

Traffic Management Inspections

The good, the bad and the ugly

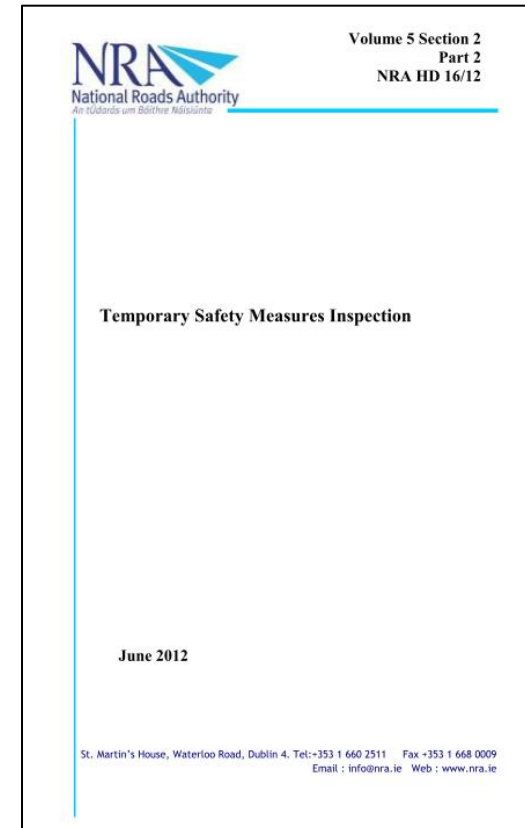


Content

- **Overview of NRA HD 16/12**
- **Types of Road Works Inspected**
- **Compliance with NRA HD 16/12**
- **Good Practice Examples – *The Good***
- **Recurring Issues – *The Bad and The Ugly***
- **Advice Notes Issued**

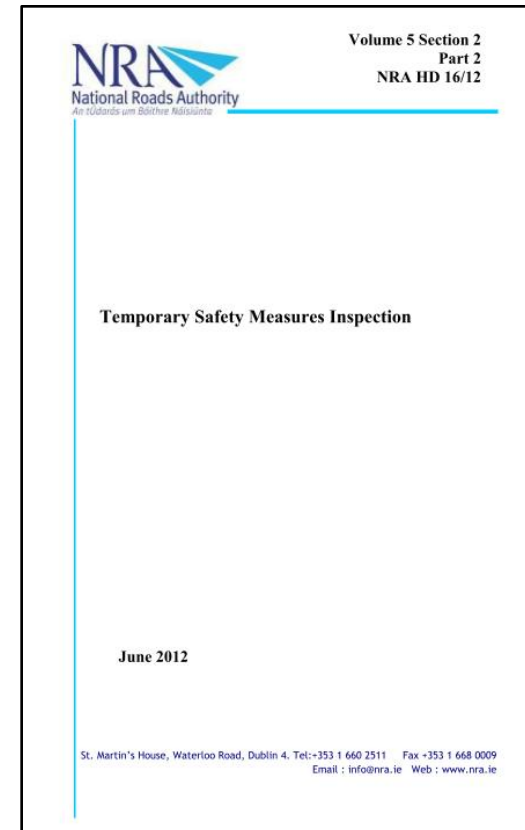
NRA HD16/12

- **Temporary Safety Measures Inspection (TSMI) - safety procedure for road works that was introduced by the NRA to comply with EU Directive 2008/96/EC on Road Infrastructure Safety Management (EU RISM).**
- **Standard addresses the requirements of the EU Directive and its transposition into Irish Law under S.I. No. 472 of 2011.**



