

Variable Crewing Research and Policy

Single Crew Test Design - Appendices

Submitted to:



Date - 22/10/10 / Ref No – OD/003

Project Sponsor – Alan Apps

CONTENTS

APPENDIX A	Operational Design	1
A1	Briefing Note	1
A2	Procedures Review Summary	3
A3	Briefing contents	5
A4	Procedures Review Full	16
APPENDIX B	Logistics Design	69
B1	Roster	69
B2	Selection Process for Live Network Test	71
B3	Project Programme	75
APPENDIX C	Measurement Design	80
C1	Test Methodology	80
C2	Questionnaires	90
C3	Proof of Concept	103
APPENDIX D	Success Criteria	107
D1	Type and Range of Results Expected	107
APPENDIX E	Project Assurance	110
E1	Risk Assessment	110
E2	Check Team Comments	116
E3	PT1 Form	129

APPENDIX A OPERATIONAL DESIGN

A1 BRIEFING NOTE

- A1.1 The following information is an extract from the document “Single Crew Procedure Summary” which was issued as version 0.1 on the 4th October 2010. The author of the document was Alan Apps and the document is subject to a Training Needs Assessment (TNA) by Mike Fryer of the HA Traffic Learning Centre. Pending TNA completion on 29th October 2010 this appendix will remain in draft status.
- A1.2 On 30th June to 1st July 2010 the Single Crewing procedures review group convened to achieve a review of the procedures and their applicability to a live network test of single crewing, that group comprised representatives from;
- National Health and Safety Team
 - Traffic Management Division
 - Jacobs
 - CCD
 - TO Procedures
 - Netserv
 - Operational Traffic Officers (both on-road and Regional Control Centre (RCC) based).
- A1.3 The results of this review were a shortlist of procedures that could, and could not, be attempted single crewed. It identified where procedures required additional information to facilitate the test of single crewing.
- A1.4 A further, and more detailed, review was completed on 18th August by Greg Taylor, Ros Drew and Andy Wood from the North West Traffic Officer Service (TOS). This review explored in detail the procedural adjustments required to facilitate the Single Crewing test. Back-up requirements for single crew test vehicles and implications for equipment, communications, RCC and safety were all considered in detail.
- A1.5 This extensive procedure review was subject to a risk assessment by the National Health and Safety team. A number of actions were recommended within the risk assessment to mitigate risks to Health & Safety. These requirements included;
- Improvement (via consolidation) to the procedural addenda process
 - Removal of Rolling Road block from the test
 - Consideration of a formal Training Needs Assessment (TNA)
- A1.6 The following information is a summary of the procedures reviews. It consolidates the findings from the reviews into a format appropriate for a concise briefing. Summarising the procedures review into eleven distinct procedural addenda for the test achieves the improvement required by the risk assessment.
- A1.7 The briefing for the Single Crew test will be considered an addition to (not revision to) existing procedure. Briefing headlines are provided below; full content is in Appendix A2.

Briefing Headlines

- a) Variable Message Panel (VMP) preloading
- b) Communications whilst driving
- c) Emergency button activation
- d) Vigilance
- e) Emergency Traffic Management (ETM)
- f) Hard shoulder working
- g) Pushing vehicles/Manual Handling
- h) Single crew lane closures
- j) Pedestrians on the network
- i) Directing traffic
- k) Coding for single crew vehicles during the test

A2 PROCEDURES REVIEW SUMMARY

- A2.1 Below is a summary of the procedures that either should not be attempted during the test by other than Dual crews, those that may be attempted with backup, and those requiring a procedural addenda briefing in order to allow them to be carried out during the test. Procedural addenda are indicated in the third column and detailed in A2.2 Procedures that can be completed single crewed without interventions are not included below.

A2.2 Table A2.1 – Status of Procedures for Single Crew Test

PROCEDURES	Must Dual	Must Backup	May Attempt single – refer briefing
1.1 – Status of the national processes and procedures	Not an On Road Activity		
1.2 – Abnormal Loads – TO escort			a, b, f
1.4 – Airwave Emergency Button Activation			c
1.5 – Ambulance Escorts			a, b, f
1.6 – Animals on the network			f
1.7 – Carriageway clearance			g
1.9 – Collision Management (Police led)		X	
1.12 - Debris			f, h, d, e
1.13 – Diesel Spills			e, b
1.14 – Directing traffic around incidents			i, a, b
1.15 – Directing traffic at junctions			d, i
1.16 – Directing traffic at roundabouts		X	
1.17 – Fires etc. in Tunnels	X		
1.19 – First Aid - Basic		X	
1.20 – Flooding on the network			e, a, b
1.21 – Hard Shoulder working			f, e, d
1.22 – Hazardous Substances (TO discovered)			a, d, e
1.23 – Hazardous substances (non-TO reported)			a, d, e
1.24 – Lane Closures			e, b
1.25 – Managing and removing abandoned vehicles			f, e, j, g
1.26 – Managing and removing broken down vehicles			f, e
1.27 – Media on the network			j
1.28 – Offside repairs LGV/PCV			e
1.29 – Pedestrians on the network			j,
1.32 – RCC Incident handling and incident logs			k
1.33 – Rearward relief		X	
1.35 – Releasing Traffic crossing the central reservation		X	
1.36 – Removing obstructions from live carriageway on foot			d, g
1.38 – Reverse flow		X	
1.39 – Road Closure			e
1.40 – Rolling road block	X		
1.43 – Stopping TO vehicle in central lanes of wide carriageways and intersections	X		
1.44 – Stopping TO vehicle in live carriageways			a, b, d, e, h
1.45 – Suicide Attempts			e
1.47 – Verge Fires		X	e
1.48 – Vulnerable People			j

Table A2.2 – Status of Guidance for Single Crew Test

GUIDANCE	Must Dual	Must Backup	May Attempt single – refer briefing
Airwave Emergency Button activation			c
Breakdown organisation vehicles – positioning at incidents.			e, g
Broken Down Vehicles – Managing vulnerable occupants			j
Checking TO vehicles	X		
Command and Control			k
Escorting Vehicles			f, a, b
Exposure to Chemicals	X		
Handling Animals			e
HA Tunnels guidance	X		
Lookout – Warning whistles			d
Mobile telephony policy and use			b
Slip road surveys	X		
Single Crew Guidance Notes - ETM			e

A2.3 The information below is the proposed additional information that will be delivered to Test Participants to facilitate the test. Some sections are potentially subject to change following the completion of the TNA. These sections are in *italics*.

A2.4 Participants were selected in accordance with Appendix B2, and are to be medically self certified in accordance with Appendix C1.23. The means of relaying this information to TO's (briefing, practical etc) is being ratified in a TNA which Jacobs understand will be complete on 29th October 2010.

A3 BRIEFING CONTENTS

a) Variable Message Panel (VMP) preloading

Required VMP legends should be pre-loaded while the vehicle is stationary to enable 'one touch activation'. This activity will be explained during briefing with embedment of learning on track.

b) Communications whilst driving

Under no circumstances should single crew officers use mobile telephony equipment to make outbound calls when driving. However it is permissible to use the in-car hands free equipment to accept incoming calls whilst driving.

If an outbound call needs to be made, a place of safety should be located and the vehicle must be stationary when the call is made.

c) Emergency button activation

The RCC should consider the immediate deployment of the nearest available resource if the emergency button is activated by a single crew member during the test.

The test vehicle has both a Subject Matter Expert (SME) and a Human Factors Observer (HFO) present so the Single Crew member will not be 'alone'. In an Emergency situation, emergency button dispatch times would be recorded.

d) Vigilance

In almost all circumstances when single crewed, especially in the early stages of an incident, there will be no crew partner to act as a lookout. Bearing this in mind, all traffic management activity should be undertaken whilst watching the traffic and the single crew member needs to be extra vigilant when working alone.

Look and listen for approaching vehicles. Do not use anything that could impair hearing. Look up and around frequently and do not allow yourself to get distracted.

Do not rely on anybody giving you a warning of an approaching vehicle.

If undertaking carriageway clearance without an additional crew being present to protect the scene, be mindful of the possibility for stationary traffic to begin moving again of its own accord.

Vigilance at junctions will be required, the cooperation of the public in observing hand signals will be critical.

e) Emergency Traffic Management (ETM)

This procedure considers the creation of clear space prior to an incident, which enables the safe deployment of ETM.

There will be no dedicated look out when placing ETM single crewed. If the TO has doubt about being able to complete the procedure safely the Traffic Officer must call for backup or revert to dual crew.

When arriving on scene, position the vehicle on the hard shoulder. After ascertaining how many lanes have to be closed with ETM, reverse the TO vehicle to a suitable point at where traffic can be stopped creating a sufficiently large gap to the incident scene. At this point, either manoeuvre the vehicle into the slow moving traffic and fend off to block the lanes, or manually stop the traffic in all lanes with hand signals (Guidance: Traffic Control Hand Signals - Applicable to Motorways & All Purpose Trunk Roads).

At this point position ETM in the sterile area to protect the scene. Once this is placed, position the TO vehicle within the ETM and then release the traffic by hand a lane at a time to run past the incident scene

Alternatively once a sterile area has been provided by rolling road block, deploy ETM to implement closure.

Removal of ETM requires a complete departure from existing procedures. Firstly, the Traffic Officer vehicle should be moved from the live lane position to the hard shoulder. The longitudinal cones and signs should then be moved to the hard shoulder followed by the taper (the last cone removed should be the one at the start of the taper). Watching the traffic all the time, the equipment should then be placed in the back of the Traffic Officer vehicle.

Vehicle protected ETM removal requires backup in the form of a Rolling Block.

f) Hard shoulder working

Enter the hard shoulder at a safe distance behind the incident and adopt a safe stopping speed. Come to a stop approx. 50mtrs behind the incident/obstruction. On arrival before alighting from vehicle, where practicable, inform the RCC of location

Leave through the driver's door if safe to do so. Deploy any appropriate ETM before approaching the incident.

Be aware that whilst carrying out all actions on the hard shoulder (e.g. putting out ETM or liaising with customers) you will need to watch the oncoming traffic.

g) Pushing vehicles/Manual Handling

Pushing vehicles – one Traffic Officer is required to push and one to pilot the vehicle, therefore pushing vehicles cannot and should not be undertaken single crewed.

If the vehicle is causing obstruction or likely danger to other road users request a patrol to assist and if it is practicable to do so, clear it to the nearest place of safety. Alternatively if it is safe and practicable to do so make it safe e.g. by turning on vehicle lights.

If a vehicle cannot be removed to a place of safety or made safe consider the need for signals and ETM to protect it.

If no report has been received, CCTV and Traffic Officer observation should be undertaken to see if there are any pedestrians nearby who are associated with the vehicle.

Carriageway Clearance can only be undertaken when the carriageway is sterile. A single crewed TO will need to be extra vigilant for breaches of the sterile area in the absence of a partner observing the scene.

An assessment of the weight of any debris should be made before attempting to move it. Where the weight of the debris is assessed as excessive clearance should not be undertaken single crewed.

h) Single crew lane closures

For lane closures, method 2 setting out should always be used. Once the vehicle is placed 50m upstream of the incident on the hard shoulder, the cones can be laid out along the hard shoulder and then walked into the live lane. Infill and then longitudinal coning can then be completed by the Officer. Once this task has been completed the Traffic Officer vehicle should be moved from the hard shoulder and positioned within the cones at the end of the taper prior to the incident. Vigilance is key, at all times when removing equipment from the vehicle and setting out ETM, the Traffic Officer must watch the Traffic. In addition, and for any type of ETM, the ETM should be the first thing the single crew member does when they get on scene. Dealing with the incident should come after the ETM has been set out and the scene made safe.

If the incident is in lanes 3/4/5 or 6, method 2 will need to be used after following the procedure for single crew stopping TO vehicle in live carriageways (Procedure 1.44).

Note that the procedure for stopping TO vehicle in central lanes of wide carriageways and intersections is to be dual crewed and should not be undertaken during the test.

i) Directing traffic

Traffic Officer safety is dependant upon the cooperation of immediate customers. For this reason, vigilance for breaches in any stationary traffic line (especially for motorbikes) or illegal use of the hard shoulder is essential. Further, at junctions vigilance over the junction will be required and the cooperation of the public in observing hand signals will be critical.

Where directing traffic also entails monitoring traffic flows, for example at a junction, the requirement for backup should be considered.

j) Pedestrians on the network

In order to assess if the pedestrian is potentially a vulnerable person, if practicable attempt to converse with the person by lowering the passenger window down by a quarter ensuring your doors are locked as you do so.

If you deem the person as vulnerable, call for Police attendance immediately and monitor the pedestrian from a safe distance, update the RCC and do not alight from your vehicle.

When dealing with a pedestrian, the RCC should carry out welfare checks at regular intervals on the single crewed TO. During the single crew test this will replicate end state RCC activity.

If you deem there to be no risk then update the RCC and follow normal procedure.

Only in extreme emergencies are pedestrians to be put in a TOV during the single crew test. A Dynamic Risk Assessment must have been carried out and the RCC Team Manager informed. Carrying a pedestrian during the test might involve leaving either the HFO (who becomes another pedestrian) or the SME alone at the roadside.

Traffic Officers would carry out a Dynamic Risk Assessment for test single crewed TO's before considering carrying out any procedures involving vulnerable people.

- A3.1 Table A2.3, shown below, outlines the RCC codes to be assigned to the Traffic Officer vehicles during the Live Network Test.

Table A2.3 - Coding for single crew vehicles during the test (Night shifts not used so greyed out)

		Lowhurst/Milnes			Samlesbury			Milnrow			Rob Lane			Knutsford		
Patrol Route		Early	Late	Night	Early	Late	Night	Early	Late	Night	Early	Late	Night	Early	Late	Night
Route 1		RE11	RL11	RN11	RE21	RL21	RN21	RE31	RL31	RN31	RE41	RL41	RN41	RE51	RL51	RN51
Route 2		RE12	RL12	RN12	RE22	RL22	RN22	RE32	RL32	RN32	RE42	RL42	RN42	RE52	RL52	RN52
Route 3		RE13	RL13	RN13	RE23	RL23	RN23	RE33	RL33	RN33	RE43	RL43	RN43	RE53	RL53	RN53
Route 4		RE14	RL14	RN14	RE24	RL24	RN24	RE34	RL34	RN34	RE44	RL44	RN44	RE54	RL54	RN54
Route 5		RE15	RL15	RN15	RE25	RL25	RN25	RE35	RL35	RN35	RE45	RL45	RN45	RE55	RL55	RN55
Patrol Route		Single Crewed			Single Crewed			Single Crewed			Single Crewed			Single Crewed		
Route 1		RE16	RL16	RN16	RE26	RL26	RN26	RE36	RL36	RN36	RE46	RL46	RN46	RE56	RL56	RN56
Route 2		RE17	RL17	RN17	RE27	RL27	RN27	RE37	RL37	RN37	RE47	RL47	RN47	RE57	RL57	RN57
Route 3		RE18	RL18	RN18	RE28	RL28	RN28	RE38	RL38	RN38	RE48	RL48	RN48	RE58	RL58	RN58
Route 4		RE19	RL19	RN19	RE29	RL29	RN29	RE39	RL39	RN39	RE49	RL49	RN49	RE59	RL59	RN59
Other Resource (eg: Days / Planned Ops)		RM10	RM16 (single)		RM20	RM26 (single)		RM30	RM36 (single)		RM40	RM46 (single)		RM50	RM56 (single)	
		RM11	RM17 (single)		RM21	RM27 (single)		RM31	RM37 (single)		RM41	RM47 (single)		RM51	RM57 (single)	
		RM12	RM18 (single)		RM22	RM28 (single)		RM32	RM38 (single)		RM42	RM48 (ingle)		RM52	RM58 (single)	
		RM13	RM19 (single)		RM23	RM29 (single)		RM33	RM39 (single)		RM43	RM49 (single)		RM53	RM59 (single)	
		RM14			RM24			RM34			RM44			RM54		
		RM15			RM25			RM35			RM45			RM55		
Team Managers	Lowhurst/Milnes TM		TM Spares		Samlesbury TM		TM Spares		Milnrow TM		TM Spares		Rob Lane TM		TM Spares	
	RT10	Early	RT15		RT20	Early	RT25		RT30	Early	RT35		RT40	Early	RT45	
	RT11	Late	RT16		RT21	Late	RT26		RT31	Late	RT36		RT41	Late	RT46	
	RT12	Night	RT17		RT22	Night	RT27		RT32	Night	RT37		RT42	Night	RT47	
	RT13	Days	RT18		RT23	Days	RT28		RT33	Days	RT38		RT43	Days	RT48	
	RT14		RT19		RT24		RT29		RT34		RT39		RT44		RT49	

- A3.2 The following tables outline those procedures that must either be Dual Crewed or that must be a back up resource available. This list will be made available within all Regional Control Centres supporting the test.

Table A2.4 – Activities that RCC must Dual Crew

PROCEDURES	Must Dual
1.1 – Status of the national processes and procedures	X
1.17 – Fires etc. in Tunnels	X
1.40 – Rolling road block	X
1.43 – Stopping TO vehicle in central lanes of wide carriageways and intersections	X
GUIDANCE	Must Dual
Checking TO vehicles	X
Exposure to Chemicals	X
HA Tunnels guidance	X
Slip road surveys	X

Table A2.5 – Activities which must have, or seek, backup resource

PROCEDURES	Must Backup
1.9 – Collision Management (Police led)	X
1.16 – Directing traffic at roundabouts	X
1.19 – First Aid - Basic	X
1.33 – Rearward relief	X
1.35 – Releasing Traffic crossing the central reservation	X
1.38 – Reverse flow	X
1.47 – Verge Fires	X
GUIDANCE	Must Backup
None	

A3.3 The following tables outline existing procedures which will require pre test briefings or practical learning; they are referenced to the table within paragraph A.2.1.

Table A2.6 - Procedures included in the Test – Identified Knowledge or Skill Gap requires pre-test briefing or practical learning

PROCEDURES	May Attempt single – refer briefing
1.2 – Abnormal Loads – TO escort	a, b, f
1.4 – Airwave Emergency Button Activation	c
1.5 – Ambulance Escorts	a, b, f
1.6 – Animals on the network	f
1.7 – Carriageway clearance	g
1.12 - Debris	f, h, d, e
1.13 – Diesel Spills	e, b
1.14 – Directing traffic around incidents	i, a, b
1.15 – Directing traffic at junctions	d, i
1.20 – Flooding on the network	e, a, b
1.21 – Hard Shoulder working	f, e, d
1.22 – Hazardous Substances (TO discovered)	a, d, e
1.23 – Hazardous substances (non-TO reported)	a, d, e
1.24 – Lane Closures	e, b
1.25 – Managing and removing abandoned vehicles	f, e, j, g
1.26 – Managing and removing broken down vehicles	f, e
1.27 – Media on the network	j
1.28 – Offside repairs LGV/PCV	e
1.29 – Pedestrians on the network	j
1.32 – RCC Incident handling and incident logs	k
1.36 – Removing obstructions from live carriageway on foot	d, g
1.39 – Road Closure	e
1.44 – Stopping TO vehicle in live carriageways	a, b, d, e, h
1.45 – Suicide Attempts	e
1.47 – Verge Fires	e
1.48 – Vulnerable People	j

Table A2.7 – Guidance included in the Test – Identified Knowledge or Skill Gap requires pre-test briefing or practical learning

GUIDANCE	May Attempt single – refer briefing
Airwave Emergency Button activation	c
Breakdown organisation vehicles – positioning at incidents.	e, g
Broken Down Vehicles – Managing vulnerable occupants	j
Command and Control	k
Escorting Vehicles	f, a, b
Handling Animals	e
Lookout – Warning whistles	d
Mobile telephony policy and use	b
Single Crew Guidance Notes - ETM	e

A3.4 The table below outlines those procedures where the competence exists within the test group and therefore are deemed ok to attempt single crewed.

