Balfour Beatty Mott MacDonald

Area 10 ASC
Maintenance Requirement Plan
April 2016

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Issue and Revision Record

Revision	Date	Checker	Approver	Description
1	10/10/12	[redacted]	[redacted]	First Draft
1.1	21/11/12	[redacted]	[redacted]	Review updates
1.2	13/12/12	[redacted]	[redacted]	Review Updates
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1.5	31/07/14	[redacted]	[redacted]	1st Review
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1 INTRODUCTION

Asset Maintenance and Operational Requirements (AMOR) Version 1.71 identifies the Maintenance Requirement Document as a plan that sets out the Provider's approach to delivering the maintenance requirements (e.g. inspections, assessment, defect repair resources, etc.), identified in AMOR.

2 DESCRIPTION OF AREA 10 NETWORK

Balfour Beatty Mott MacDonald manages and operates the Area 10 Network covering the Motorways and All Purpose Trunk Roads in the North West Region of England. The area includes the motorway network around Greater Manchester, the main routes through Cheshire, Merseyside and South Lancashire. The boundaries of the Area 10 network are shown in Figure 1.1 below.

The Area 10 network comprises 440km (270 miles) of motorways, 80km (50 miles) of trunk roads within north-west England. This represents approximately 10% of Highways England Strategic Road Network (SRN).

