

TEMPORARY TRAFFIC MANAGEMENT SYSTEMS



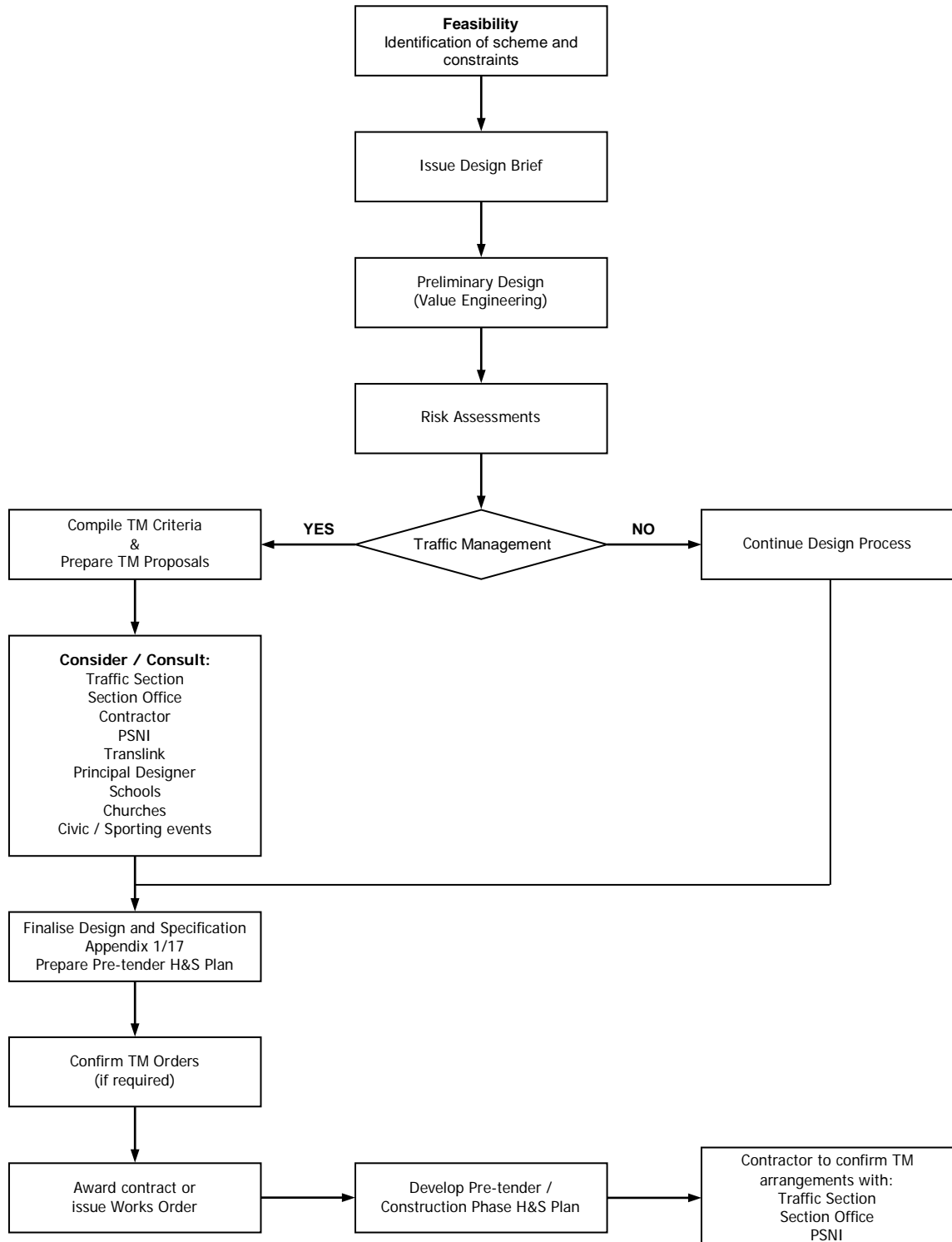
DECISION TREE

(Version 4 – Modified November 2017)

TEMPORARY TRAFFIC MANAGEMENT SYSTEMS

Objectives: - maximise safety of road workers and road users
 - minimise disruption to public

Traffic Management Flow Chart



TEMPORARY TRAFFIC MANAGEMENT SYSTEMS

All Temporary Traffic Management Systems (TTMS) should comply with the *Safety at Street Works and Road Works – A Code of Practice* or *Chapter 8 of the Traffic Signs Manual* as appropriate.

