traffic signing and road markings and their condition	- Moving and stationary vehicles - Two or more moving vehicles where all are road users (i.e. nose to tail and side swipe)	4	3	12	Medium	A broken down or stationary vehicle in a live lane during TTM restrictions is at risk of being struck by other vehicles, therefore is a hazard. If any impact was to occur, collisions are likely to be nose-to-tail collisions with the stationary vehicle, likely resulting in serious collisions. This is because during TTM restrictions, places of relative safety are limited and vehicle occupants may have to wait in the vehicle until assistance arrives. Other type of collisions might be side swipes between moving vehicles due to a driver trying to avoid colliding with the stationary vehicle.	None	- Existing or portable variable message signs - CCTV cameras and stopped vehicle detection (SVD) - Vehicle recovery - Speed enforcement
2	Incident in running lane e.g. multi-vehicle collision	Users	All	- Earlier collision remains uncleared - Failure to look - Loss of control - Driving too fast for conditions - Driver distraction due to road works - Reduced forward visibility due to weather conditions	- Speed limits and restrictions - Variation in conditions between peak and off-peak periods - Traffic signing and road markings and their condition	- Two or more moving vehicles where all are road users (i.e. nose to tail and side swipe) - Moving vehicle and obstruction	3	3	9	Low	The risk is anticipated to be lower than hazard 1 because it is anticipated that this hazard is likely to cause a flow breakdown, essentially causing vehicles to slow down and allowing drivers more time to react. Various TTM features over a short distance (e.g. narrow lanes) may also increase driver alertness subsequently reducing likelihood of collisions.	None	- Existing or portable variable message signs - CCTV cameras and SVD - Vehicle recovery - Speed enforcement
3	Debris in running lane	Users	All	- Failure to look - Reduced time to react to the obstruction ahead due to higher speeds - Loss of control - Non-compliance with speed limit or speed restriction - Driver distraction due to works	- Speed limits and restrictions - Variation in conditions between peak and off-peak periods- Signing (informing and updating customers)	- Two or more moving vehicles where all are road users (i.e. nose to tail and side swipe) - Moving vehicle and obstruction	4	2	8	Low	It is anticipated that debris may increase in running lanes during road works, which could pose a risk of injury if a vehicle strikes the debris or swerves to avoid the object. This is likely to lead to a slight injury should a collision occur .	None	- Existing or portable variable message signs - Speed enforcement
4	Vehicle drifting out of lane	Users	All	- Poor lane markings or studs/ghost markings (including lane keep technology not being able to identify lane markings) - Reduced visibility due to adverse weather conditions (including mist, fog, ice and snow) - Psychology safely level (affected by geometry, alignment) - Poor lane discipline - Driver fatigue - Driving under the influence	- Long length of works / TTM - Narrow lanes widths - Geometry, alignment - Ghosting / removing and replacing road marking (still visible to drivers and therefore causing confusion) - Placement of access and egress points - Placement of road restraint systems (RRS) and relevant departures from standard - Orientation of the road (affected by low winter sun)	- Two or more moving vehicles where all are road users - With temporary traffic management or roadside furniture - Road user and road worker	3	3	9	Low	This hazard is considered to be unintentional. This hazard could be made worse by for example long TTM and/or long journey times affecting driver attention and concentration. Vehicle occupants are at risk of being injured if the vehicle leaves the carriageway or strikes another vehicle/roadside furniture.	- Clear demarcation of lane markings - Consideration of works access and egress points - Suitable signage strategy - Suitable barriers	- Existing or portable variable message signs
5	Tailgating	Users	All	- Non-compliance with speed limit or speed restriction - Human behaviour, frustration from speed restriction - Perception of safety	- Free flowing traffic - Speed target - Reduced time to react to changes in road user behaviour, a collision or changes to road condition - Length of road works - Information/lack of information to drivers - Automatic vehicle braking system (specifically active during low speeds)	- Two or more moving vehicles where all are road users	3	3	9	Low	The speed restriction during road works will likely have an impact on the difference in speed between HGVs and other traffic. For example, the larger the headway the less likely drivers are going to tailgate. With the 60mph speed restrictions, HGVs will be limited to 56mph and cars can travel at 60mph resulting in less tailgating.	- Suitable signage strategy	- Existing or portable variable message signs - Speed enforcement

No.	Hazard	Primary affected population	Primary sub-population	Network wide causation factors	Location specific risk factors	Undesirable outcome (collisions)	Typical Risk (road works at 60mph) with mitigations				Comments	Layout mitigations	Operational mitigations
							L	S	R	Class.			
											Where a collision may occur, the severity of injuries are likely to be serious.		
6	Undertaking	Users	All	- Sudden/poor lane change manoeuvre due to reduced time to respond to a hazard - Queuing - Non-compliance with speed limit or speed restriction	- Narrow lanes restricting which lane vehicles can drive in - Dedicated lanes for diverges either as a lane drop or dedicated lane drop - Low speed restrictions - Conflicting signing - Failure to tail standard layout to road works/sites	- Two or more moving vehicles where all are road users	2	3	6	Low	A vehicle undertaking may not be seen by other drivers, particularly when undertaking an HGV. As the action is not always expected, speed is anticipated to be higher than lane changing (hazard 7) thus the severity of injury is likely to be serious. Evidence from the Safety and Benefits Realisation reports indicates that there are improvements in road user behaviour, specifically speed compliance.	- Suitable signage strategy - TTM in accordance with Chapter 8 of the TSM	- Existing or portable variable message signs - Speed enforcement
7	Lane changing at drivers discretion	Users	All	- Poor or extreme weather conditions and/or visibility - Unavoidable vehicle or debris - Queuing - Drivers wait until the last minute to merge to the correct lane - Left hand driving - Lane keep assist technology - Weaving	- Close junction spacing - Conflicting signing and road markings - Work access / frequency of them - Contraflow	- Two or more moving vehicles where all are road users	5	2	10	Medium	This hazard is considered to be intentional. The differences in speed between the HGVs and other traffic will be affected by the speed restriction. Where a collision occurs, the severity is likely to be slight. Evidence from the monitoring found that speed compliance with the posted speed limit was higher for 60mph than 50mph. Although the monitoring did not find a link with safety, it is considered that this could lead to a reduction in unsafe lane changing.	- Clear demarcation of lane markings - Suitable signage strategy	- Existing or portable variable message signs - Speed enforcement
8	Lane changing due to the road layout or conditions	Users	All	- Queuing traffic - Merging or joining traffic - Failure to look - Loss of control - Driving too fast for conditions - Driver distraction due to road works - Reduced forward visibility due to weather conditions	- Forced merge / taper - Difference between permanent and temporary TTM / longer merge / change in provision - Chicanes - Contraflow and proximity to junctions - Narrow lane widths	- Two or more moving vehicles where all are road users	4	2	8	Low	This is not likely to be throughout the scheme but at certain locations therefore, occurrence is not likely to be as high as hazard 7. Furthermore, drivers are informed on upcoming merges, whereas for hazard 7, a driver can decide at any time to change lanes without much knowledge to other drivers. Evidence suggests that there are safety benefits resulting from better compliance with speed restrictions, resulting in less lane changing.	- Clear demarcation of lane markings - Suitable signage strategy	- Existing or portable variable message signs - Methodology for placing and changing signs - Speed enforcement
9	Sudden loss of control	Users	All	- Poor lane markings or studs/ghost markings - Water on the surface - Driver not paying attention and misses the message - Driver does not see speed signs (i.e. due to theft of TM equipment (e.g. remotely operated signs)) - Driver fails to adopt or notice speed restriction or are confused due to the changing nature of the road works - Surface quality (i.e. broken surface / potholes etc.) - Obstruction up ahead - Reduced visibility due to adverse weather conditions - Excessive speed (including driving at speed that is unsuitable	- Ghosting / removing and replacing road marking (still visible to drivers and therefore causing confusion) - Traffic signing and road markings and their condition - Additional equipment which could potentially move into the lane - Speed limit detection in vehicles	- Two or more moving vehicles where all are road users - With temporary traffic management or roadside furniture - Road user and road worker	3	3	9	Low	A collision ”may happen” and injuries are likely to be serious.	- Clear demarcation of lane markings - Suitable signage strategy - Suitable barriers	- Existing or portable variable message signs - Speed enforcement

