

Part B: Hazard Elimination and Management Schedule

Project Title: Managed Motorways – All Lanes Running (MM-ALR)

Job No.: 1039092

Design Discipline: IAN161/12

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This assessment is based on the illustrative drawing of Managed Motorways All Lane Running contained in IAN 161/12. The scheme designer must undertake and document the detailed hazard assessment of the scheme specific design proposals in accordance with the requirements of CDM 2007 and other relevant HA standards and guidance.

* **Persons at Risk:** (1) Construction workers (2) Members of the Public (3) Maintenance workers

** **Action by:**
 Co-ordinator – include in the pre-construction health and safety plan / health and safety file
 Principal Contractor – manage risk during the construction phase
 Designer – take into consideration when preparing their designs
 Client – pass information to designers / planning supervisor

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Date Issue Raised	Action Required by: **
INSTALLATION							
I-1	Installation of MS4s, signals and associated equipment and cabling on all cantilever structures and gantries.	Injury to installers or members of public caused by falls from height, objects being dropped or traffic accident	(1) (2)	MM-ALR concept incorporates gantries and cantilevers at a greater spacing than previously utilised (thereby reducing and minimising quantities). Greater use of verge mounted equipment also manages / reduces installation risks. The MM-ALR concept represents a move to carriageway as opposed to lane specific signalling. Generally, the MM-ALR concept incorporates lane specific signalling only at the 'gateway signals and VMS' location and where necessary at intermediate locations. Maximum use will be made of existing gantries. At all other signal locations, verge mounted carriageway signalling is provided It is assumed that MS4s, signals and associated equipment and cabling will be installed onto gantry / cantilever beams on-site, during the carriageway closure provided for installation of the gantry and cantilever structures (maximising pre-installation to minimise length of exposure during on-site installation activities and avoiding the need for on-site activities eg: welding.).	'Normal' risks associated with working at height and within TTM will remain – to be managed by Principal Contractor through Risk Assessments and Method Statements. Refer also to 'MM-ALR Temporary TTM Requirements for Maintenance' document (authored by IBI), regarding standard taper positions and incorporation of this ethos within the installation sequence where applicable.	November 2011	Designer / Coordinator / Principal Contractor

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Date Issue Raised	Action Required by: **
				<p>TTM comprising closure of the lane over which the equipment is being installed plus a “buffer” lane will be required. On slip/link roads a full closure may be required as it may not be possible to provide the required “buffer” lane.</p> <p>The scheme designer is required to consider the access arrangements to all features to minimise / eliminate requirements in this regard.</p>			
I-2	Installation of PTZ CCTV Surveillance cameras	Injury to installers, or members of public caused by falls from height, objects being dropped or traffic incident.	(1) (2)	Pole mounted surveillance CCTV cameras to be specified by scheme designers (in discussion with maintainers) with folding column and wind down mechanism in place of gantry mounted cameras to eliminate the risk of working at height. This allows cameras to be maintained at ground level in the verge, behind safety barrier.	<p>Likelihood will be reduced with mitigation in place</p> <p>Standard risks associated with installing and maintaining roadside infrastructure will remain – to be managed by Principal Contractor through Risk Assessments and Method Statements</p>	November 2011	Designer/ Coordinator / Client / Principal Contractor
I-3	Gaining access & working adjacent to live carriageway	Vehicular impact causing injury or death.	(1) (3)	<p>Any person undertaking work on the motorway should receive appropriate training (Motorway Awareness course, Chapter 8 TTM training) and be able to demonstrate competence in these areas. All site works are to be done with Appropriate TTM or approved variation thereof e.g. IAN 150/11. All TTM is to be installed in accordance with Chapter 8 of the Traffic Signs Manual (TSM). It is recognised that a significant risk is represented by TTM operatives having to cross the carriageway. This can be avoided by the use of mobile lane closures to enable signs to be placed in the central reservation during the construction period. All operatives are to use appropriate PPE for works. All operatives are to given appropriate training and be able to demonstrate competence in this area.</p>	Likelihood will be reduced with mitigation in place, to include use of signs and signals. Appropriate verification and controls will be required. Hazard remains throughout the duration of the installation works – therefore minimising duration of construction activities is also key in the planning of these activities.	November 2011	Principal Contractor

