NATIONAL HIGHWAYS

Specialist Vehicle & Equipment Conversion Specification

OPERATIONAL TRAFFIC OFFICER VEHICLES

CONTENTS

1. INTRODUCTION

1.1. This document outlines the requirements for the supply and conversion of a 4x4 passenger vehicle, intended to meet all the operational requirements of the National Highways Traffic Officer vehicles fleet (TOV).

1.2. The specific contents of this document as detailed below may not be varied by suppliers without prior written confirmation from National Highways National Fleet Team.

1.3. The base vehicle will be acquired through the Government Crown Commercial Service (CCS) Framework RM6060.

1.4. The Supplier will ensure the Customer is present during all meetings to discuss design specifics, Engineering changes and final sign off.

1.5. The Supplier will be responsible for the provision of all ancillary equipment, including the fitment of all lighting systems, but not parts provided by National Highways for fitment only. These parts are shown in Appendix 1

1.6. Suppliers are required to ensure that technical assistance is made available in the public domain so that any 3rd party working on manufacturer's vehicles has access to purchase subscriptions for technical information such as Workshop Manuals, Electrical Diagrams, Technical Bulletins, and Diagnostic Release Notes.

2. DEFINITIONS

2.1. A list of definitions referenced throughout this document can be found below;

Customer
National Highways Limited.

Supplier
Appointed supplier responsible for, supply and delivery of the base vehicle for traffic officer use by National Highways Limited.

Convertor
Appointed supplier responsible for conversion and delivery of the base vehicle to National Highways Limited.

Operator
National Highways Limited.

Traffic Officer Vehicle (TOV)
A fully functional traffic officer vehicle supplied for operational use by National Highways Limited.

National Highways National Fleet Team
The customers team responsible for the delivery and management of traffic officer vehicles on behalf of National Highways Limited.

Customers Communication Equipment Supplier
Agent working on behalf of National Highways Company Limited who will manage its radio communication requirements and work with the Supplier on the installation and testing of that equipment.

Base vehicle
The vehicle supplied prior to being converted to a fully functional traffic officer vehicle for National Highways Limited.

3. BASE VEHICLE REQUIREMENTS

SMMT Segment	**Dual Purpose – heavy duty**
Type	Vehicle with 4-wheel drive capability
Body Style	Vehicle must seat via two body doors on each side of the vehicle, With access to the cargo area via a side opening rear door or split tailgate/fully opening rear door.
Fuel Type	All considered dependent upon whole life cost comparison
Fuel Capacity	>40 litres
Transmission & Gearbox	Automatic gearbox. Permanent 4-wheel drive system featuring front/rear split and lockable differentials; OR A variable 4-wheel drive system featuring high/low range abilities with front/rear split and lockable differentials.
Minimum Payload	600kgs
Minimum Towing Capacity	>2300kgs (Un-braked min 750kgs)
Minimum Ground Clearance	200mm
Transverse Tilt Angle	Min 35°
Minimum Wade Height	400mm
Specification	Radio/CD with radio codes; Bluetooth capability for all mobile telephone/ tablet configurations; PAS, ABS as a minimum Fully electronically adjustable driver's seat with lumber support; Remote central double locking controlled by key, card or both; Alarm and immobiliser system Category 2 Thatcham alarm system (or equivalent), Rubber floor mats front and rear, Manufacturer supplied air conditioning and/or climate control; Matching full size or space saver type spare wheel. Automatic dimmable rear-view mirror
Maximum CO2 emissions	50g/km
Colour	White (or vehicle wrapped as a minimum).
VED	VED to be included, with cost identified
Operational Extras.	Fitted with either EC type approved (Directive 94/20/EC) combined coupling to bar, with towing ball and drop pin, single electrics **OR** swan neck arrangement with single electrics and a minimum 'D' rating of 15.8kN (and a tow ball minimum 'D' rating of 17kN (standard))

Please note the vehicle offered must be able to accommodate the listed optional extras.	"Run Lock". (**Dependent upon vehicle fuel type**) a vehicle electronic interface system (Canbus or equivalent) must be capable of operating a device to allow vehicle to be left in "park" mode with the engine running and ignition keys removed. Any attempt to drive the vehicle away would result in the engine cutting out. For alternative fuel vehicles a solution to address the Run Lock demand will be required to enable the vehicle to function to the that of an ICE equivalent. Electronic Cruise Control Electric front windows and rear Satellite navigation system Fully functioning steering wheel Reversing light fitted as standard High intensity fog lights fitted as standard Side impact protection and head restraints for all seats. Reversing sensors and camera. Factory fitted with 'Bluetooth' mobile telephone facility which can be used for any type of handset. Vehicle is to be supplied with tinted glass, the glass in the window of the rear door and quarter shall not be of the darkened 'privacy type' and any tint applied must allow no more than a 30% light reduction
Rear boot area	To have typical internal rear space with the following approximate dimensions: Width between wheel arches – 1050mm; Depth from (top of) rear seat to rear door – 900mm; Height from floor to top of rear seat – 700mm; Height from floor to roof – 1000mm.
Door locking	Automatic door locking systems with the ability to be disabled for operational needs. This will include doors that that are designed to automatically lock in the event of the vehicle being left unlocked, and vehicle doors that are designed to automatically lock when the vehicle reaches a certain speed.
Rear cargo door	Rear cargo area door must have a facility to be secured in an open arrangement. Rear door / tailgate to have an external handle or button release mechanism on the outside of the vehicle.

4. QUALITY, SUPPORT & FITTING REQUIREMENTS

4.1. All parts to be used in the conversion will be new and to original equipment manufacturers (OEM) standards, except for items being given a second life; such items will be confirmed by the Customer at a later date.

4.2. The Supplier shall be entirely responsible for delivering a fit for purpose and defect free vehicle to the Customer.

4.3. All work practises and installation methods shall be in line with Crown Commercial Service Framework standards.

4.4. The Supplier shall cover all works forming part of this conversion with a 3-year warranty; parts and labour during year 1 and parts on an exchange basis in years 2 and 3. The warranty period shall not commence until the vehicle is delivered and accepted as fit for normal service.

4.5. The Supplier shall attend all incidents whereby a TOV is off the road due to a conversion related defect, within 24 hours of notification (or fund a third-party agent who is competent to provide that service).

4.6. The Customer must be kept informed of all such activities and outcomes.

4.7. The Supplier will hold a European Quality accreditation such as EN29000, ISO 9000 series or BS 5750. Proof of this must be provided with any bid proposal for this conversion.

4.8. No modifications shall be carried out by the Supplier or any of its sub-contractors which could adversely affect the original vehicle safety ratings or type approval.

4.9. No modifications shall be carried out by the Supplier or any of its sub-contractors which could adversely affect or invalidate the vehicle manufacturer's warranty.

