We Don't Know How Lucky We Are

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

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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

O5.2.5 Where rear facing high visibility markings may be obscured by any device mounted on the vehicle (e.g. lorry-mounted crash cushion (LMCC) or cone laying adaptation), at any time that the vehicle is stopped on a high-speed road, additional markings complying with paragraph O5.2.3 (c) or (d) shall be applied to any face of the device which is displayed to the rear and other road users.

O5.2.6 Works vehicles should be kept clean to maintain conspicuity.

O5.2.7 Motor vehicles with a maximum gross weight exceeding 7.5 tonnes and trailers with a maximum gross weight exceeding 3.5 tonnes must be fitted with rear markings in accordance with the Lighting Regulations.

O5.2.8 Vehicles used for works purposes shall be identified by displaying to the rear the sign to diagram 7404 "HIGHWAY MAINTENANCE". The sign to diagram 7404 variant "MOTORWAY MAINTENANCE" may be used instead when working on motorways only.

O5.3 ROOF-MOUNTED BEACONS

O5.3.1 Without prejudice to the specific requirements of the following sections, any vehicle stopping on the highway for works purposes or inspections shall be equipped with either a roof-mounted flashing amber warning light bar (comprising at least two independent light sources) or two independent roof-mounted flashing amber warning beacons, visible through 360°.

O5.3.2 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.

O5.3.3 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 toward the rear of the vehicle where they will remain visible.

O5.3.4 The roof-mounted beacons shall be in use when entering, leaving or moving within the site, when travelling in traffic at less than the general traffic speed, and when stationary on the hard shoulder.

O5.3.5 When stationary within the confines of a fully installed traffic management arrangement, the roof-mounted beacons shall be switched off, unless they form part of the guarding of the works, e.g. works on minor roads, or are required for mobile works; see Sections O10 and O11.

O5.3.6 Vehicles engaged on snow clearing, gritting operations or similar work shall display a flashing amber warning beacon at all times when operating.

O5.4 IMPACT PROTECTION

O5.4.1 Impact Protection Vehicles (IPV), Mobile Lane Closure (MLC) vehicles, and Mobile Carriageway Closure (MCC) vehicles shall be fitted with a lorry-mounted crash cushion (LMCC). The requirements for LMCCs are given in Departmental Standard TD 49 "Requirements for lorry-mounted crash cushions" (DMRB 8.4.7). As higher specification LMCCs become available their use should be adopted if appropriate.

O5.4.2 It should be noted that vehicles fitted with a LMCC currently contravene the Road Vehicles (Construction and Use) Regulations 1986, as amended, with regard to the permissible overhang (regulation 11) when the LMCC is in operational mode. To enable the vehicle to be operated legally, a special dispensation known as a Vehicle Special Order (VSO) must be obtained from the Department for Transport before the vehicle is put into service. Further details about applying for a VSO can be found on the DfT website (www.dft.gov.uk) under the heading "Vehicle special orders section 44 requirement".

Chapter 8

B14 Warning systems

B14.1 Flashing beacons

Flashing beacons refer to roof-mounted devices.

Note: Vehicle hazard warning lights are not beacons.

Flashing beacons consist of a light, encapsulated in an amber casing that may either flash (strobe) or appear to flash when circled 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, unlit darkness and lit darkness (for example, in an urban environment).
- From a distance in the range from 10m to not less than 800m unobstructed sight distance from the vehicle.
- From driver eye height for all approaches to the beacon. Driver eye height is taken to range from 1.1m to 2.4m.
- For any given viewing position from driver eye height to the beacon, the beacon must flash or appear to flash at a rate in the range of 90 cycles per minute to 180 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. Lights must be fitted in accordance with the CoPTTM-specified height and alignment specifications.

Xenon warning lights are not intended to be used on level LV and level 1 roads, unless they are fitted to AWVMS signs or the latest TMA display in accordance with CoPTTM.

It is recommended that all RCAs adopt xenon lights for level 2 and 3 roads.

COPTTM

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O8 SINGLE VEHICLE WORKS AND INSPECTION STOPS

O8.1 SINGLE VEHICLE WORKS

O8.1.1 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 low speed road where a Mobile Lane Closure in accordance with Section O10 is inappropriate. The works vehicle used shall display a "keep left/right" sign to diagram 610 conspicuously on the rear or front of the vehicle as appropriate to show approaching drivers which side to pass, in accordance with regulation 15. The use of signs attached to the works vehicle must comply with regulation 14.

O8.1.2 Vehicle-mounted "keep left/right" signs to diagram 610 shall be covered when the vehicle is travelling to and from the site. At no time must they be pointed directly up or down.

O8.1.3 Single vehicle works should not be carried out on dual carriageway roads where the national speed limit applies, except for works such as gritting, salting and damping down of dust, which are undertaken at a controlled speed nearing that of normal road speed; see paragraph O8.2.1.