Table A2.8 – Procedures included in the Test – No requirement for pre-test briefing or practical learning

PROCEDURES	May Attempt single
1.3 – Adverse Weather	X
1.8 – Collision Management (HA led)	X
1.10 – Congestion Management	X
1.11 – Critical and Major Incidents	X
1.18 – Vehicles on Fire	X
1.30 – Planned Events Management	X
1.31 – PNC vehicle enquiries and PNC updates by RCC	X
1.34 – Rejoining the carriageway	X
1.37 – Reporting and addressing safety	X
1.41 – Signals VMS and MIDAS, mobile r'works	X
1.42 – Signals VMS and MIDAS, short duration static r'works	X
1.46 – Vehicle recovery data collection	X

Table A2.9 – Guidance included in the Test – No requirement for pre-test briefing or practical learning

GUIDANCE	May Attempt single
Accessing Incidents through traffic	X
Airbags hazards	X
Airwave – Point to Point	X
Airwave security	X
Animal rescue contacts	X
Asbestos	X
Biological Hazards	X
Working on Bridges and elevated sections of the network	X
Briefing Contents	X
Capturing Evidence	X
Carrying or allowing passengers and fuel in TO vehicles	X
CCTV – use of CCTV and management of data	X
Child locks on TO vehicles	X
Claims – Red and Green	X
Collisions involving TO vehicles - reporting	X
Crime Scenes – Initial Actions	X
Critical Incident - Reporting	X
Dangerous and/or high value loads	X
Disabled drivers	X
Diversions	X
Dynamic Risk Assessments	X
Dynamic Risk Assessments – Factors to consider	X
Emergency Crossing Points	X
Feedback and complaints	X
Fitness for duty	X
Found property	X
Generic Safety Measures	X
Giving Evidence in Court	X
Handing over incident control and recording	X
Helicopters	X

GUIDANCE	May Attempt single
HSE access to HA Network	X
Incident Management – HA responsibilities	X
Deployment of Incident Screens	X
Incidents on Local road network	X
Long term roadworks – Impact on operational activities	X
Managing abandoned, apparently abandoned, and broken down vehicles	X
Network security and terrorism	X
Operating in Adverse Weather conditions	X
Over the counter medicines	X
Patrolling the HA network – A common approach	X
Permission to use the hardshoulder – factors to consider	X
Personal Safety Advice - Public	X
PNC Vehicle enquiries and data	X
Protection of Hazardous chemical transporters	X
Protests	X
Use of Radio equipment	X
RCC proactive traffic management procedures	X
Reporting bad driving and traffic offenses – supporting enforcement	X
Responsibility for managing incidents	X
Reversing on the hardshoulder	X
Risk Assessments	X
Roadworks monitoring	X
Rolling road block or lane, carriageway and road closures – what to use	X
SAD CHALETS	X
Setting signals	X
Storage of evidence	X
TASKCARD	X
Telephone Answering standards	X
Telephone scripts	X
TO interim vehicle management	X
TO pocket book	X
TO/RCC Operational Safety debrief	X

GUIDANCE	May Attempt single
To vehicle procedures	X
To vehicle speeds	X
Traffic control hand signals	X
Vehicle orientation – in line, fend in, fend off.	X
Vehicle supplementary restraint system SRS	X
VMP legends and their use	X
Vulnerable People - definition	X
Warning Lights – Use (Vehicle Mounted)	X
Winter Service	X

A4 PROCEDURES REVIEW FULL

- A4.1 An output of the Procedures Review was a guidance note titled “Single Crewing Guidance Notes”; this was produced by Greg Taylor and was used to inform the risk assessment review which was carried out by the HA National Health and Safety team. The Single Crewing Guidance Notes are not included in this report.
- A4.2 The “Variable Crewing Risk Review Response” was issued on the 21st September 2010 under version 0.1, by Greg Taylor. The following information provides key extracts from the document.
- A4.3 The aim of this document is to address the issues raised in the variable crewing risk assessment review undertaken by the national health & safety team, published in September 2010.
- A4.4 The findings of the health & safety report can be summarised as follows:
- Procedural risk mitigation measures – the health & safety report recommended that further mitigation measures needed to be developed as part of the variable crew procedures review in order to further mitigate the level of risk inherent in the single crew test;
 - Review the status of the rolling road block procedure (RRB) as part of the single crew test;
 - Provide a rationalised list of procedures to be tested as an option for the project board to consider;
 - Outline how the participants will be ‘taught’ new procedures and how this knowledge uptake will be assured and tested;
 - Provide more detail on how the subject matter experts (SME’s) and test subjects were selected in the NW region
- A4.5 The response to the risk assessment review included minor amendments to the Single Crew Guidance Notes, these are included below –

Single Crew Procedures & Guidance Notes

The following procedures and guidance notes are to be read and operated in conjunction with the existing procedures and guidance notes in the Way We Work section of the portal. This document details all adjustments which need to be made to procedures and guidance notes to enable single crewing to take place.

Single Crew Procedural Amendments

1.1	Single Crew Status of the National Processes and Procedures - Applicable to Motorways and all purpose trunk roads
Procedure / Guidance / EMT diagram under review	Status of the National Processes and Procedures - Applicable to Motorways and all purpose trunk roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.2	Single Crew Abnormal Loads - TO Escort - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Abnormal Loads - TO Escort - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Refer to procedure for single crew hard shoulder working (1.21)
Is a backup double crew required and if so when	No
Equipment implications	Required VMP legend should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	No
Safety Implications	Yes
Traffic officers	Refer to procedure for single crew hard shoulder working (1.21)
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

1.3	Single Crew Adverse Weather - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Adverse Weather
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.4	Single Crew Airwave Emergency Button Activation - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Airwave Emergency Button Activation
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Yes
Is a backup double crew required and if so when	Yes – see RCC implications
Equipment implications	No
Communications implications	No
RCC implications	RCC should consider the immediate deployment of the nearest available resource if the emergency button is activated by a single crew member
Safety Implications	No
Traffic officers	No change
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

1.5	Single Crew Ambulance Escorts - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Ambulance Escorts
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes

Procedural adjustments required	Refer to procedure for single crew hard shoulder working (1.21)
Is a backup double crew required and if so when	No
Equipment implications	Required VMP legend should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	No
Safety Implications	Yes
Traffic officers	Refer to procedure for single crew hard shoulder working (1.21)
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

1.6	Single Crew Animals on the Network - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Animals on the Network
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Refer to guidance for single crewing hard shoulder working (1.21) and single crew stopping TOV in live carriageways (1.44)
Is a backup double crew required and if so when	Yes – if Rolling Road Block is required
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	Refer to guidance for single crewing hard shoulder working (1.21) and single crewing stopping TOV in live carriageways (1.44)
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

1.7	Single Crew Carriageway Clearance - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Carriageway Clearance
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Pushing vehicles – one Traffic Officer is required to push and one to pilot the vehicle, therefore pushing vehicles should not be undertaken single crewed. Carriageway Clearance can only be undertaken when the carriageway is sterile. However a single crewed TO will need to be extra vigilant of breeches of the sterile area in the absence of a crewed partner observing the scene.
Is a backup double crew required and if so when	Yes – for pushing vehicles and for piloting disabled vehicles when the occupant is unable to pilot. Yes – if it is deemed necessary for a second Traffic Officer vehicle to protect the scene while carriageway clearance takes place
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	If undertaking carriageway clearance without an additional crew being present to protect the scene, be mindful of the possibility for stationary traffic to begin moving again of its own accord.
Immediate customers	Increased risk to immediate customers based on the need to pilot disabled vehicles
Other emergency responders	May be an increased requirement for emergency responders to pilot disabled vehicles
Travelling public	No change
HA Support Contractors	May be an increased requirement for HA support contractors to pilot disabled vehicles

1.8	Single Crew Collision Management (HA Led) - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Collision Management (HA Led) - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.9	Single Crew Collision Management (Police Led) - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Collision Management (Police Led) - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.10	Single Crew Congestion management - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Congestion management - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.11	Single Crew Critical and Major Incidents - HA Response - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Critical and Major Incidents - HA Response - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.12	Single Crew Debris - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Debris - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes

Procedural adjustments required	Refer to procedure for single crewing hard shoulder working (1.21), single crew lane closures (1.24), single crew removing obstructions from live lanes on foot (1.36), single crew stopping TO vehicle in live carriageways (1.44) and single crew guidance note - emergency traffic management.
Is a backup double crew required and if so when	Yes – may be required to make the carriageway sterile while debris is removed if at any time the single crew member feels they need another crew. A backup double crew will be required if a rolling road block is needed.
Equipment implications	Required VMP legend should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	If type and location of debris is known (e.g. from CCTV), consider restricting deployment to double crew vehicle only.
Safety Implications	Yes
Traffic officers	Yes – Refer to procedure for single crewing hard shoulder working (1.21), single crew lane closures (1.24), single crew removing obstructions from live lanes on foot (1.36), single crew stopping TO vehicle in live carriageways (1.44) and single crew guidance note - emergency traffic management.
Immediate customers	May be an increased risk due to delay in removing debris if single crew members require an additional double crew to make the scene safe
Other emergency responders	May be an increased risk due to delay in removing debris if single crew members require an additional double crew to make the scene safe
Travelling public	May be an increased risk due to delay in removing debris if single crew members require an additional double crew to make the scene safe
HA Support Contractors	May be an increased risk due to delay in removing debris if single crew members require an additional double crew to make the scene safe

1.13	Single Crew Diesel Spills - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Diesel Spills - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Refer to procedure single crew lane closures (1.24),
Is a backup double crew required and if so when	Yes – if single crewed Traffic Officer deems it is required to protect the scene while spill kits are utilised or a rolling road block is required
Equipment implications	Required VMP legend should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use – no personal radio use when moving
RCC implications	No
Safety Implications	Yes

Traffic officers	Yes – refer to procedure for single crew lane closures (1.24)
Immediate customers	No change
Other emergency responders	No change
Travelling public	May be an increase in incident related congestion due to the amount of time it takes a double crewed vehicle to access the scene for protection while the spill kits are used
HA Support Contractors	No change

1.14	Single Crew Directing Traffic around Incidents - Applicable to Motorways and all Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Directing Traffic around Incidents - Applicable to Motorways and all Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>This procedure is currently dependant on 2 Traffic Officers carrying out different roles to essentially clear a space prior to the incident to enable the safe deployment of ETM. This space can be achieved using a single crewed Traffic Officer.</p> <p>When arriving on scene, position the vehicle on the hard shoulder. After ascertaining how many lanes have to be closed with ETM, reverse the TO vehicle to a suitable point at which to stop the traffic to create a gap to the incident scene. At this point, either manoeuvre the vehicle into the slow moving traffic and fend off to block the lanes, or manually stop with hand signals (Guidance: Traffic Control Hand Signals - Applicable to Motorways & All Purpose Trunk Roads) all lanes of traffic. At this point position your ETM in the sterile area to protect the scene. Once this is placed, position the TO vehicle within the ETM and then release the traffic by hand a lane at a time to run past the incident scene</p>
Is a backup double crew required and if so when	Yes – if a single crewed Traffic Officer feels they need to revert back to the original procedure and use another Traffic Officer
Equipment implications	Required VMP legend should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	No
Safety Implications	Yes
Traffic officers	Yes – the Traffic Officers safety is dependant upon the cooperation of immediate customers. For this reason, vigilance for breach's in the stationary traffic line (especially by motorbikes) or illegal use of the hard shoulder is essential and should be practiced at all times whilst laying ETM
Immediate customers	No change
Other emergency responders	No change

Travelling public	May be an increase in incident related congestion due to the amount of time it takes for a single crew to lay out ETM
HA Support Contractors	No change

1.15	Single Crew Directing Traffic at Junctions - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	<u>Directing Traffic at Junctions - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	In its current form, the second TO's actions exist to monitor the overall traffic flows at the junction and to provide a back up for the first TO. This procedure could therefore be operated single crewed
Is a backup double crew required and if so when	Yes – if the single crewed TO feels uncomfortable operating the procedure on his / her own
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	Yes – vigilance over the overall junction will be required to cover for the activity of the absent second crew member and the cooperation of the public in observing hand signals will be critical
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

1.16	Single Crew Directing Traffic at Roundabouts - Applicable to Motorways and all purpose Trunk Roads.
Procedure / Guidance / EMT diagram under review	<u>Directing Traffic at Roundabouts - Applicable to Motorways and all purpose Trunk Roads.</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes

Procedural adjustments required	This procedure could be carried out single crewed. However, if this were to happen, all laying of ETM would have to be sequenced so that so that the single crew member could make their way around the roundabout gradually. In addition, this ETM would need to be placed without vehicular protection and without traffic stopping. To this end, if the traffic were travelling above 15 mph it would not be advised to continue without another crew member present. As there is no sterile area, TO's need to be extra vigilant of observing the moving traffic
--	--

Is a backup double crew required and if so when	Yes – if traffic is travelling at over 15 mph or traffic volumes are such that unprotected ETM laying would be unsafe
Equipment implications	The laying of ETM would need to be sequenced to ensure the safe passage of restricted traffic around the roundabout
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	Yes – laying ETM without protection and without control of the travelling public with a manual stop has the potential to be hazardous. EMT must be laid at all times whilst looking at the oncoming traffic
Immediate customers	No change
Other emergency responders	No change
Travelling public	May be an increase in incident related congestion due to the amount of time it takes for a single crew to lay out ETM
HA Support Contractors	No change

1.17	Single Crew Fires and Hazardous Chemical spillages - Tunnels. Applicable to Motorways and Patrolled Trunk Roads that feature Tunnels
Procedure / Guidance / EMT diagram under review	Fires and Hazardous Chemical spillages - Tunnels. Applicable to Motorways and Patrolled Trunk Roads that feature Tunnels
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	No

1.18	Single Crew Fires-Vehicles on Fire - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Fires-Vehicles on Fire - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.19	Single Crew First Aid Basic - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	First Aid Basic
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Upon arriving at scene, deploy ETM to make the scene safe before administering any first aid. Refer to for single crewed guidance note – Emergency Traffic Management
Is a backup double crew required and if so when	Yes
Equipment implications	Yes – Required VMP legends should be pre-loaded when stationary to enable one touch activation
Communications implications	Yes – Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	RCC and TO needs to be aware that if administering first aid, they will not be able to monitor traffic as effectively and therefore for safety reasons an additional patrol should be deployed (either single or double crewed) for this purpose
Immediate customers	Yes – first aid from TO would be delayed until ETM has been deployed. It will take longer to make scene safe as ETM being deployed by a single crew
Other emergency responders	Updates from RCC may be delayed due to TO on scene having to give first aid as well as communicate with control room. It will take longer to make scene safe as ETM being deployed by a single crew
Travelling public	No
HA Support contractors	May be asked to provide a lookout at scene for safety reasons

1.20	Single Crew Flooding on the network - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Flooding on the network
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Refer to procedures for single crew lane closures (1.24)
Is a backup double crew required and if so when	Dependent on severity of flooding and if a rolling road block is required
Equipment implications	Required VMP legends should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use

RCC implications	Yes
Safety Implications	Yes
Traffic officers	Refer to procedures for single crew lane closures (1.24). RCC may not receive updates as quickly due to single crewed TO carrying out closures or rolling road block
Immediate customers	Increased delay if ETM is put out by single crew
Other emergency responders	No
Travelling public	Increase in time before ETM is in place
HA Support contractors	Assistance to HA Support Contractors may be reduced due to only one TO on scene

1.21	Single Crew Hard Shoulder Working - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Hard Shoulder Working
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>Enter the hard shoulder at a safe distance behind the incident and adopt a safe stopping speed. Come to a stop approx. 50mtrs behind the incident/obstruction. On arrival before alighting from vehicle, where practicable, inform the RCC of location</p> <p>Leave through the driver's door if safe to do so. Deploy any appropriate ETM before approaching the incident.</p> <p>Be aware that whilst carrying out all actions on the hard shoulder (e.g. putting out ETM or liaising with customers) you will need to watch the oncoming traffic.</p>
Is a backup double crew required and if so when	Dependent on incident
Equipment implications	No
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	No
Safety Implications	Yes
Traffic officers	Communications may be slower as will have to update RCC as well as watch traffic and communicate with customer
Immediate customers	Will be a delay from when the TO arrives on hard shoulder and when gets out of vehicle to communicate as will need to give RCC location first
Other emergency responders	No
Travelling public	No
HA Support contractors	No

1.22	Single Crew Hazardous Substances - TO discovered - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Hazardous Substances - TO discovered
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	If closure / diversion required may need to ask for additional patrol to assist
Is a backup double crew required and if so when	Yes – if required to assist with closures
Equipment implications	No
Communications implications	No
RCC implications	Yes – will need to deploy an additional crew if required
Safety Implications	Yes
Traffic officers	Need to ascertain if closures are required as soon as practicable in order to deploy crews to assist and minimise risk of contamination
Immediate customers	Risk of contamination if not escorted away from the scene immediately which may be delayed if a single crewed patrol
Other emergency responders	May require further assistance in order to manage scene safely
Travelling public	Risk if closures/diversions not implemented quickly enough
HA Support contractors	May be increased requirement for HA support contractors to deploy their ETM to assist and to assist with escorting members of the public away from the incident

1.23	Single Crew Hazardous Substances - Non-TO reported - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Hazardous Substances - Non-TO reported
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	If considering lane or carriageway closures refer to procedure for single crew lane closures (1.24) After resolution of incident, when commencing procedures to clear the scene and return to normal traffic flow consider use of an additional crew if appropriate
Is a backup double crew required and if so when	Yes if appropriate – when closures are required or a rolling road block and when returning to normal traffic flow
Equipment implications	No
Communications implications	No

RCC implications	Yes
Safety Implications	Yes
Traffic officers	Consider deploying double crewed patrol immediately due to contamination issues and refer to procedure for single crew lane closures (1.24)
Immediate customers	Risk of contamination if not escorted away from the scene immediately which may be delayed if a single crewed patrol
Other emergency responders	May require further assistance in order to manage scene safely
Travelling public	Risk of contamination if not escorted away from the scene immediately which may be delayed if a single crewed patrol
HA Support contractors	May be increased requirement for HA support contractors to deploy their ETM to assist and to assist with escorting members of the public away from the incident

1.24	Single Crew Lane Closures - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Lane Closures - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Refer to single crew guidance note – Emergency Traffic Management , procedure single crew stopping TO vehicle in live carriageways (1.44).
Is a backup double crew required and if so when	Yes – may be required if the single crew member deems it necessary or a rolling road block is required
Equipment implications	No
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	No
Safety Implications	Yes
Traffic officers	Yes – Refer to single crew guidance note – Emergency Traffic Management , procedure single crew stopping TO vehicle in live carriageways (1.44).
Immediate customers	May be an increased risk due to delay caused by single crew lane closures as opposed to double crew lane closures
Other emergency responders	May be an increased risk due to delay caused by single crew lane closures as opposed to double crew lane closures
Travelling public	May be an increased risk due to delay caused by single crew lane closures as opposed to double crew lane closures
HA Support contractors	May be an increased risk due to delay caused by single crew lane closures as opposed to double crew lane closures

1.25	Single Crew Managing and Removing Abandoned and Apparently Abandoned vehicles - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Managing and Removing Abandoned and Apparently Abandoned vehicles
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>If the vehicle is causing obstruction or likely danger to other road users request a patrol to assist and if it is practicable to do so, clear it to the nearest place of safety. Alternatively if it is safe and practicable to do so make it safe e.g. by turning on vehicle lights.</p> <p>If a vehicle cannot be removed to a place of safety or made safe consider the need for signals and ETM to protect it, refer to single crew guidance note – Emergency Traffic Management.</p> <p>If no report has been received, CCTV and Traffic Officer observation should be undertaken to see if there are any pedestrians nearby who are associated with the vehicle. If this is the case refer to procedure for single crew pedestrians on the network (1.29).</p>
Is a backup double crew required and if so when	Yes – if the vehicle requires clearance to a safer location
Equipment implications	No
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	RCC to be aware transmissions may be delayed if TO is deploying ETM / taking off ETM at the incident
Safety Implications	Yes
Traffic officers	Yes - refer to single crew guidance note – emergency traffic management and single crew pedestrians on the network (1.29).
Immediate customers	No
Other emergency responders	No
Travelling public	Increased delay in ETM being deployed by a single crew TO
HA Support contractors	No

1.26	Single Crew Managing and Removing Broken Down Vehicles - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Managing and removing broken down vehicles
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes

Are adjustments to the existing procedure required	Yes
Procedural adjustments required	This procedure should be read in conjunction with single crew guidance for Managing and removing abandoned and apparently abandoned vehicles (1.25) If deployed to a vehicle on the hard shoulder, Refer to procedure for single crew hard shoulder working (1.21). If vehicle is in a live lane, refer to procedure for single crew lane closures (1.24) and single crew carriageway clearance (1.7)
Is a backup double crew required and if so when	Yes – if the vehicle requires clearance to a safer location
Equipment implications	No
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes - RCC to be aware transmissions may be delayed if TO is deploying ETM / taking off ETM at the incident
Safety Implications	Yes
Traffic officers	Yes – refer to single crew guidance for Managing and removing abandoned and apparently abandoned vehicles and single crew hard shoulder working (1.21)
Immediate customers	Increased delay in scene being made safe as ETM being deployed by a single crew TO and / or wait for crew to assist with carriageway clearance
Other emergency responders	No
Travelling public	Increased delay in ETM being deployed or carriageway cleared
HA Support contractors	No

1.27	Single Crew Media on the Network - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Media on the Network
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	If a member of the media refuse to leave a motorway, inform RCC for the information of the Police and refer to the procedure for single crew pedestrians on the network (1.29)
Is a backup double crew required and if so when	No
Equipment implications	No
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes - Increased risk as may not be able to communicate with RCC confidentially as may not be able to leave member of the media unattended
Safety Implications	Yes
Traffic officers	Yes - refer to the procedure for single crew pedestrians on the network (1.29)

Immediate customers	No
Other emergency responders	May need to assist TO to escort member of public from network to enable them to communicate confidentially with RCC
Travelling public	No change
HA Support contractors	May need to assist TO to escort member of public from network to enable them to communicate confidentially with RCC

1.28	Single Crew Offside Repairs LGV/PCV - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Offside Repairs LGV/PCV
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	If vehicle is obstructing any part of a live running lane consider signals and lane closures, refer to the procedure for single crew lane closures (1.24) If the vehicle in question is a PCV or other vehicle with a number of passengers on board ask for a back up patrol immediately
Is a backup double crew required and if so when	Yes – may be required if the single crew member deems it necessary
Equipment implications	No
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	RCC to be aware transmissions may be delayed if TO is deploying ETM / taking off ETM at the incident
Safety Implications	Yes
Traffic officers	Yes - refer to the procedure for single crew lane closures (1.24)
Immediate customers	Increased delay in scene being made safe as ETM being deployed by a single crew TO and / or wait for crew to assist with carriageway clearance

1.29	Single Crew Pedestrians on the network - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Pedestrians on the network
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes

Procedural adjustments required	<p>In order to assess if the pedestrian is potentially a vulnerable person, if practicable attempt to converse with the person by lowering the passenger window down by a quarter ensuring your doors are locked as you do so.</p> <p>If you deem the person as vulnerable, call for Police attendance immediately and monitor the pedestrian from a safe distance, update the RCC and do not alight from your vehicle. See procedure for single crew vulnerable people (1.48).</p> <p>When dealing with a pedestrian, the RCC should carry out welfare checks at regular intervals on the single crewed TO</p> <p>If you deem there to be no risk then update the RCC and follow normal procedure.</p> <p>Only in extreme emergencies are pedestrians to be put in a TOV if you are single crewed. A Dynamic Risk Assessment must have been carried out and the RCC Team Manager informed</p>
Is a backup double crew required and if so when	Yes – as soon as possible
Equipment implications	No
Communications implications	No
RCC implications	Yes
Safety Implications	Yes
Traffic officers	Need to be extra vigilant of traffic as will not have a colleague to assist. RCC Team Manager needs to ensure the TO is welfare checked regularly
Immediate customers	Customer may be frustrated that the TO cannot let them in their TOV, this may lead to confrontation
Other emergency responders	Yes – may be requirement for immediate assistance
Travelling public	Perception of TO not assisting the pedestrian, risk that the pedestrian may try and enter the carriageway
HA Support contractors	No

