



**SUPPLY CHAIN SAFETY  
LEADERSHIP GROUP**

**Highways Safety Hub  
Raising the Bar No.42  
Working on Hard Shoulders and  
Roadside Verges**

October 2023

## Contents

Objective .....	3
Scope .....	3
Background .....	4
Glossary of Terms & Definitions.....	5
Mandatory Elements for Working on Hard shoulders and Roadside Verges. ....	6
Technique Selection Table.....	7
Appendix 1 – Above and Below the Line Controls.....	8

## Table of Information Sheets

*Sheet 1 – Long term static works on hard shoulders or roadside verges – Standard works – Incident response*

*Sheet 2 – Long term static works on hard shoulders or roadside verges – Standard works – major with TVRS works.*

*Sheet 3A & 3B Static Works on hard shoulders or verge hazards – Standard & Relaxation works – Other.*

*Sheet 4A, 4B & 4C Moving Works or stopping on hard shoulders or roadside verges of roads with no hard shoulder.*

*Sheet 5A & 5B Longitudinal Works that are continuously moving or making regular or occasional stops on hard shoulders.*

## Objective

This Raising the Bar document provides additional guidance on the selection of the safe system of work for working on hard shoulders and roadside verges. It is provided to support the decision-making process.

The overall objectives specific to Raising the Bar No.42 are to:

- Reduce the risk exposure to road users from works operations on hard shoulders and roadside verges.
- Reduce the risk exposure to roadworkers.
- Provide additional guidance on the selection of the most suitable type of traffic management considering all factors.
- Provide greater guidance on standard roadworks on hard shoulders.
- Improve industry awareness of safe systems of work on hard shoulders and roadside verges.

## Scope

This document supports the DMRB document GG115 and does not replace it. It also provides additional design guidance for standard traffic management schemes on hard shoulders.

The expectation is that this Raising the Bar guidance document will apply across all National Highways worksites and will be implemented by all supply chain partners working with National Highways.

This document also specifically addresses use of coned hard shoulder closures to Plan DC1 of TSM Chapter 8 to delineate hazards for extended time periods, almost semi permanently as standard works, such as when a parapet has been struck. This is a common industry practice that had attracted specific concerns in connection with their use in this situation, and the working party identified that additional guidance was needed to reduce exposure and risk and gain compliance.

The contents of this document do not apply to traffic management operations installing, maintaining, operating, or removing temporary traffic management systems.

## Background

In recognition of the significant risks of works operations on hard shoulders and roadside verges, particularly from traffic partially crossing the edge of carriageway road marking, an industry working group was formed to review the methods of work, industry approach, and available documentation and guidance relating to these operations.

The working group concluded that the guidance provided within TSM Chapter 8 and DMRB GG115 *Requirements for works on the hard shoulder and roadside verges on high-speed dual carriageways* (formerly IAN 115/08) Issue 2 were generally satisfactory, but that the decision-making process as to the selection of the safe system of work needed extra support and guidance.

This document and information sheets form the guidance created to support the correct assessment of risk and selection of the safe system of working.



Figure 1 Single Vehicle moving works on a hard shoulder typically at risk of collision from traffic inadvertently leaving the carriageway 'drifting'

## Glossary of Terms & Definitions

ALARP – As Low As Reasonably Practical

CDM REGULATIONS – The Construction Design and Management Regulations currently in force.

TSM Chapter 8 – Traffic Signs Manual Chapter 8 and constituent volumes.

DMRB – Design Manual for Roads Bridges, specifically,

*GG115 Requirements for works on hard shoulders and road side roadside verges on high speed dual carriageways*

*CD 377 Requirements for road restraint systems*

IPV – Impact Protection Vehicle

Principal Contractor– As defined by the CDM Regulations currently in force.

Relaxation (road works)– As defined by TSM Chapter 8 TTM works on all roads that are subject to suitable traffic flows, weather, and visibility.

RtB – Raising the Bar

RAMS – Risk Assessment and Method Statements

SLG – Signing Lighting and Guarding

SSOW – Safety System of Work

Standard road works - As defined by TSM Chapter 8 TTM

Traffic Safety and Control – As defined by RTB 39 Traffic Safety & Control at Roadworks.

TMD – Traffic Management Designer as defined by RTB 39 Traffic Safety & Control at Roadworks.

TMM – Traffic Management Manager as defined by RTB 39 Traffic Safety & Control at Roadworks.

TSRGD – Traffic Signs Regulations and General Directions currently in force.

TTM – Temporary Traffic Management

As defined by DMRB CD 377 *Requirements for road restraint systems*

TVRS – Temporary Vehicle Restraint System (Temporary safety barrier)

VRS – Vehicle Restraint System (Safety fence or barrier usually known as permanent barrier)