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Date Issue Raised	Action Required by: **
I-4	Earthworks	Slope / ground instability.	(1) (2)	Geotechnical review of the generic design undertaken.	Contractor to propose safe construction sequence and methods.	November 2011	Principal Contractor
I-5	Services (all construction activities)	Damage to underground services - Striking services resulting in disruption and injury.	(1) (2)	Design to account for services known to exist at locations on the site and design out known 'clashes' where they are identified and verified. Contact stats companies for plans of services locations.	Contractor to obtain accurate location of underground services / highway drainage before commencement of construction works and to verify / locate prior to commencement of any construction activity.	November 2011	Principal Contractor
I-6	Installation of equipment at height on existing / new structures	Possible injury through falling, overstretching, dropping of items.	(1) (2) (3)	Maximise pre-assembly / installation of infrastructure prior to site installation to minimise any requirement to use a MEWP. Maximise pre-testing of equipment to eliminate faults following installation (eg: soak testing). Provide appropriate means of edge protection to prevent falls from height. Maximise use of remote monitoring facilities to obviate the need for attendance at site during installation and commissioning phase of the works for fault diagnosis and rectification. (see also I-1 above). The scheme designer is required to consider the access arrangements to all features to minimise / eliminate requirements in this regard.	<p>Possible injury through falling, overstretching, dropping of items.</p> <p>The frequency and likelihood of occurrence will be reduced by the amount of pre-testing and pre-assembly that can be achieved prior to arrival at the site. This therefore needs to be maximised.</p>	November 2011	Designer, Principal Contractor & Co-ordinator
I-7	The handling and removal and hazardous materials (eg. Asbestos)	Interaction of potentially hazardous materials	(1)	Designer to be made aware of contents of Asbestos register from maintaining agent. Ensure the safe removing and handling of hazardous materials. Contractors must carry out their own risk assessments for any unidentified materials that might be encountered.	Contamination due to interacting with materials	November 2011	Designer, Principal contractor & Coordinator
I-8	Drainage works	Deep excavations and confined space working	(1) (2)	<p>On MM-ALR schemes drainage works / interventions are kept to a minimum.</p> <p>Any person undertaking work on the motorway should receive appropriate training (Motorway Awareness course, Chapter 8 TTM training) and be able to demonstrate competence in these areas. Only operatives who are trained and competent (certified) in confined spaces shall access deep excavations to undertake drainage works.</p>	<p>Contractor to propose safe construction sequence and methods.</p> <p>No increase in risk is expected over that which exists in the pre-MM-ALR scenario.</p>	February 2012	Designer, Principal Contractor & Co-ordinator

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Date Issue Raised	Action Required by: **
				All site works are to be done with Appropriate TTM or approved variation thereof e.g. IAN 150/11. All TTM is to be installed in accordance with Chapter 8 of the Traffic Signs Manual (TSM).			
I-9	Removal of ERTs	'Installers' being struck by traffic	(1) (2)	Removal of ERTs will reduce the volume of equipment on the network requiring to be maintained. TTM comprising closure of the lane 1 plus a "buffer" lane will be required – pending a site specific assessment by Designers. Any person undertaking work on the motorway should receive appropriate training (Motorway Awareness course, Chapter 8 TTM training) and be able to demonstrate competence in these areas. All site works are to be undertaken with Appropriate TTM or approved variation thereof e.g. IAN 150/11. All TTM is to be installed in accordance with Chapter 8 of the Traffic Signs Manual (TSM).	Contractor to propose safe construction sequence and methods. No residual risk following removal of all redundant equipment and associated cabling and making good to eliminate any trip hazards.	February 2012	Designer, Principal Contractor & Co-ordinator
I-10	White lining / removal-replacement of road studs	Installers being struck by traffic	(1) (2)	Any person undertaking work on the motorway should receive appropriate training (Motorway Awareness course, Chapter 8 TTM training) and be able to demonstrate competence in these areas. All site works are to be undertaken with Appropriate TTM or approved variation thereof e.g. IAN 150/11. All TTM is to be installed in accordance with Chapter 8 of the Traffic Signs Manual (TSM).	The implementation of an MM-ALR scheme does not include the bringing forward of planned major maintenance, unless directed by the Highways Agency. Where current structures or features are fit for purpose, they must not be replaced for the sole purpose of meeting current standards. Contractor to propose safe construction sequence and methods.	February 2012	Designer, Principal Contractor & Co-ordinator
I-11	Road restraint system	Injury to installers, or members of public caused by falls from height, objects being dropped or traffic incident.	(1) (2)	Where current structures or features are fit for purpose, they must not be replaced for the sole purpose of meeting current standards. Any person undertaking work on the motorway should receive appropriate training (Motorway Awareness course, Chapter 8 TTM training) and be able to demonstrate competence in these areas.	Contractor to propose safe construction sequence and methods.	February 2012	Designer, Principal Contractor & Co-ordinator