No.	Hazard	Primary affected population	Primary sub-population	Network wide causation factors	Location specific risk factors	Undesirable outcome (collisions)	Typical Risk (road works at 60mph) with mitigations				Comments	Layout mitigations	Operational mitigations
							L	S	R	Class.			
				for the conditions) - Driver fail to anticipate a downstream queue - Driver behaves hesitantly - Lane keep assist technology									
10	Rapid deceleration	Users	All	- Vehicle technology fault - RRS misaligned due to being struck by another driver/incident in running lane - Rolling road block being implemented - Surface quality (i.e. broken surface / potholes etc.) - Inadequate signposting and lighting - Queuing - Driver/vehicle mis-reads the speed signs - Conflicting speed signs	- Proximity of infrastructure / roadside assets (may cause overreaction by autonomous vehicles / CAV braking - TM affects capacity - Traffic signing and road markings and their condition - Implementation of rolling road block	- Moving and stationary vehicles - Two or more moving vehicles where all are road users - Moving vehicle and obstruction - With temporary traffic management or roadside furniture	3	2	6	Low	When a lead vehicle suddenly decelerates, there is a risk the driver following behind is not able to respond or make safe manoeuvres in time, resulting in a collision or evasive action. If any impact was to occur, the injuries are expected to be slight due to the reduction in speed.	- Clear demarcation of lane markings - Suitable signage strategy - Suitable barriers	- Existing or portable variable message signs - Speed enforcement
11	Rapid acceleration	Users	All	- Linked to rapid deceleration, tidal waves - Loss of control - Driver/vehicle mis-reads the speed signs - Conflicting speed signs - Cruise control (adaptive cruise control)	- End of speed restriction / lane restriction - Speed limits and restrictions	- Two or more moving vehicles where all are road users - With temporary traffic management or roadside furniture	2	3	6	Low	This hazard is less likely to occur than hazard 10 hence the lower likelihood. However, the severity is likely to be serious due to the increasing of speed.	- Clear demarcation of lane markings - Suitable signage strategy - Suitable barriers	- Existing or portable variable message signs - Speed enforcement
12a	Driver enters road works intentionally (to gain progress / advantage)	Users	All	- No alternative safe place to stop in the event of a breakdown - Congestion - Driver frustration - Motorist drives right up to the last second and then try to force themselves in. If other drivers don't let them in, they may enter the work zones and endanger the lives of workers	- Availability of places of relative safety/gaps in the safety barriers - Contraflow system - Junction closures	- Two or more moving vehicles including works vehicles	3	2	6	Low	Most incursions are intentional (e.g. to gain an advantage or to seek refuge due to vehicle breakdown). The hazards is often driven by frustration and stress. If this hazard is realised the severity is likely to result in slight injuries to road users.	- Suitable signage strategy - Gates / emergency access points within the safety barrier - Suitable barriers - Suitable buffer zone between the safety barrier and work zone	- Existing or portable variable message signs
12b	Driver enters road works intentionally (to gain progress / advantage)	Workers	Construction operatives on foot, maintainers on foot	- No alternative safe place to stop in the event of a breakdown - Congestion - Driver frustration - Motorist drives right up to the last second and then try to force themselves in. If other drivers don't let them in, they may enter the work zones and endanger the lives of workers	- Availability of places of relative safety/gaps in the safety barriers - Contraflow system - Junction closures	- Road user and road worker	3	4	12	Medium	A vehicle may strike an operative on foot which may result in fatal injuries. The combination of the vehicle's speed and the vulnerability of the pedestrian significantly raises the risk of a fatal outcome.	- Suitable signage strategy - Gates / emergency access points within the safety barrier - Suitable barriers - Suitable buffer zone between the safety barrier and work zone	- Existing or portable variable message signs
13a	Driver enters road works unintentionally (i.e. does not understand the layout)	Users	All	- Safety barrier design insufficient for HSS - Loss of control - Drivers follow worker vehicles into the works access - Sudden/poor lane change manoeuvre - Poor lane markings/studs - Driver confusion due to speed	- Narrow lane widths - Traffic signing and road markings and their condition - Contraflow system - Ghosting / removing and replacing road marking (still visible to drivers and therefore causing confusion)	- With temporary traffic management or roadside furniture - Two or more moving vehicles including works vehicles	2	3	6	Low	Unintentional incursions are less likely to occur in comparison to intentional incursions. However, unintentional incursions are likely to lead to a more severe outcome due to users entering the work area in error or as a result of confusion which may impact their awareness of other hazards. Overall	- Suitable signage strategy - Gates / emergency access points within the safety barrier - Suitable barriers	- Existing or portable variable message signs