O8.1.4 Single vehicle works should normally only be carried out on the near side lane of a carriageway, see also paragraph O8.1.19.

O8.1.5 On roads where the speed limit is 40 mph or more, if practical and appropriate, and subject to risk assessment, consideration should be given to fitting a lorry-mounted crash cushion (LMCC) to the working vehicle and/or any escort vehicle that may be employed. It should be noted that LMCCs may be inappropriate on roads with poor alignment, and less than 5.5 m wide, as they may create an additional hazard to road users.

O8.1.6 On roads where the speed limit is 40 mph or more, the working vehicle shall carry a sign to diagram 7403 on the rear. If an escort vehicle carrying a sign to diagram 7403 is provided, the sign on the works vehicle can be to either diagram 610 or 7403 but on single carriageway roads the use of the sign to diagram 610 on the works vehicle is the preferred option as this will help retain forward visibility past the works vehicle. The size of the sign to diagram 610 to be used is given in Table A1.2 of Appendix 1.

O8.1.7 The standard light arrow sign (see Section O10.8) 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 two-way single carriageway roads.

O8.1.8 An authorised small light arrow sign may be used on works vehicles as a substitute for a sign to diagram 610 and for the sign to diagram 7403. Details of which signs are authorised for use in this manner, and the limitations on their use as a substitute for the sign to diagram 7403, should be confirmed with the Overseeing Organisation. Where the traffic authority has carried out a risk assessment and determined that using the small light arrow sign on a road subject to a maximum speed limit above 40 mph will not compromise safety, they may apply for special authorisation to do so.

O8.1.9 Work carried out using single vehicles standing or operating in the carriageway should be carried out only during periods of low risk.

O8.1.10 Advance warning to traffic in each direction should be given by a "road works" sign to diagram 7001, a supplementary plate variant to diagram 7001.1 and a "road narrows" sign variant to diagram 517 with a "single file traffic" supplementary plate to diagram 518 (Plan SVW1). The distance between the signs should be sufficient to enable moving work to progress before the signs are moved and should not exceed 1 mile. Subject to a risk assessment, the supplementary plate to diagram 570 "For 1 mile" in Plan SVW1 may be replaced by a supplementary plate to diagram 7001.1 showing the type of mobile operation taking place and optionally "for" and a distance in the manner shown in working drawing P7001.1 may be included. The distance shown on plates 570 or 7001.1 may be varied. Repeater signs to diagram 7001 may be required if the road alignment is poor.

Chapter 8

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 an approved TMP for the activity.
- They must only be carried out for a maximum period of five minutes.
- The TMAs must keep moving forwards at all times.
- All onramps feeding into the area of the rolling block must be controlled.
- They may only be implemented where delay calculations indicate that any queues forming during a rolling block of five minutes, can be immediately dissipated once the block is withdrawn.
- Advance warning of queues ahead must be provided at least 5km in advance of the rolling block - a variable message sign (VMS) and /or AWVMS and /or advance traffic management system (ATMS) may be used.
- Further advance warning of queues ahead must be provided 1km from the point where the block vehicles commence slowing of traffic and 500m in advance of the furthest extremity of the predicted queuing.

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

At present, there are no formal guides to direct STMS(s) on the best practice to conduct rolling block operations. However, within the Auckland network, rolling blocks have been applied extensively and successfully by both the New Zealand Police and the traffic control contractors. The rolling blocks are used to clear the road ahead to assist in the transportation of heavy equipment and machinery into worksites.

D7.6 Inspections and non-invasive works

D7.6.1 Factors affecting inspections

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

The TTM measures required for the activities involved in road inspections, investigations, measurement and/or testing, etc depend on:

- the time taken for the activity
- the CSD required for the permanent speed limit on the road or the operating speed as defined by the RCA for the road, and
- the traffic volume on the road at the time.

For a summary of the inspection requirements refer to subsection D7.7 Summary of requirements for inspections.