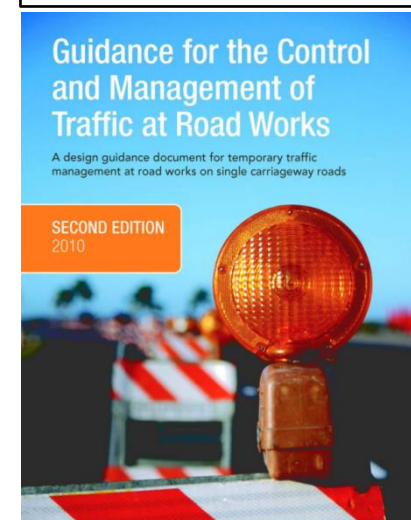
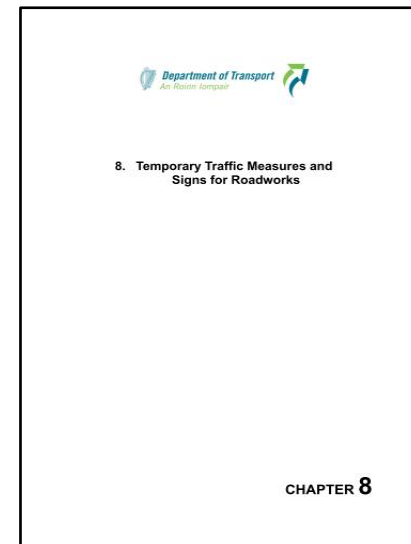
NRA HD16/12

- **The purpose of a TSMI is to ensure that the standards applying to TSM at road works are properly applied and to record impacts of road works on the safety of traffic flow.**
- **TSMI are required on all National Roads.**

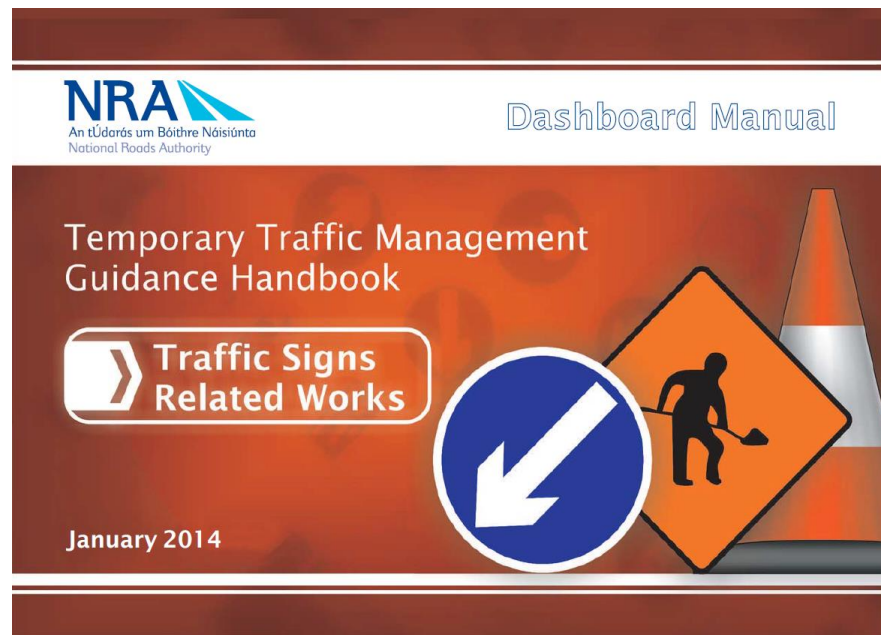
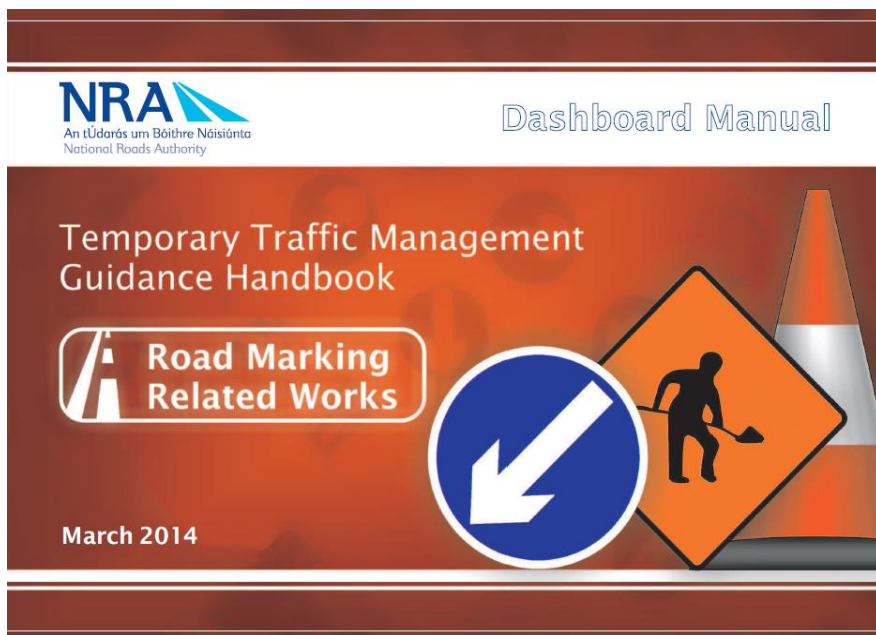