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Date Issue Raised	Action Required by: **
				All site works are to be undertaken with Appropriate TTM or approved variation thereof e.g. IAN 150/11. All TTM is to be installed in accordance with Chapter 8 of the Traffic Signs Manual (TSM).			
I-12	Installation of CR signing	Injury to installers, or members of public caused by falls from height, objects being dropped or traffic incident.	(1) (2)	TTM comprising closure of the lane in which the equipment is being installed plus a "buffer" lane will be required. The scheme designer is required to consider the access arrangements to all features to minimise / eliminate requirements in this regard. It is recognised that a significant risk is in operatives having to cross the carriageway – including this feature will eliminate the need to cross the c/way for maintenance purposes.	Inclusion of this feature – to facilitate safe means of access for maintenance – is designed to minimise the need for carriageway crossings by introduction of std taper positions and remotely operated signage. Contractor to propose safe construction sequence and methods.	February 2012	Designer, Principal Contractor & Co-ordinator

MAINTENANCE

With the permanent conversion of the hard shoulder to a running lane, all maintenance activities within a managed motorway scheme must be carried out either from a designated area for maintenance (e.g. ERA or maintenance hard standing), or from a lane closure under TTM. To reduce the impact of lane closures on network performance, the majority of maintenance is expected to be carried out at night, if assessed as safe to do so.

General note – applicable to M-1 to M-25 (below) inclusive:

- Designers should consider the use of longer life and / or low maintenance items and assets where they need to be replaced or installed as part of the scheme. This consideration should include assets that have extended maintenance interventions. Additionally, designers should consider and discuss with the Agency the need to include maintenance works that the Agency or the maintenance provider were scheduling to take place either in advance of or during or shortly after the implementation of the MM-ALR scheme. One such example of this is giving consideration to replacing the central reserve with concrete barrier as this will greatly reduce planned and reactive maintenance requirements.

In the development of MM-ALR, the following principles have been determined as a methodology that is deemed appropriate such that the hazards and risks identified can be either eliminated or mitigated so as to be as low as reasonably practicable,:

- Designers should develop a holistic scheme specific maintenance strategy for all asset types.
- Designers should minimise the number of times TTM has to be installed (through consideration of the removal or relocation of assets, remote fault diagnostics of technology and replacement of assets with longer life alternatives
- Designers should consider providing safe taper positions; use of scheme MS4s for advance signing; and installation of remotely controlled advance signing upstream of the safe taper positions.

It is considered feasible to provide TTM for maintenance access within the MM-ALR concept by incorporation of the following measures at the design stage:

- Standard locations for setting out the “taper” identified 800m downstream from the appropriate sign or signal
- Procedures to use signs and signals as part of the advance signing for roadworks
- Either the installation of permanent remotely controlled signs to provide the required advance signing; or the implementation of appropriate procedures to enable a “rolling road block” to create a safe working area whilst portable advance signs are installed and removed.