PRELIMINARY DESIGN

Designer (includes Principal Designer) – an organisation or individual, who prepares or modifies a design for a construction project (including the design of temporary works) or arranges for, or instructs someone else to do so.

The preliminary design should:

- avoid hazards or remove source
- take account of risks to:
 - public
 - workers
- take account of risks arising from:
 - setting up, maintaining and removing temporary traffic management
 - delivery of plant / materials
 - access for emergency vehicles
 - access to and from site
 - access to other sites (including homes, schools, businesses or other amenities) located within the TTMS extents

Information required at preliminary design stage:

- (a) Existing road width/conditions – including relative location to, and potential impact on, existing junctions.
- (b) Details of other works occurring in the same vicinity which could effect on phasing/programming of the proposed scheme (liaison with SFO required)
- (c) Details of plant required (see Appendix C)
- (d) Materials to be used/quantities required
- (e) Operations to be carried out (including any utility services alterations)
- (f) Safety zone required (see Appendix B)
- (g) Working space required (*“The space around the works where you will need to store tools, excavated material, equipment and plant, it is also the space required to move around in to do the job”*) Heavy Plant should not be stored on site at night unless it is protected.
- (h) Access arrangements
- (i) Delivery and storage of plant
- (j) Likely type of Temporary Traffic Management regime

- (k) Maintenance of Temporary Traffic Management
- (l) Space for signs (including cones/cylinders between running lanes)
- (m) Timing of works (time of year/day of week / day or night time)
- (n) Publicity
- (o) Any knowledge of previous incidents at same or similar sites.

Parties consulted by applicant at preliminary design stage:

- (a) Client
- (b) Principal Designer
- (c) Designer
- (d) Principal Contractor (*if available*)
- (e) DfI Roads Statutory Functions Officer (SFO)
- (f) DfI Roads Traffic Section
- (g) PSNI (and other emergency services if appropriate)
- (h) Translink (if works are on a bus route/near a station/near a level crossing)
- (i) Affected schools / churches
- (j) Utility companies
- (k) Local Council
- (l) Large Sporting Venues

After an initial design risk assessment has been completed, if necessary, the (Principal) Designer should consider alternative:

- (a) materials
- (b) methods of work
- (c) designs

Notes:

- (a) One temporary traffic management system may not be the optimum solution for all stages of the planned work consequently it may be necessary to design a number of phases of TTMS.**
- (b) The TTMS used for the works may be different than that proposed after the preliminary assessment**

DETAILED DESIGN/ CONSTRUCTION

Additional Information required at detailed design stage –

- (a) type & nature of road– including relative location to, and potential impact on, existing junctions.
- (b) speed limit of road (or actual speeds)
- (c) traffic flows (including % of HGV / buses)
- (d) pedestrian/cycle activity
- (e) details of other works occurring in the same vicinity which could effect on phasing/programming of the proposed scheme (liaison with SFO required)
- (f) suitability of alternative / diversion route
- (g) confirmation with Contractor of working space required
- (h) confirmation with Contractor of safety zone required
- (i) available remaining width for traffic
- (j) Maintenance of Temporary Traffic Management
- (k) Space for signs (including cones/cylinders between running lanes)
- (l) Delivery of plant and Storage of plant (if not off site)
- (m) Timing of works (time of year / day of week / day or night time)
- (n) Publicity
- (o) Means of keeping road clean – wheel wash, road sweeper, etc.