Temporary Safety Measures – Guidance Docs

- **Chapter 8 of the Traffic Signs Manual.**
- **Guidance for the Control and Management of Traffic at Road Works.**



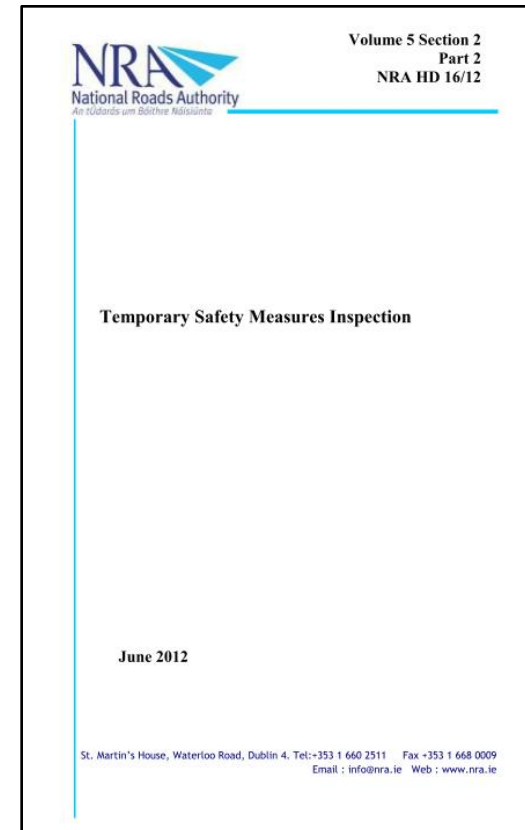
Temporary Safety Measures – Guidance Docs



- **Easy-to-use reference documents for planning and implementing Temporary Traffic Management (TTM) for routine road marking/sign maintenance works.**
- **Short duration works, max 1 day, Site Specific Risk Assessment required prior to implementation.**

NRA HD 16/12 : TSMI – Responsibility

- **NRA are responsible for TSMI on projects sanctioned/or procured by the NRA.**
- **Local Authorities (LA) are responsible for TSMI on projects sanctioned and/or procured by the LA.**
- **Statutory Undertakers/Road Operators are responsible for TSMI on projects or infrastructure under their management.**



NRA Procured Works

- **Major Projects**
- **Signs and Road Markings**
- **Motorway Maintenance and Renewal Contracts (MMaRC)**
- **Eirspan Bridge Works**
- **Intelligent Transport Systems**



NRA HD 16/12 : TSMI – Frequency

- The frequency of TSMI shall be subject to the following minimum requirements:

Duration of Road Works	% of sites to be inspected per annum	Frequency of Inspection
Exceeding 1 year in duration	100% of sites to be inspected	Quarterly
6 month to 1 year in duration	100% of sites to be inspected	Two Inspections
1 month to 6 months in duration	50% of sites to be inspected	Single Inspection
Greater than 1 day, less than 1 month	10% to 20% of sites to be inspected	Single Inspection
1 day in duration	Random	Single Inspection

NRA Map Portal to Fulfil Requirements of Directive

NRA Portal Login

← → ↻ <https://web.nra.ie/maps/Account/LogOn?ReturnUrl=%2fmaps%2f> ☆ ☰

NRA
An tÚdarás um Bóithre Náisiúnta
National Roads Authority

Map Portal Sign In

Username or Email

You can sign in with your assigned username or the email address you used to register.