### Mandatory Elements for Working on Hard Shoulders and Roadside Verges.

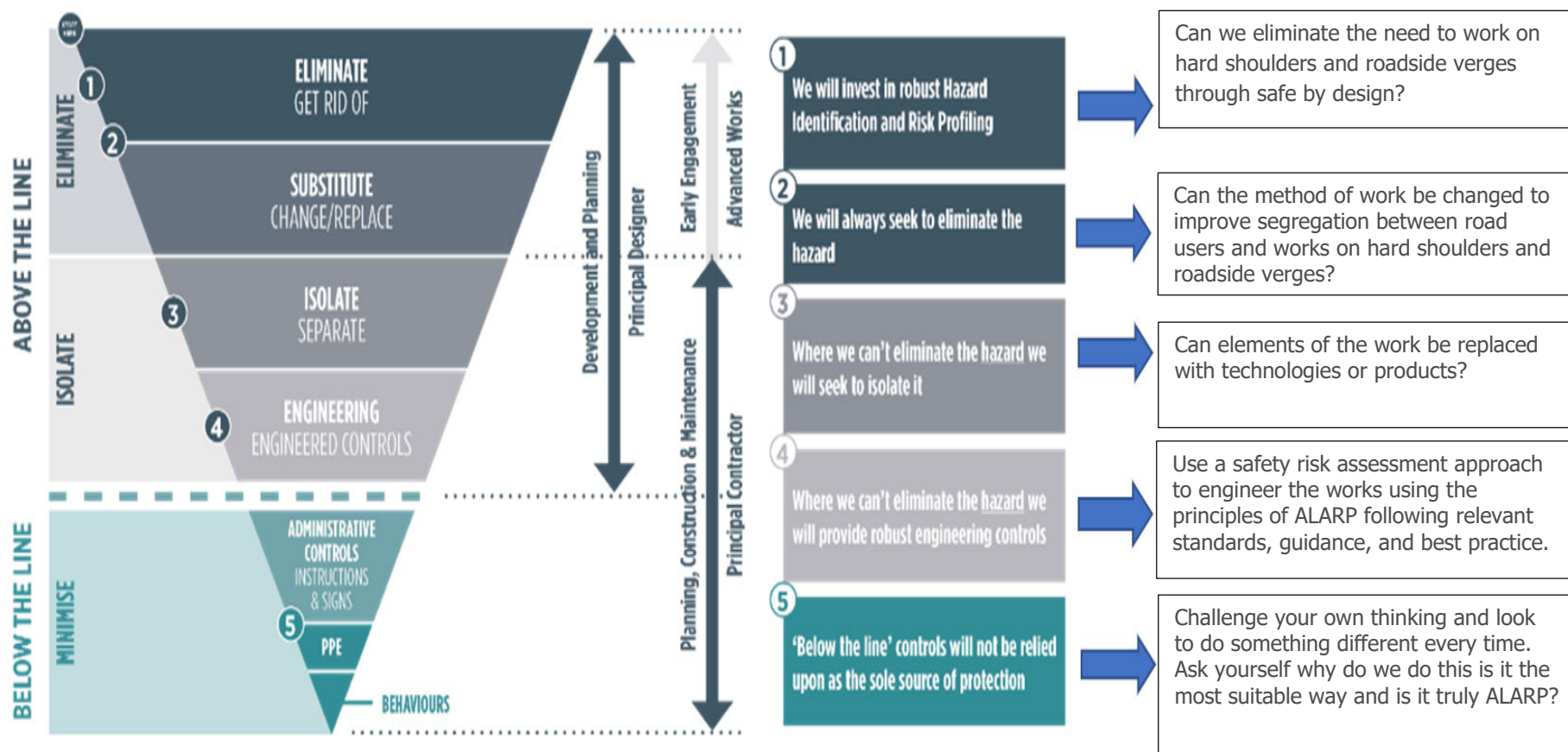
- Opportunities to combine works within planned lane closures shall always be explored before using any traffic management that involves a short duration stop on hard shoulders or verges without a defined traffic management system so as to eliminate risk.
- The risk based approach of GG115 must applied on a location by location basis for all works involving a hard shoulder stop.
- The risk assessment must consider the risks posed to the road user and any other affected parties including risks from work activities such slewing plant, projectiles from stimming, and the presence of larger vehicles and equipment.
- All works, including foreseeable emergency hazards, on hard shoulders and roadside verges shall be planned in accordance with the requirements of TSM Chapter 8, DMRB GG115, and this document.
- Where an emergency hazard occurs on a verge or hard shoulder, such as a parapet strike, and temporary traffic management is installed to cover the hazard resulting, a replacement semi-permanent solution that eliminates the need to maintain temporary 'A' frames and other temporary traffic equipment shall be installed, developed following the GG104 Risk Identification and CD377 Roadside Risk Assessment processes, whilst repairs are planned within four weeks of the initial occurrence.
- Clause E/1.5.2 of GG115 shall only be applied when it is not possible to install a lane closure to allow the requirements of E/1.5.1 of GG115 to be met.
- Where a short duration stop as defined by GG115 is the proposed method of access, you are only permitted one stop on the hard shoulder, in one location, before re-joining traffic to return to the depot or travel at road speed to another part of the network to complete an unconnected task.
- Where moving works are used on the hard shoulder, only one works vehicle shall be in front of a single Impact Protection Vehicle (IPV) with that works vehicle and any staff on foot always remaining 50 to 100m in front of an IPV.
- The Information sheets appended form the detailed requirements supporting this Raising the Bar document.
- A Highways Passport with a valid Highways Common Induction or a MAPPA card must be held by all staff undertaking short duration stops.

## Technique Selection Table

The questions in this table should be used to support and guide decision making using a risk based assessment when identifying the method of working and / or traffic management layout that is recommended to be selected by traffic management providers.

Q1 Are the works 'Static' in one location for more than one shift and/or considered 'Standard' roadworks?			Q2 Are the works moving, or of short duration, or less than one shift in one location?		
<b>A</b>	Is the work requirement a result of an incident e.g., parapet or structure strike or one where the funding, programme, or design is not yet confirmed or identified, and the hard shoulder or adjacent area requires closing to traffic?	Information sheet 1	<b>A</b>	Is the work of up to 15 minutes in one location and will require no further work on that link of carriageway?	Information sheet 4A
<b>B</b>	Is the need a result of a structural failure or need to protect traffic from a hazard and there is no design or funding in place, or a date confirmed to start permanent remedial or repair works that would enable the reopening of the hard shoulder?	Information sheet 1	<b>B</b>	Is the work of greater than 15 minutes in one location and will require no further work on that link of carriageway?	Information sheet 4B Or 5A
<b>C</b>	Is the work planned and in one location, but the hard shoulder must remain closed to protect unfinished work hazards with a temporary vehicle restraint system?	Information sheet 2	<b>C</b>	Is the work of around 15 minutes in any one location but the next work location is further on the same link?	Information sheet 5A Or 3B
<b>D</b>	Is the work planned and in one location for more than 14 days (recommended greater than 7 days) but the hard shoulder must remain closed to protect unfinished work hazards without a vehicle restraint system?	Information sheet 2 or 3A	<b>D</b>	Is the work greater than 15 minutes and will require no further work on that link of carriageway?	Information sheet 4B
<b>E</b>	Is the work planned and in one location for less than 14 days (recommended less than 7 days), but the hard shoulder must remain closed to protect unfinished work hazards?	Information sheet 3A	<b>E</b>	Is the work less than or greater than 15 minutes in one location and will further work on that link of carriageway moving down the hard shoulder?	Information sheet 4C
<b>F</b>	Is the work planned, and in one or more locations, but the hard shoulder can be opened when no works being undertaken?	Information sheet 3B	<b>F</b>	Is the work continually moving, slow moving, or occasionally stopping? Or does it involve people on foot or several concurrent or consecutive works operations including moving vehicles that will extend or be spaced out over greater than 20m longitudinally?	Information sheet 3B Or 5B
			<b>G</b>	Is the work continually moving and primarily vehicle based?	Information sheet 5A
			<b>H</b>	Is the work in one location for less than one shift before moving to start at a further location the next shift?	Information sheet 3B