COPTTM

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

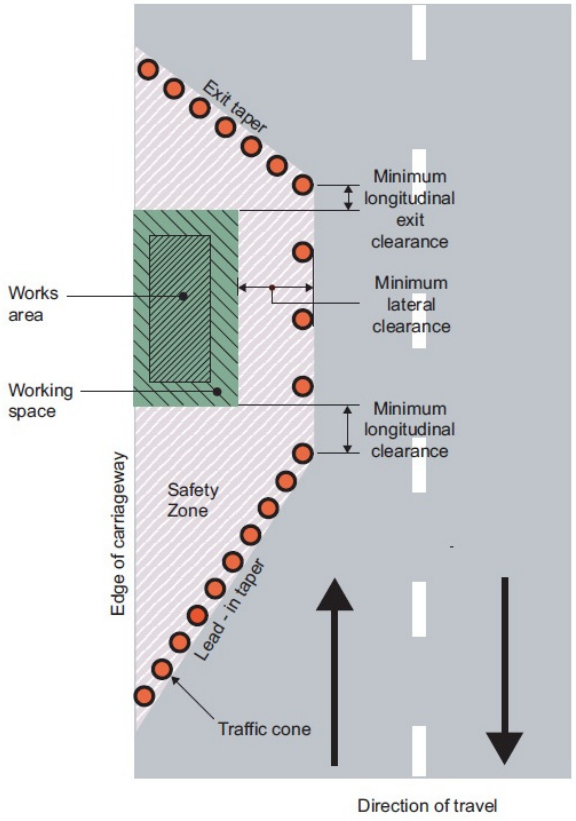
- Examples of UK options
  - Scheme Sector 12AB – For Static Temporary Traffic Management on Motorways and High-Speed Dual Carriageways
  - Sector Scheme 12C – For Mobile Lane Closure Traffic Management on Motorways and Other Dual Carriageways
  - Sector Scheme 12D – For Installing, Maintaining and Removing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

Training Requirements

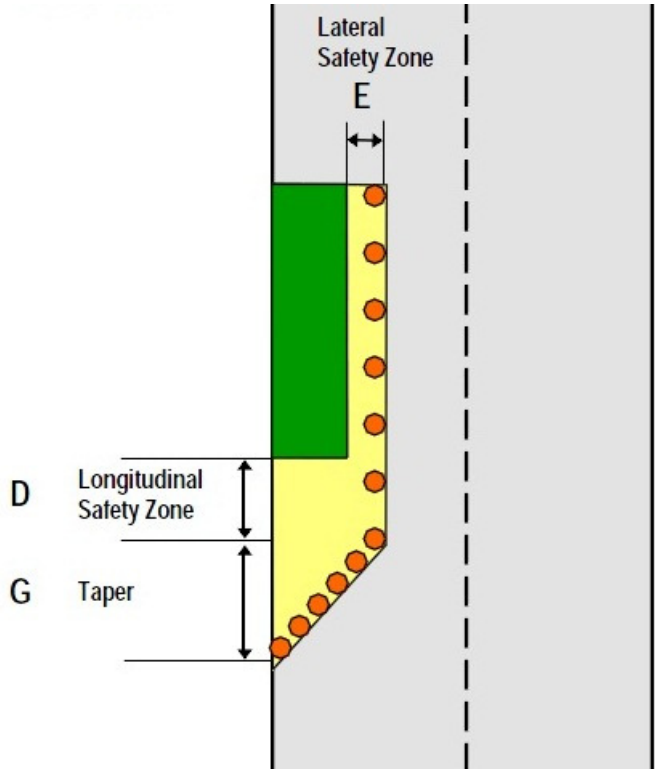
- COPTTM
  - A6 “Those who must hold this qualification are…”
  - A6.1.1 “All personnel who have supervising responsibilities … must be trained …” [emphasis added]
  - A6.3.1 “The NZTA is the certifying organisation for all CoPTTM training courses”
  - A6.4.1 “The NZTA awards the … qualifications …”
  - 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


UK Power Networks
MORRISON Utility Services
Permit Number:
3466852
Linked Permit Number:
Expected Duration:
Days:
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 …”