M-1	Maintenance access to roadside equipment	<p>Maintenance personnel having to travel distances to roadside equipment not located within ERAs or at Maintenance Hard Standings.</p> <p>Safe means of access to roadside equipment. In the advent of an incident (flying debris, out of control vehicle) limited area to find refuge within.</p>	(3)	<p>Consider provision of safe means of access over longitudinal length of scheme, to all equipment (incl isolated cabinet sites & CCTV cameras). (due to the absence of hard shoulder on MM-ALR schemes. Scheme designer to assess the risks associated providing safe means of access together with the need to provide appropriate protective TTM. Scheme designer to consider the use of adjacent local roads and slip roads in this regard. Designers may also consider provision of MHS where significant evidence of their benefits can be demonstrated.</p>	<p>Increased risk of exposure to maintenance workers due to distances walked – protection afforded by appropriate safety barrier where present. Equipment so located should be minimised. Scheme designer to assess the risks associated providing safe means of access together with the need to provide appropriate protective TTM.</p> <p>Some increased risks associated with roadside equipment will result – to be managed by Principal Contractor through Risk Assessments and Method Statements.</p>	November 2011	Client/Designer/Coordinator/TechMAC/NRTS
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				<p>Maximise removal of redundant equipment to obviate the need for on-going visits for maintenance purposes. Investigate the feasibility of off-site access to sites to obviate the need for provision of safe means of access from the carriageway.</p> <p>Maximise the incorporation of remote fault diagnostic and repair capability in items of equipment to minimise the frequency of visits to the roadside.</p>			
M-2	Maintenance of AMIs, MS4s and associated equipment and cabling on gantries and cantilevers. (including CR TTM signage)	Injury to maintenance operatives or members of public caused by falls from height, objects being dropped or traffic accident	(2) (3)	<p>Use of standard taper positions. TTM comprising closure of the lane over which the equipment is being maintained plus a "buffer" lane will be required. On slip/link roads a full closure may be required as it may not be possible to provide the required "buffer" lane and keep a traffic lane open.</p> <p>The scheme designer is required to consider the access arrangements to all features to minimise / eliminate requirements in this regard.</p>	Normal risks associated with working at height and within TTM will remain – to be managed by TechMAC through Risk Assessments and Method Statements.	November 2011	Designer / Coordinator / Client / TechMAC
M-3	TTM for maintenance activities	Operatives being hit by vehicles	(3)	<p>It is recognised that a significant risk is in operatives having to cross the carriageway</p> <p>During maintenance the pre-placement of remotely operated signs in the central reserve at defined safe taper locations will eliminate this need. (see introduction to this section)</p>	Risks associated with TTM will remain – to be managed by MAC / TechMAC through Risk Assessments and Method Statements.	November 2011	Client/Coordinator / MAC/TechMAC
M-4	Maintenance of ERTs in ERAs / on slip roads / intra-junction	Collision with maintenance vehicle whilst parked in ERA/ on slip road / at intra-junction location caused by public vehicle entering	(3)	Reduction of routine maintenance frequency of ERTs being investigated to reduce risks. Chapter 8 TTM required when site attendance required.	Risks associated with roadside infrastructure will remain – to be managed by Principal Contractor through Risk Assessments and Method Statements	November 2011	Client/Coordinator /TechMAC
M-5	Accessing site for Maintenance	Accessing site when other parties are present.	(3)	<p>Maintenance Team to liaise with the area road space team before commencing any works – in order to secure permission to access.</p> <p>Where possible and safe, liaise with the other parties to share/ gain access to the site</p>	TechMAC and MAC Maintenance Team Managers and H&S Managers to ensure all maintenance activities are conducted in a safe manner. Use form of approved / agreed permit to access system where in place.	November 2011	Principal Contractor/TechMAC/NRTS / MAC

