

INTERIM ADVICE NOTE 181/14

Guidance on the use of Impact Protection Vehicles for Temporary Traffic Management

Summary

Guidance on the use of Impact Protection Vehicles (IPVs) for temporary traffic management (TTM), in order to reduce risks to road workers.

This IAN provides guidance to service providers on the purpose of IPVs and on the management of risk associated with their use.

Instructions for Use

This guidance is supplementary to (but does not replace any elements of) the existing guidance provided in the DfT Traffic Signs Manual - Chapter 8 (2009), IAN 163/12 and IAN 150/14 Revision 01.

This IAN 181/14 is to be implemented with immediate effect.

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1 Introduction

1.1 Background

The Highways Agency (HA) set out its overarching Aiming for Zero (AfZ) Strategy in April 2010. As part of this, the AfZ Road Worker Safety Strategy has an overall aim of significantly reducing health and safety risks to road workers, eliminating road worker fatalities and serious injuries and significantly reducing road worker personal injury accidents and “near miss” incidents.

In accordance with the Department for Transport’s Traffic Signs Manual (TSM) Chapter 8, service providers use Impact Protection Vehicles (IPVs) for the installation and removal of temporary traffic management (TTM). IPVs are works vehicles equipped with a Lorry Mounted Crash Cushion (LMCC) at the rear, which is designed to absorb some impact energy during a collision. LMCCs are sometimes referred to as Truck Mounted Attenuators.

IPVs are equipped with a light arrow sign which is used to direct road users to the left or right of the vehicle, reducing the likelihood of a collision between a road user vehicle and a works vehicle. The LMCC is intended to reduce the injury severity to road users in the event of a collision. IPVs can also be used to reduce risks to road workers on foot on the carriageway and working from the rear of works vehicles.

Any work activity involving installation, maintenance and removal of TTM on high speed roads is hazardous. This Interim Advice Note (IAN) will help the HA to fulfil its future vision for improving road worker safety, by significantly reducing risks to road workers involved in the installation, maintenance and removal of TTM. It therefore has the potential to make a significant contribution towards the HA AfZ road worker safety strategy target:

- Substantially reduce the risks to those working on the rear of, or around, works vehicles.

1.2 Scope

This IAN provides guidance to the service provider on the purpose of IPVs and on the management of risk associated with their use, on trunk roads, including motorways and all-purpose trunk roads.

This IAN applies to all TTM at road works, including TTM being carried out as part of major schemes. It does not apply to the use of IPVs as part of emergency incident management.

This IAN applies to the HA network in England. Application of this document on any other road is subject to approval for its use being given by the appropriate Highway Authority.

This IAN outlines how the risks to road workers and road users should be assessed through a site specific risk assessment. This includes consideration of the operational method used, specifically the need to select the appropriate choice of dual or single vehicle working.

This guidance is supplementary to (but does not replace any elements of) the existing guidance for TTM at road works, provided in TSM Chapter 8, Parts 1 and 2.

The intention is that the guidance given in this IAN may be included within future revisions of TSM Chapter 8.

This IAN is intended to be used in conjunction with the HTMA Guidance on TTM Vehicle Selection and Operation.

2 Guidance on the use of Impact Protection Vehicles for Temporary Traffic Management

2.1 Introduction

The Highways Agency's Aiming for Zero Road Worker Safety target No. 3 is to substantially reduce the risks to those working on the rear of, or around, works vehicles, wherever the works vehicles are located. Meeting this target is the main focus of this guidance, whilst at the same time ensuring that the risks are not transferred to road users.

The purpose of IPVs is:

- to alert road users to the presence of road works vehicles on the hard shoulder or on the carriageway and, by association, road workers;
- to provide appropriate information and instruction to road users through the use of authorised traffic signs;
- to reduce the severity of injury to road users should a road user collision with a works vehicle occur; and
- to reduce risks to road workers on foot on the carriageway and working on the rear of works vehicles; and
- to reduce risks to road workers in and around TTM vehicles and other works vehicles.