1.30	Single Crew Planned Events Management - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Planned Events Management
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.31	Single Crew PNC vehicle enquiries and PNC updates by RCC - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	PNC vehicle enquiries and PNC updates by RCC
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.32	Single Crew RCC Incident Handling and Incident Logs - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	RCC Incident Handling and Incident Logs - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Ensure record on log if the TO patrol is single crewed and consider this when deploying a crew to the incident
Is a backup double crew required and if so when	No
Equipment implications	No
Communications implications	No
RCC implications	May need an additional coding on C&C to show single crewed patrol. Increased welfare checks to be considered for single crewed patrols
Safety Implications	No
Traffic officers	No
Immediate customers	No
Other emergency responders	No
Travelling public	No
HA Support Contractors	No

1.33	Single Crew Rearward Relief - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Rearward Relief
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes

Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>A single crewed patrol can undertake this procedure if they are working with at least one other additional patrol which could be single or double crewed</p> <p>Option 1: Single crewed TO could act as either the TOV leading the traffic or as the TO directing the traffic</p> <p>Option 2: Single crewed TO could carry out one of the following - Instructing drivers to make their own way back to the exit point using a specified lane. Direct vehicles to turn around, commencing from whichever lane is most practical in the circumstances. Stop each vehicle and instruct the driver to keep to a specified lane and to observe a 20 mph speed limit.</p> <p>Option 3: Single crewed TO could direct the traffic to make its own way back to the exit point using a coned off lane.</p>
Is a backup double crew required and if so when	Yes – immediately
Equipment implications	No
Communications implications	No
RCC implications	Yes
Safety Implications	Yes
Traffic officers	<p>Must be extra vigilant of traffic as will not have a colleague monitoring as well May need to transmit to other colleagues more as will not be able to communicate at scene once in flow</p>
Immediate customers	Yes – may take longer as not as many TO resources
Other emergency responders	Yes – may be increased request to assist with rearward relief if available
Travelling public	No
HA Support Contractors	Yes – may be increased request to monitor the slip closure

1.34	Single Crew Rejoining the carriageway - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Rejoining the carriageway
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>Inform RCC of status before rejoining the carriageway</p> <p>TO will need to turn off any emergency lighting when rejoining the carriageway</p>
Is a backup double crew required and if so when	Maybe – dependent on whether conditions are appropriate that speed can be built up to rejoin carriageway safely, if not consider requesting a rolling road block

Equipment implications	Yes - Required VMP legends should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	No
Safety Implications	Yes
Traffic officers	Need to be extra vigilant of traffic as will not have a passenger to assist
Immediate customers	No
Other emergency responders	No
Travelling public	No
HA Support contractors	No

1.35	Single Crew Releasing Traffic crossing the central reservation - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Releasing Traffic Crossing the Central Reservation
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes – in conjunction with additional TO patrol(s)
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>Option 1: If requested to implement lane closures refer to the procedure for single crew lane closures (1.24)</p> <p>Option 2: If requested to implement carriageway and on-slip closures refer to the procedure for single crew lane closures (1.24) and single crew road closure (1.39).</p> <p>Option 3: If requested to halt traffic flow on the opposite carriageway by implementing a carriageway closure at the previous junction, and establishing a traffic flow in the wrong direction, on the opposite carriageway, to the previous junction, refer to procedure for single crew rearward relief (1.33).</p>
Is a backup double crew required and if so when	Yes or an additional single crewed patrol – immediately
Equipment implications	No
Communications implications	No
RCC implications	Yes
Safety Implications	Yes
Traffic officers	<p>Must be extra vigilant of traffic as will not have a colleague monitoring as well</p> <p>May need to transmit to other colleagues more as will not be able to communicate at scene once in flow</p> <p>RCC to be aware transmissions may be delayed if TO is deploying ETM / taking off ETM at the incident</p>
Immediate customers	Yes – may take longer as not as many TO resources
Other emergency responders	No
Travelling public	No

HA Support contractors	Yes – may be increased requirement to assist with deploying ETM at closures and / or monitoring closures
------------------------	--

1.36	Single Crew Removing obstructions from live carriageway on foot - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Removing obstructions from live carriageway on foot
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	No TO would be available to act as lookout therefore the TO must be extra vigilant at watching the traffic Refer to procedure single crew debris (1.12)
Is a backup double crew required and if so when	Yes – to provide Rolling Road block if appropriate
Equipment implications	No
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	Communications may be slower as will have to update RCC as well as watch traffic RCC to watch CCTV (if available) and update TO as required
Immediate customers	No
Other emergency responders	No
Travelling public	Increased reliance on travelling public to obey signs and signals
HA Support contractors	May be asked to act as lookout if available

1.37	Single Crew Reporting and Addressing safety - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Reporting and Addressing safety
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.38	Single Crew Reverse Flow - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Reverse Flow
Reviewers	Ros Drew, Andy Wood, Greg Taylor

Date	18 August 2010
Can the procedure be undertaken single crewed	Yes – as an additional patrol supporting a double crewed patrol
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	If you are instructed to attend a designated junction to stop traffic at that junction refer to procedure for single crew directing traffic at junctions (1.15). Follow instructions from Team Manager as per which control point you are designated to. Refer to single crew guidance note – emergency traffic management.
Is a backup double crew required and if so when	Yes - Not to be undertaken without Team Manager supervision and additional TO patrols
Equipment implications	Yes - Required VMP legends should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	TO to be aware they will need to activate warning lights and appropriate in-car VMS TO to be aware that traffic may not comply with instructions and to remain extra vigilant RCC to be aware transmissions may be delayed if TO is deploying ETM / taking off ETM at the incident
Immediate customers	Increased reliance on customers complying with TO instructions
Other emergency responders	No
Travelling public	Increased delay in ETM being deployed by a single crew TO therefore increased risk
HA Support contractors	Maybe an increased requirement for HA Support contractors to monitor closures and traffic

1.39	Single Crew Road Closure - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Road Closure
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes - as an additional patrol supporting a double crewed patrol providing a rolling road block
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Once a sterile area has been provided by the rolling road block, deploy ETM to implement closure, refer to single crew guidance note – emergency traffic management. When removing closure, refer to single crew guidance note – emergency traffic management.
Is a backup double crew required and if so when	Yes – immediately to provide rolling road block
Equipment implications	Yes - Required VMP legends should be pre-loaded when stationary to enable 1 touch activation

Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	TO to be aware they will need to activate warning lights and appropriate in-car VMS TO to be aware that traffic may not comply with instructions and to remain extra vigilant RCC to be aware transmissions may be delayed if TO is deploying ETM / taking off ETM at the incident
Immediate customers	Increased reliance on customers complying with TO instructions
Other emergency responders	If deployed need to be aware there may be a delay in dealing with the incident and / or making the scene safe as the TO is single crewed
Travelling public	Increased delay in ETM being deployed by a single crew TO therefore increased risk
HA Support contractors	Maybe an increased requirement for HA Support contractors to implement and monitor closures and traffic

1.40	Single Crew Rolling Road Block - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Rolling Road Block
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	No

1.41	Single Crew Signals VMS and MIDAS at Mobile Roadworks - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Signals VMS and MIDAS at Mobile Roadworks
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.42	Single Crew Signals VMS and MIDAS at short duration static roadworks - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Signals VMS and MIDAS at short duration static roadworks
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes

Are adjustments to the existing procedure required	No
---	----

1.43	Single Crew Stopping TO Vehicle in central lanes of wide carriageways and intersections - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	<u>Stopping TO Vehicle in central lanes of wide carriageways and intersections</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes - as an additional patrol supporting a double crewed patrol providing a rolling road block
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>This procedure must only be carried out if a sterile area has been created by an additional double crewed patrol providing a rolling road block.</p> <p>If operating on wide carriageway or intersection consider parking the TO vehicle across two lanes in the fend off position to protect life. At no time must an island be created.</p> <p>If implementing a lane closure using ETM, refer to procedure for single crew lane closure (1.24).</p> <p>When the scene is safe then deal with the incident however as there is not an additional TO to act as lookout, you should be extra vigilant in ensuring the traffic is complying with your instructions</p> <p>If ETM is deployed, when incident is resolved, refer to single crew guidance note – emergency traffic management.</p>
Is a backup double crew required and if so when	Yes – Immediately to provide rolling road block
Equipment implications	Yes - Required VMP legends should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	<p>TO to be aware they will need to activate warning lights and appropriate in-car VMS on approach to the incident</p> <p>TO to be aware that traffic may not comply with instructions once they have started to deal with the incident</p> <p>RCC to be aware transmissions may be delayed if TO is deploying ETM / taking off ETM</p>
Immediate customers	Delay in dealing with immediate incident whilst scene is made safe by TO
Other emergency responders	If deployed need to be aware there may be a delay in dealing with the incident and / or making the scene safe as the TO is single crewed
Travelling public	Increased delay in ETM being deployed by a single crew TO therefore increased risk
HA Support contractors	Maybe an increased requirement for HA Support contractors to implement and monitor closures

1.44	Single Crew Stopping TO Vehicle in live carriageways - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Stopping TO Vehicle in live carriageways
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>If deemed necessary request a rolling road block form a double crewed patrol to provide a sterile area before stopping in live carriageway.</p> <p>If implementing a lane closure using ETM, refer to single crew guidance note – emergency traffic management.</p> <p>When the scene is safe then deal with the incident however as there is not an additional TO to act as lookout, you should be extra vigilant in ensuring the traffic is complying with your instructions</p> <p>If ETM is deployed, when incident is resolved, see guidance for taking off ETM. Refer to single crew guidance note – emergency traffic management.</p>
Is a backup double crew required and if so when	Backup crew may be required to assist with rolling road block, closures and / or to act as lookout and also to assist with taking off ETM
Equipment implications	Yes - Required VMP legends should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	<p>TO to be aware they will need to activate warning lights and appropriate in-car VMS on approach to the incident</p> <p>TO to be aware that traffic may not comply with instructions once they have started to deal with the incident</p> <p>RCC to be aware transmissions may be delayed if TO is deploying ETM / taking off ETM</p>
Immediate customers	Delay in dealing with immediate incident whilst scene is made safe by TO
Other emergency responders	If deployed need to be aware there may be a delay in dealing with the incident and / or making the scene safe as the TO is single crewed
Travelling public	Increased delay in ETM being deployed by a single crew TO therefore increased risk
HA Support contractors	Maybe an increased requirement for HA Support contractors to monitor closures

1.45	Single Crew Suicide Attempts - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Suicide Attempts
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Unless otherwise engaged at the scene, or in a function such as road closures, the TO should attend rendezvous point. If required to implement closure, refer to procedure single crew guidance note – emergency traffic management.
Is a backup double crew required and if so when	Backup crew may be required to assist with closures if across both carriageways
Equipment implications	No
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	If the TO becomes involved in communications with the apparently suicidal person, RCC to be aware the TO may not be able to communicate easily with the control room
Immediate customers	Possible delay of scene becoming sterile whilst single crewed TO deploys ETM
Other emergency responders	Maybe an increased pressure on Police to attend and or deal with an incident more immediately if the TO is single crewed
Travelling public	Increased delay in ETM being deployed by a single crew TO therefore increased risk of apparently suicidal person entering the live carriageway
HA Support contractors	Maybe an increased requirement for HA Support contractors to monitor closures

1.46	Single Crew Vehicle Recovery Data Collection - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Vehicle Recovery Data Collection
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

1.47	Single Crew Verge Fires - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Verge Fires
Reviewers	Ros Drew, Andy Wood, Greg Taylor

Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	The Fire and Rescue Service may attend from both directions and stop in the offside lane opposite. It is therefore necessary to consider signing and closing the opposite carriageway / lanes in these cases (refer to single crew guidance note – emergency traffic management.). If this is appropriate then an additional vehicle would be required immediately before considering any closures on the opposite carriageway.
Is a backup double crew required and if so when	Yes if closures or rolling road blocks are required for emergency services
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	If deploying ETM to make scene safe without an additional crew need to be mindful that traffic may attempt to move past the scene of it's own accord
Immediate customers	May be delay in being escorted to a safe area
Other emergency responders	Safe working area may not be implemented as quickly if single crewed patrol
Travelling public	Lane closures or diversion routes may not be implemented as quickly
HA Support Contractors	May be increased requirement for HA support contractors to assist with ETM

1.48	Single Crew Vulnerable People - Applicable to Motorways and All Purpose Trunk Roads
Procedure / Guidance / EMT diagram under review	Vulnerable People
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>Traffic Officers would carry out a Dynamic Risk Assessment for single crewed TO's before considering carrying out any procedures involving vulnerable people</p> <p>If dealing with a vulnerable pedestrian, refer to procedure for single crew pedestrians on the network (1.29).</p> <p>If single crewed TO is carrying a passenger in their vehicle, the RCC must carry out a welfare check every 5 mins</p> <p>If the vulnerable person is connected to an abandoned vehicle refer to procedure for single crew managing and removing abandoned and apparently abandoned vehicles (1.29).</p>

Is a backup double crew required and if so when	If there are a large number of people involved due to the breakdown of a Public Service Vehicle then back up double crew should be deployed
Equipment implications	No
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	Increased welfare checks from RCC on TO if carrying a passenger single crewed
Immediate customers	Maybe decreased occasions when TO's will consider carrying a person in a TOV if they are single crewed
Other emergency responders	Maybe an increased pressure on Police to attend and or deal with an incident more immediately if the TO is single crewed
Travelling public	No
HA Support contractors	No

Single Crew Guidance Note Amendments

Procedure / Guidance / EMT diagram under review	Guidance: Accessing Incidents Through Traffic - Applicable to Motorway and Patrolled Trunk Road Sections
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Airbags - Hazards - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Airwave Emergency Button Activation
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Yes
Is a backup double crew required and if so when	Yes – see RCC implications
Equipment implications	No
Communications implications	No
RCC implications	RCC should consider the immediate deployment of the nearest available resource if the emergency button is activated by a single crew member
Safety Implications	No
Traffic officers	No change
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

Procedure / Guidance / EMT diagram under review	<u>Guidance: Airwave Radio System - Use of Point to Point facility</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Airwave Security - Radio Removal - Applicable to Motorways & All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Animal Rescue Contacts - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Asbestos - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Biological hazards - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Breakdown Organisation Vehicles - Positioning at Incidents - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Refer to procedure for single crew stopping TO vehicle in live carriageways (1.44), single crew carriageway clearance (1.7) and single crew guidance note – emergency traffic management.
Is a backup double crew required and if so when	No
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	Yes – refer to procedure for single crew stopping TO vehicle in live carriageways (1.44), single crew carriageway clearance (1.7) and single crew guidance note – emergency traffic management.
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

Procedure / Guidance / EMT diagram under review	Guidance: Working on Bridges and Elevated Sections of the Network - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

+

Procedure / Guidance / EMT diagram under review	Guidance: Briefing Contents - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Broken Down Vehicles - Managing Vulnerable Occupants - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>Traffic Officers should carry out a Dynamic Risk Assessment before considering carrying out any procedures involving vulnerable people</p> <p>If dealing with a vulnerable pedestrian, refer to procedure for single crew pedestrians on the network (1.29).</p> <p>If single crewed TO is carrying a passenger in their vehicle, the RCC must carry out a welfare check every 5 minutes</p> <p>If the vulnerable person is connected to an abandoned vehicle see guidance on dealing with abandoned vehicle when single crewed</p>
Is a backup double crew required and if so when	If there are a large number of people involved due to the breakdown of a Public Service Vehicle then back up double crew should be deployed
Equipment implications	No
Communications implications	Yes - Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	Yes
Safety Implications	Yes
Traffic officers	Increased welfare checks from RCC on TO if carrying a passenger single crewed
Immediate customers	Maybe decreased occasions when TO's will consider carrying a person in a TOV if they are single crewed
Other emergency responders	Maybe an increased pressure on Police to attend and or deal with an incident more immediately if the TO is single crewed
Travelling public	No
HA Support Contractors	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Capturing Evidence - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Carrying or allowing Passengers and Fuel in TO Vehicles - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: CCTV - Use of CCTV and Management of Data - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Checking Traffic Officers Vehicles - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	No
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	When checking the external lighting of a TO vehicle, a crew partner is normally required to view the correct operation of the lights when they are switched on by the driver. A single crew member will need a colleague to help them do this at the outstation or other location. If a vehicle inspection bay fitted with 360 degree mirrors is available then the lighting can be checked from within the vehicle by a single crewed occupant.
Is a backup double crew required and if so when	No

Equipment implications	TO vehicles may have to remain inoperable if there are no colleagues in the outstation / other location to assist with the check
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	Traffic Officers may feel they have to deploy their vehicle with an inadequate safety check completed
Immediate customers	No
Other emergency responders	No
Travelling public	No
HA Support Contractors	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Child Locks on Traffic Officer Vehicles - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Claims - Red & Green - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Collisions Involving TO Vehicles – Reporting - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Command and Control - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010

Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Crime Scenes - Initial Actions - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Critical Incident Reporting
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Dangerous and / or High Value Loads – Applicable to Motorway And Patrolled Trunk Road Sections
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Disabled Drivers - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Diversions - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Dynamic Risk Assessments - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Dynamic Risk Assessments - Factors to Consider - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Emergency Crossing Points - Applicable to Motorways and All Purpose Trunk Roads.</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Escorting Vehicles - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes

Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Refer to procedure for single crew hard shoulder working (1.21)
Is a backup double crew required and if so when	No
Equipment implications	Required VMP legend should be pre-loaded when stationary to enable 1 touch activation
Communications implications	Refer to single crew guidance : Mobile telephony Policy & Use
RCC implications	No
Safety Implications	Yes
Traffic officers	Refer to procedure for single crew hard shoulder working (1.21)
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

Procedure / Guidance / EMT diagram under review	Guidance: Exposure to Chemicals - Applicable to Motorways and All Purpose Trunk Roads.
Reviewers	Ros Drew, Andy Wood, Greg Taylor
Date	18 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	If considering lane or carriageway closures refer to procedure for single crew lane closures (1.24). After resolution of incident, when commencing procedures to clear the scene and return to normal traffic flow consider use of an additional crew if appropriate
Is a backup double crew required and if so when	Yes if appropriate – when closures are required or a rolling road block and when returning to normal traffic flow
Equipment implications	No
Communications implications	No
RCC implications	Yes
Safety Implications	Yes
Traffic officers	Consider deploying double crewed patrol immediately due to contamination issues Need to ascertain if closures are required as soon as practicable in order to deploy crews to assist and minimise risk of contamination
Immediate customers	Risk of contamination if not escorted away from the scene immediately which may be delayed if a single crewed patrol
Other emergency responders	May require further assistance in order to manage scene safely
Travelling public	Risk if closures/diversions not implemented quickly enough
HA Support Contractors	May be increased requirement for HA support contractors to deploy their ETM to assist and to assist with escorting members of the public away from the incident

Procedure / Guidance / EMT diagram under review	<u>Guidance: Feedback and Complaints - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Fitness for Duty - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Found Property - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Generic Safety Measures - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Giving Evidence in Court</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Handing Over Incident Control and Recording - Applicable to Motorways & All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Handling Animals - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Refer to procedure for single crew hard shoulder working (1.21)
Is a backup double crew required and if so when	Yes – if rolling road block is required
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	Refer to procedure for single crew hard shoulder working (1.21)
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

Procedure / Guidance / EMT diagram under review	<u>Guidance: HA Tunnels Guidance - Applicable to Motorways & All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor

Date	19 August 2010
Can the procedure be undertaken single crewed	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Helicopters - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: HSE Access to HA Network - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Incident Management - HA Responsibilities - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Deployment of Incident Screens- Applicable to Motorways and All Purpose Trunk Roads.</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Incidents on Local Road Networks - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Long Term Road Works - Impact on Operational Activities - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Lookout - Warning Whistles - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	In almost all circumstances when single crewed, especially in the early stages of an incident, there will be no crew partner / stakeholder to act as a lookout. Bearing this in mind, all traffic management activity should be undertaken whilst watching the traffic and the single crew member needs to be extra vigilant when working alone
Is a backup double crew required and if so when	Yes – if the single crew member deems a scene lookout is necessary for safe operation
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	May be an increased risk to Traffic Officers due to a lack of vigilance as they are needing to multi-task more often
Immediate customers	May be an increased risk to immediate customers due to a lack of Traffic Officer vigilance
Other emergency responders	May be an increased risk to other emergency responders due to a lack of Traffic Officer vigilance
Travelling public	No change
HA Support Contractors	Maybe an increased requirement for HA Support contractors to implement and monitor closures and traffic

Procedure / Guidance / EMT diagram under review	<u>Guidance: Managing Abandoned, Apparently Abandoned, and Broken Down Vehicles</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Mobile Telephony Policy and Use - Applicable to Motorways and all patrolled Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	Under no circumstances should single crew members use mobile telephony equipment to make outbound calls when driving. However it is permissible to use the in-car hands free equipment to accept incoming calls whilst driving. If an outbound call needs to be made, a place of safety should be located and the vehicle must be stationary when the call is made.
Is a backup double crew required and if so when	No
Equipment implications	No
Communications implications	Yes – Do not use personal radio for communications when moving, use the in-car radio set and drivers activation button
RCC implications	The RCC will have an increased responsibility to manage the contact between all parties involved in an incident via airwave
Safety Implications	Yes
Traffic officers	There may be an increased risk to Traffic Officers if airwave service is unavailable and mobile telephony is the only other option. Single crew incident response may need to be aborted under these circumstances
Immediate customers	If single crew incident response has to be aborted as a result of a breakdown in communication, there may be an increased risk to immediate customers
Other emergency responders	If single crew incident response has to be aborted as a result of a breakdown in communication, there may be an increased risk to other emergency responders
Travelling public	If single crew incident response has to be aborted as a result of a breakdown in communication, there may be an increased risk to the travelling public
HA Support Contractors	If single crew incident response has to be aborted as a result of a breakdown in communication, there may be an increased risk to HA support contractors

Procedure / Guidance / EMT diagram under review	<u>Guidance: Network Security and Terrorism - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	<u>Guidance: Operating in Adverse Weather Conditions - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	There will be no requirement to establish a signalling form of communication in severe weather with a crew partner as when single crewing the single crew member will not have a partner
Is a backup double crew required and if so when	No
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	No
Traffic officers	No change
Immediate customers	No change
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