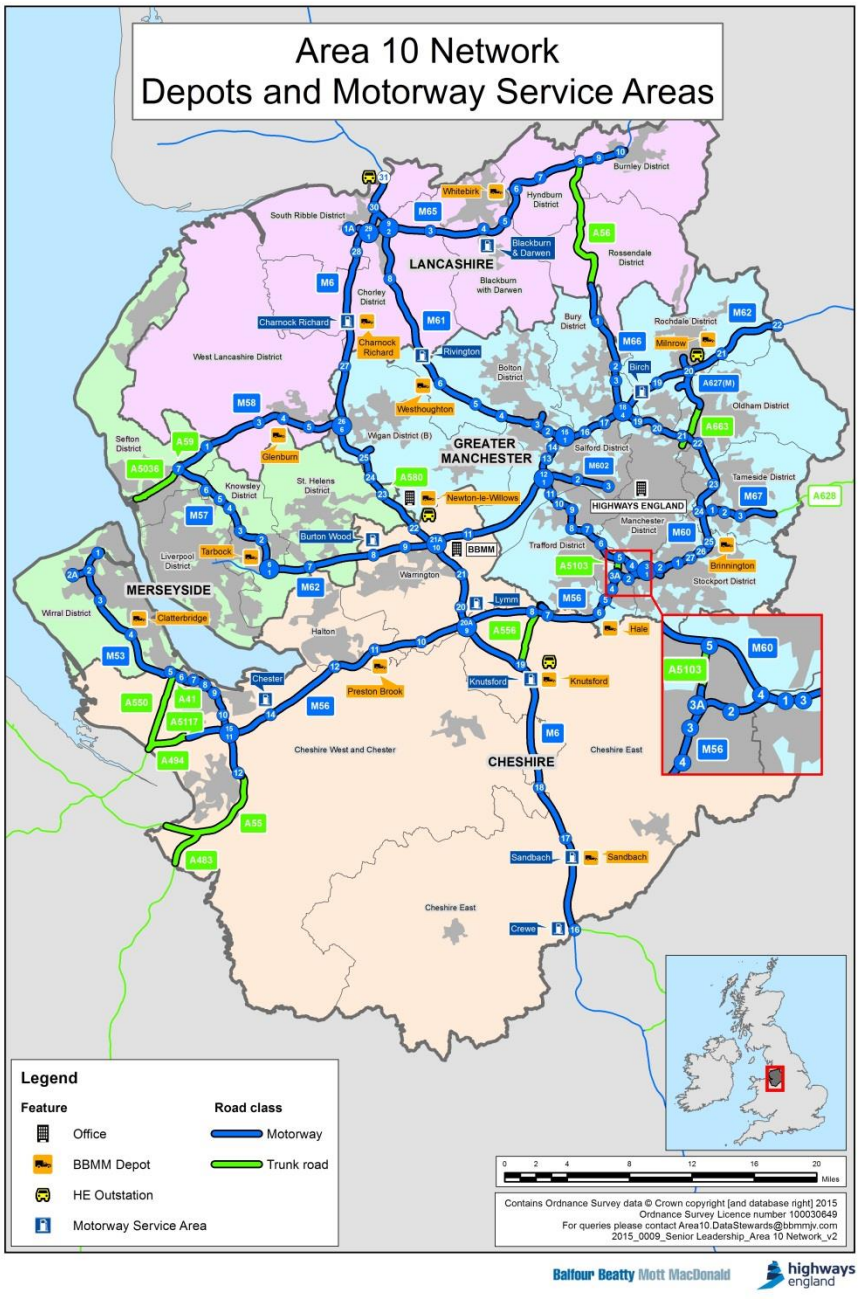


Figure 2.1: Area 10 Network Map

3 REQUIREMENTS UNDER THE ASC CONTRACT

The maintenance requirements for Area 10 are outlined in the Asset Maintenance and Operational Requirements (AMOR) Version 1.7 July 2011, Area 10 Specific Requirements Parts 5 to 16 and Appendices 11 and 15. This plan must be read in conjunction with the following documents (Documents in **bold** are contractual requirements):

- **Area 10 Contingency Plan**
- **Area 10 Severe Weather Plan**
- **Area 10 Incident Response Plan**
- **Area 10 Network Occupancy Plan**
- **Area 10 Watchman Plan**
- Area 10 Drainage Asset Management Plan
- Area 10 RRS Asset Management Plan
- Area 10 Fencing Asset Management Plan
- **Area 10 GeoAMP**
- **Area 10 Landscape Management Plan**
- Area 10 Lighting Asset Management Plan
- Area 10 Traffic Signs Asset Management Plan
- Area 10 Pavement, Road Markings & Studs Asset Management Plan
- Area 10 Structures Asset Management Plan
- **Area 10 Asbestos Management Plan**
- Area 10 Management of Spalling Concrete

3.1 AMOR PERFORMANCE REQUIREMENTS

The AMOR Parts 5 to 16 identify the maintenance requirements, performance measures and performance level requirements for the asset groups as listed:-

- Part 5 Drainage Maintenance Requirement
- Part 6 Fences, Screens and Environmental Barriers Maintenance Requirement
- Part 7 Geotechnical Assets Maintenance Requirement
- Part 8 Lighting Maintenance Requirement
- Part 9 Paved Areas Maintenance Requirement
- Part 10 Road Markings and Road Studs Maintenance Requirement
- Part 11 Road Restraint Systems Maintenance Requirement
- Part 12 Road Traffic Signs Maintenance Requirement
- Part 13 Soft Estate Maintenance Requirement
- Part 14 Structures Maintenance Requirement
- Part 15 Sweeping and Cleaning Maintenance Requirement
- Part 16 Tunnels Maintenance Requirement (not used in Area 10)

The Maintenance Requirement Plan (MRP) structure has been centred on the approach outlined in AMOR, figure 0.3 whereby the service provider shall adopt a risk-managed approach to the inspection process; and figure 0.4, whereby the service provider shall adopt a risk-managed approach to a make safe and repair process.

The purpose of BBMM's MRP is to outline BBMM's intention for the delivery of maintenance taking into account the condition and age of the asset. System supplied sources of information provided by the Client, Provider and historic data have been utilised to develop this MRP.

The MRP is a live document, reviewed annually. However, the MRP is currently reviewed on a quarterly basis, following a request of Highways England.

