We Don't Know How Lucky We Are

A newcomer’s reaction to temporary traffic management in the United Kingdom

Robert Swears
Opus International Consultants, Hertford, UK
My TTM Background

• Transportation engineer with 20+ years experience in New Zealand
• Involved with authoring the first COPTTM in 1999
• Member of Industry Reference Group providing feedback to NZTA regarding the 4th Edition
• Level 1 Trainer and Level 2/3 Assessor
Why in the UK

- Opus Arup JV awarded 7 + 5 years contract for consultancy services for Hertfordshire County Council (HCC)
- £49M over first 7 years
- Started 1 October 2012
- Head of Profession-Traffic Safety
- Not an HCC perspective and not representing HCC
Is TTM An Issue in the UK?

• The Telegraph: 07 September 2012
  – “... six road workers died and 29 were seriously injured in 2010”
  – “Despite the flashing lights, ... roadworkers are at the peril of ... drivers”

• BBC: 12 February 2011
  – “The number of injuries to road workers on motorways and trunk roads in England more than doubled between 2005 and 2009”
As a Newbie What Did I Look For?

- Similarities with NZ
- COPTTM equivalent
- Training requirements
- Equipment requirements
- Planning for TTM and permissions required
- Maintenance standards
- Consequences of non-compliance
Some Things Are Just Different

- NZ and UK use different TTM documents
- UK network can be very different to NZ road network
  - Narrow roads, traffic lanes and shoulders
  - High traffic volumes (HCC max AAWD*=47,895 vpd)
  - Land use density in urban areas
  - Adjoining land use
  - Road user behaviour; more courteous in UK (opinion)

*AAWD = Annual Average Week Day (0600-2200) flow = AADT
Some Things Are Just Different

My home in summer (January)
Some Things Are Just Different

Narrow rural roads: AAWD = 12,721 vpd

AAWD = Annual Average Week Day (0600-2200)
Some Things Are Just Different

4 lane dual carriageway, AAWD = 28,156 vpd,
70 mph, with pedestrians crossing
Some Things Are Just Different

Narrow urban roads
UK Documents, It’s Not Simple

- Chapter 8: Traffic Safety Measures and Signs for Road Works and Temporary Situations
  - Part 1: Design
  - Part 2: Operations
- Guidance for Safer Temporary Traffic Management
- Red Book: Safety at Street Works and Roadworks; A Code of Practice
Verbosity

- Chapter 8: 566 pages
- COPTTM: 511 pages
- No word count, but NZ appears to be much less verbose
Permissiveness

- Chapter 8
  - Shall: 8.1%
  - Must: 8.2%
  - Should: 63.8%
  - May: 19.9%
- COPTTM
  - Shall: 0.2%
  - Must: 64.2%
  - Should: 12.1%
  - May: 23.5%
We’re Better Looking

Chapter 8

GENERAL VEHICLE ISSUES

OS.2.5 Where rear facing high visibility markings may be obscured by any device mounted on the vehicle (e.g. heavy-duty crash cushion (UMCC) or some lashing adaptation), at any time that the vehicle is stopped or if the vehicle is stationary, additional marking complying with paragraph OS.2.3 (1) or (2) shall be applied to any face of the device which is displayed to the rear and other rear users.

OS.2.6 Works vehicles shall be kept clean to maintain conspicuity.

OS.2.7 Motor vehicles with a maximum gross weight exceeding 7.5 tonnes and ridden with a maximum gross weight exceeding 3.5 tonnes must be fitted with rear marking in accordance with the Lighting Regulations.

OS.2.8 Vehicles used for works purposes shall be identified by displaying to the rear the sign to diagram 740A “HIGHWAY MAINTENANCE”. The sign to diagram 744A or “MOTORWAY MAINTENANCE” may be used instead when working on motorways only.

OS.3 ROOF-MOUNTED BEACONS

OS.3.2 Without prejudice to the specific requirements of the following sections, any vehicle stopping on the roadway for works purposes or inspections shall be equipped with either a roof-mounted flashing amber warning light or a combination of two independent light sources or two independent roof-mounted flashing amber warning beacons visible through 360°.

OS.3.3 Roof-mounted flashing amber warning beacons must comply with the requirements of the Road Vehicle Lighting Regulations and should also comply with the United Nations Economic Commission for Europe (UNECE) Regulation 65 on Special Warning Lamps.

OS.3.4 If the main roof-mounted beacon is likely to be obscured from the rear by parts of the vehicle or any equipment carried on the vehicle, additional beacons should be fitted to the rear of the vehicle where they will remain visible.

OS.3.5 The roof-mounted beacons shall be in use when entering, leaving or moving within the site, when tallowing at a platform of the traffic and, when stationary on the hard shoulder.