No.	Hazard	Primary affected population	Primary sub-population	Network wide causation factors	Location specific risk factors	Undesirable outcome (collisions)	Typical Risk (road works at 60mph) with mitigations				Comments	Layout mitigations	Operational mitigations
							L	S	R	Class.			
				restriction signs - Driver confusion due to poorly marked worked access and exit points - Drivers are distracted							the risk classification is considered the same as hazard 12a.	- Suitable buffer zone between the safety barrier and work zone	
13b	Driver enters road works unintentionally (i.e. does not understand the layout)	Workers	Construction operatives on foot, maintainers on foot	- Safety barrier design insufficient for HSS - Loss of control - Drivers follow worker vehicles into the works access - Sudden/poor lane change manoeuvre - Poor lane markings/studs - Driver confusion due to speed restriction signs - Driver confusion due to poorly marked worked access and exit points - Drivers are distracted	- Narrow lane widths - Traffic signing and road markings and their condition - Contraflow system - Works access near junction diverge	- Road user and road worker	2	4	8	Low	A vehicle may strike an operative on foot which may result in fatal injuries. The combination of the vehicle's speed and the vulnerability of the pedestrian significantly raises the risk of a fatal outcome.	- Suitable signage strategy - Gates / emergency access points within the safety barrier - Suitable barriers - Suitable buffer zone between the safety barrier and work zone	- Existing or portable variable message signs
14	Workers entering or exiting work site	Users	All	- Loss of control - Reduced time to react to a traffic management vehicle diverging or merging with traffic - Poor or extreme weather conditions and/or visibility - Non-compliance with speed limit or speed restriction - Poorly located works access or exit points relative to the HSS - Works access/exit points located adjacent to lane 3 where vehicles travelling at or in excess of HSS is more likely	- Insufficient design of works access or exit points relative to the HSS - Location of works access and egress - Verge / central reserve works - Sufficient space for access and egress points - Frequency / number of access points - Number of closed lanes - Proximity of junctions may affect how other drivers are behaving - Proximity of conflict zones - The higher the speed the more deceleration required and following drivers may not anticipate it - Training instruction on use (could be site specific)	- Two or more moving vehicles including works vehicles - Road users and traffic management or construction vehicles entering or exiting the works site	2	2	4	Low	The increased speed differential between road works vehicles and road users at works access and exit points may affect the likelihood and severity of a collision. As works vehicles are likely to be Chapter 8 livery on vehicles, the likelihood of a collision is considered to be 'unlikely'.	- Consideration of works access and egress points - Suitable signage strategy - TTM in accordance with Chapter 8 of the TSM - Suitable buffer zone between the safety barrier and work zone	- Existing or portable variable message signs - Speed enforcement
15a	Live carriageway working	Users	Ex-vehicle pedestrian, Emergency services on foot, private recovery service on foot	- Vehicle recovery - Poor or extreme weather conditions and/or visibility - Loss of control - Non-compliance with speed limit or speed restriction - Exposure to traffic when awaiting incident support (i.e. Traffic management and/or impact protection vehicle)	- Speed limits and restrictions - Variation in conditions between peak and off-peak periods - Traffic signing and road markings and their condition - Narrow lane widths	- Moving and stationary vehicles - Two or more moving vehicles where all are road users - Moving vehicle and obstruction	3	4	12	Medium	The risk posed to emergency services / private recovery service (operatives on foot) from live lane working is classified as 'medium'. An increase in incidents and the severity that may occur means that they may need to attend more incidents. A vehicle may strike an operative working in a live lane. Where a collision occurs, the severity of injury is likely to be fatal due to the operative likely being on foot.	- Suitable signage strategy - Gates / emergency access points within the safety barrier	- Existing or portable variable message signs - CCTV cameras and SVD - Vehicle recovery - Speed enforcement
15b	Live carriageway working	Workers	Traffic officer on foot, recovery service vehicle on foot	- Vehicle recovery - Stationary vehicle in a live lane - Poor or extreme weather conditions and/or visibility - Loss of control - Non-compliance with speed limit or speed restriction - Exposure to traffic when awaiting incident support (i.e. Traffic management and/or impact protection vehicle) - Incident management	- Speed limits and restrictions - Variation in conditions between peak and off-peak periods - Traffic signing and road markings and their condition - Narrow lane widths	- Moving and stationary vehicles - Two or more moving vehicles where all are road users - Moving vehicle and obstruction - Road user and road worker	2	4	8	Low	Traffic officers on foot and vehicle recovery operatives are at risk of being struck by vehicles when working in a live lane. If any impact was to occur, injuries are likely to be fatal due to the operative likely being on foot.	- Suitable signage strategy - Gates / emergency access points within the safety barrier	- Existing or portable variable message signs - CCTV cameras and SVD - Vehicle recovery - Speed enforcement

No.	Hazard	Primary affected population	Primary sub-population	Network wide causation factors	Location specific risk factors	Undesirable outcome (collisions)	Typical Risk (road works at 60mph) with mitigations				Comments	Layout mitigations	Operational mitigations
							L	S	R	Class.			
15c	Live carriageway working	Workers	Maintainers on foot, TM operatives on foot	- Poor or extreme weather conditions and/or visibility - Loss of control - Non-compliance with speed limit or speed restriction - Installation/ removal of traffic management - Maintenance of barriers and TM signs and cones following barrier strikes	- Speed limits and restrictions - Variation in conditions between peak and off-peak periods - Traffic signing and road markings and their condition - Narrow lane widths	- Moving and stationary vehicles - Two or more moving vehicles where all are road users - Moving vehicle and obstruction - Road user and road worker	2	4	8	Low	Workers on foot are at risk of being struck by vehicles when installing/removing TM. The risk posed to workers from live lane working is considered to be lower than the risk posed to road users. This is due to the procedures workers follow and the liveried vehicles and Chapter 8 TTM. Where a collision occurs, the severity of injury is likely to be fatal due to the operative working on foot.	- Suitable signage strategy - Gates / emergency access points within the safety barrier - TTM in accordance with Chapter 8 of the TSM	- Existing or portable variable message signs - CCTV cameras and SVD - Vehicle recovery - Speed enforcement
16	Driver struggles to adjust to variable lighting levels or dazzled while driving	Users	All	- Short sections of lit and unlit carriageway / transition to unlit from a lit section - Works vehicle headlights driving or stationary facing oncoming traffic - Vehicle mounted task lighting positioned to affect passing drivers - Poorly positioned static task lighting - Position/placement of signs and size (i.e. too late or bad location) - High proportion of older/light sensitive drivers	- Adjacent roads - local or private roads parallel to site route (road lighting and headlights) - Transverse lit routes over site route - Adjacent lit properties include static or reactive security lights - Contraflow	- Moving and stationary vehicles - With temporary traffic management or roadside furniture - Two or more moving vehicles including works vehicles	2	3	6	Low	Driver struggles to adjust to variable lighting levels or dazzled while driving. Older drivers and drivers with neurological conditions are disproportionately affected by this hazard. Approximately 20% of the population are especially light sensitive.	None	- Existing or portable variable message signs - Methodology for placing and changing signs - Appropriate sign checks

8.3. Safety evaluation

The evidence collated over time from the trial schemes and later schemes has shown that, for schemes greater than 15km, increasing the speed restriction through road works does not worsen safety and improves speed compliance [6].

Hazards that may be realised as a result of the increased speed restriction have been identified and discussed within this safety risk assessment. The safety risk assessment suggests that, following the adoption of the HSS restriction in/through road works, the majority of the hazards are classified as 'low' risk and can be managed by the mitigations. However, three hazards are classified as 'medium' risk, particularly due to the high severity, and additional control measures would be required to manage their risk. The three medium hazards are as follows:

- Single stationary vehicle in running lane (users)
- Driver enters road works intentionally (to gain progress / advantage) (workers)
- Live carriageway working (users)

It is essential that scheme-specific risk assessments are conducted, and appropriate mitigations are implemented to reduce safety risk to all affected populations. However, as suggested by this safety risk assessment, in order to meet the safety objective and safety criteria for both users and workers, additional control measures may need to be considered by the schemes.