The maintenance strategy has been and will continue to be derived from a robust risk-managed inspection process, through continual review and development of detailed risk assessments of all asset groups.

3.2 PROCEDURES

This plan is produced in accordance with Annex 24 sub-process 3.01 Develop Maintenance Requirements Plan. The following processes and procedures also relate to the Maintenance Requirements Plan:-

Sub-Process

- 2.01 Inspect Asset Condition
- 2.02 Identify Maintenance Requirements
- 2.03 Undertake Technical Surveys
- 2.04 Manage Asset Data
- 2.05 Identify Schemes
- 3.01 Develop Maintenance Requirements Plan
- 3.04 Develop Schemes
- 4.01 Deliver Maintenance Requirements

Procedure

- AMOR Figure 0.4 Risk Based Make Safe and Repair Process (Part 0 – Page 9)
- AMOR Figure 0.6 Departure from standards procedure (Part 0 - Page 16)
- MANT-PRD-001 Departures from Standard Procedure

OnePlace, the Business Management System is a BBMM management system which integrates all process groups. It is an extension of the quality management system.

3.3 ASSET MAINTENANCE OBJECTIVE

The aim of this MRP is to manage defects to secure the safe use of the network in accordance with Highways England policies. To enable effective maintenance management, consideration within this plan is given to inspection, [interventions] response and repair times, taking into account and maximising network occupancy opportunities.

This MRP also considers preventative maintenance, including frequencies, timescales and resources to undertake these operations to reduce residual risk to road users and operatives on the network. Our risk managed approach to both our inspection process and make-safe-and-repair procedure will be robust to ensure the condition of the asset meets the operational and maintenance requirements up to the end of its serviceable life. This will be demonstrated through sufficient documented evidence and assessment that HE/BBMM acted reasonably.

Additionally, BBMM will identify life-expired assets that are due for renewal, prioritising the need, according to the scale of the problem and its potential impact, and will develop a prioritised forward renewals programme to extend the serviceable life of those parts of the asset.

The Asset Champions will seek to prioritise the asset needs of the network to determine which schemes should be identified and taken forward via sub-process 2.05 (Identify

Schemes). In this way the prioritised forward programme of renewals schemes will be developed for life-expired assets, or for extending the life of assets where it is better value for money to do so rather than waiting for them to become life-expired.

Where defects are contained within life-expired parts of the asset, and are deteriorating to an extent that the network is becoming unsafe for use, utilising change control, BBMM will liaise with HE and look to review and revise the renewals programme, either to bring the renewal scheme forward or agree an alternative option for speedy delivery through the in-year programme.

The above, is underpinned by an expectation that funding will be provided for all assets that become life expired, as determined by the Asset Champions. Decisions will be based upon, design life expectation, manufacturer's recommendations, lifetime maintenance requirements and expected rates of deterioration.

Reactive maintenance can be defined as an activity that has been unplanned and sits outside of a planned forward cyclic programme, and as detailed in the activity notes contained within this MRP.

3.4 ASSET GROUPING

Asset management plans have been developed for each asset group. The plans will be underpinned by an inspection regime to confirm asset condition and thus enable the prioritisation of need.

Asset groups are assigned to Asset Champions, who review the inventory, the condition data available, assess gaps in the data that need to be filled and undertake a review of risks associated with maintaining the safe serviceability of the assets. From this analysis, the Champions will determine optimised risk-managed inspection regimes for each of the Asset Groups, tailored as necessary to suit the demands of particular locations on the network to ensure they are suitable for the purpose (Annex 24 Sub-process 2.02).

4 RISK BASED PROCESSES AND PROCEDURES

BBMM will follow the strong Highways England lead in AMOR to challenge existing standards and find the optimal approach whilst not compromising safety. BBMM will, if appropriate, propose a departure from the Maintenance and Operational Requirements and submit in accordance with the Departures Submission guidance, as illustrated in AMOR Part 0, figure 0.6.