OS.3.6 When stationary within the confines of a traffic management arrangement, the roof-mounted beacons shall be switched off, unless they form part of the covering of the works, e.g. works on minor roads, or are required for mobile works, see Sections 301 and 301.

OS.3.7 Vehicles engaged on snow clearing, gritting operations or small work shall display a flashing amber warning beacon at all times when operating.

OS.4 IMPACT PROTECTION

OS.4.1 Impact Protection Vehicle (IPV), Mobile Lane Closure (MLC) vehicles, and Mobile Carriageway Closure (MCC) vehicles shall be fitted with a road-mounted crash cushion (UMCC). The requirements for UMCCs are given in Departmental Standard TD.10 “Requirements for Heavy-Duty Crash Cushions” (DMIS 8.4.7). At higher specification UMCCs become available then use should be adapted if appropriate.

OS.4.2 It should be noted that vehicles fitted with a UMCC currently comply with the Goods Vehicle (Construction and Use) Regulations 1986, as amended, with regard to the permissible overhang (regulation 12) when the UMCC is in operational mode. To enable the vehicle to be operated legally, a special dispersion known as a Vehicle Special Order (VSO) must be obtained from the Department for Transport before the vehicle is cut into service. Further details about applying for a VSO can be found on the DTT website (www.dtt.gov.uk) under the heading “Vehicle Special Order (VSO) requirements.”

B14 Warning systems

B14.1 Flashing beacons

Flashing beacons refer to roof-mounted devices.

Note: Vehicle-held warning lights are not beacons.

Flashing beacon consists of a light, encapsulated in an amber casing that may either flash (strobe) or appear to flash when cycled by a rotating reflector.

Flashing beacons must be clearly visible to road users and seen to be flashing in all of the following situations:

- In all light conditions including, but not limited to, bright sunlight, unobstructed visibility, and bright daylight.
- In all light conditions including, but not limited to, bright sunlight, unobstructed visibility, and bright daylight.
- From a distance in the range from 10m to 150m.
- From a distance in the range from 10m to 150m.
- From a distance in the range from 10m to 150m.

For any given warning position from the driver eye height to the beacon, the beacon must flash or appear to flash at a rate in the range of 50 cycles per minute to 100 cycles per minute.

Beacons must appear to flash with an amber coloured light.

B14.2 Xenon warning lights

B14.2.1 General

The purpose of the xenon warning lights is to give advance warning to alert approaching road users. These beacons are fitted in accordance with the CoPTTM specified height and alignment specifications.

Xenon warning lights are not intended to be used on low LV and LN roads, unless they are fitted with an Air/Water sign or the latest TMA display in accordance with CoPTTM. It is recommended that all SCAY (mobile) fitted xenon lights for level 2 and 3 roads.
Chapter 8

08 SINGLE VEHICLE WORKS AND INSPECTION STOPS

08.1 SINGLE VEHICLE WORKS

08.1.1 Single vehicle works are those works which involve a vehicle either standing for a short duration or operating at low speed in the carriageway, normally on an urban or non-urban road where a Mobile lane Closure is inappropriate. Works vehicle speeds shall display a “keep left” sign to diagram 6.10a conspicuously on the rear or front of the vehicle to allow approaching drivers which to pass, in accordance with Regulation 14. The signs of speed shall be placed on the vehicle to ensure compliance with Regulation 14.

08.1.2 Vehicle-mounted “keep left” signs to diagram 6.10 shall be carried when the vehicle is travelling to and from the site. At no time must they be pointed directly up or down.

08.1.3 Single vehicle works should not be carried out on dual carriageway roads where the national speed limit applies, except for works such as banking, cutting and druming down of dust, which are undertaken at a controlled speed ensuring that of normal road speed, see paragraph 08.2.1.2.

08.1.4 Single vehicle works shall normally only be carried out on the near side lane of a carriageway, see paragraph 08.3.1.2.

08.1.5 On roads where the speed limit is 40mph or more, if practical and appropriate, and subject to risk assessment, consideration should be given to fitting a long-mounted crash cushion (LMCC) to the works vehicle and/or any excavator which can be occupied. It should be noted that LMCCs may be inappropriate on roads with poor alignment, and less than 5-m width, as they may create additional hazard to road users.

08.1.6 On roads where the speed limit is 40mph or more, the working vehicle shall carry a sign to diagram 7403 on the rear; if an active vehicle carrying a sign to diagram 7403 is provided, the sign on the works vehicle to be either diagram 7410 or 7422 but on single carriageway roads the use of the sign to diagram 7410 is permitted; in the case of the diagram 7410 to be used is given in Table 11 of Appendix 1.