Password

[Sign In](#)

Create the Works Record

NRA Map Portal
x

← → ↻
https://web.nra.ie/maps/Works/Create/b62a152b-2f62-455b-bcfe-e1c6e6119a10
☆ ☰

Map Portal
Home
Collisions
Works ▾
Downloads ▾
Sign Out

Create a New Works Record

Works Description

Direction Description

If Works will be carried out on only one side of the road, indicate the direction by naming the Next town along the route or state Both to indicate both directions.

Applicant

Start Date

Finish Date

Enter the Date the Works are Scheduled to be Completed. If not known, Enter an Estimated Date. The Finish Date can be Updated Until the Finish Date has Passed.

ITM	636374.02164, 805698.93100
INGR	236377.01328, 305703.98313
LATLON	-7.44522, 53.99925
BASE MAPPING	-828798.16393, 7170013.87203 (EPSG:3857)

Attach the Record of Inspection

Back to Works details

Inspection:

Inspection Date: 2014-02-21

Inspection Contractor: Jacobs

Inspector Name: Pat Phelan

Description: Drive through inspection

Upload File: **Choose File** No file chosen

Create Inspection

Attach Inspection Report Form

Inspection Form Example

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority		TEMPORARY SAFETY MEASURES (TSM) INSPECTION SYSTEM REPORT																													
TIME AND DATE OF INSPECTION 12.00pm 06th October 2013		ROUTE NUMBER N99	ROAD AUTHORITY NRA																												
ROADWORKS START DATE Not Recorded (NR)		EXPECTED DATE OF COMPLETION OF ROADWORKS NR																													
CONTRACTOR (if applicable):	TSM DESIGNER:	ROADWORKS TYPE (Construction / Non-Construction):																													
	NR	Construction																													
PCDS:	PSDP:	ROADWORKS SAFETY OFFICER / COORDINATOR:																													
Contact Details: 999 7226116	Contact Details: 999 7226116	Contact Details: NR																													
Roadworks Description: Excavation for sign post bases on the N99 at Leenane. 100 Kph speed limit.																															
<table border="1"> <thead> <tr> <th>ASSESS</th> <th>Colour Coding</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>Achievable</td> <td>Green</td> <td>Safe systems in place and operated appropriately.</td> </tr> <tr> <td>Improvement Required</td> <td>Yellow</td> <td>Systems or operation of systems requiring improvement.</td> </tr> <tr> <td>Unacceptable</td> <td>Red</td> <td>Conditions requiring immediate corrective / improvement action.</td> </tr> <tr> <td>Not Reviewed</td> <td>NR</td> <td>Item not reviewed during inspection.</td> </tr> </tbody> </table>				ASSESS	Colour Coding	Definition	Achievable	Green	Safe systems in place and operated appropriately.	Improvement Required	Yellow	Systems or operation of systems requiring improvement.	Unacceptable	Red	Conditions requiring immediate corrective / improvement action.	Not Reviewed	NR	Item not reviewed during inspection.													
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TSM - Temporary Safety Measures (TSM) for Roadworks																															
Evidence available that sufficiently trained staff are present to design and implement the TSM?																															
TSM 1																															
Does the Design conform to the Traffic Signs Manual (DoT) and does the TSMs installed conform to the design layout and parameters?																															
TSM 2		X																													
Have all hazards been assessed in the TSM?																															
TSM 3		X																													
Has allowance been made for the delivery and removal of materials, and have these been adequately signed?																															
TSM 4		X																													
Have Gardaí been informed of any traffic lights or stop/go system in use?																															
TSM 5		X																													
Have Gardaí been informed of speed limits being introduced for the duration of the works?																															
TSM 6		X																													
Are all traffic management equipment in good condition for purpose (easily understood by the general road user) and in accordance with the Traffic Signs Manual (i.e. size/height, colour, reflectivity)?																															
TSM 7		X																													
Are sign sightlines in accordance with the requirements of the TSM and are sightlines adequate for all other signs (i.e. free from bends, hills' dips in the road, parked vehicles, hedges etc)?																															
TSM 8		X																													
Will the site be safe during hours of darkness and adverse weather conditions?																															
TSM 9		X																													
Is the carriageway/footway being kept clear of mud and surplus equipment?																															
TSM 10		X																													
Are materials/plant correctly and safely stored?																															
TSM 11		X																													
Is there safe access/egress to adjacent private premises and local roads/junctions?																															
TSM 12		X																													
Does signing and guarding meet the changing site conditions?																															
TSM 13		X																													
Are traffic control arrangements working at their optimum level to reduce traffic delays?																															
TSM 14		X																													
Are all misleading permanent signs & road markings covered?																															
TSM 15		X																													
Have the needs of pedestrians and other vulnerable road users (disabled pedestrians, blind, cyclists, horses etc) been addressed in the layout? If existing public routes have been blocked, has suitable alternatives been provided?																															
TSM 16		X																													
Is the Work Area clearly defined to the road user?																															
TSM 17		X																													
<table border="1"> <thead> <tr> <th>Item</th> <th>2</th> <th>4</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>Photo TSM 1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Photo TSM 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Photo TSM 3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Photo TSM 4</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Photo TSM 5</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Photo TSM 6</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Item	2	4	2	Photo TSM 1				Photo TSM 2				Photo TSM 3				Photo TSM 4				Photo TSM 5				Photo TSM 6			
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Photo TSM 2																															
Photo TSM 3																															
Photo TSM 4																															
Photo TSM 5																															
Photo TSM 6																															
<p>Summary of Inspection: Traffic management causing a serious hazard to the road user. Low traffic volumes observed at the time of inspection. Works crew consists of 2 operatives, van, mini-digger and flatbed truck with trailer.</p> <p>Travelling West</p> <ul style="list-style-type: none"> 1st advance roadworks sign obscured by vegetation. Also, frame appears incorrect. (See Photo TSM 5 & 6 and Item 7 & 8 above). 2nd advance roadworks sign obscured by vegetation. (See Photo TSM 7 & 8 and Item 8 above). 3rd advance roadworks sign. (See Photo TSM 9). Works vehicles and site (See Photo TSM 10). 4th advance roadworks sign. Sign damaged. (See Photo TSM 11 & Item 7 above). Truck obstructing carriageway (See Photo TSM 12 & 13 & Item 3 above). 																															