4.10. All additional wiring will be installed to maintain the original manufacturer's warranty and not have any adverse effect on the vehicle electronic systems. The wiring and positioning of components shall be consistent across all vehicles in any production batch, and furthermore across separate batches of otherwise similar vehicles. All wires must be clearly identifiable against a wiring diagram, either by permanently affixed labels/tabs at each end of the connection loom/cable run or by distinct colour coding.

Connectors must be of the highest standard and must be of a permanent nature.

4.11. Component positioning, especially around dashboard and seating ergonomics will be paramount and subject to consultation with the Customer.

4.12. To facilitate the use by either dual or single crew occupancy, each TOV will have the light bar controller, variable message controller and airwave facia components mounted in the upper centre of the dashboard. This fitting will be undertaken to consider the dashboard ergonomics' and shall not obstruct or interfere with the operation of the vehicle equipment or dashboard airbag deployment zones.

4.13. All equipment fitted as part of the TOV conversion shall not obstruct or interfere with the operation of any of the essential vehicle equipment or controls, this is inclusive of airbag deployment zones.

5. MANUALS & DOCUMENTATION

5.1. The Supplier shall create a Specialist Equipment Installation Procedure (SEIP) manual and submit it to the Customer for approval.

5.2. A draft will be provided to the Customer by the Supplier prior to build commencement and the full production version of the SEIP after the completion, review and sign off the first of any new vehicle type build. Final versions are to be supplied prior to the completion of the batch of vehicles with clear index of any changes made by batch of vehicles if relevant.

5.3. The SEIP shall detail the make, model, and size or capacity etc of all Specialist Equipment, and the installation method, location, and fixing of the equipment into the vehicle, wiring diagrams and fuse type and ratings to ensure consistency of the conversion. No changes to build specification may then be made by the Supplier without written authority from the Customer.

5.4. The Supplier shall provide the following documents;

5.5. Full production version SEIP detailing fleet numbers within this build batch (from – to). 1 off hardcopy submitted to the National Highways National Fleet Team. A further electronic indexed PDF document should be made available showing the following;

- Position of all additional fixed components and method of installation
- Function of each component, including relationship to other components
- Fault diagnosis guide
- Wiring diagrams (schematic acceptable) showing:
- Colours / ID markings
- Connector types
- Current loading
- Fuse ratings (where applicable) and location
- Livery guides
- Photographs showing interior and exterior images to the front, rear and side and dashboard / cabin area showing all major component fittings.

5.6. The Conversion User Guide is to be provided by the Supplier with every vehicle in an A5 format, capable of being incorporated into the manufacturers' issued handbook. This guide must provide simple instruction, including illustrations on the use of all controls within the vehicle and guidance in the event of an emergency system failure. This guide must be printed in a durable format and capable of being replaced if required.

5.7. A build quality control sheet must be sent to the Customer prior to vehicle delivery.

5.8. A final delivery inspection document to be used to confirm compliance with specifications and functional testing and circulate as indicated on the document. To be signed on receipt of vehicle by the Customer.

6. VEHICLE DELIVERY

6.1. The Supplier is to ensure that all vehicles are delivered complete with the User Guide to a delivery address provided by the National Highways National Fleet Team.

6.2. The Supplier shall ensure that all vehicle manufacturer pre-delivery inspections, supply and fitting of number plates are carried out on all vehicles provided. Including all handbooks, service log book (provided and correctly stamped by the supplying dealer).

6.3. The Supplier must notify National Highways at least 2 weeks prior to intended delivery that the vehicle will be ready.

6.4. The Supplier shall ensure that all vehicles are delivered to a high standard of cleanliness (i.e. clean, polished and smear-free) when delivered to National Highways and must meet the following requirements;

- Minimum of 2 gallons of fuel.
- A spare set of keys.
- Fit for purpose and without defects.

6.5. The Supplier shall ensure a professional handover of all vehicles delivered to National Highways and meet's the employer's duty of care, in relation to the operation of the vehicle, as follows:

- A full explanation of the controls and features of the vehicle.
- A Signed Delivery sheet including checks and confirmation that operating instructions have been given to National Highways.
- An A5 size simple User Guide included within the Traffic Officer Vehicle log book.

6.6. The Supplier shall deliver the vehicle to an address as agreed by the nominated National Highways National Fleet Team. A delivery window of 4 hours is to be provided to National Highways. Any delivery outside of the pre-agreed window must be communicated at the earliest opportunity. National Highways will confirm a contact point, telephone number and delivery address no later than 2 weeks before delivery.

ANNEXES

7. ANNEX A – Radio Communications

7.1. National Highways prime communication supplier is Capita. The Supplier will work with Capita and their assigned technicians to ensure the communication equipment is fitted within the conversion build schedule. The Supplier is required to install various elements of the Capita kit; these are detailed in Appendix 1.

7.2. Capita will issue a Preferred Vehicle Installation Document (PVID) for each vehicle type. Where the vehicle is a 'first of type' for the National Highways conversion, the Suppliers must make suitable resources and staff available to work with Capita to engineer a solution for that vehicle type and for Capita to produce their PVID which must then be adhered to by the Supplier, on all subsequent builds for that vehicle type.

7.2.1. The wiring loom which forms part of the Capita installation kit shall be made available free of charge to the Supplier, who shall fit it to the vehicle as part of the conversion.

7.2.2. The Supplier shall liaise with Capita to provide their Airwave technician with access to the vehicle at reasonable advanced notice at the Supplier premises, for a period of up to 8 hours, to install the following Customer Specialist Equipment*.

- SRM/SRG Sepura unit (comes complete with transceiver, display head & pivot hinge, transceiver mounting plate & 12v power cable)
- 5m data cable
- PTT / microphone kit with flexi stalk
- Low profile Speaker unit
- Fist microphone or secondary PTT
- GPS/Tetra Kombi antenna

***Please read Appendix 1 which may amend certain items of the above list – Appendix 1 takes precedence**

7.2.3. After installation and testing of an Airwave radio the Capita Airwave technician will certify the installation as fit for purpose.

7.2.4. The certification will be carried out by the Capita Airwave technician using specialist radio module for that purpose that will be removed on completion of the test.

7.2.5. The Customer (end user) will fit the vehicle's operational radio module after vehicle delivery.

7.2.6. When any legacy vehicle is returned for de-commissioning the Supplier shall remove the Capita Equipment and this will be made available to National Highways as part of the decommissioning process documented above.

As the Airwave Radio service is a secure communications network the radio module must be able to be easily removed when the vehicles are taken out of service. The radio module must be secured to the equipment backboard using easily removable fixings, i.e. wing nuts. Self-tappers or speed clip fixings are not permitted.

8. ANNEX B – Lighting Systems

8.1. All auxiliary lighting systems should meet the requirements below and be compliant with the Road Vehicles Lighting Regulations, including National Highways exemption VS 20/2016 (Appendix 4).

8.2. The main elements of the lighting equipment are as follows;

8.2.1. Roof light bar and 16 button programmable controller
8.2.2. Rear facing Variable Message Sign (VMS) and scrolling menu controller
8.2.3. Additional front, side and rear position lights

Under no circumstances are any deviations to VS 20/2016 permitted.