8.4. Safety risk mitigations

The hierarchy of control measures for risk management has been applied to identified mitigations where applicable, to reduce safety risk as much as possible. Control measures are identified either as recommended or additional.

- **Recommended mitigations**: these are control measures that are recommended as part of the design or operation and the risk classification takes these into consideration.
- **Additional control measures required**: these are additional measures that will need to be considered by each scheme in their scheme-specific safety risk assessments as a way to reduce the safety risk to meet the safety objective or to manage risk to ALARP. These would need to be progressed to meet the requirements of GG104.

The recommended mitigations in this safety risk assessment are as follows:

Layout mitigations

1. Clear demarcation of lane markings
2. Consideration of works access and egress points
3. Suitable signage strategy
4. Gates/emergency access points within the safety barrier
5. Suitable barriers
6. TTM in accordance with Chapter 8 of the TSM
7. Suitable buffer zone between the safety barrier and work zone

Operational mitigations

1. Existing or portable variable message signs
2. CCTV cameras and stopped vehicle detection systems
3. Vehicle recovery

4. Methodology for placing and changing signs
5. Appropriate sign checks
6. Speed enforcement

Further mitigations have been considered during this safety risk assessment and detailed in the HSS Hazard assessment guidance [5].

ALARP would be dependant on the costs of the measures on the scheme specific basis and this would need to be demonstrated in a scheme-specific safety risk assessments.

9. Update requirements

This report documents the safety risk assessment for introducing the HSS restriction during road works. The safety risk assessment is a live document and will be reviewed and updated by National Highways when necessary. Updates should be made if there are any significant changes to the safety risk discussions detailed in Section 8.

10. Validation and monitoring requirements

Should it be necessary to evaluate the success of the scheme, the performance can be validated against the baseline and objectives set out by schemes.

References

[1]	DMRB General Principles and Scheme Governance for GG 104 - Requirements for Safety Risk Assessment, Revision 0
[2]	A Step by Step Guide to using GG104 Requirements for Safety Risk Assessment
[3]	DMRB General Principles and Scheme Governance for GD 904 - The use of highest safe speed limits including advice on using 60mph at/through road works, Revision 0
[4]	Implementing the highest safe speed within road works - Guidance, 2022
[5]	Implementing the highest safe speed within road works - Hazard assessment guidance, 2022
[6]	HSS Safety and Benefits Realisation Reports, AJJV (2022)
[7]	60mph through road works safety risk assessment. Mouchel (2017)
[8]	DMRB GG 117 The design and implementation of temporary traffic management and road works
[9]	Health and Safety at Work etc Act 1974

Appendix A Safety risk assessment consultation and evidence base

Hazards have been identified through consultation with technical experts, project partners responsible for scheme-specific risk assessments and the review of hazard logs and risk assessments developed for other studies including:

- The National Highways smart motorway hazard log, as this provides an overview of generic hazards on the SRN that may be impacted by a change in speed restriction
- GD04 safety risk assessment regarding the use of an on-road 55mph speed restriction through road works (WSP)
- GD04 safety risk assessment for the use of an on-road 60mph speed restriction through road works (Mouchel)
- GD04 safety risk assessment for the potential use of 55mph and 60mph speed limits on sections of road works with narrow lanes (TRL)
- GD04 safety risk assessment for vehicle breakdown incursions in road works (TRL).
- Highest Safe Speeds Hazard Register (AtkinsRéalis)

A reference list of the documents described above is outlined below:

1. (Steele, 2017) *60mph through road works safety risk assessment*. *Mouchel.*
2. *The National Highways Generic Hazard Impact Log*. 2012. National Highways.
3. Wallbank C., Robbins R., Tailor A. & Chowdhury S. (2017). CPR2384 *Interim report for the simulator trial of 55 and 60mph through roadworks*. TRL.
4. Wallbank C., Balfe N. & Chowdhury S. (2017). CPR2416 *Interim report for the simulator trial of 55 and 60mph through roadworks – A follow-on study*. TRL.
5. Wallbank C., Palmer M., Hammond J. & Myers R. (2017). *CPR2383 Interim report for the on-road trials of 60mph on the M1 J32-35a scheme*. TRL.
6. Wallbank C., Hammond J., Myers R. & Chowdhury S. (2017). CPR2382 *Interim report for the on-road trials of 60mph on the A1 Leeming to Barton scheme*. TRL.
7. Wallbank C., Chowdhury S., Fleetwood R. & Myers R. (2017). CPR2417 *Interim report for the on-road trials of 60mph on the M5 J4a-6 scheme*. TRL.
8. Glaze S., Chowdhury S., Fleetwood R. & Lodge C. (2018). CPR2538 *Narrow Lanes Simulations 55mph and 60mph*. TRL.
9. *GG 104 Requirements for Safety Risk Assessment*s. 2018. National Highways.
10. Pressley A., Posner R., Tailor A. (2017). SPaTS 1-344 *Reducing incursions from breakdowns and driver confused*. TRL.

Consultation with National Highways supply chain specialists in operational safety, risk management, traffic management and vehicle restraint systems were held to inform the following areas of the safety risk assessment:

- Hazard identification
- Identification of causes associated with the hazards
- Identification of mitigations associated with the hazards
- Risk tolerability decisions.

Further consultation with experts will be carried out as required throughout the project.

Appendix B Programme level Equality Impact Assessment Screening Analysis

Equality Impact Assessment (EqIA)

Screening Analysis and Monitoring Template

Before carrying out an Equality Impact Screening or Assessment familiarise yourself with National Highways' guidance on the subject. The Equality Impact Screening and Assessment procedure applies in terms of employment and the delivery of services.

The term 'Policy/Practice' is used throughout the document. This applies to all policy/practice/project/schemes/building considerations/initiatives/guidance and functions across all areas of our business.

EQUALITY IMPACT SCREENING AND ASSESSMENT			
Name of Practice/Policy	**Highest Safe Speed (SPaTS2 Task 083) – June 2022**	**Proposed or Current**	**Current**
Person Completing the Assessment		**KC**	
Directorate		**Policy lead – SES Implementation - MP/Ops**	
Date: June 2022		**EqIA Register Ref No: (Obtained from the EDI Advocate)**	**SES149**

A: In this section, outline the aims, purpose, desired benefits and expected outcomes of the practice/policy, identifying the customers, staff or stakeholders involved or affected.

Equality Impact Assessment Background

This Equality Impact Assessment (EqIA) is used to assess a scheme or policy for its potential impact on the Protected Characteristic Groups (PCGs) outlined in the Equality Act 2010, namely:

- age;
- gender;
- gender reassignment (Incl. transsexual and transgender);
- disability;
- ethnicity;
- religion;
- sexual orientation;
- marriage and civil partnerships; and
- pregnancy and maternity.