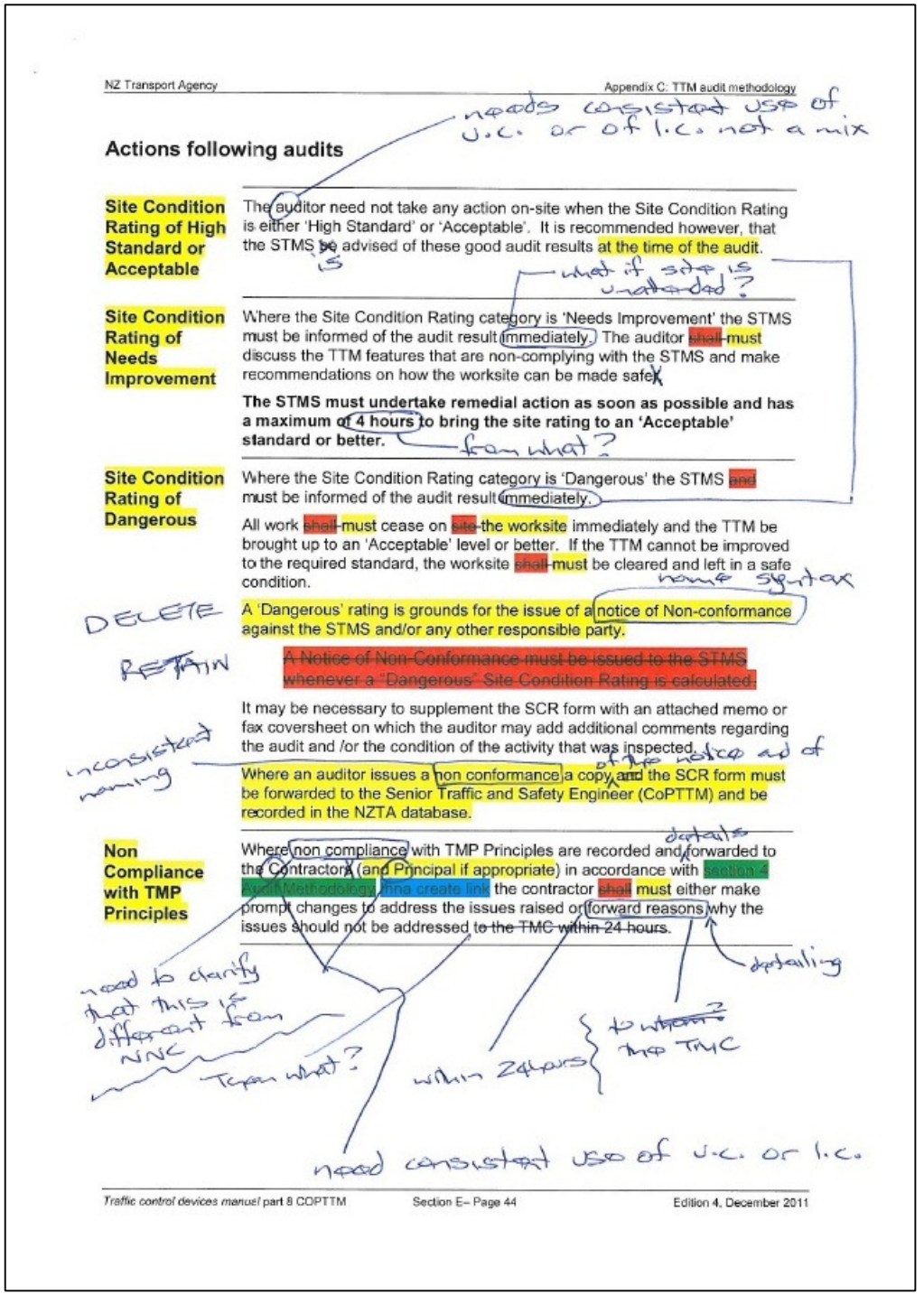
Maintenance

- 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 1st Edition, 4th 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 4th Edition
- Review process was rigourous

COPTTM Is Not Perfect



NZ Transport Agency — Appendix C: TTM audit methodology

needs consistent use of U.C. or of l.c. not a mix

Actions following audits

Site Condition Rating of High Standard or Acceptable

The auditor need not take any action on-site when the Site Condition Rating is either 'High Standard' or 'Acceptable'. It is recommended however, that the STMS be advised of these good audit results at the time of the audit.

is

what if stop is unattended?

Site Condition Rating of Needs Improvement

Where the Site Condition Rating category is 'Needs Improvement' the STMS must be informed of the audit result immediately. The auditor shall must discuss the TTM features that are non-complying with the STMS and make recommendations on how the worksite can be made safe.

The STMS must undertake remedial action as soon as possible and has a maximum of 4 hours to bring the site rating to an 'Acceptable' standard or better.

from what?

Site Condition Rating of Dangerous

Where the Site Condition Rating category is 'Dangerous' the STMS and must be informed of the audit result immediately.

All work shall must cease on site the worksite immediately and the TTM be brought up to an 'Acceptable' level or better. If the TTM cannot be improved to the required standard, the worksite shall must be cleared and left in a safe condition.

name syntax

DELETE

RETAIN

A 'Dangerous' rating is grounds for the issue of a notice of Non-conformance against the STMS and/or any other responsible party.

~~A Notice of Non-Conformance must be issued to the STMS whenever a "Dangerous" Site Condition Rating is calculated.~~

It may be necessary to supplement the SCR form with an attached memo or fax coversheet on which the auditor may add additional comments regarding the audit and /or the condition of the activity that was inspected.

inconsistent naming

of the notice ad of

Where an auditor issues a non conformance a copy and the SCR form must be forwarded to the Senior Traffic and Safety Engineer (CoPTTM) and be recorded in the NZTA database.

Non Compliance with TMP Principles

Where non compliance with TMP Principles are recorded and forwarded to the Contractors (and Principal if appropriate) in accordance with section 4 Audit Methodology this create link the contractor shall must either make prompt changes to address the issues raised or forward reasons why the issues should not be addressed to the TMC within 24 hours.

details

detailing

need to clarify that this is different from NNC

Taken what?

within 24 hours

to ~~report~~ the TMC

need consistent use of U.C. or l.c.

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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