**Appendix 1 – Above and below the line controls – Customer Perspective Temporary Traffic Management**



The principles of ALARP and risk reduction must be central to the design, planning, delivery, and maintenance of traffic management with equal consideration of relevant customers, workers, and other affected parties.



# Sheet 1 – Long term Static works on hard shoulders or roadside verges

## Hard shoulder or verge hazards - Standard works (protection, inspection, and survey of a safety hazard only)

Where works are static and require traffic management measures to be installed to permanently remove the hard shoulder for an extended period, protecting traffic from a hazard which is not subject to relaxations allowed by TSM Chapter 8. This includes when it is not safe for traffic to use the hard shoulder as a place of refuge, with the normal default approach shall be to design out regular daily maintenance inspection and checks by traffic management crews as this reduces the risk to road workers and road users. Plan DC1 should not be used for static works that have no finish date.

The provision of hard shoulder only traffic management for extended periods is typically during resolution of funding and or conclusion of design activities, such as when;

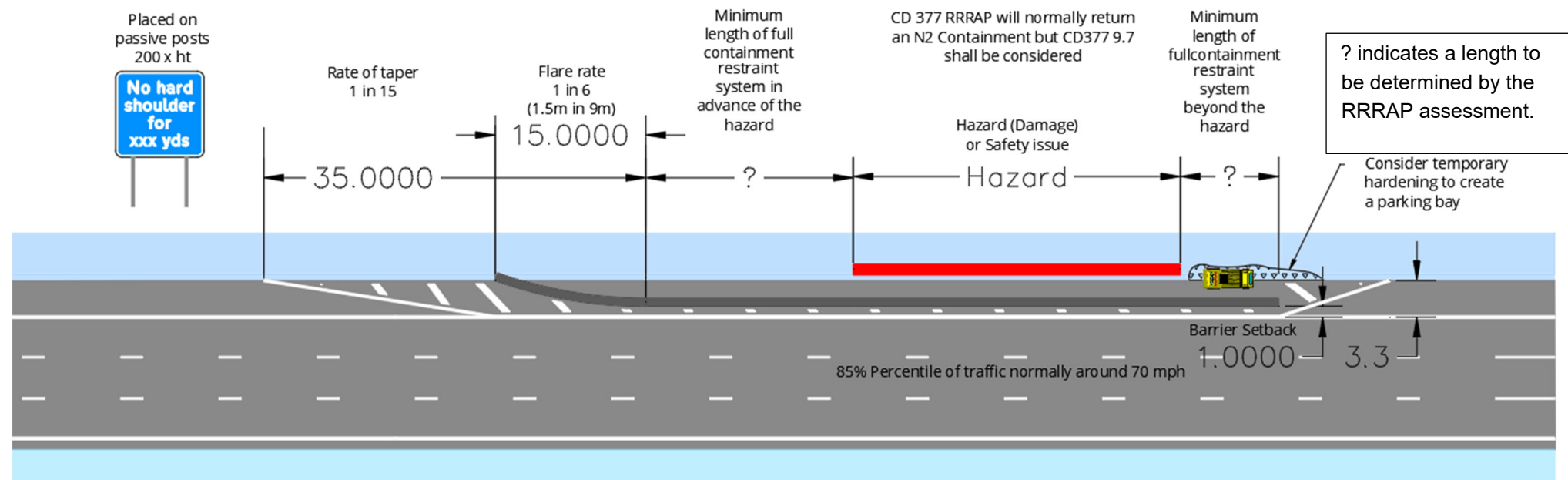
- a bridge parapet has been struck and is awaiting decision on funding source or design, and permanent repairs are not yet able to be commenced.
- a nearside verge is subsiding and works to remediate the area are not yet able to commence.
- a permanent vehicle restraint barrier is substandard, and works are not able to commence.

The measures to protect the hazard shall be designed as if the hard shoulder has a permanent discontinuity thereby eliminating the need to place operatives at risk regularly to maintain temporary signs and the traffic management equipment associated with Plan DC1. TSM Chapter 8 Plan DC1 may be used for the initial response with the intention that it shall be rapidly replaced within a few days of the incident by the design in Figure 1 (below). Signs may be placed on temporary frames before being transferred to posts. A typical arrangement referencing DMRB CD 127 Rev 1 section E1 and CD 377 Section 9 as a guide is provided specifically, Clauses E1.12 onwards of CD 127 and 9.27 of CD 377.

The traffic management design shall:

- Normally be set at the mandatory speed of the road with no reduction.
- Consider the requirements of the DMRB CD377 Section 9.
- Provide an inspection parking bay on the downstream end to access the site.
- Use road markings as well as signs mounted on permanent sign posts, all temporarily installed.
- Use desirable setback for the vehicle restraint system unless the CD 377 RRRAP process determines otherwise.

Long term provision shall consider the requirements of CD 337 with a RRRAP assessment before installation, but the system may be immediately installed using a standard design approach to mitigate risks following an incident. The standard design installed after an incident shall then always be confirmed by a site specific RRRAP, with changes identified by the RRRAP being implemented.