This EqIA aims to identify the range of impacts relevant to the PCGs and specifically identify those that could have a disproportionate impact on PCGs. The assessment aims to ensure that the positive impacts of the scheme or policy are maximised, and any negative impacts are minimised or effectively mitigated. The inclusion of EqIAs in scheme and policy design helps National Highways fulfil its responsibilities under the Equality Act 2010, and the associated Public Sector Equality Duty (PSED).

An EqIA is a live document throughout the project lifecycle, that should be reviewed at each stage of a project's progression, to ensure that any appropriate impacts are identified, or ruled out, and actioned as appropriate.

Project Background

Road works are essential for maintaining and improving National Highways' network and the number of roadwork schemes has increased in recent years due to improvement programmes such as smart motorway upgrades. Customer insight identified road works as a source of frustration and dissatisfaction for customers; and that people would prefer higher speed limits in road works[6].

National Highways commissioned a number of trials to investigate the adoption of a 'highest safe speed limit'. Following successful trials, the customer service ambition is *"to be using the highest safe speed limit in 75% of major motorways projects by 2022".*

Trials

The first phase of the trials, which commenced in 2016, considered both 55mph and 60mph speed limits. The findings showed that safety wasn't compromised and customers preferred driving at 60mph.

The second phase of trials, which commenced on road in 2019, have considered whether a 60mph speed limit in roadworks can safely be used in a wider range of roadworks scenarios. These scenarios include:

- **Permanent** – 60mph running over 24/7 period.
- **Contraflow** – Design roadworks for 60mph using a contraflow arrangement and run at 60mph on the carriageway where main works activity is not taking place.
- **Dynamic** – Design roadworks to 60mph but only use 60mph during non-working days, that is, Sundays/Bank holidays/Christmas shutdown.

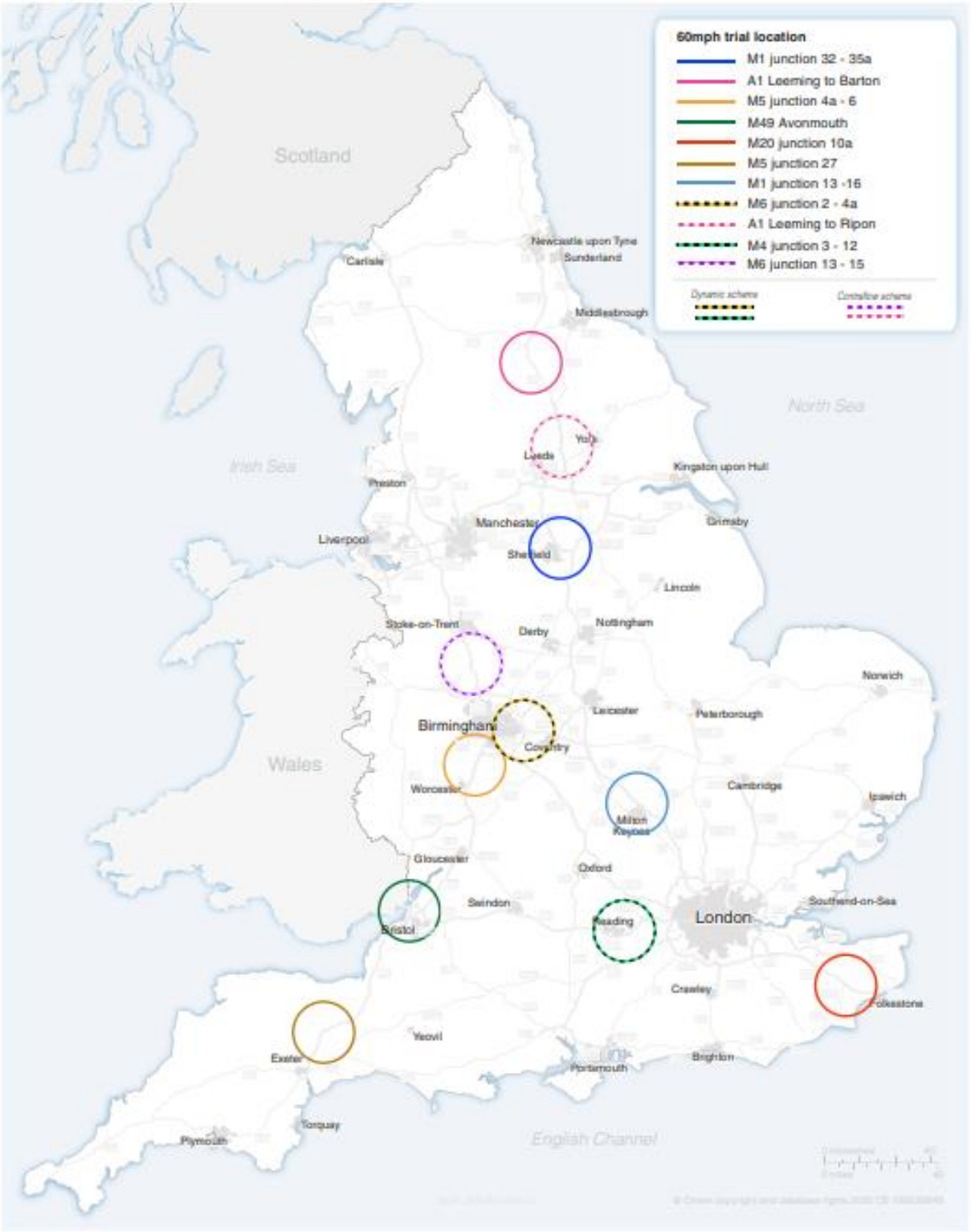
A total of 13 roadwork schemes were used in the Highest Safe Speed monitoring as detailed below, and displayed visually in Figure 1:

Scheme	Speed limit
M23 J8-10	Fixed 50mph
M62 J10-12	Fixed 50mph
M27 J4-11	Fixed 50mph
M49 Avonmouth	Fixed 50mph & Fixed 60mph
M5 J27 Willand	Fixed 50mph & Fixed 60mph
M20 J10a	Fixed 50mph & Fixed 60mph
M1 J13-16	Fixed 50mph & Fixed 60mph
A1(M) Leeming to Ripon	Fixed 50mph & Fixed 60mph
M6 J13-15	Fixed 50mph & Fixed 60mph
M6 J10	Fixed 60mph
M11 J7a	Fixed 60mph
M6 J2-4	Fixed 50mph & Dynamic 50 / 60mph
M4 J3-12	Fixed 50mph & Fixed 60mph & Dynamic 50 / 60mph

[6] National Highways – Connecting our customers 2019-20

Transport Focus – Incidents and roadworks; a road user perspective 2016

Figure 1: 60mph All Speed Limit Trials



Further information on the project and policy can be found here:

https://nationalhighways.co.uk/industry/60mph-speed-limit-through-roadworks/

Previous work on the Highest Safe Speed indicated that benefits can be gained from adopting the highest safe speed in road works, but further monitoring would be beneficial. Incidents such as collisions and live lane

breakdowns are relatively rare events, so gathering more data over a longer period and from more schemes is required to provide a bigger dataset and more robust results. This will need to be considered with National Highways and an appropriate owner for this requirement identified. This is due to the project encompassing several divisions in National Highways (see directorate notes on page 1).