Decisions – Method of TTMS

- (a) can road remain open to 2 way flow?
- (b) if **yes** is speed control or temporary barriers required?
(Refer to *Safety at Street Works and Road Works – A Code of Practice, Pages 53-55 – reproduced in Appendix B*)
- (c) if **no** – is there sufficient width for shuttle working – can shuttle working accommodate traffic flows?
(Refer to *Safety at Street Works and Road Works – A Code of Practice, Page 53 – reproduced in Appendix B*)
- (d) if too much traffic for shuttle working – is a one way order appropriate / required?
- (e) consider if temporary widening of road is required over the extent of the works
- (f) if not, road to be closed – period of closure to be minimised by careful selection of working methods.
- (g) are sight lines / forward sight distances acceptable?
- (h) is a recovery vehicle required? – see DEM 76/04
- (i) can road be signed to Chapter 8 / Street Works Code of Practice?
If not what additional measures are required or does the design require alteration
- (j) will traffic run on temporary surfaces? Are these surfaces appropriate for the flows/speeds?
- (k) timing of work (date / day or night)

Controlled Safe Access Arrangements

Having decided that the road must be closed to carry out the road works safely; there may be particular sites that need trained persons to control safe access arrangements on site.

The Role of the Traffic Marshal

The role is to maintain a safe and effective system of Traffic Control, with responsibility for all traffic (including cyclists and pedestrians) within the site boundary.

The need for Traffic Marshals to facilitate safe access arrangements on site, will be determined following an assessment by the contractor of associated risk factors, linked to authorised access requirements associated with the works, including:

- Complexity of the site/ work activities
- Projected traffic throughput
- Nature of traffic requiring access (Pedestrian / Vulnerable Road Users Access / Cyclists)
- Accessibility requirement to specific buildings or locations
- Residential Access to and from Cul de Sacs

The information required to make a full consideration for the chosen method of TTMS is included in Appendix A

Parties involved in discussion/ consideration at detailed design stage

- (a) Client
- (b) Principal Designer
- (c) Designer
- (d) Principal Contractor
- (e) DfI Roads Statutory Functions Officer (SFO)
- (f) DfI Roads Traffic Section – produce Temporary Traffic Regulation Order
- (g) PSNI (and other emergency services if appropriate)
- (h) Translink (if works are on a bus route/near a station/near a level crossing)
- (i) Local schools, churches, council, sports venues

Types of speed control

- (a) temporary speed limit (advisory / mandatory)
- (b) lane widths
- (c) chicanes
- (d) convoy working.

Possible Temporary Traffic Regulations

- (a) Road Closure
- (b) One Way System
- (c) Speed limit
- (d) No overtaking orders
- (e) Banned vehicle manoeuvres

Further Information.

Traffic Signs Manual Chapter 8 (2009) – Part 1: Design

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/203669/traffic-signs-manual-chapter-08-part-01.pdf

Traffic Signs Manual Chapter 8 (2009) – Part 2: Operations

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/203670/traffic-signs-manual-chapter-08-part-02.pdf

Safety at Street Works and Road Works Code of Practice (Red Book)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/321056/safety-at-streetworks.pdf

APPENDIX A (Example of Information Collection Form)

SCHEME NAME:	
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EXISTING CONDITIONS:		
1	Type and Classification of road:	
2	Available road width:	(m)
3	Permanent speed limit:	mph
PRELIMINARY DESIGN CONSIDERATIONS:		
1	Width of plant that will be required:	(m)
2	Operations to be carried out:	
3	Safety zone required:	(m)
4	Working space required:	(m)
5	Requirements for deliveries / storage:	(m)
6	Type(s) of publicity to be arranged:	
7	Key points raised at discussions with interested parties:	