M-6	Maintenance of PTZ CCTV surveillance cameras	Injury to maintenance workers caused by falls from height, objects being dropped or being hit by cars when maintaining cameras	(3)	Pole mounted surveillance CCTV cameras to be specified by scheme designers (in discussion with maintainers) with folding column and wind down mechanism in place of gantry mounted cameras to eliminate the risk of working at height. This allows cameras to be maintained at ground level in the verge, behind safety barrier. CCTV mounted in the verge will usually require TTM to enable access to be obtained.	Maintenance work carried out at night using appropriate TTM	November 2011	TechMAC
M-7	Maintenance activities	Injury from electrocution.	(3)	Only competent trained operatives are to carry out maintenance works. Compliance with BS7671 Requirement for Electrical Installations 17th Edition is required.	TechMAC Maintenance Team Manager and TechMAC H&S Manager to ensure all maintenance activities are conducted in a safe manner	November 2011	TechMAC Maintenance Manager and TechMAC H&S Manager.
M-8	Maintenance activity - repairing CAT 1 defects	Maintenance Operatives being hit by vehicles whilst repairing CAT 1 defects	(3)	Only competent, trained operatives are to Carry out maintenance works. TTM in accordance with chapter 8 will be required to undertake the making safe and permanent repair of defects and third party damage. Damage repair in the central reserve will usually require lane closure to be implemented on both carriageways. (installation requirement in central reserve to be kept to an absolute minimum. All TTM is to be installed in accordance with Chapter 8 of the TSM. Use of standard taper positions.	Area MAC Maintenance Team Manager and MAC H&S Manager to ensure all maintenance activities are conducted in a safe manner MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance and H&S Manager
M-9	Annual Inspection of Motorways	MAC Inspectors being hit by vehicles whilst undertaking detailed inspections of the motorway. (It is usual that the annual inspection is a detailed inspection that will require access to the asset usually by means of TTM.)	(3)	Any person undertaking work on the motorway should receive appropriate training (eg: Motorway Awareness course, Chapter 8 TTM training) and be able to demonstrate competence in these areas. All site works to be completed with appropriate TTM. All TTM to be installed in accordance with Chapter 8 of the TSM. Use of standard taper positions. All operatives are to use appropriate PPE for works and be able to demonstrate competence in this area.	Area MAC Maintenance Team Manager and MAC H&S Manager to ensure all maintenance activities are conducted in a safe manner MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance and H&S Manager

M-10	Routine surveys	MAC Surveyors being hit by vehicles whilst undertaking deflectograph and falling weight deflectograph surveys	(3)	TTM in the form of lane closures will be required to undertake these surveys. All TTM is to be installed in accordance with Chapter 8 of the TSM. Use of standard taper positions. Only competent, trained operatives to Carry out survey works. All operatives are to use appropriate PPE for works and be able to demonstrate competence in this area.	MAC Maintenance Team Manager and MAC H&S Manager to ensure all maintenance activities are conducted in a safe manner. MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance and H&S Manager
M-11	Drainage Inspections	MAC Inspectors being hit by vehicles or falling objects whilst undertaking drainage Inspections.	(3)	TTM in the form of Lane 1 lane closure for drainage in the verge. Lane 4 A and B carriageway (for central reserve drainage) closures will be required to undertake these surveys. All TTM is to be installed in accordance with Chapter 8 of the TSM.	MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance Manager
M-12	Gully Cleaning and sweeping of drainage channel	Members of Public colliding into rear of Gully cleaning machine	(2)	TTM should be installed in Lane 1 and/or Lane 4 depending on their location. Use of standard taper positions. All TTM is to be installed in accordance with Chapter 8 of the TSM.	Use risk based approach so that gullies are only cleaned as and when needed. MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance Manager
M-13	Assess and record condition of Geotechnical asset (DMRB)	MAC Assessors being struck by vehicles	(3)	All Assessors are to wear appropriate PPE for works. TTM in the form of Lane 1 and Lane 4 closure will be required to undertake the assessment of Geotechnical assets Use of standard taper positions. All TTM is to be installed in accordance with Chapter 8 of the TSM.	Combine with TTM closures for other works if possible	January 2012	MAC Maintenance Manager
M-14	General Structure Inspection (every 2 years)	MAC Inspectors being hit by vehicles or falling objects whilst undertaking Inspections	(3)	TTM in the form of Lane 1 closures will be required to undertake these Inspections. All TTM is to be installed in accordance with Chapter 8 of the TSM. Only competent trained operatives are to Carry out Inspection works. All operatives are to wear appropriate PPE for works and be able to demonstrate competence in this area.	MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance Manager
M-15	Principal Structure Inspection (every 6 years)	MAC Inspectors being hit by vehicles or falling objects whilst undertaking Inspections	(3)	TTM in the form of Lane closures will be required to undertake these Inspections. All TTM is to be installed in accordance with Chapter 8 of the TSM, including the provision of buffer lanes where appropriate.	MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance Manager