8.3. Variable Message Sign Specification

8.3.1. A fixed Variable Message Sign is to be located inside the rear door window. The whole of the sign is to be visible without the obstruction of any part of the vehicle, including the wipers when in the parked position. The position of the sign is to be located so that there is clearance with the load carrier and equipment carried. Position and mounting configurations must be approved by the National Highways Vehicles Team.

8.3.2. Alternatively, a motorised flip-down / up sign may be acceptable for some vehicle types where rearward vision is compromised. This must be approved by the National Highways National Fleet Team.

8.3.3. Signed specification as follows:
- Minimum 110mm character height.
- Maximum height of sign when extended to be 140mm (to maintain rear visibility).
- Minimum 9-character width.
- Up to 20 pre-programmed messages.
- Steady amber super bright / high intensity display, with excellent contrast and capable of still being read clearly at up to 50 metres, directly behind the vehicle in bright/direct sunlight.
- Dimming control for night time / poor visibility operation.
- Cab mounted illuminated controller must be able to show current displayed message and menu options simultaneously.

8.4. The approved messages are (to be displayed in this order and in full message):
- DONT PASS
- STAY BACK
- THANK YOU
- Right direction arrow (left to right)
- Left direction arrow (right to left)
- WIDE LOAD
- LONG LOAD
- INCIDENT
- SLOW DOWN
- FOLLOW ME (Dartford Crossing and Hilton park only) ID vehicles during build to determine if required

8.5. Some regional locations may require specialised messages to be programmed. These will be communicated in the event of this requirement.

Table 1

Example Image	Dimensions (mm – L-D-H)
	Panel: 573 x 42 x 140 Controller 105 x 25 x 65 (note, additional space required under controller for loom)
Kit includes a loom from handset to panel – on some vehicles this may need to be extended. The kit does not include mounting brackets.	

8.6. Lighting & Alert Systems Specification

8.6.1. In addition to the standard manufacturers lighting, all vehicles shall have the following items fitted:
- Roof mounted light bar.
- Front mounted amber grille lamps.
- Rear mounted red lamps (maximum of 4).
- Brake light flashers.
- Side mounted amber pin dot lighting
- Light bar control system and controller
- Headlamp flash system.
- Bull horn.

8.6.2. The way in which this equipment is used, the sequence in which the lights flash and the messages that are displayed, are all strictly controlled to ensure that agreed traffic management methods are maintained.

8.6.3. All lighting equipment in this specification must be of an LED type.

8.7. Roof Mounted Light Bar Specification

8.7.1. Front of bar
- Four forward facing amber lights, linked to flash at the same time as the front grille lamps.
- Centre of bar to have a blank space, equivalent to 2 LED's, for possible future upgrade.

8.7.2. Side of Bar

- Two amber lights on each side of the light bar ensuring an overall 360 degrees of visibility.
- Two side facing white alley lights (one on each side).

8.7.3. Rear of Bar

- Two pairs of rear facing amber lights, located at the outer edges of the light bar.
- A maximum of two pair of rear red lights (to alternate in flash pattern with the opposite side ambers), located adjacent to the outer amber lights. The roof reds may be linked to repeat with the diagonally opposing lower mounted rear red lights so long as the requirements of VS 20/2016 are met.
- Centre of bar to have a blank space, equivalent to 2 LED's, for possible future upgrade.

8.8. Light bar Mounting

- Universal removable mounting kit to mount light bar to vehicle.
- Mounted towards rear end of vehicle roof.
- Mounted in a way to minimise obtrusion and damage to the vehicle

8.8.2. Note: The vehicle must have an audible warning if the light bar is in use while the vehicle is being driven.

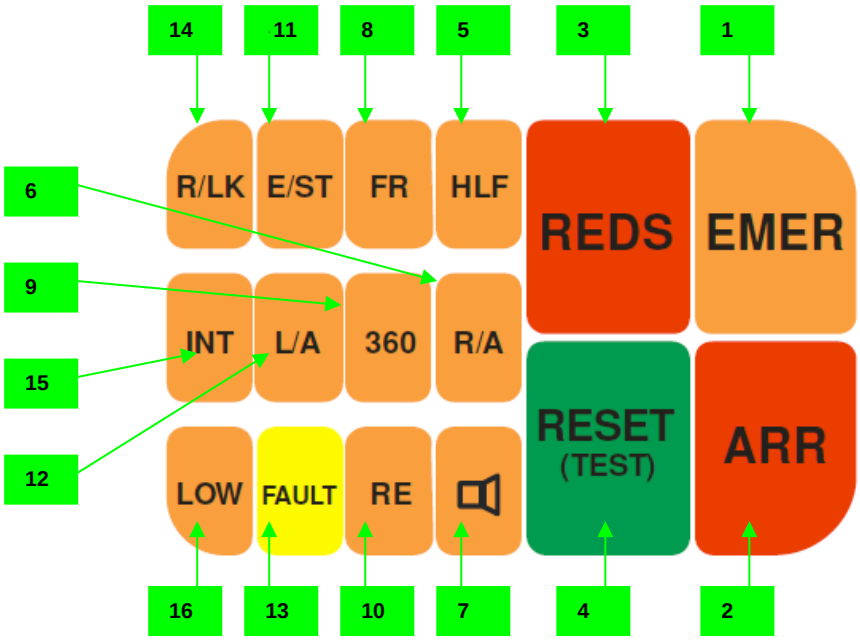
8.9. Light bar Control System and Controller

8.9.1. To be secured to the dashboard to ensure minimal movement. The cradle for the light bar controller is to be positioned as close as possible to the driver at the highest practical position.
(see example right).

8.10. The controller shall provide the following functions:

Table 2

Switch	Legend	Light Bar Function	Additional Function
1	EMERGENCY	All amber lights	All amber lights
2	ARRIVAL	Rear amber and red lights	
3	REDS	All rear red lights	Additional rear reds if tail gate obscures rear light bar visibility
4	RESET / TEST	All Lights off	Walk Test
5	HEAD LAMP FLASH	N/A	Headlamp Flash system
6	RIGHT ALLEY	Right alley light	N/A
7	BULL HORN	N/A	Bull Horn. Emergency mode vehicle horn switch to activate or controller at any time
8	FRONT AMBER	All front amber lights	Front Grille lights
9	360	All amber lights	
10	REAR AMBER	All rear amber lights	
11	EMERGENCY START	N/A	Allow aux battery voltage to main battery for starting
12	LEFT ALLEY	Left alley light	
13	FAULT	Error light if communication error between bar light / controller	
14	RUN LOCK	N/A	To enable run lock
15	INTERIOR	N/A	Interior strip lamp
16	LOW POWER	Low power setting	Low power to all other additional lights



- Automatic dimming facility to reduce controller illumination.
- Permanent back light illumination for low light viewing of legends on all switches (must switch off when vehicle engine is not running).