The above approach provides a basis of our inspection regimes and we will continue its development as we acquire a more detailed working knowledge of the network assets and their associated risks.

4.1 RISK MANAGED INSPECTION PROCESS

The initial requirement of AMOR Part 0; figure 0.3 is to establish the risk characteristics for each of the asset groups. This section explains how BBMM Asset Champions will Risk Assess each of the asset groups. Once the initial risk characteristics have been considered these will assist in establishing the MRT inspection regime (AMOR Part 0; figure 0.3, step IP6) to support Highways England policies and leave the network in a safe condition.

The nominated Asset Champion shall establish the hazard mitigation measures required for each of the AMOR asset groups, parts 5 to 14.

The AMOR Manager shall establish the hazard mitigation measures required for AMOR Part 15, Sweeping and Cleaning.

The Asset Champions will determine if the asset is beyond its serviceable life, through a review of condition data and design life of the asset. If that is the case a renewal scheme will be identified for inclusion in the forward programme.

Hazardous defects will be identified primarily, by the MRT's, when carrying out Route inspections, at the route-frequencies in Table 7.2.

Inspections will be carried out for each of the maintenance headings, with ownership within the specialist plans as detailed below:-

- Pt 5 – Drainage
  - Route inspections to monitor network risk areas
  - Other routine maintenance as per Part 5 requirements of MRP
- Pt 6 – Fences, Screens and Environmental Barriers
  - Network hazards will be identified and monitored through route inspections
- Pt 7 – Geotechnical Asset
  - Network hazards will be identified through the Geotechnical Asset Management Plan and monitored through the route inspections
  - Specialist surveys will be carried out as specified within the Geotechnical Asset Management Plan (GeoAMP))
- Pt 8 – Lighting Maintenance
  - Electrical and structural safety hazards will be identified through detailed inspections with frequencies determined in the (Lighting Asset Management Plan). Route inspections will supplement detailed inspections and monitor potential network hazards or identify new hazards that occur outside the planned detailed inspections.
- Pt 9 – Paved Areas
  - Route inspections will identify hazardous defects with a defined AMOR performance level requirement and Hazard Defect Guide
- Pt 10 – Road markings and Road Studs
  - Route inspections will identify and monitor hazardous defects as defined in the Hazard Defect Guide from TD26/07
- Pt 11 – Road Restraint Systems
  - Route inspections will identify and monitor hazardous defects that affect the structural integrity of the RRS.
  - Specialist surveys in accordance with BS 7669-3 and manufacturer's recommendations will be carried out with re-tensioning and combined with other maintenance activities.
- Pt 12 – Road Traffic Signs
  - Electrical and structural safety hazards will be identified through detailed inspections with frequencies determined in the (Traffic Signs Asset Management Plan).
  - Route inspections will supplement detailed inspections and monitor potential network hazards or identify new hazards that occur outside the planned detailed inspections.
- Pt 13 – Soft Estate
  - Route inspections will identify and monitor hazardous defects. These inspections will monitor hazard related issues that are identified within the Landscape Management Plan.
- Pt 14 – Structures
  - General Inspections and Principal Inspections will identify and monitor hazardous defects. These inspections will monitor hazard related issues that arise from the General and Principle inspections that are managed in SMIS.

- All specialist surveys will be managed through the General and Principal Inspections programme within SMIS.
- Pt 15 – Sweeping and Cleaning
- Pt 16 – Tunnels – Not used

4.2 DEFINITION OF HAZARDOUS DEFECT

A hazardous defect can be defined as damage to, or deterioration of, the asset that has a potential to cause loss, harm, danger or nuisance to persons or property.

Examples of hazardous defects are located in the Hazardous Defect Inspections Guide .

BBMM expect the MRT's to identify hazardous defects during the route inspections. All other defects are to be identified through Asset Inspections, including establishment of monitoring regime.