Procedure / Guidance / EMT diagram under review	<u>Guidance: Over the Counter Medicines - Applicable to Motorways and All Purpose Trunk Roads</u>
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Patrolling the HA Network- A Common Approach - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Permission to use the Hard Shoulder - Factors to consider - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Permission to use the Hard Shoulder - Factors to consider - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Personal Safety Advice - Public - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: PNC Vehicle Enquiries and Data
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes

Are adjustments to the existing procedure required	No
--	----

Procedure / Guidance / EMT diagram under review	Guidance: Protection of Hazardous Chemical Transporters - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Protests - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Use of Radio Equipment - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: RCC Proactive Traffic Management Procedures - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Reporting bad driving and Traffic Offences - Supporting Enforcement: Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010

Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Responsibility for Managing Incidents - Applicable to HA Networks and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Reversing on a Hard Shoulder- Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Risk Assessments - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Roadworks Monitoring - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Rolling Road Block or Lane, Carriageway and Road Closures - What to use - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: SAD CHALETS
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Setting Signals - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Slip Road Surveys - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	No – it explicitly states in the existing procedure that a minimum of 2 Traffic Officers are needed on scene. 2 single crew vehicles could attend and operate the procedure but not a lone worker

Procedure / Guidance / EMT diagram under review	Guidance: Storage of Evidence - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: TASKCARD - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Telephone Answering Standards - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Telephone Scripts - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: TO Interim Vehicle Management - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: TO Pocket Book - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes

Are adjustments to the existing procedure required	No
---	----

Procedure / Guidance / EMT diagram under review	Guidance: TO / RCC Operational Safety Debrief - Applicable to Motorways & All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: TO Vehicle Procedures - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: TO Vehicle Speeds - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Traffic Control Hand Signals - Applicable to Motorways & All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Vehicle Orientation - In Line, Fend in, Fend off - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010

Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Vehicle Supplementary Restraint Systems (SRS) - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: VMP Legends and their use - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No
Procedure / Guidance / EMT diagram under review	Guidance: Vulnerable People - definition - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Warning Lights - Use (Vehicle Mounted) - Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance: Winter Service - Applicable to Motorways and All Purpose Trunk Roads.
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	No

Procedure / Guidance / EMT diagram under review	Guidance Notes - Emergency Traffic Management. Applicable to Motorways and All Purpose Trunk Roads
Reviewers	Ros Drew, Greg Taylor
Date	19 August 2010
Can the procedure be undertaken single crewed	Yes
Are adjustments to the existing procedure required	Yes
Procedural adjustments required	<p>There will be no availability for a dedicated look out when placing ETM single crewed</p> <p>For lane closures, method 2 setting out should always be used. Once the vehicle is placed 50m upstream of the incident on the hard shoulder, the cones can be laid out along the hard shoulder and then walked into the live lane. Infill and then longitudinal coning can then be completed by the Officer. Once this task has been completed the Traffic Officer vehicle should be moved from the hard shoulder and positioned within the cones at the end of the taper prior to the incident. Vigilance is key here – at all times when removing equipment from the vehicle and setting out ETM, the Traffic Officer must watch the Traffic. In addition, and for any type of ETM, the ETM should be the first thing the single crew member does when they get on scene. Dealing with the incident should come after the ETM has been set out and the scene made safe.</p> <p>If the incident is in lanes 3/4/5 or 6, method 2 will need to be used after following the procedure for single crew stopping TO vehicle in live carriageways (1.44).</p> <p>Removal of ETM required a complete departure from existing procedures. Firstly, the Traffic Officer vehicle should be moved from the live lane position to the hard shoulder. The longitudinal cones and signs should then be moved to the hard shoulder followed by the taper (the last cone removed should be the one at the start of the taper). Watching the traffic all the time, the equipment should then be placed in the back of the Traffic Officer vehicle.</p> <p>Similarly at roundabouts, a complete departure from existing ETM procedures is required. No ETM can be laid out in a way that is protected by a vehicle. All ETM must be set out via method 2 setting out where cones are laid on the hard</p>

	<p>shoulder and then walked into the live lane. It may be necessary when laying ETM at roundabouts to move the Traffic Officer vehicle from one location to another to complete the setup. Equally when removing ETM, vehicles cannot be used for protection. Cones and signs must be moved to the hard shoulder initially starting at the furthest point from the hard shoulder and ending with the cone at the start of the taper.</p> <p><u>Wide Carriageway Nearside Closure Lanes 1 – 4</u></p> <p>This procedure will require at least 2 single crewed Traffic Officer vehicles to implement it.</p> <p><u>Wide Carriageway Offside Closure Lanes 6-3</u></p> <p>This procedure will require at least 2 single crewed Traffic Officer vehicle to implement it.</p> <p><u>Releasing Traffic via Central Reserve – Traffic Flow Retained in Opposite Carriageway</u></p> <p>This procedure will require at least 1 single crewed and 1 double crewed Traffic Officer vehicle to implement it.</p> <p><u>Reverse Flow</u></p> <p>This procedure will require at least 3 single crewed Traffic Officer vehicles to implement it.</p> <p><u>Removal of ETM</u></p> <p>As previously alluded to, vehicle protected ETM removal cannot be undertaken single crewed.</p>
Is a backup double crew required and if so when	Yes – see procedural adjustments required.
Equipment implications	No
Communications implications	No
RCC implications	No
Safety Implications	Yes
Traffic officers	Although there is a considerable change to the method of operation for laying and removing ETM, all activity can be achieved in a safe way. However, all lane closures which originate from the central reservation and involve a single crew live lane stop should where possible be supported with a rolling road block from another crew to make the carriageway sterile.
Immediate customers	There may be a delay in the setting out of ETM due to single crewing which may leave immediate customers with additional exposure to incident scene risk
Other emergency responders	No change
Travelling public	No change
HA Support Contractors	No change

APPENDIX B LOGISTICS DESIGN

B1 ROSTER

- B1.1 The Live Network Test requires the rostering of Test Participants using actual shift data from the HA. The data shown below represents a sample of shift data that is expected for the final phase of rostering for the test.

B2 SELECTION PROCESS FOR LIVE NETWORK TEST

- B2.1 Applicants for the single crew test were invited from the North West On-Road TOS.
- B2.2 These questionnaires offered the applicant the opportunity to apply as a Test Subject or a Subject Matter Expert (SME). The questionnaire also asked for the applicant to confirm specific training qualifications (CTM (Certificate in Traffic Management), Coach (Further training to allow to coach/lead new officers) or whether they have A1 qualification (able to assist with the MAC (Maintaining Area Contract) in their duties). The application deadline was Friday 13th August 2010; a sample of the questionnaire is shown below –

Nomination Form | Variable Crew Survey

Staff Name

Collar Number **HA** Payroll Number

Outstation

TM1b since **(date)**

Post applied for **Subject Matter Expert / Test Subject ***

* - delete as required

CTM **Yes/No*** A1 **Yes/No*** Coach **Yes/No***

Line Managers comments on suitability/approval

Operations Managers comments/approval

Training OM notes:

B2.3 The Test Subject selection process was as follows –

- TOs were selected to participate within the test if they had been recommended by their manager.
- TOs were selected to participate within the test if they had the ‘CTM’ qualification.
- To ensure that the Test Participants were representative of the HA Traffic Officer Service (TOS), specific candidates that had passed the above selection process were automatically accepted for the Test..

Remaining candidates were then divided into their selected outstation locations and numbered.

B2.4 The minimum number of samples required to undertake the Variable Crew (VC) Testing is 14 TOs. A sample of 20 test subjects was decided upon in order to have sufficient cover for absences during the Test (Four from each outstation with two to be selected from Cumbria North and South and then merged to form Cumbria), however the final roster would only identify 14 test participants.

- For each outstation, applicants were randomly selected from the remaining pool of candidates in order for the selection process to be fair and unbiased. This process was repeated until the required numbers for the Test had been reached.

B2.5 The SME selection process was as follows –

- TOs that had been selected for a Subject Matter Expert (SME) role were initially filtered by items 1 & 2 above.
- The remaining candidates were then individually reviewed using the submitted questionnaires, with the most appropriate candidates for the role being chosen.

B2.6 Following the Selection Process held on Friday 13th August 2010, alterations were made to the Roster of selected Traffic Officers from within the Highway Agency Traffic Officer Service. This reduced the number of Test Subjects from 20 to 18 and increased the number of SMEs from 5 to 7.

B2.7 Following the selection process above, the method for rostering of Test was decided with the following principles –

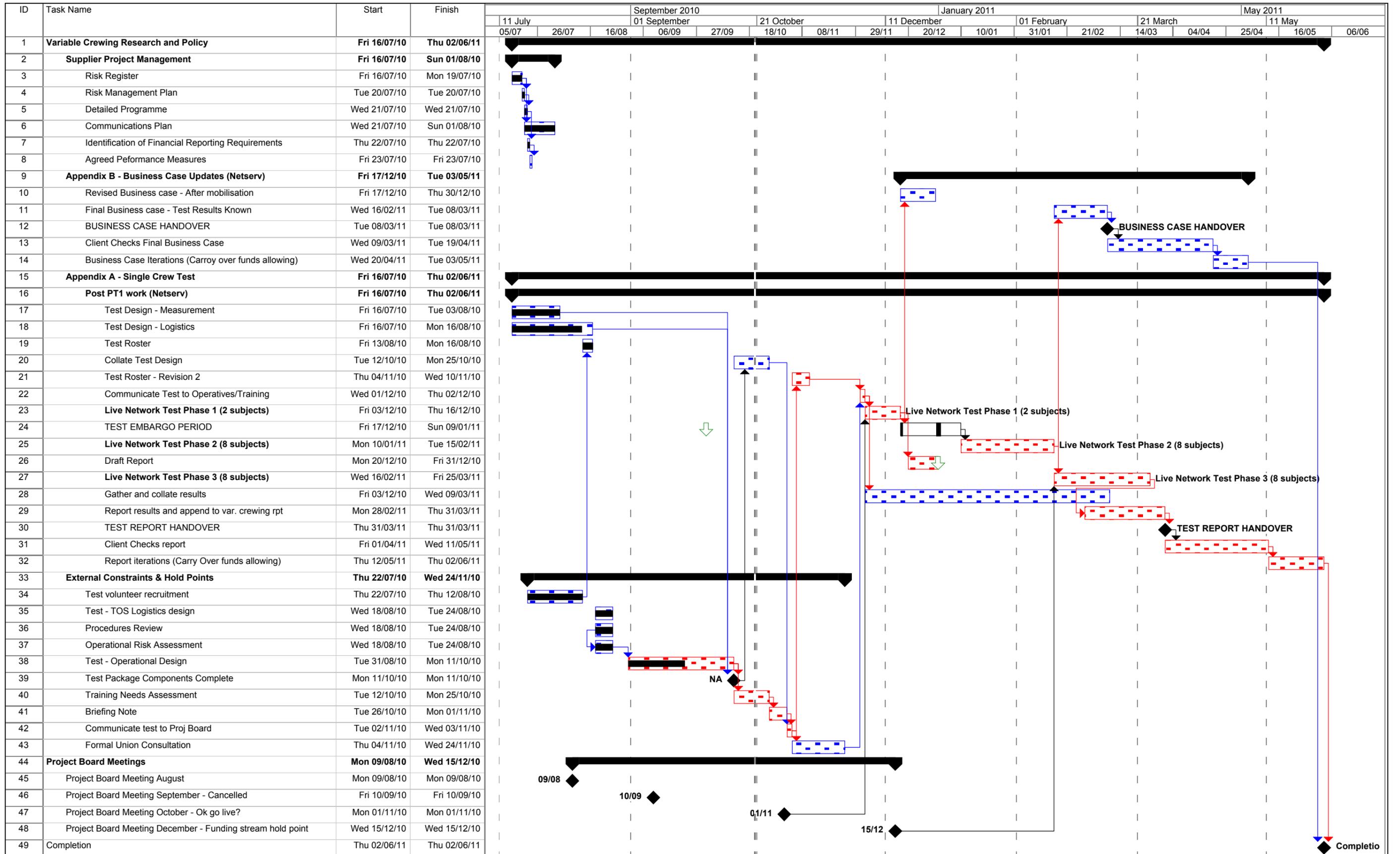
Table B2.1 – Principles of Test Rostering

Test Principle	Priority
Each Test Subject is tested 2 days double crewed and 2 days single crewed. The Test Subjects cannot be tested more than once (Stand In can be used as needed).	Essential
Test Subject should not deviate from their respective patrol area.	High
The Double Crew test should precede the Single Crew test.	High
The same SME and HFO to measure Test Subject for Double and Single Crew Tests.	High
The gap between Double and Single Tests should be minimised.	Medium
Assumed only 2 vehicles available, therefore try to maximise the resource throughout the duration of the Test.	Medium
Test Subject should not deviate from their respective shift pattern.	Medium
The fatigue of the Test Participants should be considered and Tests balanced appropriately. Consider the proximity of night shifts to Tests.	Medium
If there are enough Test Volunteers attempt to balance Tests around the region.	Low
Subject to resource availability, the Stand In officer for the Double Crew Test should be from the same area as the Test Subject.	Low
Attempt to hold the Tests within the area of the attending SME.	Low

B2.8 An additional principal that was considered during the roster process was to get the Test days for both the Double and Single Test on the same day of the shift cycle (e.g. days 2 & 3 for the double crew and days 2 & 3 for the single crew). This was added in order to reinforce the validity of any data obtained during the Test and was agreed at the Progress Meeting held on the 11th August 2010.

B3 PROJECT PROGRAMME

B3.1 The project programme is currently as follows –



Project: LLTMP0 Date: Wed 20/10/10	Task		Milestone		Rolled Up Critical Task		Split		Group By Summary	
	Critical Task		Summary		Rolled Up Milestone		External Tasks		Deadline	
	Progress		Rolled Up Task		Rolled Up Progress		Project Summary			

Intentionally Blank

APPENDIX C MEASUREMENT DESIGN

C1 TEST METHODOLOGY

- C1.1 The 'live' network test aims to record subjective and objective data for a range of measures which collectively provide a reasonable description of the operational performance of Traffic Officers. The test will record performance data with the TOs patrolling the network and managing incidents under "normal" operational conditions, in so far as is possible.
- C1.2 A key aspect of the test is that it will be applied to both double and single crews in order that a direct comparison of performance can be made. Any significant differences identified in performance between single and double crewing will subsequently be used to make inferential risk and safety analyses. The output from these analyses, together with potential mitigation measures, will form the basis for an assessment of the feasibility and impact (at a personal level) of single crewing.
- C1.3 The 'live' network test is intended to be a pragmatic assessment of the feasibility and impact of single crewing. The methodology has been specifically developed with this in mind; the employment of complex telemetry and detailed batteries of intensive tests (including computer based psychological testing methods) have been avoided on the basis that they are likely to be infeasible to develop for and deploy in, a 'live' network environment.
- C1.4 Specific objectives addressed by the test design include:
- The test will be a comparative assessment of TO performance under both single and double crewing
 - The test will be deployed in "live" network conditions
 - The test will use additional vehicle resource and will not interfere with or compromise normal TO operations
 - The test will not compromise operational safety of the TOs
 - The test will not require material change or adaptation of the TO vehicles
 - The test will be relatively easy to administer in a "live" environment
 - The test will not make unreasonable demands on the TO's attention or time
 - The test will not materially affect the availability of a patrol vehicle for deployment.
- C1.5 Individual tests will be non-invasive and will not require complex technology or in-vehicle equipment.
- C1.6 It is assumed that video recording of performance or events is not acceptable.
- C1.7 Test Participants
- Each TO patrol vehicle in the test will contain:
- Traffic Officer (TO) - one or two, dependant on whether single or double crewed
 - Subject Matter Expert (SME) – an experienced senior HA TO
 - Human Factors Observer (HFO) – a trained and experienced experimental observer

It should be noted that the SME and HFO will be treated as 'invisible' by the TO when under test. When the TO is single crewed there will be no interaction or conversation between the TO, SME and HFO, except in relation to possible safety issues.

The individual characteristics and roles of each person in the test are described in detail in the following sections.

C1.8 Subject Matter Expert

Numbers required - One per test vehicle

The primary role of the SME is to ensure the safety of the HFO during the test. The SME will accompany the HFO at all times, managing how and when they leave the TO patrol vehicle and what they do and where they are positioned when observing any incidents.

The secondary role of the SME is to provide expert assessment of TO performance (especially driving, call handling and incident management), with an emphasis on appraising the TO's adherence to procedures, safe working and task quality, via checklists and debriefing notes. The SME thus provides both expert assessment and potentially interpretation or explanation of TO behaviour / decisions for the benefit of the HFO's recording.

Thirdly, under single crewing, the SME provides mitigation for any situation that a single TO cannot manage or cope with alone; i.e. the SME is available to provide operational back-up / support to the TO in an "emergency" situation, that is one requiring the timely conduct of one or more TO procedures that currently preclude single person operation. The operational protocol for such an event will be as follows:

- The TO will make the normal suitable and sufficient DRA of a situation / event / incident.
- Should the DRA indicate that the TO cannot safely manage / cope alone, they can ask the SME to act as a second supporting TO.
- In this event, the SME's first concern will be to get the HFO to a place of safety (e.g. beyond the hard-shoulder barrier), before undertaking any other activity.
- Once the safety of the HFO is assured, the SME can act as a TO until the situation is suitably dealt with (i.e. DRA indicates safe reversion to single crew mode / or the incident has been cleared).
- This option will be considered a "last resort" where circumstances are determined to require instant / rapid response; the "normal" preference for events / activities that a single TO cannot manage, for whatever reason, would be to call for back-up,
- The SME is not expected to make the assessment of whether or not an incident can be handled by a TO, nor to suggest or recommend that the reversionary mode be adopted, except in the most exceptional circumstances – the TO's DRA should be the key driver and under all circumstances the SME's primary responsibility is to ensure the safety of the HFO.

C1.9 Personal Characteristics

The SME test subject should:

- Be a senior and highly experienced TO

- Ideally be currently (or until recently) operational as a TO
- Be briefed to undertake the test methods
- Be reasonably open minded about the feasibility and impact of single crewing.

C1.10 Experience and Attitude

The SMEs should have an extensive and up to date knowledge of the working procedures and the operations of a TO. They should have a wealth of on road experience and have attended a range of situations and incidents. Ideally they will have been or are currently involved in coaching or mentoring TOs on the HA network. They should also have a positive attitude and good communications skills coupled with a willingness to share information.

C1.11 Human Factors Observer

Numbers required - One per test vehicle

The primary role of the HFO is to brief participants, manage and deliver tests, record the event timeline and record and capture test data.

C1.12 Personal Characteristics

The HFO should:

- Be experienced and capable of facilitating and managing post test debriefing sessions
- Be personable and good at teamwork
- Be capable of taking and strictly adhering to direction from the SME

C1.13 Experience and Attitude

The HFO will need to be experienced in social survey methodology and recording practices. In addition they will need to have an in depth knowledge of the testing methodology and aims.

Access to the HA counselling service will be made available to HFO staff.

C1.14 Traffic Officer Test Subjects

Numbers Required - There will be a requirement for either one TO (for a single crew test) or two TOs (for a dual crew test) in each trial vehicle, for each test run.

The minimum number of TO test subjects required for statistical validity has been established as 14.

The TO test subjects will perform the role of a TO on the network. They will (attempt to) perform any and all of the normal duties of a TO, except those currently excluded from the single crew test by the procedures review and according Briefing Note (See Appendix A). As such their involvement in the test should not significantly differ from their normal working day.

The Traffic Officers were subject to a selection process, this is detailed in Appendix B2.

C1.15 Personal Characteristics

The TO test subjects should not:

- Be pregnant
- Have a pacemaker

- Have a heart condition
- Be a newly qualified or inexperienced TO.

C1.16 Experience and Attitude

The subject should have extensive knowledge of their duties and have enough experience to be able to make a detailed assessment of the way in which they work on the network and will feel comfortable working as a single crew. They should also have a positive attitude and good communications skills with the willingness to share information.

C1.17 Medicines and Medical Conditions

To avoid test bias, it is important to establish and ensure that TO subjects are not taking any fatigue accentuating medicines. The types of prescription medicines that promote fatigue are typically used to treat the following conditions and should the driver have any of the following conditions further investigation would be needed:

- Depression
- Anxiety
- Heart disease
- Asthma
- Vertigo
- Nasal congestion, colds, flu
- Hay-fever
- Travel sickness
- Sleeping problems.

Over-the-counter medicines can also promote drowsiness and other fatigue related symptoms; typically remedies for hay-fever, nasal congestion, travel sickness and / or sleeping problems fall into this category. The most severe sedative effect is from those medicines that contain sedating antihistamines, commonly found in many over-the-counter medicines. The common antihistamines that have a sedating effect are:

- Chlorpheniramine
- Diphenhydramine
- Promethazine
- Tripolidine.

In addition to these sedating antihistamines a substance called Hyoscine has been demonstrated to affect driving skill, and should be avoided by subjects during the test period to again minimise test bias.

It is assumed that suitable pre-test screening of potential TO test subjects will be undertaken by the HA.

C1.18 Test Methods

The live network test of variable crewing will include specific directed assessments of the following aspects of TO operational performance:

- Mood and tiredness
- Workload and Stress

- Fatigue
- Driving Performance
- Task Performance.

The various methods for measuring each of these aspects of performance are detailed in the following sections.

In addition to the directed assessment methods an event timeline will be captured and various post event and post shift debriefing sessions will be held to record qualitative data on operations, explain decisions, record any specific issues / problems and to review results.

C1.19 Activity and Event Timeline recording

The HFO will record occurrences and environmental considerations for correlation with the recorded data. In addition they will only consult the SME for resolution of confusion on those occasions where they are unsure of the process being conducted.

C1.20 Pre-test Questionnaire

The following sections detail the various questionnaires that will be administered; the questionnaires themselves are illustrated in Appendix C2.

C1.21 Background Information questionnaire

This will be administered to all TO test subjects and SMEs at the start of their test period. The questionnaire is shown in Appendix A1.