8.11. Front Mounted Amber Grille Lamps

8.11.1. Two amber lamps are to be fixed to both sides of the vehicle. Lamps are to be linked to forward-facing amber lights in the light bar and mounted at headlamp level. The positioning (offset from each side) should maximise visibility without placing the light units in an exposed area (to avoid damage). Fitment must minimise bodywork intrusion/cutting. (see arrow indicating position below). Type and configurations must be approved by National Highways.

8.12. Rear Mounted Low/High Level Red Lamps

8.12.1. Two additional rear window hideaway red lights linked to alternate with upper level red lights in the light bar may be required to be fitted if enhanced visibility is required. Type and configurations must be approved by National Highways and comply with VS 20/2016.

8.13. Vehicles with lifting tailgate

8.13.1. If vehicle lighting or light bar is obscured when the rear tailgate is open, then 2 ambers and 2 red additional LEDs must be mounted in the tailgate edge (of matching specification to those in the light bar) and shall be automatically operated, controlled by a tilt switch.

8.13.2. To ensure that VS 20/2016 is compliant a maximum of 4 red lights may flash at any one time. If the tailgate is opened and blocks the light bar rear visibility then the inner pair of red lights in the light bar must be disabled, to allow an additional pair of red lights to be fitted on the rear aspect of the vehicle.

8.14. Alternating Headlamp Flash System

8.14.1. To aid the vehicle moving through traffic the vehicle is fitted with an alternating head lamp flash system. The system is operated from the light bar controller with a dedicated module controlling the lights.

8.14.2. To ensure that VS 20/2016 is compliant under no circumstances may any light be flashed other than the headlights.

8.14.3. If flashing headlights are not possible as part of manufacturer specification and/or vehicle conversion, two white LED alternating white strip lights will be acceptable. (see white arrows indicating position below). Type and configurations must be approved by National Highways.

8.15. Windscreen Mounted Amber Pod/Amber Lighting

8.15.1. A single amber light pod unit (of suitable light intensity) can be mounted in the lower centre section of the windscreen. It will operate with a side by side action and will be triggered on activation of the emergency mode on the light bar controller. Any external module control buttons on the unit will be disabled. (See image 1)

8.15.2. The unit must not obstruct the vehicle ventilation system. Type and configurations must be approved by National Highways. The function mode button will be disabled. The windscreen demist function must be checked prior to release to ensure sufficient airflow.

8.15.3. **Alternatively,** additional amber lights can be positioned in the lower grille area and/or wing mirror pods (See image 2).

image 1.

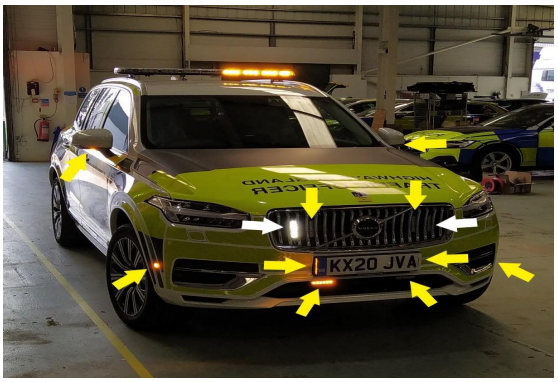


image 2.

8.16. Bullhorn Specification

8.16.1. The Bullhorn will be operated from either the light bar controller at any time or alternatively when emergency mode is activated the vehicle horn control will duplicate this function.

8.16.2. The speaker is to be mounted within the front grille pointing forward (primary solution). If this is not possible due to insufficient space a “flute and pipe” option (secondary solution) is permitted but must match the decibel and tone levels of the primary solution. Type and configurations must be approved by National Highways.

8.16.3. Note. Equipment supplier must be able to provide a written statement which confirms that the bull horn output is not strident.

8.17. Photometric Specification

8.17.1. Specification to meet UN - ECE Regulation 65, which covers warning beacons/lamps, is to be found at - http://www.unece.org/trans/main/wp29/wp29regs61-80.html

8.17.2. This base regulation is to be consolidated with any amendments.

9. ANNEX C – Closed Circuit Television (CCTV)

9.1. To be supplied by the customer and fitted by the appointed suppliers' agent.

10. ANNEX D – Mobile Phone

10.1. Bluetooth when on an active call **must automatically mute the in-vehicle audio equipment.** The in-vehicle stereo speakers shall be used to project the telephone conversation.

ANNEX E – Livery

PLEASE NOTE THAT THE IMAGES USED IN THE TABLES BELOW MAY STATE EITHER HIGHWAYS ENGLAND OR NATIONAL HIGHWAYS. THEY ARE FOR INFORMATION ONLY. ALL LIVERY WILL BE IN NATIONAL HIGHWAYS NAME.

10.2. Livery Specification

10.2.1. A full colour image exists for each of the current vehicles, detailing the approved livery. Any new livery images must be approved by the National Highways National Fleet Team before use.

10.2.2. Vehicles shall comply with the requirements outlined in **Error! Reference source not found.Error! Reference source not found.** below.

10.2.3. Below is an example of the current approved livery drawings.

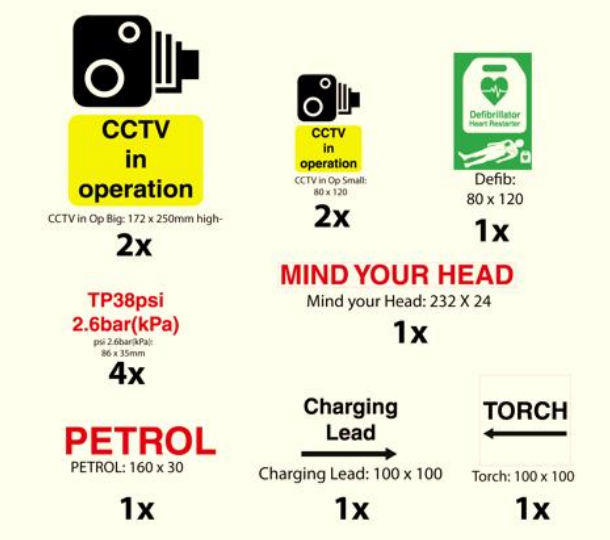


Table 3

Images	Comments
	The bonnet to be fully covered in 40% fluorescent yellow vinyl material and 60% matt black, so far as vehicle contours permit. “National Highways Traffic Officer” lettering, 100 mm high, in reverse script, Helvetica font, on front of bonnet in blue glass bead material. Colour to be Pantone® 287 (HA Blue).

	Where width permits (minimum 25 mm width to be used), fluorescent yellow vinyl strips to be applied to engine grille, as vehicle configuration permits.
	” A” pillars to have 50 mm (depending upon width available) white retro-reflective high-grade material applied. All remaining pillars and the roof line above the pillars, to have 50 mm (depending upon width available) yellow retro-reflective high-grade material applied.
	Battenberg in alternating black reflective vinyl and fluorescent yellow retro reflective high-grade material. Battenberg horizontal width is to be 600mm or greater possible. Vertical height is to be approximately 300 mm or 450 mm depending upon Vehicle type, excluding the lowest row.