As such, the following performance metrics are being evaluated for the project:

Measure	Performance metric	Description
Safety measure (SM)	SM1 – Speed compliance	Average speed through the road works
	SM2 – Incidents	The number and severity of incidents, including road traffic collisions and live lane breakdowns
	SM3 – Recovery	The length of time to recover stranded vehicles
	SM4 – Roadworker injury	The number and severity of roadwork injuries
Benefit measure (BM)	BM1 – Speed	Improved compliance with the posted speed limit
	BM2 – Journey time	Journey time savings for road users
	BM3 – Customer satisfaction	Improved customer satisfaction with road works
	BM4 – Feeling of safety	Greater feeling of safety for road users

The *TO0083 Highest Safe Speed Safety and Benefits Realisation Report* (November 2021) summarised the benefits associated with the Highest Safe Speed. These were noted to be:

- The average speed for 60mph in road works is 55.6mph, 7.5mph higher than that of 50mph. There is a saving of 10 seconds per vehicle per mile for 60mph speed limits compared to 50mph. This translates to a total delay saving of approximately 3,800,000 vehicle hours over the three schemes assessed, which equates to just over £59 million of economic savings.
- Overall, 97% of respondents felt safe when travelling through road works. The main concerns surrounding safety from those who did not feel safe are related to narrow lanes and feeling intimidated by HGVs. On the scheme level, there is little or no difference in the feeling of safety between 50mph and 60mph. Slightly more respondents felt the speed limit was appropriate at 60mph compared to 50mph.
- Customer satisfaction with road works has been consistent at approximately 54%, with a record high of 67% reached in April 2020. This together with the higher than average satisfaction levels in May 2020 and June 2020 could be attributed to the COVID-19 pandemic when traffic flows were lower. For context, a similar trend was seen nationally with respect to overall satisfaction with the SRN.
- Regarding the 60mph speed limit trials, 55% of the respondents think it is a good thing. Better speed compliance, improvements to journey time and improved driver behaviour are considered to be the main benefits of adopting 60mph in road works, while concerns over the safety of road workers and road users have also been raised.

It should be noted that these overall benefits are found when combining all trial sites. There may be individual considerations or findings for each scheme depending on the character of the route. Each route is therefore also looked at in isolation, and feedback is sought on the roadworks from road users through Customer Audits[7].

In addition, some additional evidence on experience through roadworks is gathered through National Highways customer insight research – HighView. Where appropriate, this data is used to measure customer experience of travelling through trial sites.

[7] Customer Audits are undertaken by Ipsos MORI on behalf of National Highways using a mystery shopping panel. These audits are done each month by asking 10 customers to drive through all major project schemes as a passenger and provide feedback to 35 key questions.

Further information on the insight gathered from the Customer Audits and HighView can be found in the *TO0083 Highest Safe Speed Safety and Benefits Realisation Report.*

Customers, Staff and Stakeholders

The customers, staff and stakeholders involved or affected by the policy include:

- **Customers** – UK road users, including HGV drivers travelling through roadworks on the strategic road network (and through trial sites). Impacts of the policy and trials may also be felt by communities surrounding the strategic road network.
- **Staff** – contractor staff involved in roadworks on the strategic road network.
- **Stakeholders** – Including local residents, local authorities, public services, and parties with land impacted by roadworks

B: SCREENING (Stage 1) **Questions considered to establish impacts from the outset for new or changing policies/practices**	**Sex**	**Religion or Belief**	**Age**	**Disability**	**Race**	**Sexual Orientation**	**Gender Re-assignment (include transsexual and transgender)**	**Pregnancy & Maternity**	**Marriage & Civil Partnership**
1: Is there any indication or evidence that different groups have different needs, experiences, issues or priorities in relation to the practice/policy?	N	N	Y	Y	Y	N	N	Y	N
2: Is there evidence or an indication of higher or lower uptake by different groups?	N	N	N	N	N	N	N	N	N
3: Do people have different levels of access? Are there social or physical barriers to participation (e.g. language, format, physical access)?	N	N	Y	Y	Y	N	N	Y	N
4: Is there an opportunity to advance equality or foster good relations by altering the policy/practice?	N	N	Y	Y	Y	N	N	Y	N
5: Is there an opportunity to advance equality or foster good relations by working or engaging with other organisations or the wider community?	N	N	Y	Y	Y	N	N	Y	N
6: Is there stakeholder (staff, Trade Unions or public) concern about the policy/practice in terms of actual, perceived or potential discrimination against a particular group?	N	N	N	N	N	N	N	N	N
7: Is there potential for, or evidence that any part of this policy/practice may adversely affect equality of opportunity for all or may harm good relations between different groups?	N	N	N	N	N	N	N	N	N
8: Is there any potential for, or evidence that any part of the policy/practice could discriminate indirectly or directly? (Consider those who implement it on a daily basis).	N	N	N	N	N	N	N	N	N

C: The rationale behind the rating (at Section B) and details of the evidence utilised to inform the screening decision.

The ratings provided in Section B have been identified due to a range of considerations for some PCGs (specifically age, disability, race and pregnancy and maternity). These considerations include:

- **Safety and perceived safety for road users** – associated with travelling at higher speeds through roadwork conditions, when in narrow lanes, and more opportunity for overtaking.
- **Reduced intimidation from HGVs**– initial feedback on the trial sites and consultation as part of this EqIA (see Section F) identified that 60mph gave more opportunity to overtake or move away from HGVs because they are speed limited (to 56mph in the UK), which was not the case when travelling at 50mph where HGV tailgating was noted. Whilst this could be relevant for all road users, it is most likely to impact those who are less confident drivers and who therefore feel less intimidation with a higher speed.
- **Accessibility of information on the speed limits within roadworks** – which needs to provide clear guidance to road users, reminding them of the speed limit at regular intervals, without providing too much information which may distract drivers, or overwhelm those with sensory processing conditions.
- **Accessibility of information on the policy** – ensuring it is available, upon request, in a variety of formats to assist those with specific needs or whom do not have English as a first language (as per National Highways standard practice).
- **What to do in the event of an emergency** – when travelling at higher speeds through roadworks / traffic management (TM) particularly for those who have disabilities. Although it is noted that this speed limit is lower than the majority of the SRN and therefore standard National Highways advice and practice should be implemented.
- **Safety for roadworks staff** – the impact on actual or perception of safety for those working alongside the live carriageway.

Upon consideration of the above, **a full assessment is considered necessary** to assess the likelihood, magnitude and nature of the above impacts, and ensure they are reviewed and monitored.