C1.22 Brief Mood Introspection Scale (BMIS) questionnaire

A BMIS questionnaire will be administered by the HFO at the beginning of each daily shift, at a convenient time during the shift (approximately the middle) and again at the end of the shift. The questionnaire is shown in Appendix C2.

C1.23 Stanford Sleepiness Scale (SSS) questionnaire

An SSS questionnaire will be administered at the beginning of each daily shift, at a convenient time during the shift (approximately mid-way through) and again at the end of the shift. The questionnaire is shown in Appendix A3.

C1.24 Workload and Stress measurement

A key element of the assessment is to determine the physical and mental demands on the TO in single and dual crew scenarios. The methods that will be used for the live network test will include heart rate monitoring and subjective rating scales.

A heart rate monitor will be used to record the subjects' heart rate throughout the daily shift. The heart rate monitor used will be a non invasive unit consisting of a remote data recording device on a wrist strap and a lightweight heart rate monitor attached to a strap placed around the chest of the subject. The wrist strap will be worn by the TO, since its communication range is only 1m, which is too limited for the data device to be worn by the HFO or left in the vehicle. The heart rate results will be used in conjunction with the subjective rating scales against the activity timeline to determine if there are any correlations between heart rate and physical / mental demands, particularly in comparing dual and single crewing.

C1.25 Fatigue Assessment

Fatigue will be assessed using an adapted Visual Analogue Scales, which includes a series of different questions assessing various aspects of fatigue related symptoms specifically related to the task/s being undertaken.

C1.26 Test Protocol

All of the scales will be administered to each subject by the HFO at the start and finish of each daily shift and at approximately hourly intervals throughout the shift, as well as immediately after any event that required the TO/s to undertake tasks outside of the vehicle.

The HFO will pass the TO subject a sheet with the relevant scales on to help the TO chose the position on the scale that corresponds to what they feel. However, the HFO will record the data on separate scoring sheets.

The subjective assessment scales are shown in Appendix C2.

C1.27 TO Driving Performance Assessment

A data recording box will be used in the TO vehicle which uses GPS technology to provide speed, distance, time and acceleration data that can be later interpreted and analysed to provide some objective data on driving performance.

Additionally, a complimentary assessment of TO driving performance will be conducted by the SME who will also travel in the TO vehicle.

This assessment will be conducted on an incident attendance basis. The incident period includes the driving period preceding the incident and up to the point where the TO vehicle has rejoined the carriageway. Should there be an occasion when the shift attends no incidents then the prolonged period of driving, patrolling, will count as an incident and a single driving form completed. The network and environmental conditions will be noted during the trip (by the HFO) as part of the timeline information capture.

C1.28 Test Protocol:

The SME will complete a driving form whilst the vehicle is in motion. The incident recording format will aid the TO's recollection of the incidents following the shift to enable better discussion during a post shift debrief.

The form requires an "overall" assessment of driving performance, a log of any key events and an assessment of various detailed aspects of driving related activities.

The HFO will facilitate a debrief session following each shift that will include both the SME and TOs, which will review the driving performance evaluations made during the shift and agree / finalise the driving performance evaluation. The debrief session provides the opportunity for the TOs and SME to add useful qualitative information, including observations, explanations and or qualifications that may better illuminate the results. This will also help to identify and explain any occasions where actions taken by the TO were justified but where this was not immediately apparent to the observing SME.

The assessment forms are shown in Appendix C2.

C1.29 TO Task Performance Assessment

An assessment of the TO task performance will be conducted by the SME who will observe TO activity in company with the HFO from a safe position on the network.

This assessment will be conducted on an incident attendance basis. The incident period will commence from the moment the TO emerges from the vehicle (the driving elements will be assessed in the driving assessment) and will end when the TO has re-entered the vehicle at the end of the incident. Should there be an occasion when the shift attends no incidents then there will be an assessment of the performance of the TO on an overall shift basis, considering higher level criteria that should have been completed, such as patrolling programme. The network and environmental conditions will be noted during the trip (by the HFO) as part of the timeline information capture.

C1.30 Test Protocol

The SME will complete a task performance form outside the vehicle at each event / incident scene attended. The incident recording format will aid the TO's recollection of the incidents following the shift to enable better discussion during a post shift debrief. Additionally, the SME will provide an explanatory commentary that the HFO will record to capture any specific detail of interest.

The scores recorded for each incident will be finalised in the post shift debrief session.

The TO Task Performance recording form is shown in Appendix C2.9.

C1.31 Test Delivery - Test Timing and daily schedule

The hourly administering of questionnaires (workload / stress and fatigue) will need to be conducted with the vehicle stationary and 'off network'.

The HFO will be responsible for managing timing, warning the TO of an impending data recording session and asking them to find appropriate exit / location to stop the vehicle off the network.

The TO will be responsible for determining when and how to proceed to a location where they feel it is safe to stop the vehicle and complete a questionnaire.

A pragmatic and realistic approach will be taken to timing of questionnaire sessions, such that the hourly timings will be treated as approximate allowing the TOs to find the most convenient time and location to stop.

Post event / incident questionnaires will be administered only in so far as it is convenient for the TOs to stop off-network.

Should a questionnaire have been administered (following an incident or event) within 10 minutes of a regular hourly time slot, then the incident questionnaire will take the place of the regular questionnaire.

Based on the proof of concept session the duration of each stop for completion of all hourly questionnaires should be approximately 5 minutes.

An approximate daily data collection schedule, including a couple of example incidents, is illustrated below. There is no difference in the method of collection (in terms of timescale) between single and dual crew tests, as such the collection of the data has been presented as a chronology assuming a typical 8 hour daily shift for the TO. Due to pre and post test briefing a test day will be approximately 1 hour longer than a normal day.

Table C1.1 - Approximate Daily data collection schedule

Timeline		Task	Duration
TO arrives		Initial Daily Briefing and Questionnaires	15 minutes
TO commences shift	0 hours	No specific task	
	1 hour	Questionnaires	5 minutes
	2 hours	Questionnaires	5 minutes
	3 hours	Questionnaires	5 minutes
	3.45 hours - Incident	Questionnaires	5 minutes
	5 hours	Questionnaires	5 minutes
	5.25 hours - Incident	Questionnaires	5 minutes
	6 hours	Questionnaires	5 minutes
	7 hours	Questionnaires	5 minutes
	8 hours	Questionnaires	5 minutes
TO finishes shift		TO debrief	45 minutes

C1.32 Operational Philosophy

The TO will be acting in a fully operational capacity at all times and therefore operational necessity will take precedence over the test at all times. Thus the test will be suspended, abandoned or postponed as necessary at the discretion of the TOs (or SME), e.g. an urgent dispatch call will take precedence over a questionnaire session.

For the live network test to provide realistic and useful data it will be conducted under "normal" operating conditions, i.e. the crews will undertake a normal patrol shift and be dispatched by the RCC to appropriate incidents or events, regardless of whether the vehicle is single or double crewed.

C1.33 Test Team In-Vehicle Arrangements

The test vehicles for the single and double crew conditions should be the same. It is crucial that all the single crew subjects are tested in the same type of vehicle.

The ergonomics review and the Samlesbury proof of concept session led to the recommendation that all the current vehicles are suitable for being used in a single crew condition, but the Land Rover Discovery is the preferred vehicle.

In the double crew mode only one TO will be monitored and tested. The second TO will be test trained but not measured. They will change roles (driver and assistant) half way through the shift.

C1.34 Test Duration and Resourcing

Since the test is intended to be carried out under "live" network conditions, the number and nature of events / incidents that might be encountered is entirely beyond control. In order that each test crew is presented with a reasonable chance of experiencing a reasonable number and variety of activities it is

recommended that they are tested over a number of days, the ideal being for a full two day rota. Additionally, this would provide the opportunity for the test to record if and / or how energy/fatigue/stress levels change over a period of days and whether this is significantly different between double and single crewing. A subject would always be tested in a double crew scenario before being tested in a single crew scenario.

Thus each TO subject will be tested:

- For two x seven hour days in double crew mode (allowing 1 hour for brief/debrief)
- For two x seven hour days in single crew mode (allowing 1 hour for brief/debrief)

Double crewing will always precede single crewing.

Ideally, within each two day test, the crew will either attend early or late shifts. There will be no night shifts in the test.

The absolute recommended minimum for the extent of testing for each subject is to undertake two days testing under each of single and double crewing modes.

The availability of resources and timescale requirements have ultimately determined the possible extent and duration of the network test. A schedule for delivery of the whole test programme is included in Appendix B1. In addition, early work has highlighted that there can be a difference in the shift patterns worked at individual outstations within a specific region.

Initial assumptions have been based on having two TO patrol vehicles available concurrently, each of which would have one HFO and one SME and one or two TO's (depending on whether double or single crewed). Based on the requirements for the statistical validity and quality of data 14 TO subjects will be required.

The key criteria that will affect the resourcing plan have been listed below:

- Subjects should be tested in pairs, ideally from the same out-station
- The subjects should not work on an unfamiliar patch
- The SME and HFO would, as far as possible, remain paired on all tests
- The same SME / HFO team will observe the same pair of TO subjects for both their double and single crew testing; however, it should be noted that it is far more crucial that the SME remains with the same TO subjects than with the same HFO
- Each set of testing (single or double) should be conducted within a shift block and should not be split over different blocks to attain the desired number of days.

C1.35 Test Operation and Safety Protocols

The following have been agreed with the participants at the Samlesbury proof of concept session and with the HA IMP team.

- The SME has primary responsibility for the safety of the HFO and this responsibility will take precedence over all others.
- The HFO will not be actively identifiable by the public as they are not intended to have any direct contact with them. HFO will wear Hi Vis clothing (similar to that of the Traffic Officers but without the official markings).

- On arrival at an incident the SME will make a DRA and decide on the safest way to proceed. By default, the SME and HFO will always exit the vehicle when it is stationary on the network. However, if the SME's DRA dictates a deviation from this, the SME will explain the decision and required action to the HFO (who will record it) and act as requested.

At incidents, the following will normally apply:

- If the vehicle stops in lane 1 or on the hard shoulder, the HFO and SME should exit via the nearside and proceed immediately with the SME and under his / her guidance to the place of safety the SME chooses. The SME (sitting always on the off-side rear seat) will exit the vehicle first and the HFO will slide across to follow.
- When the vehicle stops in lane 2 or 3, the HFO and SME should exit via the offside and proceed immediately with the SME and under his / her guidance to the place of safety the SME chooses. This may entail the HFO leaving the vehicle first, which will only be done if the SME determines that this is the safest option, rather than waiting for the SME to leave by the nearside door and come around the vehicle first.
- When the TO vehicle stops in a carriageway of greater than 3 lanes the SME will decide and explain the safety procedure for exiting the vehicle. The default will always be to exit the vehicle on the opposite side to the 'live' traffic.
- The normal "place of safety" on the near-side (hard shoulder) will be beyond the crash barrier. Whether this is in front of beyond the incident will be determined and decided by the SME.
- The normal "place of safety" on the far-side (3rd lane) will also be beyond the crash barrier, where the carriageway includes a suitably sized central reservation with a gap between barriers for either carriageway, or wherever the SME otherwise deems most safe. Whether the location is in front of beyond the incident will be determined and decided by the SME.
- The SME will keep the HFO with them at all times when attending an incident. The exception will be if reversion from single to double crewing has been decided upon, in which case the SME will ensure that the HFO is placed in a position of safety before undertaking any other tasks or leaving the HFO alone.

Stopping on wide carriageways is not procedurally included in the test.

C2 QUESTIONNAIRES

C2.1 The following questionnaire will be used pre test –

Name (first only)	
Age	
Gender	
Approximate height	
Approximate weight	
No. years experience as a TO	
Do you wear prescription eye wear? If yes, please describe	
What is the subjects' previous work background?	
Additional comments or experiences of high demand situations	

C2.2 Brief Mood Introspection Scale (BMIS)

A BMIS questionnaire will be administered by the HFO at the beginning of each daily shift, at a convenient time during the shift (approximately the middle) and again at the end of the shift. The questionnaire is illustrated below –

Instructions: Circle the response on the scale below that indicates how well each adjective or phrase describes your present mood:

1	2	3	4
(Definitely do not feel)	(Do not feel)	(Slightly feel)	(Definitely feel)

C2.3

Lively	1	2	3	4	Drowsy	1	2	3	4
Happy	1	2	3	4	Grouchy	1	2	3	4
Sad	1	2	3	4	Alert	1	2	3	4
Tired	1	2	3	4	Nervous	1	2	3	4
Caring	1	2	3	4	Calm	1	2	3	4
Content	1	2	3	4	Loving	1	2	3	4
Gloomy	1	2	3	4	Fed Up	1	2	3	4
Jittery	1	2	3	4	Active	1	2	3	4

C2.4 If you feel like you would like to add any additional information about the above answers, please do so below:

C2.5 Stanford Sleepiness Scale (SSS)

An SSS questionnaire will be administered at the beginning of each daily shift, at a convenient time during the shift (approximately mid-way through) and again at the end of the shift. The SSS questionnaire is illustrated below:

Instructions: Please tick a response on the scale below that indicates the adjective or phrase that best describes your degree of sleepiness:

Degree of Sleepiness	Please Tick
Feeling active, vital, alert, or wide awake	
Functioning at high levels, but not at peak; able to concentrate	
Awake, but relaxed; responsive but not fully alert	
Somewhat foggy, let down	
Foggy; losing interest in remaining awake; slowed down	
Sleepy, woozy, fighting sleep; prefer to lie down	
No longer fighting sleep, sleep onset soon; having dream-like thoughts	
Asleep	

C2.6 Subjective Assessment Scales for Workload and Stress

a. Mental Demand

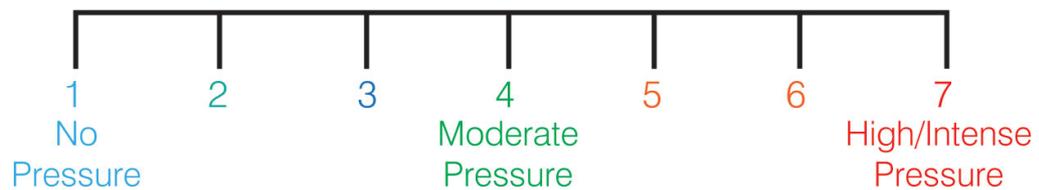
How mentally demanding were the tasks?

**b. Physical Demand**

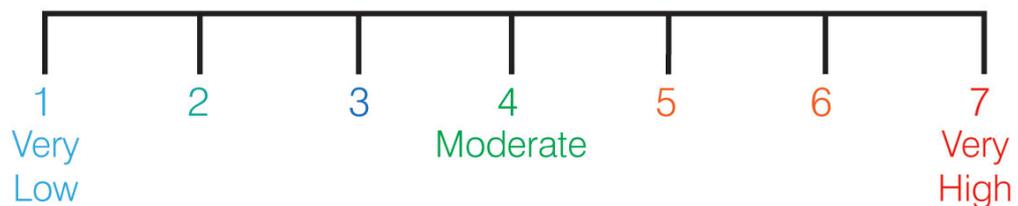
How physically demanding were the tasks?

**c. Temporal Demand**

How hurried or rushed was the pace of the tasks?

**d. Frustration**

How frustrated, discouraged, irritated, stressed have you been?



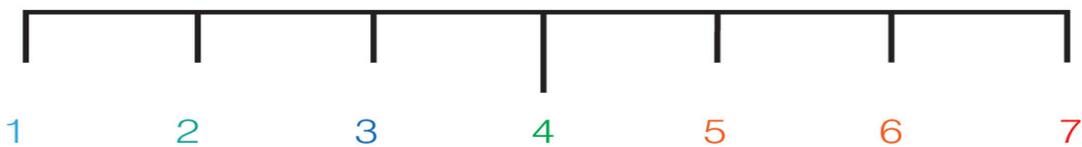
C2.7 Subjective Assessment Scales for Fatigue

The following scales relate to how energetic you are feeling. When asked to do so, please rate this on the following scales:



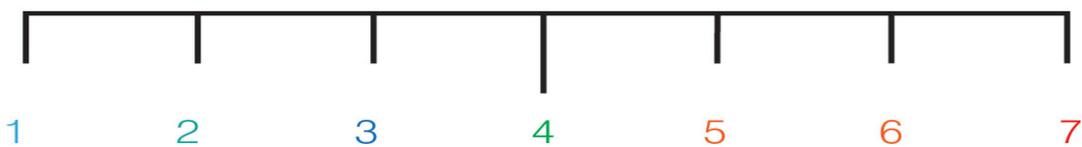
Not at all fatigued

Extremely fatigued



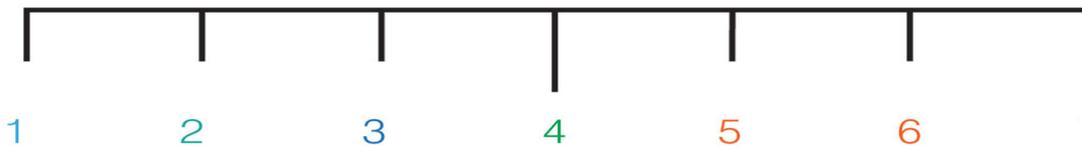
Not at all energetic

Extremely energetic



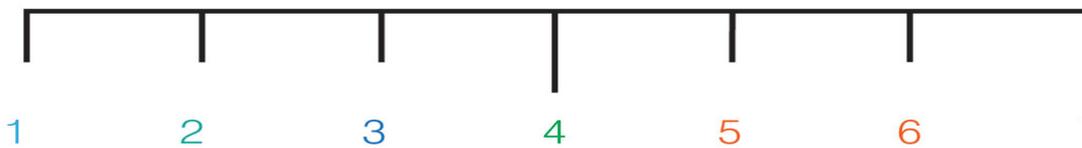
Not at all active

Extremely active



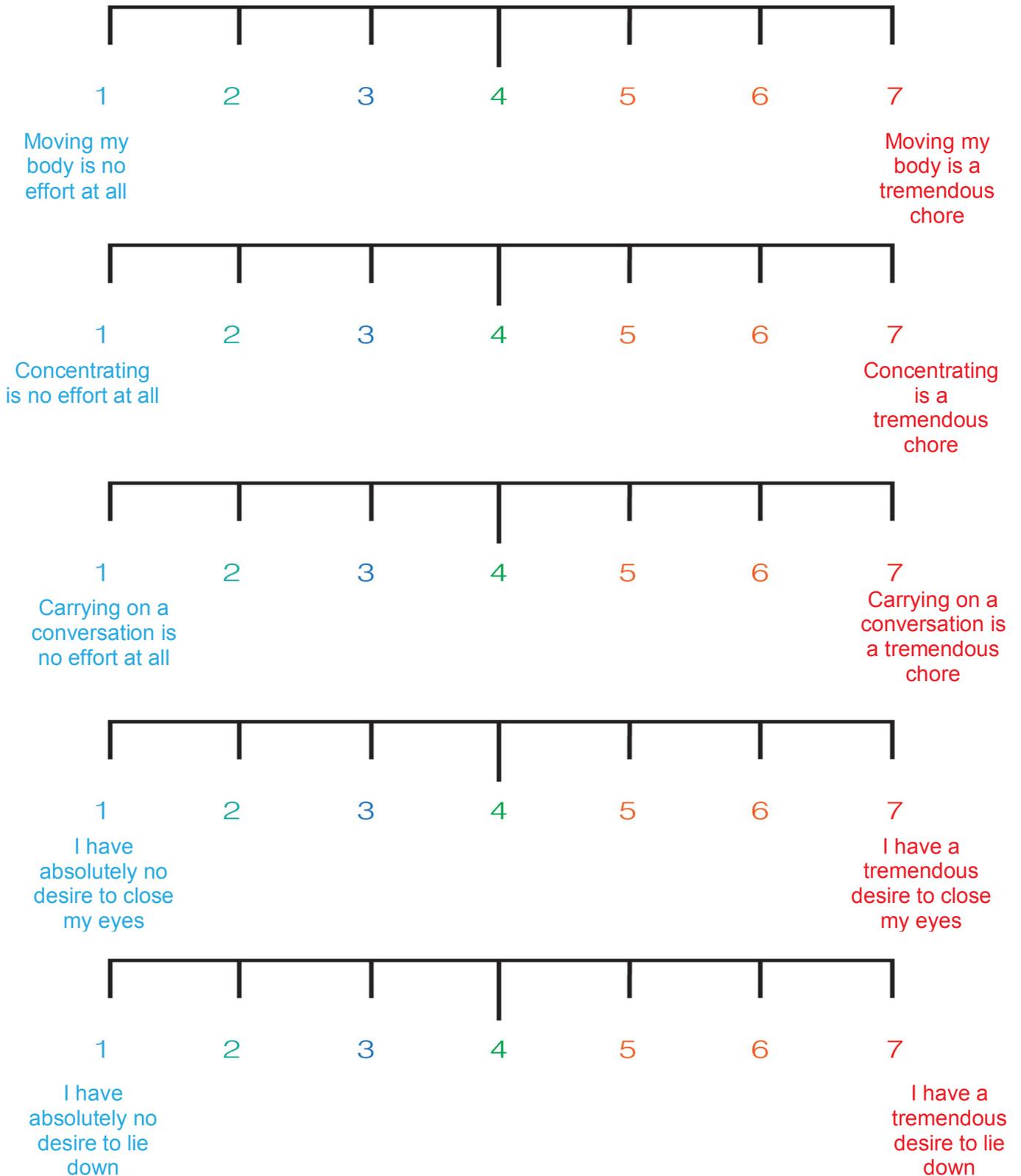
Not at all exhausted

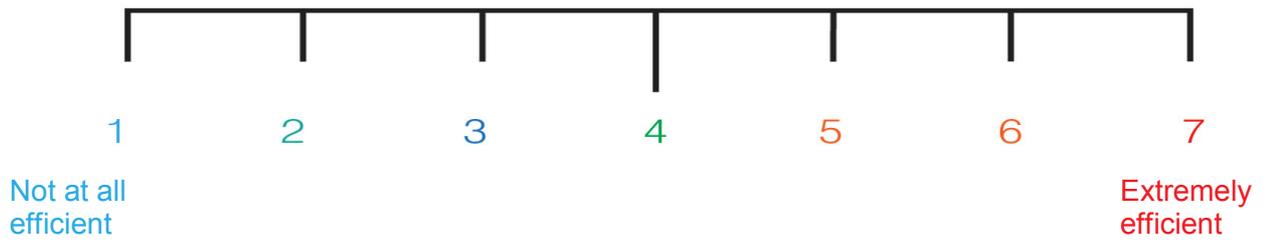
Extremely exhausted



Keeping my eyes open is no effort at all

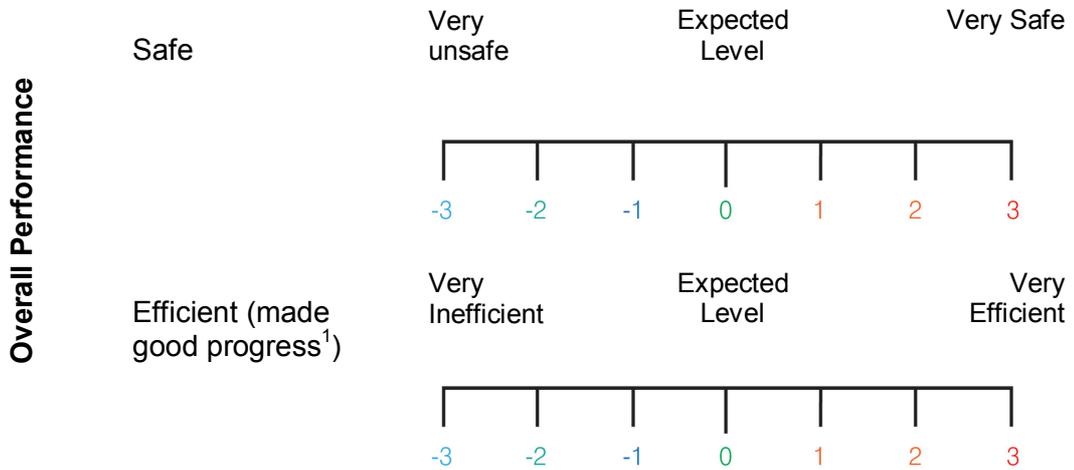
Keeping my eyes open is a tremendous chore





C2.8 Driving Checklist
Driving Performance Form

Incident Number and Description	
Date	
Weather	
Traffic Conditions	



Key Event Log

Event Number	Time	Description of Key Event ²	Description of tasks being conducted by TO at time of the Key Event
<i>Example</i>	11:10	<i>Changing from lane 1 to lane 2, failed to notice vehicle alongside TO vehicle in lane 2. TO spotted vehicle at last minute swerving back into lane 1.</i>	<i>Communicating with RCC regarding the location of a broken down vehicle requiring attendance</i>
1			
2			

¹ Progress – Driving at an appropriate speed for the road and traffic conditions. Example scenarios are not holding up traffic, no hesitation, unnecessary stopping, not proceeding when safe to do so.