	Uppermost fluorescent yellow Battenberg block on front doors to contain the National Highways logo, with the words “TRAFFIC OFFICER” below in Transport Heavy font. Logo and text to be in black reflective vinyl.
	“TRAFFIC OFFICER” wording in white non-reflective vinyl, 80 mm high Transport Heavy font, and “www.nationalhighways.co.uk” in 40mm high Transport Heavy 22.5mm lowercase font to be placed centrally on rear side windows. Fixing of the wording should preferably be on the inside of the windows.
	Tyre pressures above all 4-wheel arches, bar and psi settings at gross vehicle weight

Alternate orange and yellow diagonal stripes in fluorescent retro-reflective (dual purpose) high grade material, minimum 150 mm wide at 60˚. Chevron scheme to point 'Up'.

Any vehicle fittings should be cut around. Where practicable, the top half of the rear of the vehicle should be outlined in yellow retro-reflective high-grade material, a minimum 25 mm wide around door pillars (Pillar D, rear facing) and 50 mm wide around top of rear door edge.

If the spare wheel is removed, the rear door / tailgate shall have livery installed as completely as possible giving due regard to the contours of the vehicle panels.

If the spare wheel is to remain in place, it must be fitted with a cover that is able to be fitted with livery (metal or plastic). Any cover must be secured with quick release fittings, to allow the removal of the cover without tools.

	"TRAFFIC OFFICER" wording in red retro-reflective high-grade material, minimum 60 mm high in Transport Heavy font to be located on yellow strip on rear of vehicle.
	Internal surfaces and door shuts within the rear boot area to be marked in yellow retro-reflective high-grade material, 50 mm wide where appropriate (i.e. rear facing vertical surfaces of equipment box). 50 mm (or 25 mm depending upon width available and curvature of panels), yellow retro-reflective high-grade material, vehicle edging to fit inside doors as space permits.

The outer edges of the open doors, rear door / tailgate and the section across the top of the open door / tailgate to be marked in yellow retro- reflective high-grade material, 50 mm wide or as a minimum, 25 mm wide.

Where the rear door/tailgate is of the horizontally split type (i.e. top half opens, and bottom half opens down), both visible edges when opened to be marked in yellow retro-reflective high-grade material, 50 mm wide or as a minimum, 25 mm wide.

No Smoking Sticker should be fitted in a visible location within the vehicle. (location subject to agreement with National Fleet Team).

	Fleet number, vehicle dimension and trailer dimension sticker. To be positioned in a visible location within the vehicle.
	CCTV decals to be placed on rear quarters panels and rear screen (bottom right) Automated external defibrillator (AED) decal to be placed on rear screen (bottom left) Neither should interfere with rear wiper operation.

10.3. General Livery Comments

10.3.1. Battenberg Design

- The Battenberg design shall incorporate the following:
- Horizontal length – minimum 600 mm (except front and rear panels).
- Vertical height – minimum 300 mm (except front and rear panels).
- Pattern design starts at the centre of the vehicle with a black reflective vinyl panel (Panel A) and be extend horizontally to the front and rear of the vehicle using an alternating black and yellow retro reflective material along the side of the vehicle.

- The pattern extends downwards starting with a yellow retro reflective panel vertically below Panel A. This extends horizontally to the front and rear of the vehicle. The lowest row is sized to fill the side of the vehicle below the original row of panels.
- Recommended number of panels for top row is seven.
- Both end panels must end in fluorescent yellow and may be less than 600mm long, but ideally not less than 400mm long.

10.3.2. Vinyl Material

The following forms a recommendation for the minimum level of performance of livery films that would be acceptable. The livery scheme should not fade or diminish during a typical life span, and all livery shall be warrantied against this over a typical three-year vehicle lifespan. This will not include irregular damages.

10.3.3. General Product Information

Table 4

ITEM	REQUIREMENT(S)
Material thickness	Preferably less than 1.7mm
Orientation requirements	As per manufacturer's instructions
Applicable automatic cutting methods	Die, plotter or manually cut-able using laser/knife
Life expectancy	Minimum 3 years
Warranty period	Minimum 3 years
Temperature range	-25°C to 50°C

10.3.4. Coefficient of Retro Reflection (R_A) Minimum Values

Table 5

Observation Angle	Entrance Angle	R_A				
		Fl. Yellow (Green)	Fl. Orange	Blue	White	Red
0.20°	5°	300	160	25	350	60

	30°	150	80	12	150	25
	45°	33	18	3	40	7
33°	5°	80	80	10	150	25
	30°	60	50	4	60	10
	45°	16	20	2	30	5
0.50°	5°	50	45	7	110	20
	30°	20	20	3	60	10
	45°	9	8	1.3	20	3.6
1.00°	5°	8	8	1	9	2.5
	30°	6	4	0.75	6	1
	45°	2	2	-	3	-

Coefficient of retro reflection, RA, is a measure of the amount of light radiation retro reflected from a surface relative to the amount of light radiation incident upon the surface, per unit area. Units are candelas per lux per square metre, cd. lx−1.m $^{-2}$. Further details are available from CIE publication 54.2 – 2001.

Note: These values are similar to those quoted in BS873: 1983 and ASTM D 4956 – 01a.

10.3.5. **Maximum Permissible Retro Reflectivity Degradation**

Table 6

Performance Degradation	Fl. Yellow (Green)	Fl. Orange	Blue	White	Red
Acceptable maximum	50%	20%	20%	20%	20%
Degradation period (years)	3	3	3	3	3

Note: these values are per ISO 4892-1:1994 and ISO 4892-2:1994.

10.3.6. **Day-time and Night-time Chromaticity**

Table 7

Daytime Chromaticity	CIE D65 Illuminant							
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y

Fl. Yellow (Green)	0.375	0.620	0.460	0.532	0.398	0.450	0.350	0.508
Fl. Orange	0.506	0.404	0.570	0.429	0.655	0.345	0.560	0.340
Blue	0.065	0.216	0.190	0.255	0.245	0.210	0.144	0.030
White	0.285	0.325	0.335	0.375	0.355	0.355	0.305	0.305
Red	0.550	0.358	0.640	0.365	0.735	0.265	0.660	0.233
Note: These values are similar to those quoted in BS 873: 1983 and ASTM D 4956-01a								

10.3.7. **Fluorescent and Non-Fluorescent Luminance Factor**

Table 8

Fluorescent Materials	Luminance Factor (min)		
	CIE D65		CIE D150
	Total	Fluorescent	Total
F. Yellow (Green)	30	15	40
Fl. Orange	15	7	15
Blue	0.7	n/a	n/a
White	17	n/a	n/a
Red	0.5	n/a	n/a

10.3.8. **Standards Compliance**

Table 9

Impact Resistance	ASTM D4956 – 01a: 6:10 or ASTM D2794 –93
Shrinkage	ASTM D4956 – 01a: 6.6

Flexibility	ASTM D4956 – 01a: 6.7
Chemical / solvent resistance	BS 873: Part 1:1983 section 12 (solvent wipe test) **Chemicals** – at minimum, should be resistant to diesel, petrol and LPG that can occur during refuelling. **Solvents** – at minimum, should be resistant to white spirit, turpentine, kerosene and cleaning solutions likely to be used.