4.3 CONDITION INSPECTION ASSET GROUP

For certain assets, surveys will be necessary to supplement visual inspections. The following summarises both visual inspections and condition surveys for each asset group. (Asset Condition Inspection Programme)

4.4 COLLECTION OF DATA, UPDATE OF RECORDS AND PHOTOGRAPHIC EVIDENCE

CONFIRM (where applicable) will be used to collect asset/condition data and capture maintenance activities. The use of BBMM tablets (running the CONFIRM Connect software) will allow BBMM to make use of the latest technologies, ensure accurate data capture, and achieve operational efficiencies. Photographs will be captured on-site using the BBMM tablets, transferred to the CONFIRM host system via 3G, and linked to the associated records. This will ensure BBMM operatives have access to information in a timely manner, and that all photographic records are geo-referenced or correctly tagged as required.

4.5 ANALYSIS OF DEFECT DATA

The Asset Champions will be responsible for analysing all data captured through route inspections, condition inspections to identify network needs, via Annex 24 sub process 2.05.

AMOR will prioritise maintenance that is required to mitigate hazards and prevent further deterioration to the asset, via Annex 24 sub process 4.01.

5 RISK-MANAGED MAKE SAFE AND REPAIR PROCESS

Risk-managed make safe and repair process (detailed in figure 0.4, AMOR Part 0) will be focused on defect prioritisation, preventative maintenance, make safe options, temporary and permanent repairs.

All permanent repairs will be associated with defects within the serviceable life of the asset and that are not already captured within a forward renewals scheme, immediate hazard mitigation shall be addressed at all times by BBMM to support HE Policies.

Permanent repairs will be carried out, for example utilising HAPAS approved products, to assets within their serviceable life unless already included within a renewal scheme. Where a renewal scheme exists, assessment will be made dependent upon scheme deliverable timescale.

5.1 ASSESSMENT OF DEFECT.

All identified defects shall have any associated hazards mitigated within 24 hours of notification. Following hazard mitigation the defect shall be assessed by the Maintenance Manager to determine repair methodology and if temporary repair is required in the interim.

Non-hazardous defect are to be reviewed in conjunction with forward renewals programme, and assessment made to determine if it can be left until commencement of small works scheme, without further detriment to the asset. Small works schemes shall focus on renewal techniques which involve least disruption to the network and reinstate asset with a serviceable life, examples of which will include inlay schemes and joint infills.

5.2 PREVENTATIVE MAINTENANCE

Preventative maintenance will be undertaken to avoid deterioration to the asset where deemed practicable and will be covered within the Risk managed approach to the repair process and will be contained within the Activity notes in Appendix A. Preventative maintenance could comprise either a cyclic based activity, for example gully emptying or a holding scheme to life expired assets, already within a forward programme.

6 ROADSPACE PLANNING AND NETWORK OCCUPANCY OPPORTUNITIES

This MRP shall be read in conjunction with the Network Occupancy Plan, as referred to within AMOR Part 2; Managing Network Occupancy Operational Requirements. The Network Managers shall review delivery requirements based on the outcomes from the Risk managed methodology to make safe and repair defects for the maintenance requirements for AMOR Parts 5 to 16.

The defects shall be made safe and repaired through a robust planning and programming strategy. The programme shall consider the Network Occupancy Optimisation (Working Windows) Procedure, which will ultimately consider maximising all road space opportunities.

The Maintenance Managers shall ensure resource is available prior to applying for road space approval; consideration shall be given to residual site specific health & safety risks and control consideration to ensure that the works are able to continue upon approval of the closure restrictions. Site specific risks that could be considered may include the following:-

- Collaborative working with other contractors who are sharing closures.
- Overhead power lines
- Working adjacent to water
- Working at height
- Additional lighting
- Incident History
- Pedestrians
- Environmental Considerations
- Welfare
- Asbestos

The Network Manager will issue the approved closure restriction report to the AMOR Manager, Maintenance Managers and Occupancy Teams. Upon approval the AMOR Manager shall ensure that the delivery programme is resourced.