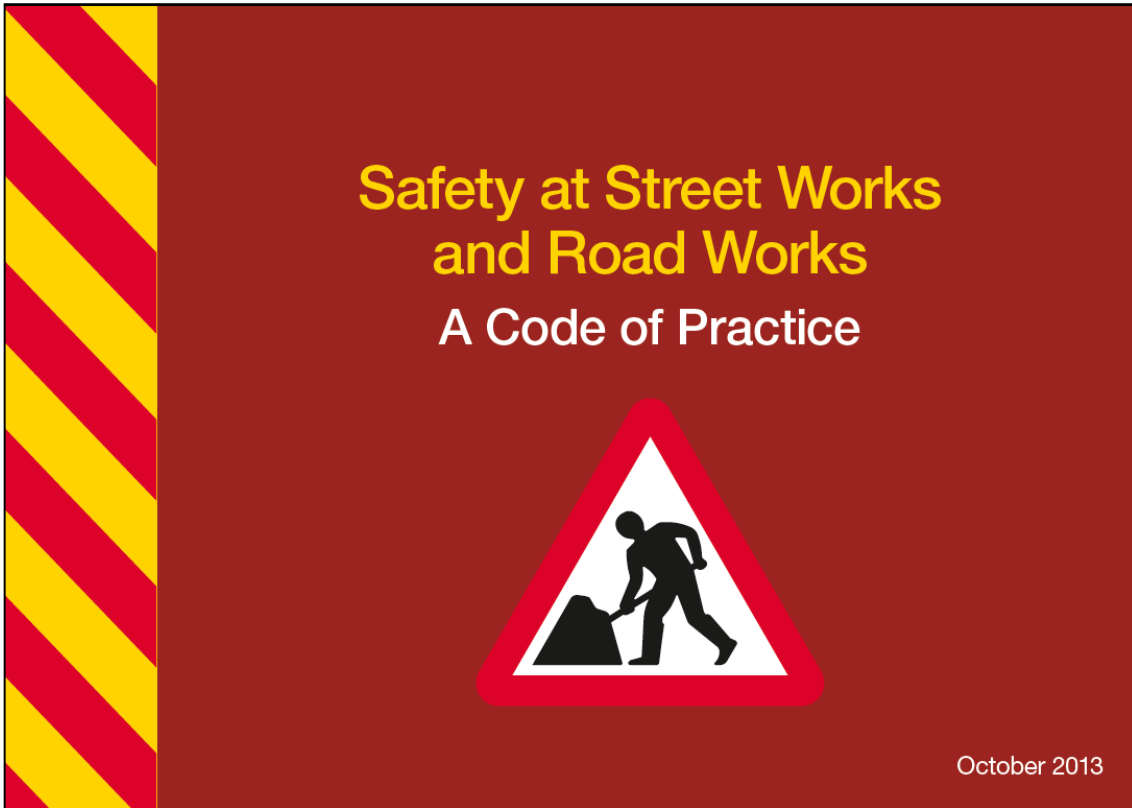
DETAILED DESIGN / CONSTRUCTION:		
1	Speed limit or actual vehicle speeds:	mph
2	Volume of traffic:	
	- proportion of which is HGVs / buses	%
3	Level of pedestrian activity:	
4	Level of cycle activity:	
5	Suitability of alternative / diversion route:	
6	Working space distance/width required: (see relevant note in Appendix C and confirm required width with Contractor)	(m)
7	Width of safety zone required: (confirm with Contractor)	(m)

8	Road width remaining for traffic/cyclists/pedestrians:	(m)
9	Space required for signs / cones: (including cones/cylinders between running lanes)	(m)
MAINTENANCE:		
1	Maintenance of traffic management:	
2	Means of keeping road clean: (eg. wheel wash, road sweeper, etc.)	