10.3.9. **Power Washing**

The film, as applied to the vehicle and conditioned as necessary, shall withstand washing during routine maintenance under the conditions specified below;

Table 10	
Maximum fluid temperature	38°C or lower
Minimum incident angle of spray axis	15° or less to perpendicular of surface. I.e. as near to 90° (right angle) with surface that is being cleaned, as possible.
Nozzle distance from surface	1.2m of further. Any closer risks damaging the livery edge seal
Nozzle pressure	5.5 bar / 80psi or less.
Spray fan pattern required	As per manufacturer's instructions. I.e. direct jets of water should be avoided. Water should be 'sprayed' out if possible.

When time permits, vehicles will be hand washed with soapy water, using a soft sponge.

10.4. Notes

10.4.1. These values should be minimum performance guidelines for livery film materials.

10.4.2. If specific films are resistant to cleaning at a higher temperature, incident angle or pressure, or at a shorter distance between the nozzle and the film surface, this may be superior performance. All retro reflective material shall be of the highest available grade, unless stated otherwise.

10.4.3. Livery film shall not be folded over the edges and cut-outs of vehicle panels, but instead should be cut short of them. It is recommended that a clear fuel-resistant film is fitted over the fuel filler area; reference should be made to the manufacturer's instructions as this may not be necessary.

10.4.4. All open panel prismatic material shall be edge sealed to prevent the ingress of water and dirt. (Reference should however be made to the manufacturer's instructions as some livery materials do not required edge sealing).

10.4.5. All panels shall be cut in the same orientation to maximise reflectivity and colour.

10.4.6. A livery guide is to be provided within each vehicles User Guide (as referenced in 6.2 of this document), an electronic version is to be provided to the Customer and the Customers Agent, the guide is to detail reorder codes.

10.4.7. The Customers Agent is measured on vehicle availability, therefore Livery suppliers are to provide a fast turnaround time to minimise VOR (vehicle off road) time. Small batches ordered prior to midday are to be dispatched same working day.

11. ANNEX F – Vehicle Internal Storage System

11.1. Vehicles shall comply with the following requirements;

11.1.1. Provision of a Storage System to store Customer Works Equipment as detailed in Appendix 2, using a securely mounted National Highways Traffic Officer Vehicle approved storage layout that will enable the Customer Works Equipment to be easily accessible, and where possible will meet the current standard equipment layout.

11.1.2. Sliding shelving will have low friction high durability runners and positive locking devices that are easy to use with a gloved hand. Maximised slide out capability is required to ensure ease of use and to minimise manual handling risks.

11.1.3. See-through mesh grille bulkhead capable of preventing equipment from entering the saloon in the event of an accident.

11.1.4. Manufacturers lashing points and other protrusions to be removed (these are to be retained for re-fitment during decommissioning) to prevent damage to the Customer Works Equipment. Similarly, the Storage System will be free from sharp edges which might damage equipment or users.

11.1.5. Where possible ‘diamond grade’ (or similar) reflective material in yellow / red will be applied to any rear facing surface forming part of the Storage System which is capable of being so covered.

11.1.6. Vehicles must be positively checked so that each vehicle's axle and GVW limits are not exceeded when the vehicle is modified to meet this specification, with a full complement of a driver and 3 passengers (90kgs per person) where applicable, including all equipment carried in the rear cargo area.

11.1.7. A notional allowance of 15kgs may be estimated for the weight of the radio installation, equally divided between axles.

11.1.8. Weighbridge record data must be provided to the Customers Agent and National Highways by the Supplier, on completion of the first prototype vehicle.

11.1.9. Customer works equipment detailed in Appendix 2, excluding the bulkhead and storage system, weighs approximately 170kgs.

11.1.10. A sample works equipment kit will be provided by National Highways to the Supplier to enable development of the racking solution.

12. ANNEX G – Auxiliary Equipment

12.1. Overview

12.1.1. This specification calls for a number of other detailed enhancements or modifications to the vehicle to fully meet the operational requirements of the Traffic Officer. These are divided into two categories; Interior & Exterior.

12.2. Interior Equipment

12.2.1. Run-Lock

- Equipped with a “Run-lock” type of facility **on ICE vehicles**, to safely allow the engine to continue running while the vehicle is unattended; it must be possible to remove the key (ignition lock or keyless systems) with the engine running.
- **PHEV/EV vehicles will be equipped with an ancillary battery to support such activity (if existing power sources are not sufficient).**
- The engine must cut out immediately if any attempt is made to move the vehicle without the vehicle key being present, including with ‘keyless ignition’ type systems.
- On keyless systems, the engine may continue to run once Run-lock is engaged but the engine must cut-out if the Traffic Officer with the key is not in the immediate vicinity of the vehicle when an attempt is made to drive it.
- The system must be simple to reset when the key is present.

12.2.2. Disable standard vehicle auto-locking

- All automatic door locking systems to be disabled. This includes doors that that are designed to automatically lock in the event of the vehicle being left unlocked and vehicle doors that are designed to automatically lock when the vehicle reaches a certain speed.

12.2.3. Auto stop / start

- Disable stop / start function if possible.

12.2.4. Extra interior mirror

- Additional shatter proof suction mounted rear view mirror for use by the front passenger is to be provided and fitted.

12.2.5. Height warning/Info sign

- Conspicuous labelling in the front of the saloon, identifying the vehicle’s overall height (including light bar) and width, Incident Screen Trailer height and width, and its roof ID number is to be fitted.

12.2.6. Safety Hammer

- Two emergency escape hammers / seatbelt cutters, with hardened stainless-steel tip and blade, for cutting seat belts to be securely fitted in the front of the vehicle; one on the driver's side and one on the passenger side. Must include a glass breaking tip.

12.2.7. Interior lamp

- Single, centrally mounted LED light unit, as a map-reading light above the front seats. Controlled from the lighting system controller.
- Single, centrally mounted LED light unit, mounted above the equipment storage area. To illuminate automatically on opening of the rear door.

12.2.8. Additional 12v power supply (add to any standard vehicle fittings to achieve this requirement);

- Four auxiliary 12-volt supply sockets in the vehicle. The location of the sockets are as follows;

  12.2.8..1. 1 x front driver / passenger area.
  12.2.8..2. 1 x permanently wired USB C charger in centre console.
  12.2.8..3. 1 x rear passenger area
  12.2.8..4. 1 x rear boot area

12.2.9. 3rd row of seats removed (if fitted)

- All seat and associated components are to be marked with the source vehicle information and stored by the Supplier for re-fitting on decommissioning.