² A Key event is an event that significantly affects either the efficiency or the safety of the driving task, for example a near miss.

Individual Performance

		Significantly below	Expected level of performance	Significantly above average	
Individual performance	Joining the Main carriageway				
	Entering/exiting the Hard Shoulder				
	Accelerators				
	Brake				
	Steering				
	Reversing				
	Mirrors				
	Signals				
	Manoeuvring				
	Clearance of obstructions				
	Response to signs/signals				
	Use of Speed				
	Following distance				
	Positioning				
	Progress				
	Judgement				
Awareness/planning					

C2.9 TO Task Performance Form

Incident Number and Description	
Date	
Weather	
Traffic Conditions	

Overall Performance	Safe	<p>Very unsafe Expected Level Very Safe</p>
	Efficient (made good progress ³)	<p>Very Inefficient Expected Level Very Efficient</p>

Individual performance		<p>Significantly below Expected level of performance Significantly above average</p>
	Time	
	Customer Service	
	Result	
	Thought process	
	DRA	
	Safety	

	Compliance to operational guidelines	
	Performance	

C2.10 Recording Sheets

Subject Number:

1. Brief Mood Introspection Scale (BMIS)

	Start	Middle	End
Lively			
Happy			
Sad			
Tired			
Caring			
Content			
Gloomy			
Jittery			
Drowsy			
Grouchy			
Alert			
Nervous			
Calm			
Loving			
Fed up			
Active			

2. Stanford Sleepiness Scale

	Start	Middle	End
Rating			

3. Workload and Stress

	Mental Demand	Physical Demand	Temporal Demand	Frustration
Start				
End				

4. Subjective Assessment Scales for Fatigue

	Fatigue	Energy	Active	Exhaust	Eyes	Moving	Conc.	Conve.	Eyes	Lie	Efficiency
Start											
End											

C3 PROOF OF CONCEPT

- C3.1 The following sections provide a summary of activities and results from the Samlesbury proof of concept session. The session involved both desk-top exercises and class room discussions and simulation of a range of operational scenarios in order to evaluate and prove test methods in a “live” run-through.
- C3.2 No video assessment was possible due to project constraints. In addition no assessment of in-vehicle black box technology was possible.
- C3.3 The provisional proof of concept schedule issued by Jacobs/HA as a briefing note, is reproduced below. This was amended on the day of testing as necessary.

Day	Activity	Estimated Timescale
Day 1	Setup of Welfare Facilities	9am – 10am
	Brief Presentation	10am – 10.30am
	Questionnaire Piloting – This will be a simple work through of all the major questionnaires. The purpose of this exercise is to determine the suitability of the format/structure of the questions to ensure that the SME's and TO's understand the test and that it can give useful answers.	10.30am – 12.00pm
	Feasibility Assessment – This section of testing will explore the feasibility of the best method to use on the live network test to record individual aspects of data.	13.00pm – 15.30pm
	Driving Performance Assessment – To test the driving performance assessment methodology the TO will be briefed on a specific action, such as receiving a radio call whilst attending an incident, the SME will be briefed separately on data recording methods. Various simulated events will occur whilst the vehicle is driven round a circuit. A debrief will take place after each test run.	15.30pm – 17.00pm
Day 2	TO Task Performance	9.00am – 16.00pm (1 Hour Lunch)
	Wrap Up Session	16.00pm – 17.00pm

C3.4 Questionnaire Piloting

This was a simple work through of all the major questionnaires. The purpose of this exercise was to determine the suitability of the format/structure of the questions to ensure that the SMEs and TOs understood the tests and that the various methods would give useful answers.

All the TOs were briefed on the aim of the questionnaires and then asked to complete each and comment on their experience; raising any issues they felt pertinent as they went through them.

The questionnaires included in the assessment were:

- Generic Information
- Baseline Questionnaires
- Brief Mood Introspection Scale
- Sleepiness Scale
- Workload and Stress
- Fatigue

The time to complete each questionnaire was recorded and any comments about how easy the TOs felt the questionnaires were to complete. The overall results are summarised thus –

Table C3.1 – Questionnaire times to complete

Quest'aire Type	Fastest time to complete/s	Slowest time to complete/s	Comments
Mood	69	87	<ul style="list-style-type: none"> – Can this be changed to numbers – Chance to explain reason for the mood
Sleepiness	12	21	<ul style="list-style-type: none"> – Remove scale and have tick boxes – Otherwise easy to complete
Workload and Stress	23	31	<ul style="list-style-type: none"> – No changes
Fatigue	50	80	<ul style="list-style-type: none"> – Wording on the final question is misleading, present as the rest are.

C3.5 Feasibility Assessments

This was consulted in an open discussion session with the TOs. The outcome of which was that they felt regular reporting slots once every hour and additionally for every incident attended would be achievable. In addition they felt both the Workload/Stress form and the Fatigue form should be completed at the same time.

C3.6 SME Commentary

Various methods were tested to allow HFOs to record a timeline/chronology of events that were occurring and the associated thought processes of the TO (as communicated by the SME). This proved difficult and produced poor quality data. Furthermore on debrief with the TO's in the vehicles they found it a very

distracting and unusual to have their actions and thinking continually commented on. This affected the TO's behaviour in two ways:

- It caused a distraction whilst they were trying to conduct their planning and DRA process on approach to an incident
- Upon hearing the commentary the TO's began thinking about only those items that the SME was commenting upon. As a consequence of this the TO's felt disengaged from the thought process.

As an outcome of the trial it was agreed to drop this activity from the test method.

C3.7 Timeline Recording

The proposed Dictaphone method of event timeline recording was ruled out for the same reasons as those given for the commentary. It was found that it was possible, although significantly more difficult, for the HFO to record information about the key events and timeline on paper.

C3.8 Driving Performance

The driving performance questionnaires were piloted with the SMEs and some revisions suggested. The revisions suggested were:

- Inclusion of an incident number
- Inclusion of environmental conditions
- Wording on the scale to clarify the extremities of the scale
- Completion of all the items on the form and an overall score per trip

These were amended.

C3.9 TO Activity Performance

Various proposed methods for assessing the TO's performance at incident management activities were discussed. The considered collective opinions of the SME's were that this should take a similar form to the driving assessment based on an assessment checklist form.

A crucial element of the assessment will be the post test daily debriefs as these will be the only chance to explore the TO's decision making and DRA. It was therefore agreed that debriefs remain crucial and would be kept as part of the test.

C3.10 Test Logistics

Some ground rules were established for how the HFO and SME will operate during the test. It was agreed that:

- An SME and HFO will travel in the rear of the TO vehicle throughout the duration of the test.
- An SME's (senior experienced TO) primary role is to ensure the safety of the HFO and to rate and record TO performance (driving and on road) and offer expert interpretation on activity / decisions and events (through post event debriefing).
- The first action of the SME, on exiting the vehicle, will be to take the HFO to a place of safety.
- The SME and HFO will always exit the vehicle when the vehicle is stationary. This is the default situation; however, if the DRA of the SME dictates a deviation from this, this must be explained to the HFO who will then record this.
- The HFO will always stay on the nearside of the vehicle unless told otherwise by the SME or in a 'live' lane situation.
- When the TO vehicle stops in lane 1 or on the hard shoulder the HFO should exit the vehicle via the nearside of the vehicle (non-driver's side of a right hand drive vehicle) and proceed immediately with the SME to the place of safety.
- When the TO vehicle stops in lane 2 or 3 the HFO should exit the vehicle via the offside of the vehicle (driver's side of a right hand drive vehicle) and proceed immediately with the SME to the place of safety.
- When the TO vehicle stops in a carriageway of greater than 3 lanes the SME will explain the safety procedure for exiting the vehicle. The default will always be to exit the vehicle on the opposite side to the 'live' traffic.

APPENDIX D SUCCESS CRITERIA

D1 TYPE AND RANGE OF RESULTS EXPECTED

- D1.1 The following information is an extract from a note prepared by CCD Ergonomics titled "Test Results Explanation". The note was prepared by Martin Freer on the 03/09/2010 and outlines the type of data which could be obtained from the test and how this may be used to draw conclusions.
- D1.2 A pragmatic test has been designed within tight constraints for implementation in a live network situation, without recourse to instrumentation or adaptation of the vehicles, without the use of video or audio recording and with minimum interference with normal TO operations.
- D1.3 The test is based around three classes of data –
- Performance Indicators
 - Key Action Data
 - Explanatory Data
- D1.4 The Performance Indicators aim to measure the performance of the TOs during their normal operations, under first double and then single crewing. The analysis will compare performance under the two conditions to determine whether there is a significant difference between single and double crewed scenarios. Indicators include –
- Workload / Stress (measured by subjective questionnaire and heart rate)
 - Fatigue (measured by subjective questionnaire)
 - Driving Performance (measured by expert assessment and distance / acceleration data)
 - Task Performance (measured by expert assessment)
- D1.5 The Key Action Data is recorded as an event timeline, which aims to capture data about incidents and activities that occur, including –
- Time of occurrence (i.e. record of initial start timing of subsequent tasks / actions or events)
 - Nature of event (i.e. detail of incident, vehicles involved, weather conditions, etc)
 - Duration (i.e. point at which TO return to patrol or next event)
 - Event handling (i.e. whether crew was dispatched by RCC, whether back-up was called, etc)
 - Jobs / Tasks (i.e. what TO does, task order / whether in parallel etc)
- D1.6 Explanatory Data is captured to provide context to the Performance and Action data during the analysis of results, it includes –
- Background Information (personal details for each TO test subject)
 - Daily mood assessment (measured by subjective questionnaire)
 - Sleepiness / Fatigue (measured by subjective questionnaire)

D1.7 By using data obtained from the questionnaires (See Appendix C2) it will be possible to use the granular data to be processed into conclusions. An example of graphs that could be generated from the data is shown below –

Table D1.1 - Data obtained from questionnaires

Time	Mental Demand	Physical Demand	Temporal Demand	Frustration
1	1	1	1	2
2	4	3	2	2
3	5	3	5	2
4	5	3	5	1
5	2	2	2	1
6	4	3	4	5
7	6	5	7	5
8	6	6	6	3
9	4	4	5	2
10	3	2	1	1

The data can then be graphed as follows, to show how the various workload dimensions vary over time –

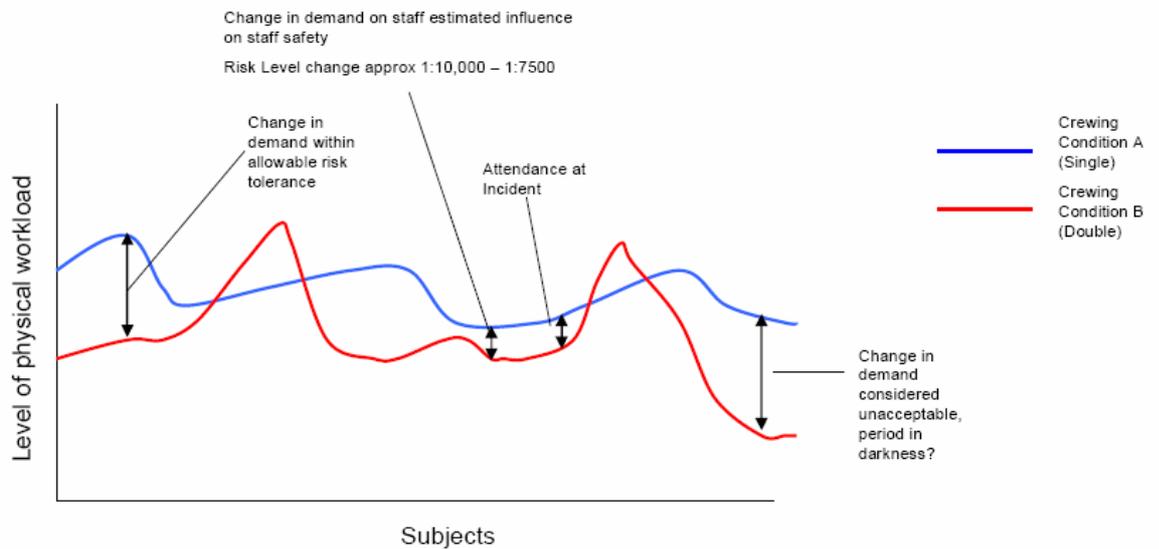


The peaks and troughs can be cross-referenced to the various events and task actions recorded in the event timeline.

Over the whole experiment, the aim is to compare the data for single crewed with that for double crewed to determine whether there are noticeable patterns of difference. For example, whether average mental demand is consistently, or

shows any trend towards being, higher or lower under one or other of the crewing conditions.

- D1.8 The graph below illustrates average levels of physical workload for each of the test subjects over all days under the two crewing conditions, A and B. The exemplar graph demonstrates that crewing condition A is fairly consistently rated as more demanding than condition B. Statistical treatments appropriate to the data may be employed to determine whether the difference in trends observed is significant (i.e. the level of certainty that the difference is related to the conditions and not to other variables).



- D1.9 The graph above has been annotated to show how conclusions may be drawn from the data. This process can be repeated to reflect the various data sets obtained and therefore a conclusion as to the feasibility and impact of variable crewing can be ascertained.

APPENDIX E PROJECT ASSURANCE

E1 RISK ASSESSMENT

E1.1 A Risk Assessment was undertaken on the Test Design in order to ensure that safety had been adequately addressed and to highlight any areas that may require additional consideration.

E1.2 The following information is extracted from the Risk Assessment carried out by the HA National Health and Safety Team. This Risk Assessment was undertaken by Ian Nowosielski in September 2010.

Table E1.1 - Consequence Table

Consequence	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Harm	Minor bruises/ discomfort/ affects wellbeing.	Some minor injuries/ minor ill-health.	Many minor injuries/ ill-health temporarily incapacitating	Some major injuries/ ill-health permanently incapacitating	Death
Disruption	One day Service disruption/ 1 or 2 staff absent.	One week Service disruption/ <5 staff absent.	One month Service disruption/ 5-10 staff absent.	Up to 6 months Service disruption/ 11-20 staff absent.	6 months to 1 year Service disruption/ 21-50 staff absent.
Litigation	Replacement of property.	Replacement of property & finances	Minor out-of-court settlement.	Civil action – no defence.	Criminal prosecution.
Damage	Minor property damage/no environmental impacts.	Slight property damage/impacts on internal environment.	Moderate property damage/impacts on site environment.	Severe property damage/impacts on local environment.	Loss of whole department/impacts on regional environment.
Reputation/ Stakeholder confidence	Damage to individual's reputation. Minor complaints to team.	Damage to team reputation. Minor complaints to local Management.	Damage to Service reputation/local media coverage on day. Some complaints to Senior Management.	Damage to Service / HA reputation/local media coverage <3 days. Complaints to Chief Executive.	Damage to HA reputation/ national media coverage <3 days. Complaints at national level.
Enforcing Action	Audit non-conformance/ advice from enforcers.	Breach of procedure/ Directive from enforcers.	Improvement Notice.	Prohibition Notice.	Government Investigation.

Table E1.2 - Likelihood Table

Level	Descriptor	Description
5	Almost Certain	Expected to occur in most circumstances..
4	Likely	Will probably occur in most circumstances.
3	Possible	Might occur at some time.
2	Unlikely	Not expected but conceivable. Could occur sometime.
1	Rare	Don't expect to happen. Can only imagine happening in exceptional circumstances.

Risk Matrix

Likelihood										Action Priority	
5. Almost Certain	5	10	15	20	25					25	Prohibited; Stop immediately
4. Likely	4	8	12	16	20					16-20	Very High
3. Possible	3	6	9	12	15					12-15	High
2. Unlikely	2	4	6	8	10					6-10	Medium
1. Rare	1	2	3	4	5					1-5	Low
Consequence		Insignificant	Minor	Moderate	Major	Catastrophic					

Tolerable: a risk can be considered 'Tolerable' AFTER it has been reduced to its lowest residual risk that is reasonably practicable.

Best Practice: examples of 'Best Practice' include; working to legislative requirements; adopting latest technology; complying with compliance standards (e.g. BS OHSAS18001, HS(G)65 etc.); positive audit outcomes; positive benchmarking with similar organisations.

Risk Control Options

Risk Control Options	
1 st	Risk Avoidance (informed decision not to become involved in the risk situation)
2 nd	Risk Transfer (shifting the responsibility for burden or loss to another party)
3 rd	Risk Reduction (selective application of appropriate techniques, engineering and/or management principles)
4 th	Risk Acceptance (an informed decision to accept the consequences and likelihood of the risk)

Further Action Criteria

Risk Level	Tolerable? <small>(see definition)</small>	Using Best Practice?	Action if answered 'No' to BOTH Tolerable and Best Practice questions
Prohibited	Not Applicable	Not Applicable	Work should not be started or continued until the risk has been reduced. If it is not possible to reduce the risk, even with unlimited resources, the work must remain prohibited.
Very High	Yes/No	Yes/No	Work should not be started until the risk has been reduced. Considerable resources may have to be allocated to reduce the risk. Consult with Senior Manager. Documented & Detailed Risk Assessments Required.
High	No	No	Work should be strictly limited until the risk has been reduced. Significant resources may have to be allocated to reduce the risk. Consult with Senior Manager. Documented & Detailed Risk Assessments Required.
Medium	Yes/No	Yes/No	Efforts should be made to reduce the risk, but the cost of reduction should be carefully measured and limited. If 'Consequence' is 'Major', 'Catastrophic' or 'Extremely Harmful', emergency measures MUST be in place should the risk be realised, and control measures carefully monitored. Consider Risk Assessments if 'Consequence' is 'Major', 'Catastrophic' or 'Extremely Harmful'
Low	Accept, unless easily improved at no extra cost. No Further Documentation Necessary.		

Traffic Officer Assessment

Summary of Assessment Areas assessed Variable Crewing Test Location: North West TOS Regional Network Staff involved in assessment: Local TM1, SME Date of assessment: September 2010	Overall priority for action: High Date by which action is to be taken: Prior to Test Assessor's Name & Title: Ian Nowosielski NHST				
	Review dates	1st qtr review	2nd qtr review	3rd qtr review	Annual reassessment
	Manager's Signature				

Answer ALL questions and analyse those answered No using the tables and matrices on the previous page. Insert rows as necessary.