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority		TEMPORARY SAFETY MEASURES (TSM) INSPECTION SYSTEM REPORT (Supplementary Information)	
Photo TSM 7	Photo TSM 8	Photo TSM 9	
Photo TSM 10	Photo TSM 11	Photo TSM 12	
Photo TSM 13	Photo TSM 14	Photo TSM 15	
Photo TSM 16	Photo TSM 17	Photo TSM 18	
<p>Summary of Inspection continued:</p> <ul style="list-style-type: none"> Excavation ongoing for sign post base. Mini-digger obstructing carriageway. Road user has to cross the white line on a blind bend to manoeuvre past mini-digger. (See Photo TSM 14 to 16 & Item 2 & 3 above). <p>Travelling East</p> <ul style="list-style-type: none"> Work site (See Photo TSM 17 & 18). 			

Good Practice – *The Good*



Principles of Traffic Management

- **W** → **Warn**
- **I** → **Inform**
- **D** → **Direct**
- **E** → **End**

The Good - Static TSM on Motorway

Warn



- **Additional warning signs beyond Chapter 8 requirements provided**

The Good - Static TSM on Motorway

Inform



- **Advance warning to inform of lane closure ahead at 1km and every 200m both sides of carriageway**

The Good - Static TSM on Motorway

Direct



- **Clear direction through TSM layout**
- **Road works end sign provided on diverge lane**

The Good - Static TSM on Motorway

Direct



- Merging traffic warned and directed through TSM layout
- Works vehicles fitted with rear reflective markings
- Lateral Safety Zone maintained by staggered cones

The Good - Static TSM on Motorway

End



- **Site access warning sign provided at works exit**
- **Road works end signs provided both sides of carriageway**

The Good - Semi-Static TSM on Motorway



- Road user warned of hazard ahead
- Road user informed of nature and extent of hazard

The Good - Semi-Static TSM on Motorway



- Repeater sign within TSM layout
- Road user directed around hazard

The Good - Short Duration Works on Motorway



- **IPV with rear mounted flashing arrow in advance of works vehicle**
- **Longitudinal Safety Zone maintained**
- **Work-site well defined**

The Good - Short Duration Works on Single Carriageway



- **Good visibility**
- **Reflective material clean**
- **Warning vehicle in advance of works vehicle**
- **Work-site well defined**