12.2.10. Search light and charger

- A free issue hand-held rechargeable heavy-duty LED torch is to be supplier by National Highways and must be fitted into a suitable location inside the vehicle passenger area. It must be easily accessible by the vehicles crew. Fitment is to be a damage free installation allowing the removal of manufactures floor mats with ease for the cleaning of the vehicle, to include 12v power supply from auxiliary battery for charging.

12.3. Exterior Equipment

12.3.1. Tow Bar

- Fitted with an EC type approved (Directive 94/20/EC) dual coupling tow bar (with towing ball and drop pin and twin electrics) **OR** swan neck arrangement (with single electric 13 pin). If a drop pin arrangement is the preferred option the tow bar ball is to be set at between 44 to 46cms height, facilitating
- 70kg Incident Screen Trailer nose weight. Final supply and fit subject to agreement with the National Fleet Team.

12.3.1..1. Minimum D rating of 15.8kN and tow ball rated to 17.0kN

- The 2nd electric kit (12s) is to be modified for the flashing of trailer beacons & LED's;

12.3.1..1. Pin 2 – Positive feed from emergency mode output (4amp load)
12.3.1..2. Pin 7 – Earth connection
12.3.1..3. Pin 4 + 5 to be wired to telematics system (Incident Screen Trailer sensing).

12.3.2. Non-locking wheels nuts

- If the vehicle is supplied as standard with alloy wheels with locking wheel nuts, these nuts shall be replaced with ordinary non-locking wheel nuts. Removed locking nuts must be retained by the Supplier for refitting at the decommissioning stage.

12.3.3. Wide angle mirrors attached to door mirrors

- Wide angle door mirrors are to be fitted to each of the exterior door mirrors.

12.3.4. Spare wheel – fitment and access (if fitted)

- Spare wheel and tyre must not obstruct the access of the Traffic Officer equipment.
- Provision must be made for access to the spare wheel release mechanism if it is obstructed by any equipment added as part of the conversion.
- The spare wheel may be removed if required, to accommodate the vehicle conversion.

12.3.5. Power Supply and Auxiliary battery (including Emergency start function)

- The vehicle power supply shall include a non-surge/stall interference system.
- Capable of supplying sufficient power to all electrical equipment as defined in this specification without affecting the safe operation of the vehicle.
- Capable of supplying sufficient power to all electrical equipment as defined in this specification when the ignition is turned off, for at least one hour. The vehicle shall be capable of then restarting again with the headlamps on (provision may be made for an 'Emergency Start' auxiliary control on the lighting system controller.

Note

If the proposed vehicle solution requires an auxiliary battery, the Supplier shall state this clearly in its proposal, and consider the weight of the battery and its effect on GVW of the vehicle when the full complement of Traffic Officer equipment is carried.

13. ANNEX H – Telematics System

13.1. A telematics system of the same specification as fitted to current TOVs, and supplied by Masternaut, will be fitted as part of the vehicle conversion and wired to the following components;

13.1.1. Vehicle Can-bus
13.1.2. Amber light input from light bar
13.1.3. Trailer auxiliary socket
13.1.4. A Test certificate to be provided by the Supplier to confirm correct operation.

13.2. Masternaut can be contacted via the National Fleet Team.

APPENDICES

14. Appendix 1 – Communications Equipment and Installation Responsibilities

Table 11

		Supplier		Capita		Exeros	
	Description	Labour	Parts	Labour	Parts	Labour	Parts
1	Installation backboard	Y	Y				
2	Sepura SRG power cable	Y			Y		
3	Vehicle power cables	Y	Y				
4	Ignition sense cable	Y	Y				
5	Remote control cable 5mtr (data lead)	Y			Y		
6	Speaker cables	Y	Y				
7	Speaker	Y			Y		
8	Fuse box, carriers & fuses	Y	Y				
9	Sepura console dash mount kit bracket (pivot type)	Y			Y		
10	Hands free kit including MIC	Y			Y		
11	Peiker PTT switch	Y			Y		
12	Fist MIC & carrier	Y			Y		
13	Tetra UHF & radio GPS Kombi antenna & lead	Y			Y		
14	Sepura radio console head	Y			Y		
15	Radio (during test only)			Y	Y		

15. Appendix 2 – Customer Works Equipment

15.1. The list below is the current equipment carried within the Traffic Office Vehicle; the stowage solution is to allow storage for all items detailed below. National Highways will provide a sample kit of this equipment for the development of the prototype vehicle build. The sample kit of equipment will be returned to National Highways on completion of the tender.

15.2. Note: Suppliers will not be expected to fit the equipment into the vehicle for delivery unless marked in the relevant field.

Table 12

Equipment Items in Boot	Quantity	Description
Traffic Cone	20	500mm road cones with red base complete with triple reflective sleeves (red/white/red)
INCIDENT SLOW Sign face*	2	**DfT drawing files no. HA26/28/15 Plan No.10 Ref.S2**. Collapsible 900x600 mm (WxH) Class 1 prismatic high visibility reflective material to withstand continuous folding
DIVERT Sign face (610 arrow)*	6	**TSRGD Drawing No. 610** Collapsible 600x600 mm Class 1 prismatic high visibility reflective face on 900x600mm grey panel. Material to withstand continuous folding – studded directional change option required

NO ENTRY Sign face*	1	**TSRGD Drawing No. 616** Collapsible 600x600 mm Class 1 prismatic high visibility reflective face on 900x600mm grey panel. Material to withstand continuous folding
Road Danger Lamps	10	Amber sequential flashing back-lit hi-intensity LED lamps (Battery operated)
Load Cell Equipment	1	Consists of load cell unit and visual display unit
Single Tow Strap	1	
Brothers strap	1	
Tow Strap Bag	1	Green
Tow Strap Bag	1	Red
Bow Shackles	4	
Poncho	10	Waterproof plastic, yellow in colour
Crowbar	1	760mm length
Broom	2	Extendable plastic handle
Shovel	1	Plastic
Searchlight and charger	1	Installed by Prime Supplier as part of conversion
First Aid Kit	1	First aid kit for up to 10 persons
Resuscitation Aid	2	Plastic sheeting with one-way valve mouthpiece
15L Chemical Spill Kit	1	12 Absorbent pads, 2 absorbent socks, instructions, 2 disposable bags with ties
Bin Liners	10	0.45m x 0.75m x 1m (opened)
Tape	1 roll	Red/white adhesive floor marking tape. 50mm x 33m
Box of Nitrile Disposable Gloves	1	Comply with EN 420 (mixed sizes)
Multi-Purpose Wipes	1	Pack 200 Multi-Purpose Wipes
Binoculars/Monocular	1	General purpose.
Adult Thermal Foil Blanket	10	
Individual Eye Wash	5	
De-Icer	1	

Hazardous Waste bags	5	
SPAG Sorb	6	10 litre bags of SPAG Sorb
Anemometer	1	
Safe Cutting Tool	1	
Tyre Pressure Gauge	1	
Door Edge Protectors	4	To be fitted where applicable
Battery booster pack	1	
AED Defibrillator	1	
Animals on the Network Kit	1	Subject to need