	N/A	Yes	No	Likelihood (Choose One)	Risk Rating (Consequence x Likelihood)	Avoid, Transfer, Accept or Reduce?
	(Accept and move on)		(Consequence)			
1. Consider the WORKPLACE Hazards (including the Working Environment)						
1. Have these hazards been recognized and mitigated against in other current assessments?		1				Accept
2.	0	1		1 2 3 4 5		
3.	0	1		1 2 3 4 5		
4.	0	1		1 2 3 4 5		
5.	0	1		1 2 3 4 5		

2. Consider the WORK Process Hazards (system of work and equipment used – PPE next section)	N/A	Yes	No	Likelihood (Choose One)	Risk Rating (Consequence x Likelihood)	Avoid, Transfer, Accept or Reduce?
	(Accept and move on)	(Consequence)				
1. Have work processes been reviewed in respect of single crewed vehicles?		1				Accept
2. Where changes have been made, is further mitigation evident, and suitable and sufficient?	0		4	3	12	Reduce
3. Does the test methodology include the presence of an SME with the authority to stop a task for safety reasons?	0	1				Accept
4. Has a process for RRB been included despite agreement it would be outwith this test?		1				Avoidance
5.	0	1		1 2 3 4 5		
6.	0	1		1 2 3 4 5		
7.	0	1		1 2 3 4 5		
8.	0	1		1 2 3 4 5		

3. Consider the PERSON (wellbeing, welfare and PPE)	N/A	Yes	No	Likelihood (Choose One)	Risk Rating (Consequence x Likelihood)	Avoid, Transfer, Accept or Reduce?
	(Accept and move on)		(Consequence)			
1. Has provision for the wellbeing, welfare and PPE of the test subjects been made.		1				Accept
2.	0	1		1 2 3 4 5		
3.	0	1		1 2 3 4 5		
4. Consider INFORMATION, INSTRUCTION AND TRAINING (issued and received)	N/A	Yes	No	Likelihood (Choose One)	Risk Rating (Consequence x Likelihood)	Avoid, Transfer, Accept or Reduce?
	(Accept and move on)		(Consequence)			
1. In respect of the review, has a formal training needs analysis, delivery plan and means of assessing learning been developed for the test subjects and SME?	0	1	4	4	16	Reduce
2. Has a practical off road test been organised pre On-road event?		1				Accept
3.	0	1		1 2 3 4 5		

Now complete the following Action Plan for any outstanding risks:

Rationale: It is acknowledged that strong checks and balances have been built into the test design; however it is felt that the procedural review has been unsuccessful in mitigating the increased level of risk. Further, it is felt that the amount of change merits a formal TNA for both the SME and TO participants with an accompanying assessment process before this project moves to live on-road working.

List of actions to take:-	Date for completion	Date completed	Residual Risk (after treatment)
2.2 Reconsider opportunities to develop mitigation measures 2.4 Confirm status of RRB reviewed procedure 4.1 Outline how participants will be taught “new” procedures and assurance of learning will be delivered.			

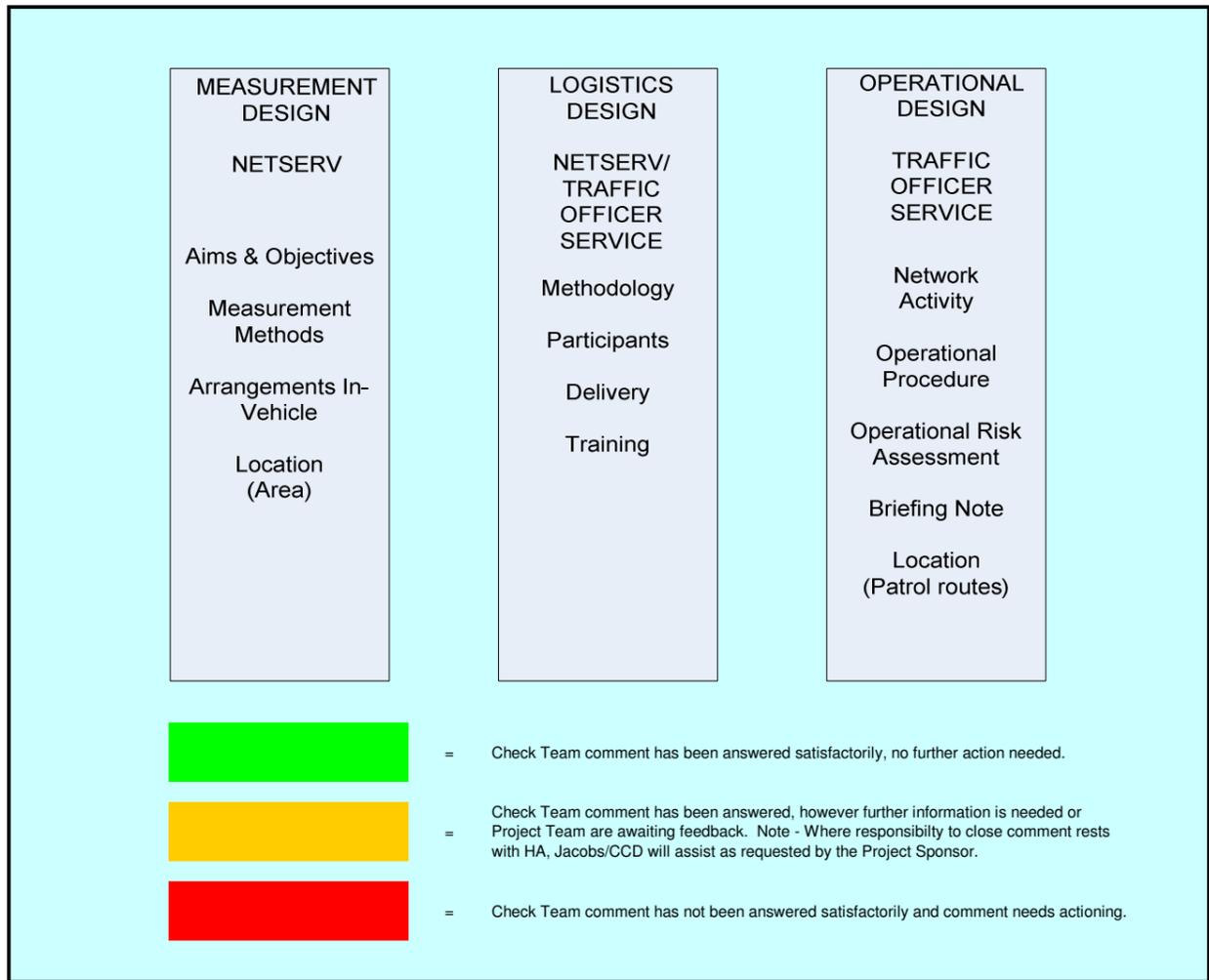
And finally

<ul style="list-style-type: none"> ◆ complete the summary at the beginning of this form and set the quarterly review dates, ◆ TAKE ACTION - AND CHECK THAT IT HAS THE DESIRED EFFECT 	<ul style="list-style-type: none"> ◆ inform the staff of your findings and actions, ◆ inform those you share the workplace with of the findings and actions of this assessment, ◆ copy the assessment to SRR for their information
---	--

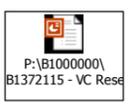
E2 CHECK TEAM COMMENTS

- E2.1 The following information is a record of the comments made by the Independent Check Team following their review of the Test Design in May 2010. The Check Team comment register also demonstrates where the Test Design has been modified to incorporate the comments of the Independent Check Team.

Key



Current Status Presentation



Milestones for Check Team Comments

April/May - Check Team comments received
June 2010 - Procedures review held to identify those procedures that may not be possible to attend during the test, representatives of Jacobs, CCD, TOS, RCC, Corporate H+S and procedures consultants present.

Measurement Design				
Responsibility to deliver - NETSERV				
Check Team Comment	Response	Resolved?	Project Sponsor Comment	Reference to Single Crew Test Design Report
Arrangements In-Vehicle - Position of light bar and Variable Message Sign buttons in vehicle				
There were a number of issues raised regarding this issue. The primary issue was 'is it legal for TOs to operate buttons whilst driving the vehicle', with the secondary concern being 'should they push buttons that may be badly placed for a solo crew and that may require them to divert their attention from the road ahead'.	CCD have recommended modifications to devices to improve operator reach and vision - HA to resolve (both legal question and whether vehicles can be modified). <i>Note: CCD believes it is unlikely that there is specific legal bar to device operation (although usual "due care" in operation rules will apply and of course are not easy to meet if device is badly designed or located for in-car operation by a driver). However, should they HA determine there is a bar then new procedures will be required to ensure that the TOs do not use the devices when driving and to determine how (and indeed if) TOs can practically operate on their own (e.g., do they have to stop each time they need to use the light bar; is this practicable in operation, etc).</i>	ACPO opinion was "unconcerned" with the approach taken for the test? Check with Alan and turn green if in agreement.	There is no legal restriction on 'button pressing'. There is a need for a driver to ensure due care and attention. Where the driver determines due care and attention cannot be offered to the driving task they must prioritise the tasks at hand. Either cease button pressing task or cease the driving task. Test Training to ensure this is clear	N/A
These issues could not be resolved in the workshop since, to the thought of the group, they require legal input.	We understand that HA are seeking an opinion from ACPO on this matter.			N/A
Measurement Methods - Driving Standards				
There was concern that the measuring of driving ability may be considered by test subjects as a test of their ability to drive. It has to be made very clear to test subjects that it is simply a comparison of behaviour in double crew against single crew.	Included in the training documents and the TO briefing – TOs (and SMEs) will be clearly told that the Test is not "judging" or "assessing" their performance against standard / criteria and that there is no "good" or "bad"; the Test is designed to compare each TO effectively with him / herself (under first dual and then single crewing) and collectively under both conditions. The aim is merely to understand what if any changes in their performance occur under each scenario and, as far as possible, try to work out the causes of any differences.		Inclusion to Training Documents	N/A
The test design team need to make it clear in the documentation what will be discussed, with who and why, regarding such potentially sensitive issues.	Included in the training documents and the TO briefing.		Inclusion to Training Documents	N/A
Arrangements In-Vehicle - Overweight vehicles				
Sitting a double crew, HFO and SME in a fully laden vehicle may result in the vehicle being overweight. This needs to be taken account of in advance of any test (may need to weigh the subjects).	It was earlier communicated that this was only a concern in a certain (Mitsubishi) vehicle type and thus the Land Rover Discovery was chosen for the test. This vehicle has sufficient capacity for four individuals who are within a normal range of weights. It is necessary, using the current test design, for both SME and HFO to be in the vehicle in both single and dual crew scenarios.		Traffic Officer to advise (as necessary) on test vehicle weight vs capacity.	See Single Crew Test Design Report - Appendices, Paragraph (C1.41 and C1.42).

Logistics Design				
Responsibility to deliver -NETSERV/TOS				
Check Team Comment	Response	Resolved?	Project Sponsor Comment	Reference to Single Crew Test Design Report
Training				
The test design is not clear about what preparatory steps will be taken to ensure that all test subjects and testers know what is to happen.	This has been covered in the recent test preparation work that has been conducted. SME and HFO training documents have been produced as have TO Briefing and test participation training materials. <i>Note: The developed training materials relate to the conduct of the live network test; no attempt has been made to address how (if at all) TOs need to change / adapt how they work for Single Crewing (the Test results will provide detailed guidance on this issue).</i> Update June 2010 - A procedures review was held at Rob Lane RCC in June and it was agreed that the briefing pack and training package will make clear to test participants what is going to happen during the test. The Training package and briefing pack have yet to be finalised.	Further consideration required by the HA.	Awaiting Procedures review outcome	See Single Crew Test Design Report - Appendix A
Asking individuals to single crew after having worked in a double crew scenario for a number of years will have implications. The TO will need to know what, if anything, is to change about the way they operate; what they should and should not do, i.e. they should operate as normal; but what is normal since there has been no single crewing before.	It must be borne in mind that this is in essence what we are seeking to identify in the test. The remit was to design a test that could work within the current operating procedures. The TO's in the Test should act as 'normal', i.e. they should work using the HA's TO procedures they would normally use, deviating from them only where suitable and sufficient DRA suggests it is safe for them to do so in order to complete the task (as is currently the case). The Test Design team agreed that in the event that a Single TO is faced with a procedure (or task) they cannot do alone then they would call for back up. In the event of emergencies (i.e. timely resolution of incident is required to save life or similar) then the TO can use the SME (being carried in the back of the car) to revert to a dual crewing for as long as necessary. The Test will usefully identify how often and for what activities TOs need to call for backup, either because they need to employ procedures which require two persons or because they cannot cope alone for other reasons. Update June 2010 - Following the procedures review in June 2010 it wa	Procedures review outcomes needed.	Test briefing note to be produced following the procedures review. This will cover the operational test activities	See Single Crew Test Design Report - Appendix A
The TO will need to know who the other people in the car are, what they are doing and how they all interact. They will need to be aware of all the assessment sheets that will be completed, the manner in which they will be completed and how long everything will take e.g. filling forms, initial briefings the duration of the test etcetera.	Covered in the training documents and test briefing (as per 1.1).	Further consideration required by the HA.	Inclusion to Training Documents - HA Project Sponsor to brief test subjects prior to test training	See Single Crew Test Design Report - Appendix A - (Once Appendix is finalised, currently draft)
The TO test subject may need a refresher on the procedures since in double crew scenario's they have back-up if they cannot recall issues.	If this is deemed necessary it could form part of the pre test training for the TOs, which would be arranged by the TOS and / or TLC for those TOs selected to take part as Test subjects.	Further consideration required by the HA.	Inclusion to Training Documents. HA Test briefing note to cover procedural environment for test. If Officer cannot recall procedure refer to RCC for support	See Single Crew Test Design Report - Appendix A - (Once Appendix is finalised, currently draft)

<p>The HFOs will need to know what they can/cannot, should/should not do. They will need health and safety inductions as well as briefings/trainings on working on the network. They will need to be aware of what they can/should and cannot/should not mention to the TO, and this should match the TOs briefing.</p>	<p>Yes, they will need training and familiarisation - there is a requirement for vehicle ride out and road safety briefing. This is covered in the HFO training pack. <i>Note the HFO will at ALL times be under protection of the SME, except in emergencies (where the SME may act to support the TO), in which case the HFO will have first been moved to a safe place.</i> Update June 2010 - The procedures review highlighted the concerns of corporate H+S and it was agreed that these will be reviewed following the workshop. Any procedures that will not be carried out single crewed will be identified and communicated to test subjects prior to the test.</p>	<p>Procedures review outcomes needed.</p>	<p>Procedures review outcome not needed. HFO role only. Standard TO ride out induction and waiver for HFO. CCD pre-briefing to HFO in accordance with the Jacobs comms plan.</p>	<p>N/A</p>
<p>The Subject Matter Experts should know what they are to look for; what they are to provide comment to the HFO about; when they should comment; what they should say to the TO; what they should say to line managers etcetera.</p>	<p>Covered in the SME training pack. Update June 2010 - To be further considered by TLC.</p>	<p>Further consideration required by the HA.</p>	<p>Awaiting Procedures review outcome. Specific SME training to be updated</p>	<p>See Single Crew Test Design Report, Paragraph 6.1.5 and Appendix A - (Once Appendix is finalised, currently draft)</p>
<p>Clear briefings or training should be provided to all three groups. All three groups should receive a consistent message so that they don't expect things of others that they will not get.</p>	<p>Covered in the training packs. Update June 2010 - To be further considered by TLC.</p>	<p>Further consideration required by the HA.</p>	<p>Awaiting Procedures review outcome</p>	<p>See Single Crew Test Design Report - Appendix A - (Once Appendix is finalised, currently draft)</p>
<p>Any briefing or training should not compromise the undertaking of the test. Therefore the manner in which any briefing or training is given, and who gives it, will need very careful consideration and planning.</p>	<p>Covered in the training packs. Update June 2010 - To be further considered by TLC.</p>	<p>Further consideration required by the HA.</p>	<p>HA exploring TLC involvement</p>	<p>See Single Crew Test Design Report - Appendix A - (Once Appendix is finalised, currently draft)</p>
<p>It is important for the SME to know what is to happen during the test and what their role is. An advance briefing is considered an appropriate method.</p>	<p>The SME training pack covers issues (role, activities, responsibilities etc) in relation to the conduct of the Test and procedures / rules for its operation. HA may wish to add to these.</p>	<p></p>	<p>Awaiting Procedures review outcome. Specific SME training to be updated</p>	<p>See Single Crew Test Design Report, Paragraph 6.1.5 and Appendix A - (Once Appendix is finalised, currently draft)</p>
Participants				
<p>Who is setting the required standard for these individuals to meet. Who is providing a reality check? Suggestion that Traffic Learning Centre could provide a reality check. The same issues apply to the other roles.</p>	<p>The selection of subjects for the roles, SME and TO are up to the HA and are being discussed by the Project Board on an ongoing basis. The criteria outlined in the Test Methodology are those that are essential to successfully conducting the test. The HA may have further considerations above those specified, but we do not consider that this would be detrimental to the test. Update July 2010 - Invites for test subjects have been sent out, there have been no "requirements" made in terms of health in order to get a large sample data. Following the invitation period, the sample will be checked against test requirements for suitability and a final sample of test subjects will be chosen.</p>	<p></p>	<p>See invitation documents for detail</p>	<p>See Appendix B2 and Appendix C1, Paragraph C1.23.</p>

In addition, the test excludes individuals from selection if they fall within certain criteria. Is it likely that enough test subjects (volunteers) will be found? Do the restrictions allow for a fair and balanced test?	The criteria are in place due to the heart rate monitors being used. They are conditions of use of the equipment, not the task. Any TO could be eligible for the test, but where we cannot use a heart monitor a measure of stress is taken away, so we would prefer not to. It is difficult for us to comment on the availability of resource, as HA are managing this. Update July 2010 - See comment made above.		Number of test subjects known by 13th August. Min test population of 14 subjects to alleviate population variations.	See Appendix B2 and Appendix C1, Paragraph C1.23.
The TO subject may change behavioural pattern as a result of working solo. Some form of operational impact discussion may be required in advance of the test to ensure they are prepared to go on-road.	We expect that subjects will be volunteers. Briefing will ask them to perform as best they can as normal and that test is not about them personally, it is a fact finding exercise trying to see what if any barriers there are to Single Crewing. Operational Impact (i.e. whether or not test impacts on the TOS service provision, KPI etc) is not covered by Test Design remit. We assume that the HA can accept that the Test may have impact on operations and will ensure that TOs are aware that this is not their problem.		A change of behaviour is expected. Briefing pre-test will be provided. KPIs will continue to be measured centrally by the RCC to record operational performance change	See Single Crew Test Design Report - Paragraph 6.1.5.
To work the shift patterns there may be a degree of separation of TOs from line managers. There will also be a need for Line Managers to understand what their team is doing and how they are performing to enable reporting in yearly PDPs etcetera. The HA will need to allow for this.	Agreed, but this is a matter for the HA to manage.	Further consideration required by the HA.	Access to line managers via test brief and de-brief process. Also test subject able to halt test and call line manager as required. TO can withdraw from test at any point.	See Single Crew Test Design Report - Paragraph 6.1.5.
Aims and Objectives - "Foot in door" test				
This is only a test of the idea of a fuller test.	Agree and the test has been designed as such. We would anticipate that the stage after the test might be a trial in a particular area.		Need to educate officers in Test:Trial:Rollout difference. Project Sponsor briefing	See Single Crew Test Design Report - Paragraph 6.1.5.

Operational Design				
Responsibility to deliver -TOS				
Check Team Comment	Response	Resolved?	Project Sponsor Comment	Reference to Single Crew Test Design Report
Operational Procedure - Rolling Road Blocks				
Departures from procedures.	HA to resolve whether these can be conducted in the test or not. The Test design assumes procedures are adhered to and hence Single Crewed TOs will not undertake procedures requiring x2 TOs, except where DRA suggests it is safe, or under an emergency scenario when the SME provides support (see 1.2). (See also H&S comments below). Update June 2010 - Following the procedures review it was made clear that the procedures are written for double crewing. It was agreed that some procedures will be excluded from the test and these will be identified and communicated to the test subjects prior to the test. It was made clear that a DRA should not be wholly relied on during the test and should only be used in "exceptional" circumstances. The identification of procedures to be excluded from the test is ongoing.	Procedures review outcomes needed.	Procedures review outcome needed. Note RCC will not deploy test vehicle to excluded procedures	See Single Crew Test Design Report - Appendix A2 and A3.
Adapt some generic risk assessments.	HA to resolve. Update June 2010 - HA currently progressing following the procedures review workshop.	Procedures review outcomes needed.	Procedures review outcomes needed.	See Single Crew Test Design Report - Appendix A2 and A3.
Rolling road block procedure requires two TOs to undertake it. Concern was voiced that this is still the case, so it would cause an issue if single crew TOs are unaware they are able to determine if they can attempt it solo or if they will automatically call in a second person (e.g. Subject Matter Expert [SME]).	If the TOs can depart from the rolling road block procedure then this would be clearly communicated within the TO and SME briefing. If this does not prove to be acceptable then HA must accept that the TO will call for back-up. Update June 2010 - Following the procedures review it was made clear that the procedures are written for double crewing. It was agreed that some procedures will be excluded from the test and these will be identified and communicated to the test subjects prior to the test.	Procedures review outcomes needed.	Rolling Road block and Rearward relief excluded from test	N/A
It was felt that the TO test subjects should be adequately briefed on how the procedures can be interpreted and that they should accord with them whilst utilising DRAs as required.	The premise is that TO's should be trying to work as "normal", that is as far as is possible they should work as they do now. We do not believe there is a need for "interpretation" of procedures for the Test as it is not a special or different circumstance. The TO's should comply with the procedures as they stand. If HA consider that some changes are required, then those changes would need to be made by, or with, the TLC and TOS. <i>Note: the Test is meant to determine the practicality of Single Crewing, care must be taken to ensure the test is not biased too much by special training, procedural dispensations, adaptations of working conditions and operations or over careful selection of unrepresentative subjects in order that its results give a fair and realistic representation of Single Crewing.</i> Update June 2010 - Following the procedures review, it was agreed that a cover note will be prepared to cover how existing procedures should be interpreted during the test, Syd Barry is to produce/manage this.	Cover note to be prepared by Syd Barry (HA)	Cover note to be prepared by Syd Barry (HA)	See Single Crew Test Design Report - Appendix A3.
It was highlighted that training/briefings for TOs/SMEs and Human Factors Observers (HFOs) would be provided before the test. The team wishes it to be made clear that the briefings/training need to be adequate – see issues 1&2.	Now available as drafts. Update July 2010 - Drafts to be developed further by TLC.	Further consideration required by the HA.	TLC to review draft training package	See Single Crew Test Design Report - Appendix A - (Once Appendix is finalised, currently draft)

