

Temporary Traffic Management Vehicle Selection and Operation on High Speed Dual Carriageways including Motorways

This Guidance is written with the expectation that it represents good practice and as such if you are involved in this type of activity will normally be followed unless a better site specific solution has been devised.

Scope

This guidance provides information on Temporary Traffic Management Vehicle (TTMV) selection during works undertaken or controlled by Highways Term Maintenance Association Members on High Speed Dual Carriageways and Motorways

Purpose

To ensure temporary traffic management practitioners adopt a safe system of work for temporary traffic management (TTM) schemes, in order to reduce risks to road workers whilst not transferring risk to road users.

Definitions and Notes

TTMV are those as defined in Traffic Signs Manual TSM Chapter 8 Part 2 O 5

Associated Documents

Traffic Signs Manual (TSM) Chapter 8 Part 1: Design and Part 2: Operations

Safety and Street Works and Road Works - A Code of Practice 2014

TRL Report CPR1323 (2012): IPV collisions – exploratory risk investigation and possible countermeasures

TRL Report RPN2600 (2013): IPV Guidance Supporting Documentation

Highways Agency INTERIM ADVICE NOTE 181/14

HSE CIS 53

HSE free publication “Five steps to risk assessment”.

The Management of Health and Safety at Work Regulations 1999

Guidance

1. Vehicle Selection for High Speed Dual Carriageways including Motorways

High Speed Dual Carriageways and Motorways are recognised as a high risk environment in which to install, remove and, maintain static temporary traffic management. As is normal when working in these areas we need to reduce risk to our workforce to be as low as reasonably practicable; in so doing however we must not transfer unacceptable risk to the road user. The selection of the vehicles and method of working, including whether to use a dual vehicle or single vehicle working approach, is an important part of ensuring the risk to road workers and road users is reduced to a level that is as low as is reasonably practicable. The safe system of work should be site and task specific, should be written down and, understood.

- **Dual Vehicle Working - should normally be used when installing, maintaining and removing TTM, during activities such as those in which road workers operate on the rear of a vehicle in a live lane, in order to substantially reduce road worker exposure to risks from traffic.**

Temporary Traffic Management Vehicle Selection and Operation on High Speed Dual Carriageways including Motorways

- **Single Vehicle Working - may be considered for use when installing, maintaining and removing TTM, during activities which do not require road workers to operate on the rear of a vehicle in a live lane.**

2. Safe system of work

The safe system of work shall document the choice of dual or single vehicle working (and the spacing between the vehicles if dual vehicle working is used) based on the specific circumstances in which the works will be carried out. The choice of technique should be made whilst taking into consideration all of the relevant factors which may affect the risk involved with an operation, examples are listed below.

Site Constraints – the characteristics of the site which do not change on a regular basis; for example this includes (but is not restricted to):

- Number of lanes on the carriageway
- Availability of safe taper locations
- Presence of a hard shoulder
- Dynamic use of the hard shoulder as a running lane (if present)
- Presence of Variable Signs and Signals (VSS) to support lane closure
- Road geometry and sightlines
- Presence of junctions, slip roads, roundabouts, access roads etc.

Fixed environment assessments should be carried out in advance of the works. Sites that have been pre-assessed should be reassessed on a regular basis, or immediately following any changes to the road layout.

Static operational requirements – the characteristics specific to the type of works being carried out at a given site. The risk assessment shall consider the traffic management technique used, including the choice of dual or single vehicle working (and the spacing between the vehicles if dual vehicle working is used). This should be based on characteristics which are specific to the operation being carried out and the predicted characteristics at the site during the period of the works; for example this includes (but is not restricted to):

- Lane(s) to be closed
- Lighting conditions
- Expected traffic flow per hour per lane
- Expected HGV's per hour per lane (Are they excluded)
- Likely speed of approaching vehicles (not the speed limit of the road)
- Any known issues with compliance with signing or signals
- Availability of an escape route for operatives
- Type of vehicle(s) to be used to install/remove equipment
- Requirement for carriageway crossings by operatives
- Manoeuvrability when installing/removing TTM using two vehicles