08.1.7 The standard light arrow sign to Section 08.1.6 may be used to replace the sign to diagram 7403 on either vehicle. Note that the light arrow element of this sign shall not be used on any single carriageway roads.

08.1.8 An approved light snow sign may be used on works vehicles as a substitute for a sign to diagram 7410 and for the sign to diagram 7402. Details of such signs are approved for use in this manner, and the limitations on their use as a substitute for the sign to diagram 7402, should be confirmed with the Oxfordshire County Council. Where the works vehicle has carried out a risk assessment and determined that using the light arrow sign would be a subject to a maximum speed limit above 40mph will not compensate users, they may apply for special permission to do so.

08.1.9 Work carried out using single vehicles standing or operating in the carriageway should be carried out only during periods of low use.

08.1.10 Advance warning to traffic in each direction should be given by a “roadworks” sign to diagram 7000, a supplementary plate variant to diagram 7001 and a “roadworks” sign variant to diagram 517 with a “keep left” supplementary plate to diagram 518. A supplementary plate to diagram 518 may be replaced by a supplementary plate to diagram 7001 showing the type of mobile operation taking place or, if not a certain distance in the manner shown in working distance 5001 may be included. The distance shown on plates 7501 or 7001.5 may be varied. Inclusive signs to diagram 7001 may be required if the road condition is poor.

D7 Special operations

D7.5 Rolling blocks

D7.5.1 Requirements Rolling blocks may be conducted on level 2 and level 3 divided carriageways subject to the following:

• They must only be carried out in terms of a approved TTM for the activity.
• They must only be carried out for a maximum period of five minutes.
• The TTM must keep moving towards at all times.
• All oncoming traffic into the area of the rolling block must be controlled.
• They may only be implemented where delay calculations indicate that any changes occurring during a rolling block of five minutes, can be immediately disregarded once the block is withdrawn.
• Advance warning ofSuch action must be provided at least 5km in advance of the rolling block - a variable message VMS and/or AWVMS and/or advance traffic management system (ATMS) may be used.
• Further advance warning of such action must be provided within 10km of the point where the rolling blocks commence.
• Traffic on the road and in advance of the rolling block must be controlled.

Note: Rolling blocks can be used for works that require the full width of the carriageway.

As at present, there are no formal guides to direct TTM/IA on the best practice to conduct rolling block operations. However, within the Oxfordshire area, rolling blocks have been employed extensively and successfully by the Oxfordshire Police and the traffic control contractors. The rolling blocks are used to clear the road ahead to assist the transportation of heavy equipment and machinery into workshops.

D7.6 Inspections and non-invasive works

D7.6.1 Factors affecting inspections

The general principle for inspection or non-invasive works is that the person undertaking the inspection must move to avoid traffic on the road, i.e. they must not expect traffic to move or slow down for the inspection activity.

The TTM resource required for the inspections involves road inspections, investigations, measurement and/or testing, etc depending on:
• the nature of the test, and
• the OSO required for the permanent speed limit on the road or the operating speeds as defined by the BCA for the road, and
• the traffic volume on the road at the time.

For a summary of inspection requirements refer to subchapter D7.7 Summary of requirements for inspections.
Training Requirements

• Chapter 8
  – O6.2.1 “... engaged in the installation, removal and maintenance ... shall be competent ... Only adequately trained ... should be engaged ...”.
  – O6.2.3 “... members of the workforce should have successfully completed the appropriate nationally recognised training ...”.
  – O6.2.4 “The National Highway Sector Schemes ... provide details of one such nationally recognised training and competency assessment regime that may be considered appropriate ...”.
  – O6.2.6 “Operatives should undertake regular refresher training ...”. [emphasis added]
Training Requirements

• Examples of UK options
  – Scheme Sector 12AB – For Static Temporary Traffic Management on Motorways and High-Speed Dual Carriageways
  – Sector Scheme 12C – For Mobile Lane Closure Traffic Management on Motorways and Other Dual Carriageways
  – Sector Scheme 12D – For Installing, Maintaining and Removing Temporary Traffic Management on Rural and Urban Roads
Training Requirements

- COPTTM
  - A6 “Those who must hold this qualification are...”
  - A6.1.1 “All personnel who have supervising responsibilities ... must be trained ...” [emphasis added]
  - A6.3.1 “The NZTA is the certifying organisation for all CoPTTM training courses”
  - A6.4.1 “The NZTA awards the ... qualifications ...”
  - A6.4.2 “These qualifications lapse three years after the date ...”
Layout and Equipment Similarities
Some Things Are Similar

