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## Appendices:

Appendix 1 – Outline construction programme Rev M (March 2015).

Appendix 2 – Incident Management Plan
Abbreviations Used

CCTV  Closed Circuit Television
IPV   Impact Protection Vehicle
ITS   Intelligent Transport Systems
MAC   Managing Agent Contractor
MOU   Memorandum of Understanding
TM    Traffic Management
1. INTRODUCTION

1.1 Purpose

1.1.1 This document sets out the proposed traffic management and maintenance responsibilities during construction of M4 J3 to 12 Smart Motorway scheme ("Scheme"). The Scheme is the subject of an application for development consent under the Planning Act 2008. That application is supported by a number of documents including environmental management plans which will mitigate its effects, particularly during construction.

1.1.2 This document supports the application for development consent and the environmental management plans. It will be developed as the Scheme progresses. The Scheme is in the preliminary design stage and a Contractor to construct the works has not yet been appointed by the Highways Agency ("Agency"). The actual traffic management design and proposals will be determined by the Contractor once appointed and reflected in a final version of this document. The description of traffic management which follows provides a framework for the methodology for the works which will enable the final management measures to evolve.

1.2 Description of Scheme

1.2.1 The Scheme is some 50km (32 miles) in length, between junctions 3 and 12. Preliminary design is complete and the Scheme comprises the following principal elements:

a) conversion of the hard shoulder to a permanent running lane and, where no hard shoulder is in place at present, the construction of a new lane. This will mainly take place between junction 4b and junction 8/9;

b) replacement of overbridge structures where portals are too narrow to accommodate the improved motorway;

c) extension of underbridges and other structures such as culverts and subways to accommodate the improved motorway;

d) changes to junctions and slip roads needed to accommodate traffic joining and leaving the improved motorway, and to allow use of the hard shoulder as a running lane, as well as allowing "through junction running";
e) provision of new gantries and signs to allow the motorway to function as a smart motorway with a variable speed limit, and to provide messages to road users; and

f) other infrastructure needed for the improved motorway, such as Emergency Refuge Areas, enhanced communication systems, closed circuit television ("CCTV") and electrical supplies, as well as works to accommodate statutory undertakers' apparatus and other parties who may be affected by the Scheme.

1.2.2 The proposed lane widths for the permanent works are as shown in the following table:

<table>
<thead>
<tr>
<th></th>
<th>Lane 1</th>
<th>Lane 2</th>
<th>Lane 3</th>
<th>Lane 4</th>
<th>Lane 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four lane ALR</td>
<td>3.65m</td>
<td>3.50m</td>
<td>3.40m</td>
<td>3.20m</td>
<td>n/a</td>
</tr>
<tr>
<td>Five lane ALR</td>
<td>3.65m</td>
<td>3.65m</td>
<td>3.50m</td>
<td>3.40m</td>
<td>3.20m</td>
</tr>
</tbody>
</table>

1.3 Programme

1.3.1 Mobilisation and construction is programmed to commence in September 2016 with completion by 2022.

1.3.2 The outline construction plan Rev M (March 2015) is attached in Appendix 1.
2. TRAFFIC MANAGEMENT PLAN

2.1 Proposed traffic management measures

2.1.1 A number of options have been considered for the traffic management measures required for the construction of the permanent works; the full 52km under traffic management ("TM"), splitting the works into two phases (Phase 1 and Phase 2) and phased working with 4km under traffic management with 10km gaps.

2.1.2 Phase 1 comprises the 28km between J8/9 at Maidenhead and J12 at Reading (West) and this would be constructed first. The bridge replacements and widening of underbridges required for Phase 2 will commence before Phase 1 is complete and Phase 2, which is the 24km between J8/9 and J3 at Hounslow, will commence after Phase 1 is completed.

2.1.3 Significant TM resources will be required for the installation of traffic management and subsequent maintenance during construction. Separate installation and maintenance crews will be utilised for traffic management on the side roads for bridge construction.

2.1.4 All live lane traffic management installation on the M4 will be carried out using two vehicles with separate impact protection vehicle. All TM will be planned for installation, maintenance and removal without traffic management operatives crossing live traffic lanes without IPV protection. It is envisaged that up to 5 No. two man TM maintenance crews will be required, with additional resources when layouts are installed, altered or removed.

2.1.5 A Traffic Manager will oversee all aspects of the TM. In addition up to ten Traffic Safety and Control Officers will provide 24 hour cover for the works.

2.2 Lane restrictions speed limits and enforcement

2.2.1 During construction a temporary speed limit of 50mph will be imposed to facilitate narrow lanes on the M4. The enforcement will be through average speed cameras with prosecutions dealt with by the Police. Signing requirements for speed limits will be agreed in advance with the Police, and will be checked in situ prior to enforcement commencing. Video recording of the speed limit signing will take place and a two hourly check of the signing will be carried out and recorded.
2.3 Narrow lanes

2.3.1 The proposed traffic management for the construction works on the M4 verges and shoulders will involve narrowing the existing running lanes in order to provide a safety zone to the existing hard shoulder from where the works will be accessed and constructed.