### Mandatory Elements

- If a safety hazard exists on or adjacent to a hard shoulder, such as a damaged parapet or subsidence, for which there is not an agreed design or funding, then the signing plan as defined in TSM Chapter 8 D6.10 and Plan DC1 shall only be installed to allow time to rapidly install a replacement semi-permanent removal of the hard shoulder, as defined and set out on this sheet.
- The design must reduce or eliminate the need for daily maintenance checks on TM that is protecting hazards that have no end date and are awaiting decisions on funding and or design.

### Working Group Comments

*The review identified that nationally there were many hard shoulder closures implemented because of incidents resulting from errant vehicles, requiring daily maintenance visits for several years, with restraint provision that was technically substandard, at which road users had been harmed from maintenance activities.*

*Areas should review their incident plan against this information.*

## Sheet 2 – Long term hard shoulder or verge hazards- Standard works

### (Repair and Improvement works being undertaken)

Where the project risk assessment, including any relevant consideration of roadwork's roadside risk has determined the need for a temporary mandatory speed limit, the designer must engineer the traffic management to obtain an 85% percentile speed of private cars and light vehicles at or about the reduced speed limit. If this reduction in speed is not obtained, then this does not create a Safe System of Work for the road user or road worker.

The speed in operation, as required by DMRB CD377, is not the design speed used for the design of the restraint provision. In this situation, the barrier deflection would potentially be greater than the dimension considered in the design of the site cross-section. This would result in roadworkers and traffic being at greater risk because of the potentially greater working width generated by higher speeds with a high potential of personnel and vehicles regularly compromising the working width of the barrier system or an impact significantly increasing the deflection of the barrier towards the workforce.

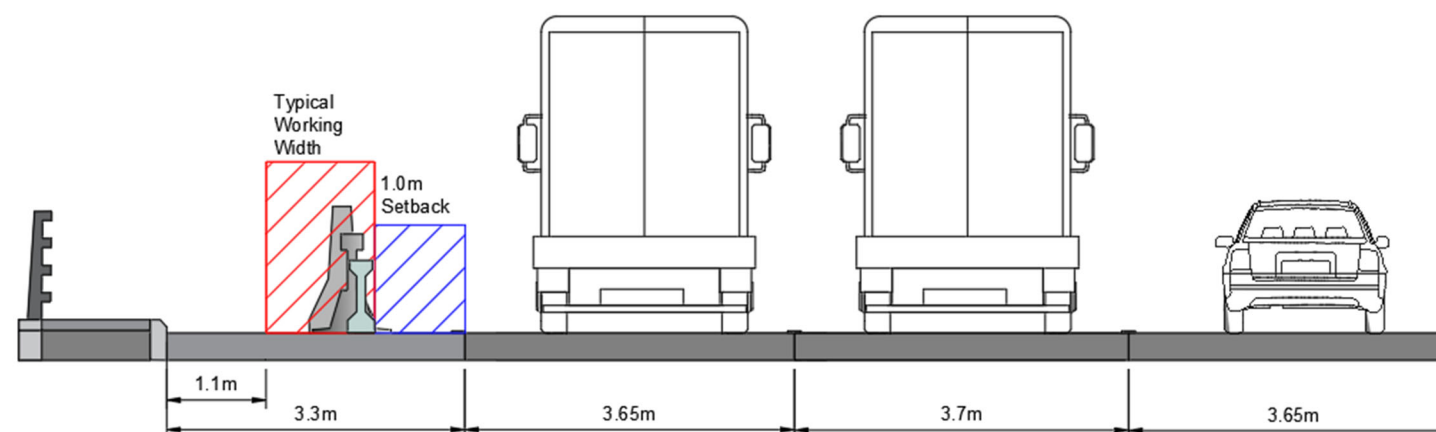
The failure to obtain the reduced speed limit also means that the traffic management system is not meeting the requirements of DMRB GD904.

Where works are static and require traffic management measures that are not subject to relaxations, which permanently removes the hard shoulder for an extended period to allow repair, maintenance, or improvement work to be undertaken, these works shall comply with TSM Chapter 8 and GD 904. Designers shall use TSM Chapter 8 Part 3 section U2.10 and Appendix 1.8 to support decision making on speed reduction and therefore are required to include consideration of enforcing the normal mandatory speed limit in operation first.

It is not recommended to specify a temporary barrier installation to a reduced mandatory speed limit without additional measures also being provided to achieve an 85% percentile speed at the chosen reduced speed limit. Where measures cannot be used, the barrier specification shall be reverted to the normal mandatory speed limit, irrespective of any reduction in speed being signed.

Where normal lane widths remain in operation with no reduction in their width, but the output of a CD 377 RRRAP assessment process requires a mandatory reduced speed limit to implement the determined design, additional signs to Diagram 7004 shall be provided to explain the reason for the reduced speed and the essential additional measures enforcing it.

Where the design speed is 70 or 60 mph it is not normally possible to provide works vehicle access behind a temporary barrier and keep all hazards clear of the working width of the installed system with no reduction of the width of adjacent traffic lanes.



### Mandatory Elements

- Where a reduced speed limit has been implemented to allow a restraint design at a reduced speed, the design shall implement additional measures to obtain an 85% percentile speed of private cars at or around the reduced speed limit.
- Designs for works on hard shoulders and associated speeds shall comply with DMRB GD 904 and DMRB CD 377 to create a Safe System of Work for road users and roadworkers.