Appropriate mitigations must be put in place to reduce the risk to road workers and users ALARP. Assessment of these characteristics should be planned and assessed out in advance of the works, such that operatives have sufficient time to familiarise themselves with the techniques and mitigations required at different times during the operation. This can be achieved through effective engagement and briefing sessions

Dynamic operational requirements – characteristics of the working environment which can vary during the operation itself; this includes (but is not restricted to):

- Visibility of oncoming traffic for operatives
- Weather conditions
- Actual traffic flow
- Actual HGV traffic
- Actual traffic speed

These factors must be assessed at the site and recorded via a Point of Work Risk Assessment (POWRA) immediately prior to the start of the on-road work and reassessed regularly, throughout the operational period.

Temporary Traffic Management Vehicle Selection and Operation on High Speed Dual Carriageways including Motorways

3. Recommended Vehicles and TTM Methods subject to the Safe the System of Work

Dual Carriageway with H/S	Approach Signing Installation and Removal working from Hard Shoulder	Lead Taper Installation	In situ, signs, taper and closure install / set aside	Taper Collection	Longitudinal Coning Install and Collect	Maintenance of Temporary Traffic Management
Type of Closure						
H/S	Impact Protection Vehicle or Traffic Management Installation Vehicle	Impact Protection Vehicle or Traffic Management Installation Vehicle	Impact Protection Vehicle or Traffic Management Installation Vehicle or Traffic Management Maintenance Vehicle	Impact Protection Vehicle or Traffic Management Installation Vehicle	Impact Protection Vehicle or Traffic Management Installation Vehicle	Impact Protection Vehicle or Traffic Management Installation Vehicle or Traffic Management Maintenance Vehicle
Lane 1 (Working from H/S)			Impact Protection Vehicle or Traffic Management Installation Vehicle			
Lane 1,2 (Working from H/S)						
Lane 1,2,3 (Working from H/S)						
Lane 4		Impact Protection Vehicle and Traffic Management vehicle with Impact Protection or Traffic Management Installation Vehicle	Impact Protection Vehicle and Traffic Management vehicle with Impact Protection or Traffic Management Installation Vehicle (Live Lane, operatives on rear) Or Or Impact Protection Vehicle (Live Lane, No operatives on the rear of the vehicle) Or Impact Protection Vehicle, Traffic Management Installation Vehicle (Non Live Lane)	Impact Protection Vehicle and Traffic Management vehicle with Impact Protection or Traffic Management Installation Vehicle Or Impact Protection Vehicle (No operatives on the rear of the vehicle)		
Lane 4,3						
Lane 4,3,2						
Lane 3						
Lane 3,2						
Lane 2						

Dual Carriageway without Hard Shoulder including All Lane Running Motorways	Approach Signing Installation and Removal	Lead Taper Installation	In situ, signs, taper and closure install / set aside	Taper Collection	Longitudinal Coning Install and Collect	Maintenance of Temporary Traffic Management (Non Live Lane)
Type of Closure						
Lane 1	Impact Protection Vehicle and Traffic Management vehicle with Impact Protection or Traffic Management Installation Vehicle (Live Lane) Or Impact Protection Vehicle, Traffic Management Installation Vehicle (Non Live Lane)					Impact Protection Vehicle or Traffic Management Installation Vehicle or Traffic Management Maintenance Vehicle
Lane 1,2						
Lane 1,2,3						
Lane 4						
Lane 4,3						
Lane 4,3,2						
Lane 3						
Lane 3,2						
Lane 2						

Additional Notes

All vehicle definitions and specifications as described within TSM Chapter 8 O5

All working methods must be reasonable and practicable and assessed through Risk Assessment at each location.

It is **strongly recommended** that all working vehicles parked in the **live lane** on High Speed Dual Carriageways and Motorways, when operatives are unloading, installing, maintaining, removing, temporary traffic management will be afforded dedicated impact protection unless alternative working methods reduce overall risk.