16. Appendix 3 – National Highways Locations

16.1. Below is a list of all National Highways Regional Control Centres (RCC) and Outstations.

Table 13

Region	Location	Address	Post Code	RCC	Outstation
North West	Rob Lane	Newton Le Willows	WA12 0DR	Y	Y
	Knutsford	Northwich Road, Tabley	WA16 0TG		Y
	Lowhurst	Wreay, Carlisle	CA4 0RH		Y
	Millness	Crooklands, Milnthorpe	LA7 7NR		Y
	Milnrow	Elizabethan Way, Rochdale	OL16 0EJ		Y
	Samlesbury	Preston New Road, Samlesbury, Preston	PR5 0UJ		Y
Yorkshire North East	Calder Park	Wakefield	WF2 7UA	Y	
	Carrville	Barton	DL10 5NH		Y
	Barton	Durham	DH1 1TZ		Y
	Tingley	Leeds	WF3 1SW		Y
	Sprotbrough	South Yorkshire	DN5 7PY		Y
West Midlands	Quinton	1 Ridgeway, Quinton	B32 1AF	Y	Y
	Ansty	Main Road, Ansty, Coventry	CV7 9JA		Y
	Hilton Park	Shareshill	WV11 2AP		Y
	Longbridge	Hilton Park Motorway Compound	CV34 6RB		Y
	Strensham	Strensham Motorway Compound	WR8 9LJ		Y
East Midlands	East Mids RCC	Eric Belfield House	NG8 6PZ	Y	
	Felley	Felley Motorway Compound	NGA5 0AS		Y
	Shepshed	Shepshed Motorway Compound	LE12 9DJ		Y
	Watford Gap	Watford Gap Motorway Compound	NN6 7UZ		Y

East	South Mimms	St. Albans Road	EN6 3PN	Y	Y
	Chieveley	Chieveley HA Depot, Moto Service Area	RG18 9XX		Y
	Dartford	Le Crossing	DA1 5PR		Y
	Heston	Heston National Highways Depot	TW5 9RY		Y
	Milton Common	Milton Common Depot	OX9 2UN		Y
	Toddington	Carillion URS, M1 Motorway Depot	LU5 6HP		Y
	Whittlesford	Whittlesford Motorway Maintenance Depot	CB2 2NL		Y
South West	South West RCC	St Brendan's Court	BS11 9FB	Y	
	Almondsbury	Almondsbury Motorway Maintenance Depot	BS32 4AG		Y
	Chelston	Chelston Motorway Compound	TA21 9PL		Y
	Stanton St Quintin	Stanton St Quintin Motorway Maintenance Compound	SN14 6BD		Y
	Pridhamsleigh	Old Pridhamsleigh Quarry, Buckfastleigh, Devon	TQ11 0JR		Y
South East	South East RCC	Godstone	RH9 8BQ	Y	
	Coldharbour	London Road, Coldharbour	ME20 7SL		Y
	Easton Lane	Winnal, Winchester	SO23 7TY		Y
	Heston	M4 Maintenance Compound, Heston	TW5 9RY		Y
	Weatherhill	Hathersham Close, Smallfield	RH6 9JE		Y

17. Appendix 4 – Road Vehicles Lighting Regulations 1989 – National Highways Exemption VS 20/2016

VCA Midlands Centre
Watling Street
Nuneaton
Warwickshire, CV10 0UA
United Kingdom

Switchboard: +44 (0) 247 632 8421
Direct line: +44 (0) 247 664 ****
Main Fax: +44 (0) 247 632 9276
Email: enquiries@vca.gov.uk
Web: www.dft.gov.uk/vca

Mr. S. Boyle
Team Leader
Service Delivery Operational Support
Highways England
Kestrel House
Calder Park
Durkar
Wakefield
West Yorkshire
WF2 7UA

4th February 2016

Dear Mr. Simon Boyle,

Thank you for your application requesting a renewal of your Vehicle Special Order for authorisation to operate, on roads, vehicles that do not comply with some of the provisions of the Road Vehicles Lighting Regulations 1989, as amended.

I have pleasure in enclosing for your files a Vehicle Special Order No. **VS 20/2016** which will cover movements on the roads for the vehicles operated by Highway England Traffic Officers. Please check and make sure that your Order contains the right details and that you understand the conditions attached to it. If any changes occur that will affect your Orders, these must be notified to me as soon as possible.

Vehicle Special Order VS 53/2013 is hereby revoked.

I wish to draw your attention to the expiry date of the Order, which is **3 February 2019**. It will then be your responsibility, if you wish me to renew your Order, to re-apply at least a month before it expires.

This Vehicle Special Order permits Highways England Traffic Officers to operate the vehicles whilst consideration is given to including the exemptions provided by the order to be included in Road Vehicle Lighting Regulations 1989.

You must ensure that your vehicles are kept in a fit, serviceable and roadworthy condition at all times. You should also be aware that, if your vehicles fail to comply in any way with the requirements of the Regulations stated above (or the conditions in your Order), your Vehicle Special Order may become invalid and could be revoked.

Yours sincerely,

Michael J Hepworth MBE JP IEng MSOE MIRTE
Senior Legislation Engineer, Mobile 07776 171233, E-mail
michael.hepworth@vca.gov.uk

Order No. VS 20/2016

ROAD TRAFFIC ACT 1988

ORDER OF THE SECRETARY OF STATE UNDER SECTION 44

The Secretary of State for Transport in exercise of his powers under section 44 of the Road Traffic Act 1988 hereby authorises the use on the roads motor vehicles owned and operated by the Highways Agency not withstanding that the said vehicles do not comply in all respects with the requirements of The Road Vehicles Lighting Regulations 1989, as amended, subject to the following conditions:

1. The vehicle shall be operated only by or on behalf of Department of Transport, Highways England, Kestrel House, Calder Park, Durkar, Wakefield, West Yorkshire, WF2 7UA.

2. The vehicles to which this order applies shall be primarily used by accredited Traffic Officers of the Highways England.

3. The vehicles shall comply with all the requirements of The Road Vehicles Lighting Regulations 1989, with the exemption of:

   (a) Regulation 13 in so far as the vehicle may be equipped with up to 4 red flashing lamps. These red lamps may only be used by Highways Agency Traffic Officers Service Vehicles when attending or dealing with any incident that requires the attendance of the vehicles of the Service.

   (b) Regulation 13 (1), in so far as to allow the vehicles to be fitted with lamps, which automatically emit a flashing amber light to the front or rear.

   (c) Regulation 13 (1), in so far as to allow the vehicles to be fitted with headlamps, which automatically emit a flashing light to the front.

This Order shall expire on **3 February 2019**.

Vehicle Special Order VS 52/2013 is hereby revoked.

Page 1 of 2

Order No. VS 20/2016

Signed by the authority of the Secretary of State 4 February 2016.

Michael J Hepworth MBE JP IEng MSOE MIRTE

Vehicle Certification Agency