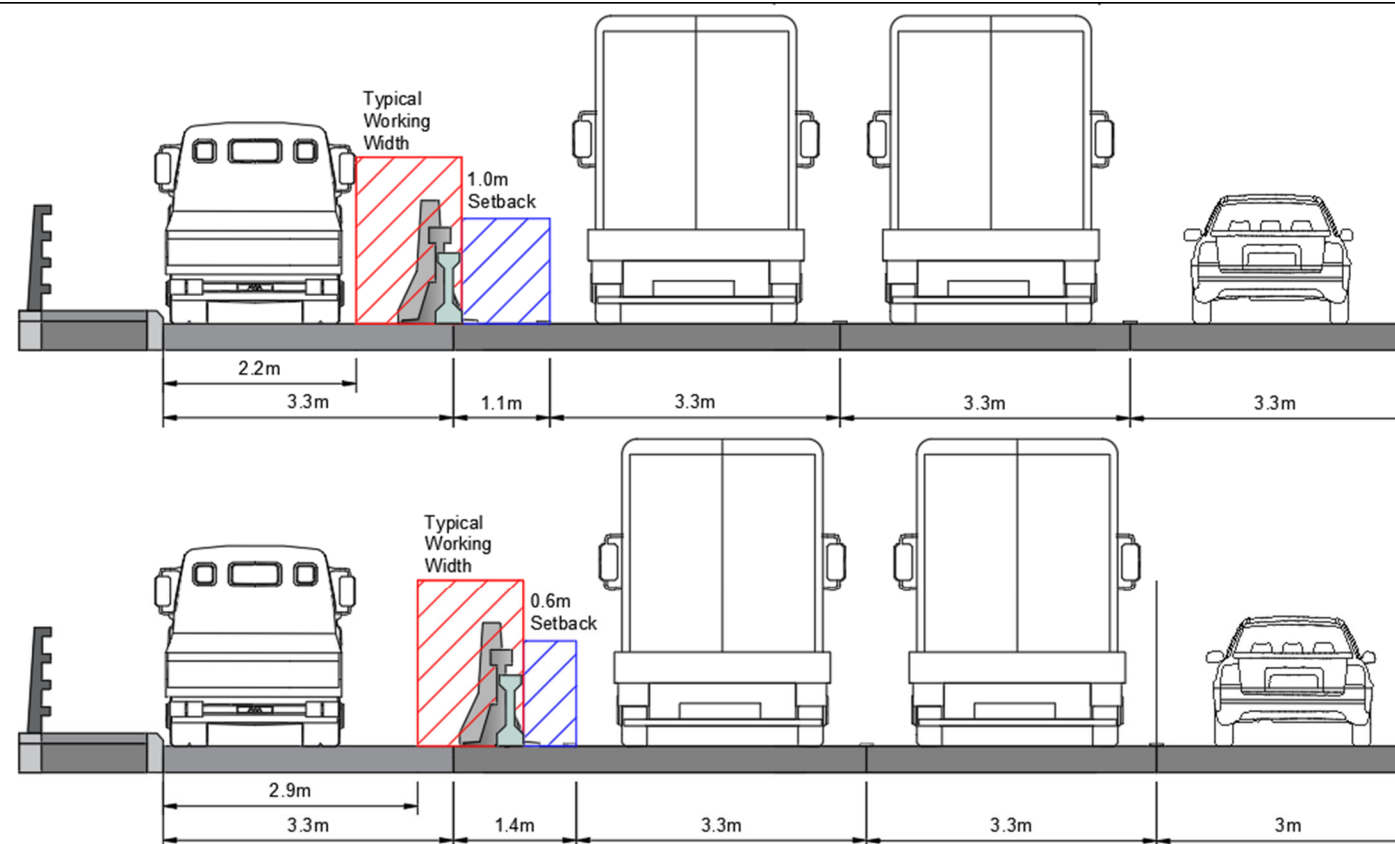
### Working Group Comments

*The review identified several locations nationally and many examples historically of hard shoulder work where a reduced temporary mandatory speed limit had been implemented, accompanied by a barrier specification based on that reduced speed, without accompanying measures, normally enforcement, to obtain the selected design speed limit.*

*This does not comply with the minimum requirements TSM Chapter 8, DMRB documents GG104, GD904 and CD 377 and does not create a Safe System of Work for the road user and roadworker.*

By reducing lanes to 3.3m per lane for all traffic, or 3.0m in lanes where restrictions normally apply for certain classes of vehicles, using lane widths which are narrower than normal but not a 'Narrow Lane', at a design speed of the National Speed Limit and/or implementing a reduced speed limit of 60mph, it has been found to provide benefits in creating a more suitable Safe System of Work for contractors and road users in situations where the traditional approach would have been used with high risk to all.

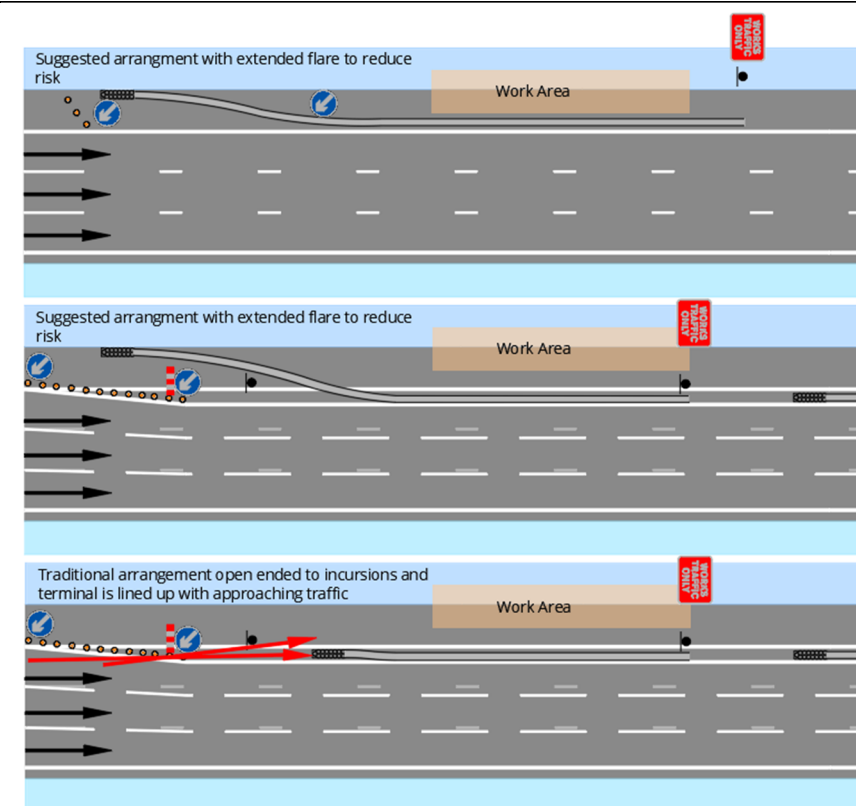
This realignment approach has significantly reduced signing levels as there is no width restriction requiring advance signs to Diagram P7244.