Operational Risk Assessment - Dynamic Risk Assessments (DRAs)				
DRAs need to be recorded to allow an understanding to be gained of why the decision taken was made; this is not to say whether it was right or wrong.	Yes and of key importance to the test and debrief. CCD understands that TOs record their DRAs in notebook as a matter of course.		Normal DRA recording processes to be followed	N/A
The design test check team believed it would be advantageous to ensure that TOs are made aware of DRA issues for single crewing in advance of the test. We understand the Jacobs/CCD training to be provided in advance is about how to conduct and perform in the test and will not cover such operational issues.	Correct – training of TOs for Single Crewing needs to be developed by the TOS/TLC. Update July 2010 - Drafts to be developed further by TLC.	Further consideration required by the HA.	Operational Test Design is ongoing	See Single Crew Test Design Report - Appendix C1.
Operational Procedure - Extra work load on Regional Control Centres (RCCs)				
The issue was raised of whether staff in the RCCs would have to take account of single crew vehicles or not.	The Design Team believe that they would probably need to be aware, but should not act other than entirely normally when dispatching single crewed TOs, because of potential to bias the test in ways we cannot determine (i.e. RCC operators might worry about KPI / Performance and avoid using single TOs; or might make decisions about which types of events single TOs could / should attend). The RCC should dispatch Single Crews in the same way as Double Crews. They might be “blind” in terms of which vehicles are single crewed (though it may be obvious from call signs), but not that the test is taking place. Update June 2010 - Following the procedures review it was agreed that the RCC will have knowledge of the single crew vehicles and will have knowledge of what procedures are not to be assigned to the single crewed vehicle.		RCC to develop call sign ident for test vehicles. RCC and cross network considerations to be addressed	See Single Crew Test Design Report - Appendices - Table A2.3.
It will be a blind test and therefore the RCC should not notice any difference on despatch. They may however have to despatch more vehicles during the day if they have to send another vehicle out to assist a single crew vehicle.	Not quite correct – see previous response. Update June 2010 - See above comment		RCC to deploy back-up as requested to test vehicles	
Methodology - Limitations/scope of test				
It may be beneficial for there to be some record made by the test design team of what will not be covered. This should assist communication plans where it will be possible to anticipate frequent questions and have the answers ready.	Potentially beneficial. This may be included as part of the communications plan during the next phase. Update June 2010 - The Communications Plan will be updated by the Project Team following the outcomes of the procedures review. This will also be covered in the training package.	Further consideration required by the HA.	Exclusions diagram produced. Procedures review exclusions identified	See Single Crew Test Design Report - Paragraph 6.1.4 and 6.1.5 and Appendix A2 and A3.
Methodology - Customer Perception				
There will be three people in the vehicle. When it stops two of them will stand on the side and watch one person work. How does the test design team intend to handle this?	The Test requires these people. The TO may explain their purpose to any members of the public as necessary or if asked.		Use standard approach for ride-outs.	N/A

Operational Risk Assessment - Personal health and safety risks				
On-going discussions to be held with H&S representative.	Noted. Update June 2010 - Corporate H+S involved in the procedures review and fully informed of the project direction.		Procedures review and operational risk assessment to proceed in parallel	See Single Crew Test Design Report - Appendix A2, A3 and E1.
Operational Procedure - Decision making of Traffic Officers (TOs)				
The TOs make decisions with the knowledge there are two of them in the vehicle and that the procedures say certain requirements exist. If the single crew individual has to make decisions the thought process may be affected by the lack of a colleague and because of knowledge procedures say to do something. The training provided to the TO subject must make thought processes clear and that nothing has changed.	Agreed. There is an ongoing question of what training should be given to assist the TOs in operating during the test prior to the test. Update June 2010 - To be further considered by TLC.	Further consideration required by the HA.	Procedures review outcomes needed.	See Single Crew Test Design Report - Appendix A2, A3 and E1.
Methodology - Communications with TOs whilst they are driving				
How will the SME or HFO talk to the TO should they have to. How will the TO talk to those in the vehicle. How will communications work with the RCC if the TO cannot push buttons e.g. two-way radio. The HA need to take account of this.	Conversations between the HFO/SME and TOs will be kept to an essential minimum and within a safe controlled environment.		In vehicle communications to be minimised. Airwave communication is exempt from mobile communications legislation. Due care and attention must still be exercised.	See Single Crew Test Design Report, Paragraph 6.1.5.
Methodology - Extent of testing and recording				
The test design paperwork indicates a 9 hour shift. Is this right? There appears to be a few papers to complete, in inclement weather is this practical?	There are additional tasks to complete compared to a 'normal' shift. The table in the report indicates the duration of time that these tasks are expected to will take. They can either be incorporated into a normal shift length of 8 hours or the shift can be extended by approximately one hour to accommodate the briefing and debriefing. The papers do not need to be completed outside the vehicle. The HFO / SME may want to complete checklists or make notes outside the vehicle, but this can be done later, when inside the vehicle or a building. Both HFO and SME will have Dictaphone to record notes outside the vehicle if they need to.		Shifts limited to 8 hrs inclusive of brief and de-brief. Notes in inclement weather can be taken using weatherproof clipboard	See Single Crew Test Design Report Appendix C1, Paragraph C1.46.
Methodology - Seniority in vehicle				
Who is in charge of the vehicle? The SME is likely to be senior to the TO test subject but who has the final say on an issue? The HA will need to determine this.	The TO is in charge of the vehicle. The SME and HFO can ask to be let out of the vehicle at any time (on basis that they can be dropped at a safe spot off network) should they want to do so – ending the test. The testing can be stopped at any time by the TO for whatever reason. The SME will not direct the TO except where there is, in the opinion of the SME, a clear threat to safety. The SME will not act to support a single TO unless they ask in an emergency situation. The TO can ask the SME for advice at any time or can ask for help with the DRA (this would be noted as legitimate part of test as it indicates all sorts of interesting things).		Note both TO and SME can stop the test and revert to dual crew as need dictates.	See Single Crew Test Design Report , Paragraph 6.1.5.

Methodology - Amount of driving				
It is likely that a single crew vehicle will result in more driving for the TO than in a double crew vehicle. What allowance has been made for this and is it safe to allow it.	This is correct and is one of the elements the test is designed to measure.		Regular driving breaks to be taken in accordance within highway code and HA guidance or as required by the driver	N/A
Delivery - Night/dark issues				
Although the test excludes night it will run in to winter where it will be dark during the afternoon shift. What, if anything, is different about this to a night shift or what is expected during the lit dayshifts.	The HA requested a test design with no night shifts. In terms of the items to measure in the test etc. there is no difference in light or dark.		Night shifts are excluded during testing due to the possibility of criminality and lack of Performance measurement. This exclusion does not mean night shift could not be subsequently considered for single crewing	See Single Crew Test Design Report , Paragraph 6.1.4.
Methodology - End of shift debrief				
How long do these last and how much of the test findings are discussed with the TO and SME. There would be benefit in telling the subjects before the test starts what they will be given as feedback during the testing.	The table shows an allowance of 45 minutes has been made. The content is discussed in the training packages. The nature of the feedback is to be agreed with HA. Naturally "feedback" will be given in course of de-brief discussions as CCD will be asking subjects about their experiences and issues / difficulties etc – essentially the subjects provide their own feedback. There is no assessment of "performance" in the sense of anyone judging whether the TO did a "good" job or could have done better or differently. If the TO thinks they could have done differently that is for them to say, if they say they do not think things went well CCD only want to record why they say this in order to inform the HA of potential changes to training, procedures etc that might improve ability to Single Crew.		Will inform TO of feedback availability at briefing session	See Single Crew Test Design Report Appendix C1, Paragraph C1.46.
Operational Procedure - "Bread and butter" procedures				
Perception of the TO representatives that routine tasks will be adversely affected by single crewing. Rolling road blocks are stated as two man activities in procedures and are routine activities. Need to ensure that the test TO is aware of how to undertake the DRA to determine if they progress or call assistance.	We assume that TOs are (or will be trained) to currently undertake DRA. Update June 2010 - Following the procedures review it was made clear that certain procedures would be excluded from the test, however DRA should not change from usual practice and should be used only in "exceptional" circumstances.		Procedures review outcomes needed.	See Single Crew Test Design Report - Appendix A2, A3 and E1.
Operational Procedure - Traffic Wales experience of single crewing				
Traffic Wales has been running single crew vehicles for six months now, what has the HA learnt from this?	We were unaware of this. Any knowledge / experience in this area would be useful..	Doesn't stop the project progressing, however any knowledge / experience in this area would be useful..	Traffic Wales do not offer a comparable service at this time.	N/A
Delivery - Perception of Stakeholders of health and safety				

What do our stakeholders think of the test and how it might affect health and safety on the network. HA to consider.	HA consideration. Update June 2010 - Corporate H+S were present at the procedures review and are part of the process for reviewing the current procedures, they are aware of the project direction. Formal consultation with the unions has yet to proceed. Several other stakeholders identified have been informed of the project direction.	Formal Union consultation is needed if we are to proceed with more than 12 HA staff.	Formal Union consultation is programmed. NH&S team onboard. National TMD H&S to be informed.	N/A
Delivery - Stakeholder communications				
Have we informed the stakeholders of what we are doing and the potential impact it may have?	HA consideration. Update June 2010 - See comment above.	Formal Union consultation is needed if we are to proceed with more than 12 HA staff.	Formal Stakeholder liaison with MAC/Police/Unions/TMD H&S planned. NH&S liaison ongoing	N/A
Delivery - Internal communications				
Would it be beneficial to undertake some limited exposure of the test to reduce the amount of rumour surrounding the test.	HA consideration. Update July 2010 - The roster of the traffic officers for the test will use only those officers chosen for the test and not a reserve who happens to be a test subjects partner for the shift.	Rostering of test will outline how exposed the HA is to the test.	Formal Union consultation is programmed. NH&S team onboard. National TMD H&S to be informed. Update to officers planned.	See Single Crew Test Design Report - Appendix B1.
Delivery - Implications for Service Provider / North West RCC				
Does the Service Provider know what is happening and what effect it might have on them?	HA consideration. Update June 2010 - Corporate H+S were present at the procedures review and are part of the process for reviewing the current procedures, they are aware of the project direction. Formal consultation with the unions has yet to proceed. Several other stakeholders identified have been informed of the project direction	Training will ensure service provider is fully aware of what is happening, however service provider already has a good idea.	Liaison meeting on 22nd Sept update planned	N/A

Health and Safety

Responsibility to deliver - All

Check Team Comment	Response	Resolved?	Project Sponsor Comment	Reference to Single Crew Test Design Report
<p>The risk assessments provided by the test design team cover individual elements of a task rather than the task itself. A task is made up of multiple elements therefore there is interaction that needs requirements. The HA is currently looking to improve the risk assessments undertaken to date by itself. What is the status of the Risk Assessment spreadsheet (ours, CCD's and Jacobs?).</p>	<p>The risk assessments referred to are assumed to be the TO risk assessment provided by the HA. These were reviewed only to find any risk assessment that included the presence of two persons as a control measures. The assessment did not look at the applicability, standard or quality of the risk assessments. We did comment that the relationship between the risk assessments and procedures and the tasks conducted by the TOs was difficult to establish. We are happy to produce additional risk assessments deemed necessary for the Test to proceed. Update June 2010 - Following the procedures review it was made clear that the current procedures are for double crewing only. Corporate H+S are now reviewing the procedures and risk assessments for compatibility with the single crew testing.</p>	<p>Procedures review outcomes needed.</p>	<p>Procedures review outcomes needed.</p>	<p>See Single Crew Test Design Report - Appendix A2, A3 and E1.</p>
<p>Tasks migrated to the HA from the police resulted in Risk Assessments and Procedures that have the spirit and intent of there being two Traffic Officers in a vehicle. How has this been accommodated within the Risk Assessments undertaken for the tasks in the test.</p>	<p>It has not. The project remit was to design a test to see how single crew TOs performed on the HA network. Therefore the test has been designed under the HA's assumption that it is safe to conduct a test and safe to work on the network in a single crew. There is an operational fail safe built into the test whereby the single TO can call for back-up or use the SME to revert to a dual crew scenario in emergencies. Update June 2010 - Following the procedures review it was made clear that some procedures will be excluded for the test, however the comment above is still very much a robust answer.</p>	<p></p>	<p>Procedures review and Operational Risk assessment outcomes needed.</p>	<p>See Single Crew Test Design Report - Appendix A2, A3 and E1.</p>
<p>Is the test to be undertaken in 'real' conditions, i.e. do all existing Key Performance Indicators remain in place to be achieved? This could significantly affect performance and increase stress/pressure on the TO.</p>	<p>The test should, as far as possible, be conducted within all real conditions. However, it should be noted that the KPI's will not be applicable to a single crew conditions as they are not designed to measure these. The potential for the KPI's to bias the test is one reason that the RCC operators should be 'blind' to the test. There should be no pressure on the TO to adhere to or work towards the KPIs.</p>	<p></p>	<p>KPIs will now be used during the test to ensure business validity of Single Crewing</p>	<p>See Single Crew Test Design Report, Paragraph 6.1.5.</p>
<p>What does the TO do first when reaching an incident? When double crewed one reports details while the other goes to the scene. One then comes back and watches traffic as traffic management is established. With one person, how has this type of task been approached? What does one person do first, go to the scene? Report data or establish a safe working area?</p>	<p>This is partly what is being tested. However, this is the subject for the TLC / TOS to discuss to decide how they want the TOs to act. This may require a review of current training (e.g. if current rules stress making the scene safe first, then that is what TO should do, fitting other activities in as necessary). Additionally it could be left to the individual officer to decide and the lessons learnt from the test can steer future training. Update June 2010 - This was discussed at the procedures review and is currently ongoing as part of the review process. However it was suggested that a cover note will be produced to precede the procedures during the test that makes this clear.</p>	<p>Cover note to be prepared by Syd Barry (HA)</p>	<p>The test briefing note to be prepared by Syd Barry (HA) will detail the process for carrying our tasks in series which are normally completed in parallel</p>	<p>See Single Crew Test Design Report - Appendix A2, A3 and E1.</p>
<p>TOs were recruited under the knowledge and a skill set suitable for double crewing. We have not recruited for single crewing. Do we have the right people for the test or any subsequent roll-out?</p>	<p>The test design remit was to design a test of single crewed TOs. Criteria for selecting TO subjects have been put in place and are reported in the test design / training documents. One criterion is that the subject is willing and capable of undertaking the task of single crewing. It will be the responsibility of the HA to determine who is/isn't suitable. The test has a large sample size to attempt to determine the suitability of different TOs to conduct single crewing and the test will answer this question.</p>	<p></p>	<p>We are carefully selecting the right people for the test. Any subsequent Trial or rollout would require careful consideration</p>	<p>See Single Crew Test Design Report - Appendix B2..</p>

<p>A single TO may not wish to undertake a general two man task if a more senior person is in the back watching. Will another single crew be sent to assist or a double crew? What impact will this reluctance have?</p>	<p>The test design had to take place within existing procedures. Single TOs should therefore not undertake any procedure which states two people are required, except where DRA suggests they can. The SME is not there to second guess or judge the TOs DRA. The TO can ask the SME's advice, but the TO is responsible. Part of the test is to understand why they might not want to do a task. In such a situation, the TO can call for back-up, or in an emergency ask the SME to help. The SME would not be empowered to make a TO do a task or to over-rule a decision. The SME can only ask to end the test / leave the vehicle on the basis that his or the HFO's safety is threatened by something the TO wants to do. Should such a situation actually arise, the whole test would have to be suspended and reviewed by HA to understand reasons and implications for Single Crewing.</p> <p>With regard to the reluctance of the TO, the spirit that the test will be conducted under is crucial. This spirit should be one of open communication with no a 'no blame' culture and thus both parties are willing and open to conducting and proceeding with tasks. Wh</p>		<p>Briefing session to explain the testing regime</p>	<p>See Single Crew Test Design Report, Paragraph 6.1.5 and Appendix A2, A3 and E1.</p>
<p>The way the TO works now are akin to say standard football rules. With a reduced number of TOs in a car we are now playing 5-a-side, but the rules have not changed. Why?</p>	<p>The rules have not changed due to the remit being to design a test within the existing rules. Where necessary consideration has being given to rule changes, for example rolling road blocks. It should be noted that the rules are set by the HA and that the tasks and actions being conducted are the same.</p>		<p>Because we are selecting the most capable players on the field</p>	<p>See Single Crew Test Design Report, Paragraph 6.1.5 and Appendix A2, A3, B2 and E1.</p>
<p>Fatigue – There is a much better tool for this that the HA has used in association with the H&S Executive. Why is it not being used here? [Developed for rail industry but H&S Executive are happy for us to use it, RR446]. It has just been used to review HA TO shift patterns.</p>	<p>Prior to the test design being finalised a review of potential methodologies was conducted. The Risk and Fatigue Index tool was included in the review of methods to measure the fatigue of the TOs whilst on shift. It was concluded that the tool was not appropriate for use due to the points outlined below:</p> <ul style="list-style-type: none"> i. The tool has a very strong focus on the role that sleep plays within fatigue and the associated risks of a shift pattern to the task performance. In the variable crewing test the task and shift pattern of the TOs will not change only the workload and effort will change. ii. The test needs to capture the difference between single and dual crewing. One of the main aspects of this change is that the single crew Officer will have to conduct 8 hours on a shift compared with (crudely approximating) 4 hours work when they are working in a dual crew situation. This means that a desired factor of the fatigue level of the TO is their energy related fatigue level and the TO's response to this. The HSE tool has 4 discrete bands of workload and 4 discrete bands of differing attention level. The 		<p>The H&S exec tool will be used to validate the more granular test results achieved by questionnaire.</p>	<p>N/A</p>

E3 PT1 FORM

PT1: Pilot or Trial category selection and approval

To be completed and sent with a Financially Approved Business Case to the relevant Divisional Director, along with a suitable specification.

1. Pilot or Trial Requirement - to be completed by the Project Sponsor:

1.1 Project PIN:

1.2 Pilot or Trial Title (ideally the same as the PIN in Cascade):

People Organisation & Powers (Variable Crewing)

1.3 Brief Pilot or Trial description:

Since the inception of the Traffic Officer Service in 2004 it has required two traffic officers to crew each vehicle when operating on the network. This project will assist efficient delivery of the Traffic Officer Service on the motorway network by challenging this precept. Studies recommend that a limited scale network test of single crewed Traffic Officer patrols is undertaken.

2. Intended Pilot or Trial Cost (£)

Annual breakdown of Costs (£)

	Year 1	Year 2	Remaining
Net (£ excluding VAT)	180,000.00	100,000.00	50,000.00
VAT (adjust if non-standard)	31,500.00	17,500.00	8,750.00
Gross (£ including VAT)	211,500.00	117,500.00	58,750.00

3. Timetable

Please allow sufficient time for your request to be processed and awarded (approx 4 weeks)

3.1 Work on Pilot or Trial to commence:

3.2 End to finish:

4. Location

Please indicate where the proposed pilot/trial will operate. If multiple sites include ALL locations

The Category B (Cat B) limited scale network test of Single Crewing will start on 3rd May 2010, this will include routes patrolled from the following North West outstations; Knutsford, Milnrow, Rob Lane, Samlesbury and Milnes. The purpose of this work is to prove the safety case for the 'single crewing'. It will offer results by November 2010.

5. Similar Pilots or Trials

Please indicate previous pilots or trials similar in nature to the proposed pilot or trial - include ALL

None

6. Potential Impacts

6.1 Will the pilot or trial impact HA network operations?

Yes (Tick if appropriate)

If Yes provide brief details:

The (Cat B) limited scale network test will require a number of abstractions from normal TO duties. The project team will minimise these.

6.2 Will the pilot or trial require co-ordination with the Regional Control Centres?

Yes (Tick if appropriate)

If Yes provide brief details:

The (Cat B) limited scale network test will require the RCC to be aware of a number of test vehicles on the network. It is anticipated that these test vehicles will be deployed in the same manner as a dual patrol meaning the RCC impact will be minimal. Appropriate training and guidance will be issued prior to the test commencing.

6.3 Will the pilot or trial have a high political sensitivity or likely press interest?

Yes (Tick if appropriate)

If Yes provide brief details:

Consultation with Prospect (the union to which the majority of TOs belong) has commenced. This and other key stakeholders will be key consultees throughout this process

PT1: Pilot or Trial category selection and approval

To be completed and sent with a Financially Approved Business Case to the relevant Divisional Director, along with a suitable specification.

6.4 Will the pilot or trial impact Agency objectives (e.g. Improving Safety, Reducing Congestion and Improving Reliability, Respecting the Environment)?

Yes (tick if appropriate)

If Yes provide brief details:

The project will enable efficiencies within the TOS. The result of these savings may be directly employed to reduce congestion on a wider proportion of the network for which the Agency is responsible.

7. Pilot or Trial Category

Pilots and trials are separated into different categories using the following:
 Category A (Trial) - Minor scheme or project with minimum impact on network operations and business objectives.
 Category B (Trial) - Medium scheme or project which will not have any adverse impact on network operations and Agency business objectives but will require co-ordination with regional Traffic Operations team.
 Category C (Trial) - Most significant schemes and projects with high political sensitivity, press interest, EOC resource requirements or impact on Agency objectives, including safety and journey reliability targets.
 The final decision on the category rests with the National Operations Group.

Select a Pilot or Trial Category:

Category B - Trial

The Project Sponsor should advise NOG of any substantial changes to the specification following authorisation to initiate the pilot or trial.

Actions to follow:

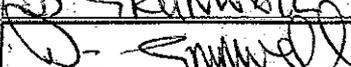
Forward to ROB for approval (section 9) and submit to NOG for information

8. Project Sponsor

Name: Alan Apps
 Division: Netserv CoE Centre: 5510 Team: SSR OP IMP
 Signature:  Date: 16/3/10

9. Regional Operations Board

I agree with the choice of the proposed Pilot/Trial Category and approve this trial (Category B only)

Name: D. SKUNWICK
 Signature:  Date: 10/5/10

Additional comments:

10. National Operations Group

I approve/reject the initiation of this Pilot or Trial (delete as appropriate)

Name: Simon Sheldon-Wilson DEREK TURNER
 Signature:  Date: 26/5/10

Additional comments:

The project team understand that this category B trial will be submitted formally to Simon Sheldon-Wilson for approval. This follows the process whereby a category B trial is submitted to ROB for approval and to NOG for information. NOG then designate that it to become a pilot. See guidance note 08 accompanying this form.