Chapter 8

COPTTM
Some Things Are Similar

Chapter 8

COPTTM
How Similar is Similar? Cone for Example

- NZ: COPTTM Section B – Page 28:
  - Colour: Fluorescent orange, refer AS/NZS 1906.1:2007
  - Dimensions: 900 mm height, weight not exceeding 7 kg

- UK:
  - Part 1, A2.13 “Cone” means a delineator to diagram 7101.1 of TSRGD
  - Part 2, Section O4.10.1 Traffic cones and cylinders should conform to BS EN13422:2004, and must comply with Regulation 56; see also Part 1: Design, Section D4.9
  - TSRGD illustrates a Traffic Cone as diagram 7101.1 and cites Traffic Signs Regulations 54 and 56
Some Things Are Similar

Chapter 8

COPTTM
Some Things Are Different

For dual carriageway roads with speed ≥ 50 mph

Must comply with AS/NZS 4602.1:2011
As per NZ, Not Everyone Gets It Right

High vis jacket always required
Vehicle Markings

• Chapter 8
  – O5.2.3 “... all vehicles ... shall be equipped with high visibility rear markings ... The markings ... should cover as much of the rear-facing portion of the vehicle as possible ...”. [emphasis added]

• COPTTM
  – “B1.4.1 ... TV3 ... must be mounted on the rear of any vehicle conducting road inspections”. [emphasis added]
  – “B1.3.1.1 ... The minimum size for ... a rectangular sign ... is 900mm x 450mm.”
Chapter 8 Vehicle Markings

Cover as much of the rear-facing portion of the vehicle as possible.
Chapter 8 Vehicle Markings

Cover as much of the rear-facing portion of the vehicle as possible.
COPTTM Vehicle Markings

Minimum size 900 mm x 450 mm
Some Things Appear to be Undefined

Safety fence?
Some Things Appear to be Undefined

Safety fence?
Permissions and Planning for TTM

- In NZ, TMP process and road access through RCA and TMC
- In UK:
  - Road works may require a permit (D2.4.2) from RCA equivalent
  - TTROs and consultation are a very significant component of TTM permissions
  - Traffic management plans are diagrams rather than documents describing what will be done
  - O2.4.1 A project-specific detailed method statement should be prepared for the implementation, maintenance and removal of the detailed traffic management arrangements
  - Potential for very significant impact on traffic
Permissions and Planning for TTM

- Temporary Traffic Regulation Orders (TTROs)
  - D4.3.1 TTROs required to impose road and carriageway closures, traffic restrictions such as lane width and speed limits
  - Required when roads or footways are temporarily to be closed, or when parking controls or speed limits are to be introduced
  - Period of notice varies: 4 weeks to 3 months
  - Some works cannot proceed without TTRO
  - Formal document that allows restrictions to be applied

- Permit for works
- Roadspace booking
Permits

[Image of a permit sign with the number 34665852 and a message apologizing for inconvenience due to essential works on the electricity network.]

We apologise for any inconvenience. These are essential works being carried out on the electricity network.

Contractor: MORRISON Utility Services
Emergency telephone 0845 795 9774
Maintenance

• Chapter 8
  – O4.3.1 “All temporary traffic management equipment shall be clean and ... regularly maintained in such condition
  – O6.3.4 “High visibility warning clothing shall be clean and in a serviceable condition.”
  – O4.1.7 “... sign faces must be kept clean and legible at all times ...”
Maintenance

• COPTTM
  – 3 categories:
    • Acceptable
    • Marginal
    • Unacceptable
  – Criteria for each category clearly defined
  – Tolerances defined
  – And pictures to reduce potential for doubt
COPTTM Is Not Perfect

- Having worked on the 1\textsuperscript{st} Edition, 4\textsuperscript{th} Edition, and bits in between, I know COPTTM is not perfect
- Contains some compromises that were required to get buy in from all parties
- The industry reference group (and various contributors) put a huge amount of work in to the 4\textsuperscript{th} Edition
- Review process was rigourous
COPTTM Is Not Perfect
Personal Perspective Précis

- UK
  - Processes
  - Permits
  - Puzzling
- NZ
  - Planning
  - Practical
  - Performance
UK TTM

- Different demands to NZ
- More than one source regarding temporary traffic management
- Specific training requirements not defined
- Uncertainty regarding the standards required
- Unclear regarding accountability
- Standards of acceptability unclear
- Relatively wordy and complex
COPTTM

- One source regarding temporary traffic management
- One national training system
- Practical solutions for TTM
- Clarity regarding the standards required
- Clear lines of accountability
- Clear standards regarding acceptability
- Relatively simple
“We don't know how propitious are the circumstances. We don't know how lucky we are, ...”

(Fred Dagg aka John Clarke)

Thank you to the NZTA for providing the opportunity for me to present here today.