The Good - Mobile Lane Closure

- **Good Visibility**
- **Appropriate rear mounted signage**



The Good - Static Layout at Eirspan Bridge



- **Motorist is well informed**
- **Work-site well defined**
- **Equipment well maintained**

The Good - Deployment of Equipment



- Advance warning signs installed from deployment vehicle protected by IPV



- Lead in taper installed on live lane protected by IPV

The Good - Deployment of Equipment



- **Vehicles move behind taper and commence installing longitudinal cones**
- **Longitudinal cones laid out on trafficked side from low level platform inside deployment vehicle**
- **Material should not be deployed from a vehicle if vehicle is acting as IPV**

Public Interface

- **Pedestrians** – Term includes mobility impaired pedestrians, pushchairs and wheelchair users.
- At all roadwork sites, where there is existing provision for pedestrians, consideration must be given to providing or maintaining facilities or access.
- Where footways are affected by construction or maintenance work, a safe route should be provided for pedestrians, at all times past the works area.

The Good - Public Interface



- **Pedestrians separated from works**
- **Safe route provided and signed**
- **Ramp installed for vulnerable users**

Recurring Issues - *The Bad*



The Bad - Inadequate TSM



- **Motorway off-ramp**
- **No advance warning signs on approach**
- **Work site poorly defined**

The Bad - Inadequate TSM



- **120 Kph motorway dual carriageway**
- **No advance road works signs on approach**
- **Duration of works?**

The Bad - Inadequate TSM



- 100 Kph road
- Solid white line
- Poor forward visibility
- Priority (Yield Sign) in use

TTM Guidance Handbook Extract



Temporary Traffic Management
Guidance Handbook

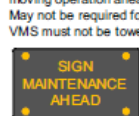
Traffic Signs

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF
LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY - NOT TO SCALE



VMS to give drivers advance notification of continuously moving operation ahead.
May not be required for One-Off Isolated Works.
VMS must not be towed as part of a moving operation.



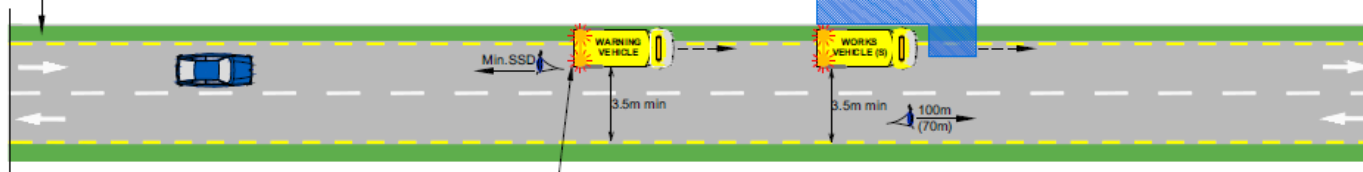
10km Max.



To allow one overtaking manoeuvre (80m max.)

50m

5m to 10m



Traffic must yield behind warning vehicle to oncoming traffic.

SSD Parameters		
Road Type	Speed Limit (km/h)	Stopping Sight Distance (SSD) (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Notes

- Where traffic volumes are > 20 veh / 3 mins (400 veh/h), refer to TS43. Three minute traffic counts should be carried out at regular intervals to ensure flows are not exceeded.
- Where sight lines are poor refer to TS03 or TS04 as appropriate.
- For continuously moving operations, where required, pedestrians and cyclists are to be guided safely through or around the works.
- For isolated one-off stops, refer alternatively to TS24.
- Vehicles to have minimal encroachment on the running lanes where possible.
- Care must be taken not to damage verges or cause debris when maneuvering vehicles.
- Should not be used in poor weather conditions.