For the avoidance of doubt, **the hard shoulder is NOT classified as a live lane**, unless it is being used by public traffic as part of an ALR section of motorway

Temporary Traffic Management Vehicle Selection and Operation on High Speed Dual Carriageways including Motorways

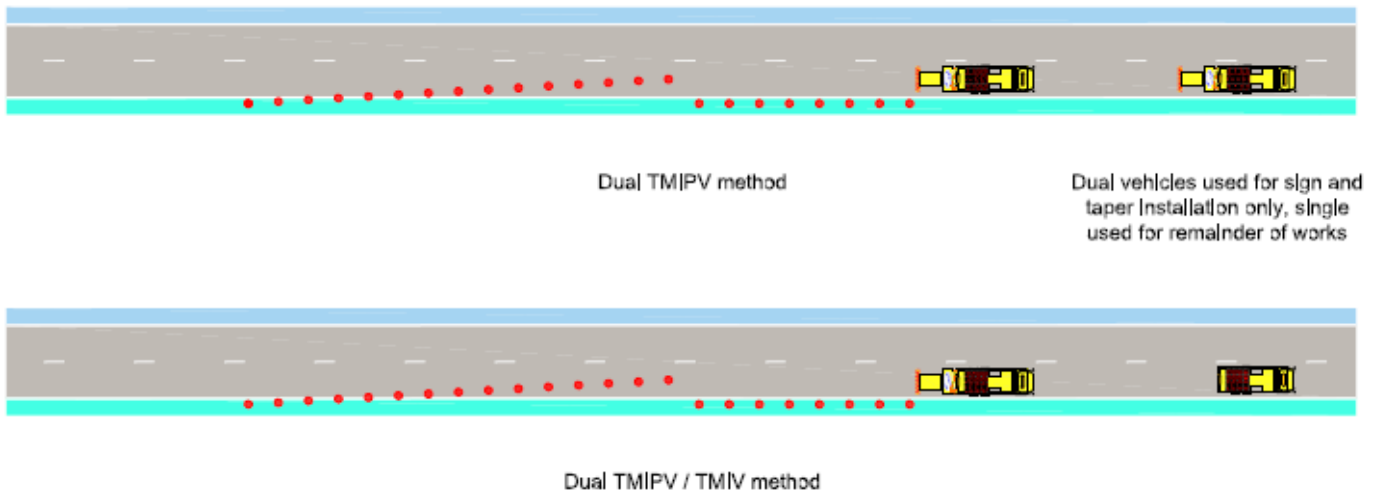
4. Considerations For Dual Vehicle Working

When operating using dual vehicle working, a suitable separation distance must be maintained between the works vehicle/operation and the impact protection vehicle upstream at all times. This distance should be 75m (+/-25m) (as shown in the Plans in Chapter 8 Part 2: Operations Section O10). Selection of an appropriate distance between the vehicles/operation should consider that:

- Shorter distances decrease the risk of road users re-entering the closed lane between the two vehicles but may increase the risk that, if the upstream vehicle is hit, it may be shunted into the rear of the works vehicle.
- Longer distances decrease the risk of the upstream vehicle being shunted into the rear of the works vehicle, but present a greater likelihood of road users cutting back in to the gap between the two vehicles and colliding with the rear of the works vehicle. If the works vehicle is not fitted with an LMCC, the severity of such a collision is likely to be greater.

This requires specific attention and need to be considered when installing or removing lead tapers. Two recognised methods are currently in operation:

Taper Installation with IPV parked “downstream” of taper



Generally the “downstream” method affords;

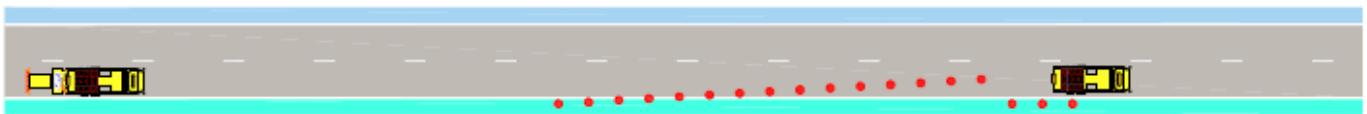
- Consistent cover of protection if deployed 75m (+/-25m) from the working vehicle
- Avoids the need to merge with traffic
- Can cause access issues (identification of safe passing places in single lane closures) if the IPV is utilised as the working vehicle for the remainder of the operation
- Does not afford impact protection to the operatives but to the working vehicle.
- Affords a clear view upstream of the oncoming traffic.