The Management of Health and Safety at Work Regulations require service providers to undertake a suitable and sufficient assessment of the risks to the health and safety of their employees. TSM Chapter 8, Section O2.2.1 states:

The Management of Health and Safety at Work Regulations 1999 require that a suitable and sufficient risk assessment, specific to the task being performed, must be carried out to provide input to the method statement as it is being drafted. Consideration must be given to ways of firstly eliminating, or if this is not possible, then minimising the risk to operatives and the public. Information on formulating a risk assessment is given in the HSE free publication "Five steps to risk assessment".

This IAN builds on this requirement, by providing guidance on the basis for this risk assessment.

The risk assessment should be site specific, suitably recorded and consider all relevant factors that may affect the risks associated with an operation. The risk assessment should also record the method used to install, maintain, or remove TTM, specifically including the use of dual or single vehicle working.

2.2 Vehicle options

The installation, maintenance and removal of temporary traffic management may be carried out using one of the following options:

- Dual vehicle working. This is two vehicles working together with an IPV positioned 75m (+/-25m) upstream of the works vehicle; or
- Single vehicle working. This is one vehicle which acts as both IPV and works vehicle.

The use of dual or single vehicle working is likely to result in different injury risk to road workers. This difference in injury risk means the choice of dual or single vehicle working (and the separation distance if dual vehicle working is used) can be crucial to ensuring that the risk to road workers is As Low As Reasonably Practicable (ALARP), whilst managing safety risks to road users to a tolerable level. This is in accordance with the general principles applied in TSM Chapter 8. Refer to Section 2.3.

In some circumstances, it may be appropriate to use more than two vehicles, with more than one upstream IPV. The principles of dual vehicle working apply equally to such scenarios.

The advice contained in this IAN is provided on the basis that service providers responsible for the installation, maintenance and removal of TTM using IPVs comply with the guidance given in TSM Chapter 8 Part 1: Design and Part 2: Operations.

2.2.1 Dual vehicle working

Dual vehicle working refers to the use of two vehicles that work together at a separation distance of 75m (+/-25m). The first (upstream) vehicle is fitted with an LMCC and offers protection to the downstream works vehicle. Where practicable, the works vehicle may also be fitted with an LMCC.

Signing on the vehicles should comply with the recommendation in TSM Chapter 8 Part 2 O5.5.5 and O10.6.6 for the working vehicle.

Research indicates that, when working in a live lane, dual vehicle working may achieve the lowest level of relative risk to road workers (see Annex A).

Dual vehicle working should normally be used when installing, maintaining and removing TTM, in accordance with the HTMA guidance, 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.

When using dual vehicle working, a suitable separation distance should be maintained between the IPV (the upstream vehicle) and the downstream vehicle at all times. This distance should be 75m (+/-25m) (as shown in the Plans in TSM Chapter 8 Part 2: Operations Section O10). Selection of an appropriate distance between the vehicles 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 downstream vehicle.
- Longer distances decrease the risk of the upstream vehicle being shunted into the rear of the downstream 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 downstream vehicle. If the downstream vehicle is not fitted with an LMCC, the severity of such a collision is likely to be greater.

2.2.2 Single vehicle working

Single vehicle working refers to the use of a single vehicle for installation, maintenance, or removal of TTM equipment.

This vehicle may or may not be equipped with an LMCC; if it is not fitted with an LMCC, it should not operate as a single vehicle in a live lane of a dual carriageway open to vehicular traffic (TSM Chapter 8, Section O5.9.5).

Signing on the vehicle should comply with the recommendation in TSM Chapter 8 Part 2 O5.5.5 (if the vehicle is fitted with an LMCC) and O5.2.3 (if the vehicle is not fitted with an LMCC).

Single vehicle working may be considered for use when installing, maintaining and removing TTM, in accordance with the HTMA guidance, during activities which do not require road workers to operate on the rear of a vehicle in a live lane.

2.3 Site specific risk assessment

A site specific risk assessment enables the risks to road workers and road users to be suitably identified and subsequently managed to a level that is as low as reasonably practicable.