DECISIONS:			
1	Can road remain open to 2-way traffic flow?	YES	NO
	a. If YES , are speed controls or temporary barriers required?	YES	NO
	b. If NO , is there sufficient width for shuttle working?	YES	NO
2	Can shuttle working accommodate traffic flows?	YES	NO
3	If NO (too much traffic for shuttle working), is a one-way order necessary / appropriate?	YES	NO
4	Is temporary widening of road required along the works?	YES	NO
5	If NO , road to be closed. Confirm suitability of Diversion Route: Period of closure to be minimised by careful planning of working methods.	YES	NO
6	Are sight lines / forward sight distances acceptable?	YES	NO
7	Is a recovery vehicle required? (see DEM 76/04)	YES	NO
8	Can road be signed to Chapter 8 / Street Works Code of Practice?	YES	NO
	a. If NO , what additional measures are required, or does the design need to change?		
9	Will traffic run on temporary surfaces?	YES	NO
	a. If YES , are these surfaces appropriate for the flows / speeds?	YES	NO
10	Will the TTMS be removed when works are not taking place (e.g. evenings or weekends)?	YES	NO
11	Proposed timing of the work? (date / daytime or night working)		
12	Are Temporary Safety Barriers VRS required – TD19/06 (IAN 142/11)	YES	NO
13	Suggested TTMS to be used:		

Appendix B

Extracts from Safety at Street Works and Road Works – A Code of Practice



widths between 2.75 and 3.25 m, most cars could overtake cyclists, but with reduced safety. Similarly, it found that for widths between 3.5 and 3.75 m it was possible for HGVs to overtake cyclists, but again with reduced safety.)

Consideration must be given to this before deciding to use widths other than 3.25–3.50 m for normal traffic in shuttle working. Where shuttle working is restricted to cars and light vehicles only, the upper bound of 3.50 m (which is aimed at preventing HGVs from overtaking cyclists) is not relevant, and a desirable minimum only is given.

	Standard: Normal traffic including buses and HGVs	Restricted: Cars and light vehicles only
Two-way working	6.75 m minimum	5.5 m minimum
Shuttle working	3.25–3.50 m desirable width range 3.0 m absolute minimum	3.25 m desirable minimum width 2.5 m absolute minimum

Warning: Where the minimum width cannot be met, your [supervisor, manager or other competent person](#) must consult the highway authority.

Choice of traffic control method

The table beginning on page 54 shows various methods of traffic control together with the required conditions for each method. For a given method of traffic control, the relevant conditions in the table must be complied with.

Caution: If the situation is not covered by the methods shown, your [supervisor, manager or other competent person](#) should consult the highway authority.

Appendix B (continued)

Extracts from Safety at Street Works and Road Works – A Code of Practice

Part 2: Operations 54

Method	Max speed limit (mph)	Coned area length	Traffic flow (maximum)	Notes
Passive				
Give and take	30	50 m maximum	20 vehicles over 3 mins and 20 HGVs per hour	Signing as per page 57
Priority	60	80 m maximum	42 vehicles over 3 minutes	Signing as per page 59. Supplementary 'End' plates needed if over 50 m
Positive				
Stop/Go boards	60	Up to 100 m	70 vehicles/3 mins	Signing as per page 61. Consult your supervisor, manager or other competent person if greater than 500 m or near a railway level crossing. See also pages 77 to 80.
		Up to 200 m	63 vehicles/3 mins	
		Up to 300 m	53 vehicles/3 mins	
		Up to 400 m	47 vehicles/3 mins	
		Up to 500 m	42 vehicles/3 mins	
Portable traffic signals	60	300 m maximum	No limit	Highway authority permission needed. Signing as per page 65 Consult your supervisor, manager or other competent person if at or near a railway level crossing. See also pages 77 to 80.
Speed reduction	60	N/A	N/A	See page 67.

Method	Max speed limit (mph)	Coned area length	Traffic flow (maximum)	Notes
Convoy working	Temporary limit of 10 mph	N/A	N/A	See convoy working page 68.
Road closure or one-way traffic	60	N/A	N/A	See pages 70 and 71.
'Stop – works' sign	60	N/A	N/A	Max period – 2 mins. See page 72.
'Temporary obstruction' sign	60	N/A	N/A	Max period – 15 mins. See page 73.