Confirmation – State whether a full equality impact assessment is required (Tick box as appropriate)		
Yes	✓	• Adjustment required to prevent potential discriminatory practice and to remove barriers to equality of opportunity. • Further evidence/consultation required to enable a sound equality decision. **Proceed to Sections D – H**
No		• **The policy/practice is robust in terms of equality.** • **The impact on different groups is considered to be 'neutral' with no risk of discrimination and any minor impacts can be justified.** **Proceed to Section E1 and Sign-off at H**

D: ASSESSMENT (Stage 2)

The level of impact on protected characteristics gauged from available information, research, consultation

Equality Group (Protected Characteristics)	Positive Impact	Negative Impact	Neutral Impact	Summary of reasons and evidence sources (data research and consultation) supporting this analysis
Sex			✓	No considerable or disproportionate impact considered for this PCG.
Religion or Belief			✓	No considerable or disproportionate impact considered for this PCG.

Age	✓	✓		New and older drivers may find road works and the temporary traffic management (TTM) associated with them stressful environments to travel in. The ability to use the highest safe speed may provide benefits for these road users if they are able to travel through the roadworks in a shorter journey time, and experience less intimidation from HGVs / large vehicles. Information along the route should be accessible to inform road users of the speed limit, particularly in dynamic situations, and policy wide information should also be fully accessible (or available in accessible formats upon request). There may be some potential negative impacts for this group in regard to the perceived impact of increased speed in the event of an emergency (particularly in TTM, narrow lanes, contraflow etc.). However all schemes where the highest safe speed is used will also include free recovery to assist road users through the TTM, and may therefore present enhanced conditions compared to the rest of the network (which is generally at a higher speed). Whilst this is true, there is a lack of infrastructure to report issues in lanes (i.e. red 'x' signs) compared to elsewhere on the network i.e. where there is all lane running, may create concerns for road users, particularly unconfident users.
Disability	✓	✓		The disability PCG encompasses a wide range of conditions that may impact on travel, and therefore opinion / experience with changes to SRN conditions. The potential impacts of the policy for this group would be 1. **Provision of accessible information:** Signage along the route to inform road users of the highest safe speed limit should be clear and well placed to ensure it is accessible for all. This will be particularly important where there is dynamic speed limits within roadworks and assist those with sensory processing conditions. Wider information on the policy should also be available in accessible formats (i.e. consider colour blindness, large print, pictorial information) where appropriate and requested to enhance accessibility, as per National Highways standard practice. 2. **Perceived safety and intimidation issues when travelling on the SRN at higher speeds:** Data gathered through HighView research[8] (see Section F), shows: • Overall satisfaction of travelling on the SRN is generally consistent between those who have a disability (77.6%) and those who do not (77.1%); • Around 53.3% of road users with a disability thought the trial was a good thing (2% less

[8] HighView respondents were asked 'Do you have any long-term physical or mental health conditions or illnesses lasting or expected to last 12 months or more?' and on average 15.5% of the sample each month (over 3 years) stated 'Yes' and are classified here as those who have a disability.

				than those without a disability); and 17.7% of road users with a disability thought the trial was a bad thing, (4% more than those without a disability). • Although a lower percentage of road users with a disability thought the speed limits trialled were about right (66.7% compared to 71.9%), a higher proportion of disabled road users (15.2%) thought the trialled speed limit was too low compared to those without a disability (13.7%). Similarly, a higher proportion of those with a disability thought the speed limit was too high (3.8%) compared to those without a disability (2.3%) • Feedback from the Roads for All forum suggested that there were less perceived intimidation issues when travelling at a higher speed, particularly around HGVs, and specifically in narrowed lanes. There was support from this group for the introduction of the highest safe speed. However it should be noted that there have previously been safety concerns raised by this group for all lane running schemes and disabled users. 3. **What to do in the event of an emergency when travelling at a higher speed**. This is consideration point for this PCG who may not be able to exit their vehicle should they need to when in live lanes (i.e. TM, all lane running, narrow lanes, contraflow conditions etc.) The increased speed limit through roadworks may worsen this issue (or perception of this issue) for the disability PCG. However it is noted that all schemes where the highest safe speed will be used will include free recovery assistance, and this may therefore provide an enhanced service when compared to business as usual conditions on the remainder of the SRN (where the speed limit is generally higher). Whilst this is true, there is a lack of infrastructure to report issues in lanes (i.e. red 'x' signs) compared to elsewhere on the network i.e. where there is all lane running, may create concerns for road users with disabilities. The RFA have previously noted concern over the emergency situation for disabled users, particularly in all lanes running schemes, and therefore this should be researched further to develop understanding and any associated policy/ practice for those with a disability. Overall there may be potential benefits and disbenefits to this PCG as a result of the policy. The slight difference of opinion displayed within the HighView data should be monitored going forward, and insight gathered from each individual scheme (i.e. through Customer Audits) to ensure there are no considerable differences in experience between those who have a disability and those who do not. In addition, there is a case to enhance our insight in this area by undertaking specific activities to understand the

				experiences / needs / concerns of those with disabilities – and to allow comparison of those with differing disabilities (i.e. physical compared to cognitive impairments)
Race			✓	No considerable or disproportionate impacts on the assumption that all communication materials on the policy will consider the needs of those who do not have English as a first language (as per National Highways standard practice) which will be particularly important for foreign drivers and those who do not have English as a first language.
Sexual Orientation			✓	No considerable or disproportionate impact considered for this PCG.
Gender Reassignment (Incl. Transsexual and Transgender)			✓	No considerable or disproportionate impact considered for this PCG.
Pregnancy & Maternity	✓			Those travelling whilst pregnant, with babies or small children may find road works and the traffic management associated with them stressful environments to travel in. The ability to use the highest safe speed is likely to provide benefits for these road users if they are able to travel through the road works in a shorter journey time, and experience less intimidation from large vehicles. Similar to age and disability PCGs, the increased speed may present perceived negative impacts on what to do in the event of an emergency; however the conditions where the highest safe speed is used are generally enhanced compared to BAU on the SRN (i.e. free recovery, lower speeds). The positive impacts of the policy for this group could be enhanced by ensuring there is adequate signage and information in place within roadworks to inform users of the speed limits adopted, and, as per standard practice, provide advanced notice of road works to allow those who do not wish to travel through traffic management the opportunity to alter their travel route.
Marriage & Civil Partnership			✓	No considerable or disproportionate impact considered for this PCG.

Potential Risks Identified – Including insufficient information to make robust decisions (Yes/No ticked as appropriate)

No		
Yes (Mitigating action shown in Section F)	✓	**Identified Risks:** • Current customer audit data used for monitoring project may not provide sufficient information – particularly around the experience of disabled users. …… • Project Managers of highway schemes may not be fully aware of requirements around HSS and how to monitor and link data into EqIAs for each scheme…… • …… • ……

E: Options: The rationale behind the decision reached.