The advice contained within this document is given on the basis that a service provider competent person carries out a suitable and sufficient site specific risk assessment, in accordance with the requirements and guidance in GD 04/12 in the Design Manual for Roads and Bridges, well before site works and ensures that it is appropriately recorded.

2.3.1 Specific considerations – all routes

The site specific risk assessment should, as a minimum, include consideration of the fixed environment requirements, static operational requirements and dynamic operational requirements.

2.3.1.1 Fixed environment requirements

Fixed environment requirements – the characteristics of the site which do not change on a regular basis; for example this should normally include (but is not restricted to):

- Number of lanes on the carriageway.
- Availability of safe taper locations, emergency refuge areas and maintenance access areas.
- Presence of a hard shoulder, or hard shoulder discontinuities.
- Dynamic use of the hard shoulder as a running lane (if present).
- Presence of Variable Signs and Signals (VSS) to support lane closure.
- Horizontal and vertical road alignment and sightlines.
- Presence of junctions, slip roads, roundabouts, access roads, central reserve gaps, etc.
- Presence of road lighting.

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

2.3.1.2 Static operational requirements

Static operational requirements – the characteristics specific to the type of works being carried out at a given site. The risk assessment should 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). The choice of technique should be made whilst taking into consideration the purpose of IPVs (provided in section 2.1 in this IAN), the 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 should normally include (but is not restricted to):

- Lane(s) to be closed.
- Expected traffic flow per hour per lane.
- Expected HGVs per hour per lane.
- Likely speed of approaching vehicles (not the speed limit of the road).
- Any known issues concerning compliance with signing or signals.
- Availability of a suitable escape route for operatives.
- Type of vehicle(s) to be used to install / remove equipment, including whether the works vehicle is fitted with an LMCC.
- Requirement for carriageway crossings by operatives.
- Manoeuvrability when installing / removing TTM using more than one vehicle.
- Use of a dedicated lookout person, with a suitable means of communication.

Appropriate mitigations should be put in place to reduce the risks to road workers and road users to ALARP. Assessment of these characteristics should be carried out in advance of the works, in order that operatives have sufficient time to familiarise themselves with the techniques and mitigations required at different times during the operation.

2.3.1.3 Dynamic operational requirements

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

- Visibility of oncoming traffic for operatives.
- Weather conditions.
- Actual traffic flow.
- Actual HGV traffic.
- Actual traffic speed.
- Confirmation of setting of Variable Sign and Signals.
- Communications with the HA Regional Control Centre.

These factors should be assessed at the site immediately prior to the start of the on-road work and reassessed regularly, including whenever circumstances at the site change significantly. The scope for the dynamic part of the risk assessment should be documented within the written risk assessment.

2.3.2 Specific considerations - Smart Motorways

Additional risks to road workers on Smart Motorways should be considered at the planning stage, and included in the site specific risk assessment.

The term “Smart Motorway” includes three types of motorway:

- (1) Controlled Motorway, i.e. a motorway with variable speed limits, and with a hard shoulder which should only be used in a genuine emergency.
- (2) Hard Shoulder Running (HSR), i.e. part time use of the hard shoulder as a running lane.
- (3) All Lane Running (ALR), i.e. where the motorway does not have a hard shoulder, all lanes are used as running lanes.

When working on a Smart Motorway – HSR section, there may be an increased risk of hard shoulder misuse by road users, i.e. road users driving on the hard shoulder when the hard shoulder is closed as a running lane. This increased risk of hard shoulder misuse may also arise in the case of sections of dual carriageway with hard shoulder that are immediately downstream of a Smart Motorway – HSR or ALR section. Particular consideration should also be given to driver compliance with VSS on these sections.

3 Withdrawal Conditions

This IAN will remain in force until such time as this guidance can be incorporated permanently into a future revision of TSM Chapter 8, or superseded by revised HA guidance.