Where a work zone on the hard shoulder or verge is not being accessed with the flow of traffic, i.e., past the approach flare of the temporary barrier, the flare should be extended at the appropriate rate of taper to the verge edge of the paved area.

This arrangement will help to minimise the likelihood of a vehicle in the nearside lane impacting the terminal end and mitigation of traffic drifting towards the verge and passing the wrong side of the terminal.

This design practice should be considered for all nearside works where normal lane widths are not reduced or any layout where the deflection in the re-alignment of the traffic lanes towards the central reserve is minimal.



# Sheet 3A & 3B – Static works on hard shoulder or verge hazards- Standard works

## General – Sheet 3

Verge works would have previously been undertaken in a hard shoulder closure to plan DC1 with no delineated lateral safety zone and high potential of workers on or about goods vehicles being in any virtual lateral safety zone with no route to a place of safety compromising the segregation between road users and workers and vice versa. However, now, projects must consider the provision of segregation in more detail. Projects shall also consider the need to ensure that, where traffic management is used, there is a requirement reduce the presence of it and need for maintenance by traffic management personnel.

The default starting point for a traffic management design and method of work for activities on a hard shoulder or adjacent verge that would have previously used Plan DC1 (with no delineated lateral safety zone) shall now change by installing traffic management that provides adequate segregation. Installing a positive lane closure allows the full requirements of TSM Chapter 8 D3.20 to be met and therefore the requirements of GG115 paragraph E1.5.3.

The lateral safety zone shall be no less than 1.2m and should be increased where the additional width provided by an adjacent lane closure allows (TSM Chapter 8 D3.2.6). This has the added benefit of increasing the distance between traffic and any dust or debris generated or ejected by the works operation, such as stones when a strimmer or brush cutter is used. Provision of additional lateral space allows the implementation of a wider range of additional controls such as screens, etc. in many situations.

The requirements of GG115 section E 1.5.1 and 1.5.2 shall only be considered in exceptional circumstances, when all other possibilities to install lateral safety the full requirements of TSM Chapter 8 D3.20 have been subject to detailed consideration. The use of GG115 reduced lateral safety dimensions shall be subject to a detailed risk assessment.

Note: *this section assumes a full 3.3m hard shoulder is present; however, the principles and application remain the same when the hard shoulder is less than 3.3m or there is no hard shoulder present.*

## Sheet 3A

Where an incomplete hazard exists at or near the edge of the verge adjacent to the paved surface or on the hard shoulder itself, a hard shoulder closure to plan DC1 will need to remain in place during peak traffic periods. This will include peak periods where remedial or repair work is not being undertaken; this will need to be maintained by a TTM contractor. When a works contractor is undertaking the works, a nearside closure of at least one adjacent lane, in addition to the hard shoulder width, shall be installed to facilitate the works and to provide a delineated lateral safety zone of at least 1.2m.

## Sheet 3B

Where no hazards exist, and works are not being undertaken, all traffic management, including that on a hard shoulder, must be removed (Walked off / removed). When a contractor is undertaking works, an off-peak lane nearside closure of at least 1 adjacent lane, in addition to the hard shoulder, shall be installed to facilitate the works and provide a delineated lateral safety zone of at least 1.2m separating the traffic and works area.

All mobile hazards shall be removed from the verge or hard shoulder to eliminate any risks and where objects remain, the roadside risk shall be reduced as far as reasonably practical. The parking of plant behind existing vehicle restraint systems shall be carefully assessed at the planning stage as the permanent design of the system may not accommodate more significant hazards nearer to passing traffic.

### Mandatory Elements

- Provision of adequate segregation between traffic and works operation hazards has to be provided by complying with TSM Chapter 8 D3.20.
- A robust risk assessment of the activity and location must be undertaken during planning activities, considering all aspects of working in restricted widths normally present in a hard shoulder closure.

### Working Group Comments

*The review considered data relating to incursions towards hard shoulder works in addition to commercial and known decision making around the subject.*

*The data indicated that road users are regularly compromising the reduced lateral safety zones in GG115 by partially crossing the diagram 1012.1 edge line and are being harmed by colliding with works vehicles.*

*e.g., the wing mirror of a lorry crossing a rib line will intrude at least 0.8m even if the nearside wheel remains precisely against the verge side of the 1012.1 marking.*

*The conclusion was that this is potentially inattention driven by road users not having to take positive action required by drivers responding to lane closures. The only conclusion available was that at least a 1.2m lateral safety zone has to be the normal provision and reduction on this dimension.*

*Data, including substantial visual evidence from works operations, also indicated that inappropriate works activities were being undertaken in hard shoulder closures that could only be delivered by workers compromising reduced lateral safety and/or working between vehicle beds and passing HGVs.*

*Organisations had not updated, or were not updating, generic risk assessments for changes in the surrounding highway environment, because doing so would potentially generate outcomes resulting in having to employ greater resources in different time periods.*

# Sheet 4A 4B & 4C – Moving works or stopping on hard shoulders or roadside verges of roads with no hard shoulders

## General Sheet 4.

The requirements of DMRB GG115 for short duration stops remain valid but should only be used where the stop is a genuine short duration stop of 15 minutes.

The work requirement should allow the vehicle to travel to the next requirement by joining with traffic and then traveling at normal speed to another work location before undertaking another short duration stop a significant distance away on the same link or on another link or carriageway.

Where the work requirement requires a stop regularly on the same link, e.g., every 200m - 500m with the vehicle(s) continuously remaining on the hard shoulder or where a works vehicle on a verge is required to 'bunny hop' into a live lane around vehicle safety fence, then this shall be treated as one work requirement with a continuous duration of hazard and other methods of traffic management technique utilised.