Temporary Traffic Management Vehicle Selection and Operation on High Speed Dual Carriageways including Motorways

Taper installation and removal with IPV parked “upstream” of taper



Dual TMIPV method



Dual TMIPV / TMIV method

Generally the “upstream” method affords;

- Additional protection to the operatives whilst the taper is being installed
- Affords protection to the taper equipment whilst installation is complete
- Does not afford protection to the working vehicle when over 100m from the IPV
- The potential issue that once the taper has been installed the IPV has to attempt to rejoin the live lane
- The potential issue from operatives that their view upstream is restricted

Through a suitable and sufficient risk assessment the most appropriate positioning should be determined to maintain ALARP.

An effective and hands free communication system must be in operation between both the vehicles to ensure clear communication is maintained with both vehicles throughout the ongoing operations.

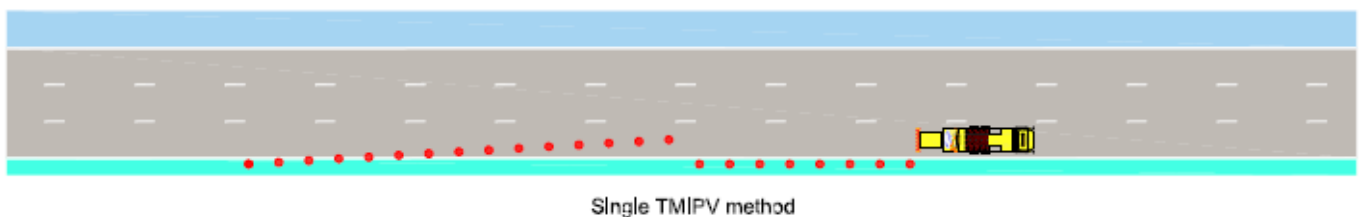
Historically there has always been a focus on the training of the IPV driver in terms of a live lane situation. However we also need to consider the training of the driver in the second vehicle, who would have received no training in working with a dedicated IPV (unless they are another operative who holds the IPV rating). In the short term we should ensure that the training/briefing delivered minimises the chance of a conflict i.e. where one part of the formation commits and manoeuvres into one lane whilst the other stays positioned in the other. In the medium term this needs to be considered at the National Highways Sector Scheme Reviews.

The benefit from Dual vehicle Working is an overall reduction in the risk population as the vehicle most likely to be struck only has one person in it in a properly designed restraint system rather than a potential crew of 3 operatives. We have a legal duty to reduce the risks to our workforce to be as low as reasonably practicable and the provision of the protection vehicle is seen as being reasonably practicable by the HSE in the conditions outlined in this guidance

Temporary Traffic Management Vehicle Selection and Operation on High Speed Dual Carriageways including Motorways

5. Considerations For Single Vehicle Working in a Live Lane

Single vehicle working refers to the use of a single vehicle for installation, removal or maintenance of TTM. This vehicle may or may not be equipped with a lorry mounted crash cushion (LMCC); if it is not fitted with an LMCC, it cannot operate as a single vehicle in a live lane of a carriageway open to vehicular traffic (TSM Chapter 8, Section O5.9.5). Single vehicle working may require road workers to operate from the rear of a vehicle exposed to live traffic. This method is not recommended on High Speed Dual Carriageways when operatives are working from the rear of the vehicle in a live lane. This method should only be considered when the operatives are working in a Non Live Lane or working on foot with a lookout / installer is in position affording a clear view of the oncoming traffic with an effective communication system in use.



Single vehicle (combined) working may be considered, in some or all of the example circumstances below. These considerations must be recorded in a safe system of work.

- No operatives working on the rear of vehicle when deployed as an IPV
- Working on foot with the IPV acting as a support vehicle
- Dedicated look out in place who has a clear unrestricted view of the oncoming traffic and has effective communication with all the team members
- No Heavy Goods Vehicles in the lanes to be closed where the IPV vehicle is deployed e.g. Lane 3 or 4 on motorways
- All the approach zone signing is erected and in position.
- Where dedicated impact protection may increase overall risk e.g. entrances to slip roads and junctions, or roundabouts with a tight radius and multiple exits.