4 Contacts

Further information may be obtained from:

Mark N. Pooley,
National Health and Safety,
Highways Agency,
GA Federated House,
London Road,
Dorking,
Surrey, RH4 1SZ.

Tel: 01306 87 8282.

GTN: 3904 8282.

Email: Standards_Feedback&Enquiries@highways.gsi.gov.uk

5 Training

5.1 Road worker training

Service providers should ensure that suitable and sufficient training is given to road workers. This training should include the following:

- (a) Safe use of IPVs.
- (b) Safe working in close proximity to a works vehicle.
- (c) Safe working on the rear of a works vehicle.

5.2 National Highway Sector Schemes

The development of an accredited training module for the use of IPVs in accordance with this IAN is on-going. Training materials (including production of presentation material, the drafting of suitable test questions and where appropriate determining the assessment criteria) need to be developed and piloted before the training and assessment module can be provided to recognised training instructors and training bodies by the Awarding Organisation.

The training committee, which has been established by industry via National Highway Sector Scheme 12 for TTM, is fully aware of this guidance on the use of IPVs for TTM and development work has been included in their current programme of work.

6 Normative references

DfT Design Manual for Roads & Bridges GD 04/12 Standard for Safety Risk Assessment on the Strategic Road Network.

<http://www.dft.gov.uk/ha/standards/dmr/vol0/section2/gd0412.pdf>

DfT Traffic Signs Manual (TSM) Chapter 8 (2009) Traffic Safety Measures and Signs for Temporary Situations, Part 1 – Design & Part 2 – Operations.

<https://www.gov.uk/government/publications/traffic-signs-manual>

HTMA Guidance on TTM Vehicle Selection and Operation.

<http://www.htma.info/>

7 Informative references

7.1 Highways Agency – Aiming for Zero and Road Worker Safety Strategy

Highways Agency Aiming for Zero.

<https://www.gov.uk/government/collections/roadworker-safety-highways-agencys-aiming-for-zero-programme>

Aiming for Zero Road Worker Safety Strategy.

<https://www.gov.uk/government/publications/highways-agency-health-and-safety-strategy>

7.2 Research Reports

TRL Report CPR 1323 (2012): IPV collisions – exploratory risk investigation and possible countermeasures.

TRL Report PPR 701(2014): IPV Guidance Supporting Documentation.

Atkins Report Hard Shoulder Abuse Final Report, Dec 2012.

Annex A: Background Information

Research has been carried out on behalf of the Highways Agency to quantify the relative risks to road workers of different approaches to the use of IPVs in order to inform this guidance. This research included identification of risks via consultation with service providers, analysis of accident data and computer simulation of collisions involving IPVs.

A1 TRL Report CPR 1323 (2012): IPV collisions – exploratory risk investigation and possible countermeasures

This research investigated the trend in IPV collisions between 2007 and 2011 in order to identify if the rate at which these vehicles were struck was increasing. The findings showed that the overall number of IPV collisions was increasing; however, when exposure was taken into account, there was no discernible trend in terms of collisions with IPVs involved in Static Traffic Management. The work also highlighted that many IPV collisions were not reported at all or were recorded incorrectly in the HA AIRSweb database. Recommendations were made to rectify this.

Initial risk analysis was conducted into dual and single vehicle working and, although there was insufficient evidence to provide definitive guidance on working methods, a number of points were raised for consideration.

Finally, an overview of potential countermeasures which could be implemented to reduce the likelihood, frequency and severity of road user collisions involving IPVs was suggested.

A2 TRL Report PPR 701 (2014): IPV Guidance Supporting Documentation

Following TRL's previous work, the risks associated with the use of dual and single vehicle working were researched in more detail. This report contains the results of consultation with service providers, a review of the approaches taken in other countries, a detailed analysis of the risks associated with different approaches, and collision modelling to inform the required separation distances between the two vehicles in a dual vehicle working arrangement. In addition, it considers the specific risks associated with each of the factors that need to be reviewed as part of a service provider's suitable and sufficient risk assessment to ensure that the risk is ALARP.