				Only competent trained operatives are to Carry out Inspection works. All operatives are to wear appropriate PPE for works and be able to demonstrate competence in this area..			
M-16	Routine Bridge Maintenance (annually)	MAC Maintenance Engineers being hit by vehicles or falling objects whilst undertaking bridge Inspections	(3)	TTM in the form of Lane 1 and Lane 4 closures will be required to undertake these Inspections. All TTM is to be installed in accordance with Chapter 8 of the TSM.	Only competent trained operatives are to carryout maintenance works.	January 2012	MAC H&S Manager
M-17	Graffiti removal	MAC Employees being struck by moving vehicles	(3)	Scheme designers to consider planting / provision of more resilient fencing to break display areas of abutments to discourage artists. Only competent trained operatives are to carry out maintenance works. TTM in the form of Lane closures will be required to undertake these Inspections. All TTM is to be installed in accordance with Chapter 8 of the TSM. Use of standard taper positions. All operatives are to wear appropriate PPE for works.	MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance and H&S Manager
M-18	Detailed Inspection of Road Restraint System	MAC Inspectors being hit by vehicles whilst undertaking Inspections of the Road restraint System	(3)	TTM in the form of Lane 1 and 4 (A and B carriageways) closures will be required to undertake these Inspections. All TTM is to be installed in accordance with Chapter 8 of the TSM. Use of standard taper positions. All operatives are to wear appropriate PPE for works and be able to demonstrate competence in this area.	Combine with TTM closures for other works where possible	January 2012	MAC Maintenance Manager
M-19	Road Markings and Road Studs Replacement	Members of Public colliding into rear of vehicle	(3)	Vehicle to be in TTM whilst replacing road markings and road studs. All TTM is to be installed in accordance with Chapter 8 of the TSM.	MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance Manager
M-20	Road Traffic Signs Inspection and Testing	MAC Employees being struck by moving vehicles	(3)	TTM in the form of Lane 1 Lane closures will be required to undertake these Inspections. All TTM is to be installed in accordance with Chapter 8 of the TSM.	MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance Manager

M-21	Road traffic Signals Inspection and testing	MAC Employees being struck by moving vehicles	(3)	Detailed inspections and maintenance will need TTM lane closures. All TTM is to be installed in accordance with Chapter 8 of the TSM.	Combine with TTM closures for other works where possible	January 2012	MAC Maintenance Manager
M-22	Lighting Inspection and Testing	MAC Employees being struck by moving vehicle	(3)	TTM in the form of Lane 1 closure will be required to undertake the Inspection and testing of lamp columns in the verge. All TTM to be installed in accordance with Chapter 8 of the TSM.	MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance Manager
M-23	Maintenance activity - Bulk lantern change and cleaning of lamp columns	Maintenance Operatives being hit by vehicles whilst changing and cleaning lamp columns in the central reserve	(3)	TTM in the form of lane 1 / 4 (A and B carriageways) closures will be required to undertake this activity. All TTM is to be installed in accordance with Chapter 8 of the TSM. All operatives are to wear appropriate PPE for works.	Combine with TTM closures for other works where possible	January 2012	MAC Maintenance Manager
M-24	Fences, Walls, Screens, and Environmental Barriers Inspections	MAC Inspectors being hit by vehicles whilst undertaking Inspections	(3)	TTM in the form of Lane 1 closure will be required to undertake the inspection of all fences, walls, screens and environmental barriers that are within the verge. All TTM is to be installed in accordance with Chapter 8 of the TSM.	MAC Co-ordination and combining of works to minimise the implementation of TTM.	January 2012	MAC Maintenance Manager
M-25	Soft Estate Inspection and Maintenance Litter picking	MAC Employees being struck by moving vehicles	(3)	TTM in the form of Lane 1 and Lane 4 (A and B carriageways) closure will be required to undertake the Inspection and maintenance / litter picking activity. All TTM is to be installed in accordance with Chapter 8 of the TSM. All operatives are to wear appropriate PPE for works and be able to demonstrate competence in this area.	Combine with TTM closures for other works where possible Reduction in requirement due to the adoption of a risk based approach to this activity.	January 2012	MAC Maintenance Manager

Note

1. In future MAC and TechMAC will be replaced by ASC and RTMC respectively.