Works on All Purpose Trunk Roads that require vehicles or personnel to work for more than 15 minutes in a location on the verge<sup>1</sup> are far more likely to have to 'bunny hop' around vehicle safety fence at significantly lower speed than the normal traffic or remain almost adjacent to the carriageway because of changes to roadside vegetation management strategies in recent years restricting available roadside widths. Where works vehicles or personnel has to remain adjacent to the carriageway on the verge, it shall be treated as if it is on an unpaved hard shoulder when reading 4A and 4B below to determine the methodology.

### Sheet 4A (One location - Max 15 minutes)

The risk assessment required by DMRB GG115 before a short duration stop on a hard shoulder or all-purpose trunk road verge shall demonstrate that the work can be completed in one location in 15 minutes and no further stops will be required to complete the task in the same length of hard shoulder.

The requirements of DMRB GG115 E/1.5.1 have to apply in full.

### Sheet 4B (One location - 15 – 45 minutes)

Where a hazard, normally a works vehicle, is present on the hard shoulder for longer than 15 minutes at one location then the requirements of GG115 shall apply.

Where works on All Purpose Trunk Roads require a 'bunny hop' around verge obstructions, usually at a speed much lower than passing traffic, organisations shall determine using a risk assessment that there is not a suitable alternative method of traffic management that could generate a lower risk to road user and road workers and that sufficient gaps in traffic will occur on roads with good visibility.

Works using smaller vehicles such as minor technology works and surveying, will may require a vehicle on the hard shoulder for longer than 15 minutes due to the need to remove and replace security measures and then access locations in a safe manner. Any stop requiring more than 15 minutes becomes a medium duration stop under GG115. Organisations need to carefully consider, by utilising a site-specific risk assessment, if the lateral safety zone that is allowed by Table E4.1.3 of GG115 of less than 1.2m without providing additional TTM measures provides sufficient lateral safety zone for this duration. Normally, these works use smaller vehicles that can present a lower risk to road users if carefully parked. Using a risk assessment, where use of a smaller vehicle allows a virtual 1.2m lateral safety zone to be provided during minor works, then a stop can exceed 15 minutes without requiring additional TM measures; however, it is essential that any stop should be kept to a minimum and should be planned to be comfortably completed within and not planned to exceed 45 minutes.

Where the width of the hard shoulder or verge allows larger vehicles to park further laterally from the carriageway with at least 1.2m laterally then the time periods may also apply in this situation.

### Sheet 4C (One or more locations – Continuous presence)

Where a hazard, normally a works vehicle, is present on the hard shoulder for longer than 15 minutes because it remains on the hard shoulder making short duration or longer stops at multiple locations on the same link without leaving the hard shoulder, then this is not a series of short duration stops but a continuous risk to the road user and the requirements of TSM Chapter 8 must be met. TSM Chapter 8 section 0.10 referencing mobile works on the hard shoulder should be the starting point for assessing traffic management provision.

#### Mandatory Elements

- The continuous length time that the vehicle presents a hazard to road users shall be considered in the selection of the traffic management technique used. The time being calculated from the first deceleration onto the hard shoulder of the hazard to time it leaves the hard shoulder.
- A short duration stop is one visit on a highway link consisting of a deceleration onto the hard shoulder, 15 minutes, and then leaving the hard shoulder.

#### Working Group Comments

*The review was tasked with considering the methods of work on the hard shoulder. It concluded that organisations had to consider the continuous length of time that a road user is exposed to the presence of a hazard on the hard shoulder, including moving down the hard shoulder of the same link to the next location, not the specific time at one location.*

<sup>1</sup> Verge is defined in DMRB CD127 Terms and Definitions and the documents accompanying cross-sections for All Purpose Dual carriageway and Single Carriageway Trunk Roads

## Vehicle Selection and the process for moving onto and off a verge or hard shoulder.

The following requirements, previously published in Raising the Bar 2, part 2: have been transferred to this document and updated.

When organisations are selecting vehicles for works stopping on hard shoulders or roadside verges e.g. short duration stops, the risk assessment and selection criteria for this specialist piece of work equipment, essential to the safe system of work, shall determine the most suitable vehicle for the roadside environment: vehicles that are also used for private activities may be a compromise in the higher risk roadside environment especially when there is no maintenance bay or off network access to allow them to exit the right hand side of a vehicle.

Recent advances in vehicle capabilities and design changes, together with increased specification of driver support technologies, mean a far greater range of vehicles than just cars are now available to organisations. When selecting or replacing vehicles, as a minimum, organisations shall consider:

- Whether a vehicle that has dual use, e.g., work and personal use is the most suitable equipment for the hard shoulder or verge environment.
- The physical capability and whether it is reasonably practical for all occupants to egress or move laterally through smaller vans and cars.
- Movement of vehicles in an offset collision (nearside third party to offside works vehicle).
- Capability and realistic ability of occupants to identify and react to an incursion and move rapidly to a place of greater safety when an incursion is identified.
- Visibility of traffic when removing / returning tools and equipment from vehicle.
- Verge obstructions such as barrier, verge growth increasing in provision, and restricting widths.
- Widths of hard shoulders having the potential to be noticeably less than the 3.3m assumed width in GG 115.
- The ability of occupants and any part of the vehicle to remain at least 1.2m away from passing traffic.

The alternative shall be a type of vehicle that can be driven on and off a verge at a safe speed to a location where a 1.2m safety zone can be provided to any part of the opening side of vehicle however increasing provision of barrier and verge vegetation has to potential to reduce opportunities to rely on this.