Setting up traffic control

Before setting up any traffic control, a risk assessment must be undertaken. Where a positive traffic control method is chosen, notification must be given to the relevant highway authority. For the use of portable traffic signals, **prior permission** is required from the relevant highway authority. However, in the case of immediate works (as defined in the *Code of Practice for the Co-ordination of Street Works and Works for Road Purposes and Related Matters*), the authority must be informed at the time and an application submitted at the earliest opportunity (but not later than 10 am the next working day).

Warning: When setting up any form of traffic control, the operative must be aware of their own and other road users' safety.

Part 2: Operations 55

Appendix B (continued)

Extracts from Safety at Street Works and Road Works – A Code of Practice

Setting out site

(Distances in metres unless stated otherwise, numbers are minimum numbers)

Type of road	Minimum visibility distance to first sign	D Distance from first sign to start of lead-in taper	Lead-in taper							S Minimum width of sideways safety zone	E Distance from last cone to End of works sign	Minimum size of signs (mm)	
			Width of works including sideways safety zone										
			1m	2m	3m	4m	5m	6m	7m				
Single carriageway – speed limit 30 mph or less	60	20 to 45	T Taper length	13	26	39	52	65	78	91	0.5	10 to 30	600
			No of cones	4	4	6	7	9	10	12			
			No of lights	–	–	–	–	–	–	–			
Single carriageway – speed limit 40 mph	60	45 to 110	T Taper length	20	40	60	80	100	120	140	0.5	30 to 45	750
			No of cones	4	6	8	10	13	15	17			
			No of lights	3	5	7	9	12	14	16			
Single carriageway – speed limit 50 mph or more	75	275 to 450	T Taper length	25	50	75	100	125	150	175	1.2	30 to 45	750
			No of cones	4	7	10	13	15	18	21			
			No of lights	3	6	9	12	14	17	20			
All-purpose dual carriageway – speed limit 40 mph or less	60	110 to 275	T Taper length	25	50	75	100	125	150	175	0.5	30 to 45	750
			No of cones	4	7	10	13	15	18	21			
			No of lights	3	6	9	12	14	17	20			

Speed limit mph	20	30	40	50	60
L Longways clearance	0.5	0.5	15	30	60

Speed limit mph	30 or less	40 or more
C Clearance to works vehicle	2	5

Notes

- For roads covered by this Code, the minimum height of cones is 450 mm where the speed limit is 40 mph or less, and 750 mm where the speed limit is 50 mph or more.
- The maximum spacing between cones in longitudinal lengths shall be 9 metres, but no fewer than two cones shall be used in any length between tapers.
- Lead-in tapers where two-way traffic control is used, and all exit tapers shall be at about 45° to the kerb line with cones spaced 1.2 metres apart maximum.
- In certain circumstances on congested roads with speed limits of 30 mph or less, the lead-in taper may be reduced to 45° (see page 19).
- The longways clearance (L) is the distance between the end of the lead-in taper and the first traffic barrier placed across the lane.

Appendix C

Working width requirements

WORKING WIDTH = WORKS AREA + WORKING SPACE + SIDEWAYS CLEARANCE

Works area - *The works area is the excavation, chamber opening, etc at which you will be working*

Working space - *The space around the works where you will need to store tools, excavated material, equipment and plant, it is also the space required to move around in to do the job. The actual working space needed is to be determined for each operation. It is likely that this will be a minimum of 1.0m*

Sideways clearance - *The width between the working space and moving traffic – it will vary with speed limit – see Appendix B*

ROAD WORKS PLANT & MACHINERY (Typical Widths¹)

Type of Machinery	Width (m)
Asphalt Paver	2.6m – 5.20m
2-Point / 3-Point Roller	1.3m/ 2.2m
Tipper Lorry	2.80m
Rubber tyred digger	2.53m
Chipper	4.25m
Planer	2.2m
Road-Marking Lorry	2.30m
Road Stud Lorry	2.55m
Low Loader	2.55m
<i>Table modified 20/11/06 – Source Lagan Group</i>	

¹ Check actual plant and machinery widths.