2.3.2 The proposed lane widths for four lane sections lanes are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Lane 1</th>
<th>Lane 2</th>
<th>Lane 3</th>
<th>Lane 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four lane ALR</td>
<td>3.25m</td>
<td>3.0m</td>
<td>2.75m</td>
<td>n/a</td>
</tr>
<tr>
<td>Five lane ALR</td>
<td>3.25m</td>
<td>3.0m</td>
<td>3.0m</td>
<td>2.75m</td>
</tr>
</tbody>
</table>

2.3.3 For works to the central reserve, the narrow running lanes will be switched to the verge side, thus freeing working space for access and construction.

2.3.4 It is proposed that all works areas will be segregated from traffic lanes by suitable protective barriers. Terminal ends of barriers will be fitted with crash cushions. The barriers will be relocated to suit progress of the works. The principles of the temporary Road Restraint Risk Assessment Process will be used, but the default position will be to use temporary barriers.

2.4 Consultation

2.4.1 Detailed traffic management proposals and drawings will be produced and consultation will be held with external stakeholders including Thames Valley Police, the Metropolitan Police, Area 5 Connect Plus, Area 3 EM Highways, the Traffic Officer Service and the various local authorities affected by the works (West Berkshire, Reading, Wokingham, Bracknell Forest, Windsor & Maidenhead, Slough, Buckinghamshire, Transport for London, London Borough of Hillingdon and London Borough of Hounslow). Others to be consulted in the formation of traffic management proposals will be Fire and Rescue, Ambulance Services, public transport operators, Network Rail, and district and parish councils (the latter particularly when planning road closures and diversion routes).

2.5 Overnight works/closures

2.5.1 The installation of narrow lanes for carriageway works will be undertaken at night under full carriageway closures. Other night time restrictions will
be in accordance with the Area 3 and Area 5 schedule of permitted traffic management.

2.5.2 The timings of overnight lane closures will be based on historical data which will be used to identify less sensitive times for works to be undertaken. The timings selected will be subject to traffic counts on the night before implementation on the basis of a trigger value of less than 1200 vehicles per lane left open to ascertain that the consequences of closures will be acceptable.

2.5.3 Once narrow lanes and/or contraflow systems are in place, there will be a need to close lanes overnight for works such as Motorway Incident Detection and Automatic Signalling loop cutting, erecting cantilever signs, and resurfacing. Lane closures and slip roads will be subject to scheduled road works and roadspace booking through Area 3 and Area 5.

2.5.4 Some operations will require the closure of slip roads and the main carriageway in order to undertake a particular operation such as demolition, new bridge beam erections, installation of narrow lanes and duct crossings, or erection of gantry beams and signs.

2.6 Major events and bank holidays

2.6.1 Co-ordination will be required to ensure all major events served by the M4 and/or relevant side roads are known. This will particularly impact on works at night, which may be restricted if heavy flows are anticipated after an event such as a football match, rowing at Eton Dorney or similar. This will be undertaken in liaison with the Highways Agency Area Maintenance teams and discussed at the regular Traffic Management Co-ordination meetings, held with the Highways Agency and stakeholders during the works.

2.6.2 During Bank Holiday periods the M4 will typically remain under narrow lanes traffic management (see 2.3.2), maintaining three or four lanes as appropriate. All other traffic management would be minimised as far as practicably and safely possible. No lane or carriageway closures would take place during these periods.

2.7 Breakdown and recovery temporary CCTV

2.7.1 A CCTV system for identifying vehicles in need of recovery will be required during the works and monitoring traffic and other incidents. This will be a temporary system relaying pictures to a monitoring room staffed by
suitably qualified staff 24 hours a day, 7 days per week including all bank holidays. There will also be a link from the monitoring room to the Agency’s Regional Control Centre to enable the Traffic Officer Service to view images from the site monitoring room. The CCTV monitoring staff will despatch breakdown recovery vehicles and crews to ensure speedy removal of breakdowns.

2.7.2 The alternative method of using off site recovery operators on a call out basis will be investigated to determine if it is suitable for some or all of the works. This system has been used on a number of projects on the Agency's network.
3. **IMPLICATIONS OF TRAFFIC MANAGEMENT MEASURES ON MAINTENANCE OPERATIONS**

3.1 Working with adjacent maintenance schemes

3.1.1 During construction of the Scheme co-ordination meetings will be held with the service providers to allow access to complete essential maintenance operations. Consideration will be given to the distance between sites or maintenance works and joining up maintenance schemes if necessary to complete maintenance operations. All details will be included in the maintenance responsibilities' Memorandum of Understanding ("MOU").

3.2 MOU maintenance responsibilities

3.2.1 The MOU will be developed and agreed with the Agency's Area 3 and Area 5 management teams to define the roles and responsibilities for each party for the ongoing maintenance of the existing motorway assets. The basis of this procedure will be for the party best placed to carry out a repair or maintenance to do so. This typically means the MAC will attend to emergency situations and repairs, with the Contractor carrying out planned and major reactive maintenance.
4. IMPLICATIONS OF TRAFFIC MANAGEMENT MEASURES ON OPERATIONS

4.1 Incident management plan

4.1.1 A Draft Incident Management Plan is included in Appendix 2 for consultation with Emergency Responders.
Appendix 1

Outline construction programme Rev M (March 2015)
Appendix 2

Incident Management Plan