Legend	
	Forward Clear Visibility 80 / 100 km/h 30 / 50 / 60 km/h
	Minimum Stopping Sight Distance (SSD)
	Works Area

January 2014

Minor Maintenance (Continuously Moving)
Pole Caps / Patching / Sign Washing / Hedge Maintenance

< 5
mins

Single C/W
Mainline Verge - No H/S - Good Sight Lines

TS 02

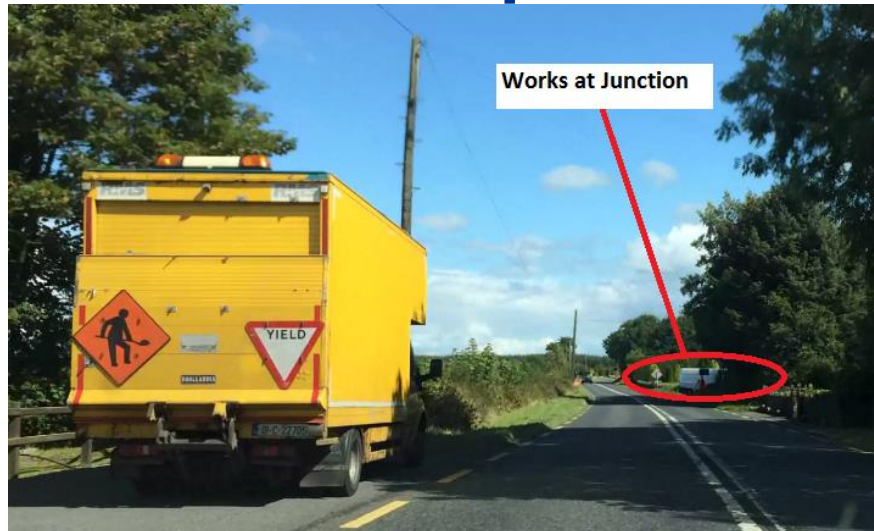
- Short duration sign maintenance

The Bad - Inadequate TSM



- **100 Kph road**
- **No protection to operatives**
- **Confusing for the road user**

The Bad - Inadequate TSM



- 100 kph road
- Warning vehicle does not inform road user
- Advance warning signs indicating nature and direction of hazard should be installed
- Work site poorly defined

The Bad - Misleading Signs/Markings



- **End of no overtaking sign erected**
- **Solid permanent road marking**
- **Poor forward visibility**

The Bad - Misleading Signs/Markings

End of No Overtaking Sign Erected

- Permanent no overtaking sign at location
- Solid permanent road marking



The Bad - Exiting Vehicles



- **Speed limit 120 Kph**
- **Lateral Safety Zone of 1.2 metres required**
- **Where possible, exit/enter vehicle on non-traffic side**

The Bad - Lateral Safety Zone



- **100Kph, Lateral Safety Zone of 1.2 metres required**
- **Safety Zone Must be kept clear of ALL plant, materials and personnel**

The Bad - Deployment of Equipment



- Operative not allowing sufficient time to cross live carriageway

The Bad - Deployment of Equipment



- **Operative unloading equipment from trafficked side of vehicle**

The Bad - Deployment of Equipment



- **Operative unloading equipment from trafficked side of vehicle in live carriageway**
- **Vehicles exiting motorway?**

The Bad - Public Safety



- **Pedestrian not informed**
- **No safe route provided**

The Ugly?



The Ugly?



Advice Notes

- Available for download from the Publications Section of the NRA website.