The vehicle shall comply with TSM Chapter 8 05.5 and U4.3:

- Check your mirrors to ensure vehicles behind you are at a safe distance from you.
- Switch on flashing beacons and indicate left, pull onto the hard shoulder at normal road speed and decelerate.
- Use the hard shoulder as a deceleration lane before coming to a halt, watch for debris.
- Pull over to the left as far as you can and turn your front wheels to the nearside verge (fend off position) with a 1.2m safety zone between your vehicle and the live lane.
- Do not park directly behind (upstream) of the work area as, if the vehicle rolls or is hit from behind, it will enter the work area.
- Leave flashing beacons on, do not use hazard lights.
- Leave the vehicle safely.
- Remove keys and lock the vehicle.
- Restrict your time on the hard shoulder or verge to a minimum.
- When walking or working on the hard shoulder, face the oncoming traffic whenever possible, and work in pairs: one watching, and one working.
- When finished, enter the vehicle safely.
- Check your mirrors to ensure vehicles behind you are at a safe distance from you.
- Use the hard shoulder as an acceleration lane before joining the nearside lane, watch for debris.
- When safe to do so, merge into the nearside traffic lane and switch off your beacons.
- Travel to the next site.

### Mandatory Elements

- A stop on the hard shoulder or verge is a higher risk activity and the vehicle is a specialist piece of work equipment. Its specification, including its warning lights and livery, are essential control measures.
- A risk assessment shall determine the most suitable type of vehicle for hard shoulder and verge works. Vehicles with dual use, e.g., work and personal travel often are not the most suitable for allowing work activities with the lowest risk because the different capabilities required.
- Vehicles shall fully comply with TSM Chapter 8 05.5

## Sheet 5A & 5B – Longitudinal works that are continuously moving or making regular or occasional stops on hard shoulders.

A single IPV is often placed in advance of several groups of personnel or vehicles undertaking horticultural or environmental works. These operations typically consist of a mix of personnel on foot and moving plant travelling at different speeds, which become spaced out over several hundred metres. This longitudinal spacing out in front of a single works vehicle, caused by different work speeds, increases the risk to work personnel and has never met the minimum requirements of TSM Chapter 8 for works of this nature.

In this situation, the IPV provides limited protection to those personnel or vehicles once the personnel have moved more than 100m downstream of the cab of an IPV. Any works operation using an IPV on the hard shoulder shall remain no more than 100m and no less than 50m downstream of the IPV.

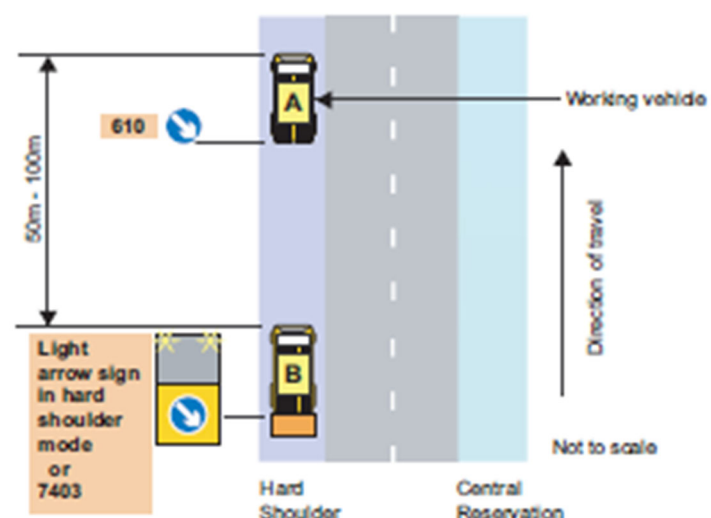
Works moving longitudinally, such as horticultural or environmental work, and that have traditionally used a single IPV to provide warning of the presence of the works operation shall use one of the following four approaches:

- A Single IPV upstream of a single works operation meeting the requirements of TSM Chapter 8 Section O.10 and Plan MLC6 keeping the whole task within 50 – 100m downstream of the IPV.
- Multiple, consecutively placed, IPV's upstream of each task of the works operation where each IPV and task meets the requirements of TSM Chapter 8 Section O.10 and Plan MLC6 keeping each task within 50 – 100m downstream of an IPV.
- A mobile lane closure of the hard shoulder and at least the adjacent nearside lane meeting the requirements of O.10.
- A static lane closure to section 4 of this document.

Moving works on hard shoulders less than 3.3m wide normally having a width of 2.75m or less are not practical as an IPV width including the mirrors is greater than 2.75m wide and will not maintain segregation between passing traffic.

Multiple IPV's following an individual vehicle, or small groups of personnel delivering each task, shall be the normal method of work if closing an adjacent lane is not practical. This shall specifically apply where different speeds of work result in a works operation that cannot fit or remain 50 – 100m in front of one IPV.

Plan MLC 6, From TSM Chapter 8, First published in 1994. Working vehicle on a hard shoulder



### Mandatory Elements

- Works operations have to remain within 50 – 100m of an IPV to comply with TSM Chapter 8.
- Works operations consisting of a sequence of tasks with different rates of progression that become spaced out in excess of 100m from an IPV should never have been preceded by just one IPV upstream.

### Working Group Comments

*The incidents that this review considered typically involved vehicles drifting onto the hard shoulder and individuals within organisations were often selecting or requesting IPV's without understanding the operational characteristics of these vehicles in hard shoulder situations. This resulted in many works operations implementing a system that increased risk.*

*The review identified that many operations were failing to comply with long standing requirements of TSM Chapter 8 relating to moving and mobile works on hard shoulders and that these requirements remained valid but that specific additional layouts to support understanding of TSM Chapter 8 needed creating.*

Vegetation management is a typical works operation where different stages of a task result in different speeds of progression, and it is not possible to provide a lane closure to install lateral safety due to the distance covered during one work period.

In this example, three IPVS concurrently provide signing to allow each stage of the vegetation task to remain compliant with TSM Chapter 8 and progress along a hard shoulder.

Examples of Mobile Works layouts not included as examples in TSM Chapter 8 Mobile Works section, created using the requirements for a works operation on foot for a Mobile Lane Closure of a nearside traffic lane. Use of these layouts creates a wider work area on a hard shoulder provided with 1.2m Lateral Safety Zone.

A layout for a mobile lane closure of a nearside lane on an All-purpose dual carriageway is already included in TSM Chapter 8.