E1: Proceed with the policy/practice because: ○ the decision can be justified (At screening or in Section D) ○ there is no reasonable alternative ○ the Senior Reporting Officer/Programme Delivery Director is content to defend any potential challenge and is willing to sign-off in Section H **(There are no unjustified negative impacts and the policy/practice is compliant in terms of the equality duty)**	✓
E2: Make adjustments ○ to demonstrate how activities will lead to a fair outcome (Ensure further evidence is gathered to ensure any barriers are removed and referenced in Sections F and G) **(Opportunities were identified to advance equality, foster good relations and prevent discrimination)**	
E3: Withdraw it because there is obvious detriment **(Sign Off in Section H)** **(A negative impact has been identified that cannot be justified)**	

F: Description of additional evidence, research and consultation undertaken, required, ongoing or captured. This is to ascertain how the policy or practice will advance equality, foster good relations and/or eliminate discrimination. Reference the evidence sources

(Include how internal scoping tools such as EDIT have been utilised and how this work has influenced other assessments such as the social aspects of environmental assessments)

Activities to address any potential negative impacts or risks to deliver positive impacts	Provide activity completion dates
1. Identify appropriate National Highways owner for the monitoring and communication of requirements around the project going forward. As the project encompasses three divisions within National Highways, it will be important to identify an owner to ensure requirements are appropriately met in future. This should include communicating monitoring/audit requirements, how data is input into EqIAs, reviewing EqIAs and incorporating other data to thoroughly impacts across schemes.	National Highways to identify owner ASAP
2. Monitor Highview Data to ensure customers continue to be satisfied with the Highest Safe Speed, and in particular that there is no considerable difference between different PCGs. This task should be undertaken by the National Highways owner for the project (see point 1)	Ongoing
3. Ensure Customer Audits for each scheme continue, to monitor the experience of customers when travelling through roadworks, and where possible, expand these feedback mechanisms to capture demographic data to ensure there is no difference of opinion or experience between PCGs. Feed findings into scheme specific EqIAs, and this overarching EqIA where appropriate. This task should be undertaken by the National Highways owner for the project (see point 1).	Ongoing
4. Consider undertaking further customer insight to examine behaviour and experience of disabled road users – allowing insight into differences between different groups (i.e. physical and sensory impairments) specifically in the event of emergency situations when travelling along the SRN. This task should	National Highways to consider

be led by the National Highways owner for the project (see point 1) in association with SES to undertake the research.	

Summary of the findings, including details of consultation with communities/customers/groups/stakeholders/staff/professional organisations. Explain how this has shaped the development of the practice or policy:

Roads for All Forum – 9th December 2021

In the December 2021 National Highways Roads for All Forum, the Highest Safe Speed project was presented to the group to inform them of the project and invite feedback around benefits or issues/concerns. This forum was considered to be a suitable way to engage with a range of organisations representing PCGs to obtain feedback to develop the project.

When feedback was provided by the group there was widespread support for increasing the speed limit to 60mph through roadworks, with reasons provided being:

- Reduces intimidation of HGVs on the SRN – the higher speed limit allows overtaking HGVs who are limited to 56mph in the UK, rather than being caught alongside them or having them in close proximity to your vehicle; and
- Higher speeds allow more opportunity for overtaking other vehicles rather than travelling alongside – particularly when in narrow lanes, which was noted to cause concern.

There were no perceived issues with a higher speed limit noted by the group.

A couple of opportunities were suggested by the group. These were:

- An education programme for road users on driving through roadworks (including leaving space, overtaking etc); and
- Speed variations depending on vehicle type - whether HGVs can have a different speed limit to other vehicles when travelling through roadworks to reduce any intimidation and perceived safety issues when traveling through a works environment. ***It was noted to the group that this is not a feasible option on the network.***

HighView

National Highways Highview road user research data has been used to inform the assessment of benefits of the Highest Safe Speed project.

The data was further explored to identify whether there was any difference of opinion or experience between those road users who have a disability and those who do not, as it is understood that there can be a difference in experience and opinion these groups. Key questions relevant to this policy have been extracted, with the results displayed below.

Overall Satisfaction with the SRN

	Disabled	Other	Difference
Satisfied	77.6%	77.1%	0.5%
Dissatisfied	7.0%	5.7%	1.3%
Neither/don't remember	15.4%	14.3%	1.0%
Total	10,790	60,438	

How do you consider the speed limits currently in place in these roadworks?

	Disabled	Other	Difference
Too high	3.8%	2.3%	+1.5%
Too low	15.2%	13.7%	+1.5%
Just about right	66.7%	71.9%	-5.3%
I can't recall	14.4%	12.1%	+2.3%
Total	528	3,008	

Speed limit trial – what do you think of this idea?

	Disabled	Other	Difference
I think it's a good thing	53.3%	55.8%	-2.4%
I think it's a bad thing	17.7%	13.6%	+4.1%
I have no opinion	28.9%	30.6%	-1.7%
Total	463	3,073	

Only where available and only where appropriate in line with General Data Protection Regulation (GDPR) include photographic evidence or links to the difference made via the EqIA activity. E.g. images of a successful installation of footbridges, shared accessible footpaths. (Ignore if not appropriate or where no permissions to use images could be provided) (For National Highways internal records):

n/a

Where appropriate - Link to evidence of communication/inclusion action plans, environmental assessments or EDIT exercises.

(For National Highways internal records):

n/a

G: Monitoring (Stage 3)

Detail how you will monitor the actual outcomes of the policy/practice throughout the project lifecycle and explain how/when you will review them.

Agreed actions to implement the findings of this assessment.

(For relevant schemes, this includes planned Post Opening Project Evaluations/Implementation/Investment Reviews and compliance with other internal monitoring systems such as the Project Control Framework).

Monitoring Action	By Whom	By When
Ensure that, once the National Highways lead for the project is identified, a set of requirements and guidance is developed and issued that can be used across all major schemes using HSS (see Section F, point 1)	National Highways HSS lead	ASAP
Ensure EqIA for each roadwork scheme includes reference to the adoption of the highest safe speed and monitors its implementation and customer feedback. Each project should liaise with the designated National Highways lead for the HSS (see Section F, point 1) to ensure all appropriate actions and requirements are met.	SES/MP/Ops EDI team	Ongoing
Update this EqIA periodically to ensure any equality considerations are included in the future development of the policy	SES/MP/Ops EDI team	Ongoing

H: Sign-off by National Highways Senior Responsible Owner (SRO), or for Major Project schemes, the Programme Delivery Director (PDD), (or the Programme Internal Sponsor or Project Sponsor if the PDD has delegated sign-off).

(This does not have to be a physical signature but approval is required)

Name		**Date**	
Job Title			

In submitting this EqIA the SRO/PDD has:

- **Approved all activity including monitoring actions**
- **Submitted documentation to the Directorate's Equality, Diversity and Inclusion Advocate for quality assurance and registration.**
- **For all MP schemes please contact Customer Contact Centre (CCC).**
- **Considered the documentation as robust and suitable for publication**
- **Checked that the documentation is saved in the EqIA area of the internal filing system and is retained as a record as part of good governance.**