<div data-bbox="123 601 316 679">  <p>NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority</p> </div> <div data-bbox="355 601 633 676"> <h3>Health and Safety Advice Note</h3> </div> <div data-bbox="117 723 670 755"> <h4>Temporary Traffic Measures - Exiting Vehicles</h4> </div> <div data-bbox="144 791 382 958">  </div> <div data-bbox="425 791 662 958">  </div> <div data-bbox="150 983 386 1062"> <p>This Advice Note acts as a reminder to persons involved in the construction and maintenance of the road network in relation to exiting/entering vehicles in close proximity to live traffic:</p> </div> <div data-bbox="150 1066 388 1265"> <ul style="list-style-type: none"> A method statement and risk assessment should be prepared for all works activities. A site safety induction should be completed for all operatives involved in a work activity. The procedure for and the method of safe access and egress to the workplace should be addressed in the method statement and risk assessment and briefed to operatives as part of the site safety induction. </div> <div data-bbox="413 983 658 1258"> <ul style="list-style-type: none"> Where it is necessary to exit a works vehicle in close proximity to a live carriageway lane, a safe system of access and egress should be used. Temporary Safety Measures should be utilised in accordance with Chapter 8 of the Traffic Signs Manual. Operatives should exit /enter vehicles from the side furthest away from live traffic i.e for hard shoulder works - the near-side. Operatives should be aware of weather conditions, road speed and lateral safety zones. Operatives should be aware of approaching traffic. </div>	<div data-bbox="707 572 900 651">  <p>NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority</p> </div> <div data-bbox="938 568 1219 644"> <h3>Health and Safety Advice Note</h3> </div> <div data-bbox="699 696 1244 723"> <h4>Temporary Traffic Measures - Temporary Safety Barriers</h4> </div> <div data-bbox="724 748 971 933">  </div> <div data-bbox="728 949 973 1013"> <p>This Advice Note has been prepared to advise on best practice with respect to Working Widths of Temporary Safety Barriers at Temporary Traffic Measures</p> </div> <div data-bbox="732 1022 973 1085"> <p>Chapter 8 of the Traffic Signs Manual gives guidance on Temporary Safety Barriers to be used at Temporary Traffic Management layouts.</p> </div> <div data-bbox="732 1088 973 1278"> <ul style="list-style-type: none"> Where Safety Barriers are used not only to delineate the areas where pedestrians or traffic should go but also to prevent errant vehicles encroaching into the area of the roadworks, their design shall be in accordance with IS EN 1317 and NRA TD 19, which specify the performance parameters required for safety barriers for use on public roads. The placement of barriers should allow for the required working width. </div> <div data-bbox="1000 748 1238 933">  </div> <div data-bbox="1000 938 1238 1240"> <ul style="list-style-type: none"> This working width can be included as part of the lateral safety zone. The lateral safety zone/working width may be used for the purpose of an emergency lane. At no time should vehicles be parked, materials stored, or operations be carried out within the working width or lateral clearance. The design of the layout of barriers must adhere to the manufacturer's requirements to ensure the temporary safety barrier acts as intended on impact. Manufacturer's requirements include: <ul style="list-style-type: none"> Maintaining clear working width; Anchorage of terminals; Interlocking of units, e.g. on concrete barriers. </div> <div data-bbox="1025 1259 1238 1306"> <p>Further Guidance is given on Temporary Safety Barriers in NRA TD 19 of the DMRB.</p> </div>	<div data-bbox="1277 572 1470 651">  <p>NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority</p> </div> <div data-bbox="1514 568 1802 644"> <h3>Health and Safety Advice Note</h3> </div> <div data-bbox="1373 684 1736 745"> <h4>Temporary Traffic Measures - End of No Overtaking</h4> </div> <div data-bbox="1306 748 1551 933">  </div> <div data-bbox="1300 945 1551 1009"> <p>This Advice Note has been prepared to provide guidance on the positioning of End of No Overtaking signs at Temporary Traffic Measures</p> </div> <div data-bbox="1300 1022 1551 1098"> <p>Table 8.2.4 of Chapter 8 of the Traffic Signs Manual gives guidance on the use of sign RUS 014 No Overtaking at Temporary Traffic Management layouts.</p> </div> <div data-bbox="1300 1102 1551 1302"> <ul style="list-style-type: none"> No Overtaking sign RUS 014 prohibits overtaking at locations where it is considered dangerous to do so. At the point where the overtaking restriction ends, Sign RUS 014 shall be erected together with a Supplementary Plate P 010, End. Ideally the End of No Overtaking sign should be positioned opposite the No Overtaking sign as per Fig 4.4.2 of the Guidance for the Control and Management of Traffic at Roadworks. </div> <div data-bbox="1576 748 1821 933">  </div> <div data-bbox="1570 961 1821 1053"> <ul style="list-style-type: none"> The position of the End of No Overtaking sign should not be in conflict with the permanent road signs or road markings i.e. It should not be positioned at a location where overtaking is permanently prohibited. </div> <div data-bbox="1570 1059 1821 1236"> <ul style="list-style-type: none"> If a suitable location for positioning the End of No Overtaking sign is not identified on site, consideration should be given to the removal of the End of No Overtaking sign from the Traffic Management layout in consultation with the Traffic Management Designer. Any modifications made to the Traffic Management Plan to suit site specific conditions must be recorded on the Traffic Management Plan. </div>
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Thank you for your attention



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