7 RISK BASED PROCESSES AND PROCEDURES

7.1 PROGRAMME OF ROUTE INSPECTIONS

The route inspection programme is developed utilising a risk strategy looking at trends over previous 5 years from data provided by the previous service provider and held within CONFIRM. The historic data utilised will include information obtained from the following sources:-

- Flood Hotspots
- VRS Strikes
- Pothole Reports
- Area 10 Contract Risk Register
- Traffic Volumes
- Network Condition

Table 7.2 has grouped the historic data to determine proposed route inspection frequencies. Since access date a review of inspection frequencies has been undertaken, which in turn adjusted frequencies based on adjusted likelihood and local knowledge/intelligence. The review will then be on an annual basis unless there is a significant change noted to the risk characteristics and frequencies.

Data for VRS strikes and potholes is obtained from BBMM's CONFIRM and the previous service providers data, for the last 5 years (up to end Dec 2015) Risk scores will be based on the following criteria for VRS strikes and potholes:-

- > 20 per KM = Risk Factor 3
- > 10, however < 20 = Risk Factor 2
- < 10 = Risk Factor 1

Flood Hotspots (Source HADDMS, updated Dec 2015) assist in producing a balanced risk score:-

- Score of 2 to be applied for each risk highlighted
- Score of 1 for where a risk is not present

Traffic flow risk factor scores are based on the same principles as contained with Appendix 11 of AMOR document, with data obtained from AADT 2013:-

- High traffic flow >30k/carriageway/day = Risk Factor 3
- Medium traffic flow 20-30k/carriageway/day = Risk Factor 2
- Low traffic flow <20k/carriageway/day = Risk factor 1

The Resultant Risk Factor to determine frequency is calculated as follows:-

Resultant Risk Factor =	**Resultant VRS Strike Rate Factor x Pothole Risk Factor x Flood Hotspot Risk Factor x Traffic Volume Risk Factor**

Where if the product of the above calculation is:

- >= 36 = Daily Route inspection
- Between 6 and 35 (inclusive) = Weekly Route inspection
- < 6 = Monthly Route inspection

Risk based methodology for determining risk based inspection frequencies has been based around a similar approach adopted in Trunk Road Maintenance Manual (TRMM), whereby Category A roads were patrolled daily and inspected weekly, Category B roads were inspected weekly and Category C roads were inspected every 28 days.

7.2 RISK CHARACTERISTICS REVIEW

As Risk Assessments develop, it is likely the frequencies will change on routes. These frequencies may reduce through betterment of the asset or increase as other assets deteriorate. The overall impact on resources should remain balanced across the area network. BBMM will examine the risk characteristics at each review.

Route	Route Km	Number of VRS strikes over 5 years	Strikes per Route Km	Resultant strike rate per week (Risk Factor)	Number of potholes over 5 years	Potholes per Route Km	Potential identified potholes per week (Risk ctor)	Number of flooding hot spots identified	Number of flooding hot spots identified (Risk ctor)	Traffic Volumes - Max AADT / Route	Traffic Volumes (apply same principle as M129) (Risk Factor	Resultant Risk Factor	Proposed Route inspection Frequency
M6	86.36	1946	23	3	3075	36	3	35	2	79012	3	54	Daily
M60	58.14	1679	29	3	1637	28	3	23	2	95215	3	54	Daily
M62	51.54	1161	23	3	1867	36	3	16	2	64339	3	54	Daily
M56	55.63	1158	21	3	1006	18	2	16	2	75061	3	36	Daily
M53	32.03	457	14	2	964	30	3	16	2	31689	3	36	Daily
M602	6.958	170	24	3	85	12	2	1	2	37769	3	36	Daily
M66	14.3	258	18	2	321	22	3	5	2	43134	3	36	Daily
A5036	5.249	63	12	2	679	129	3	2	2	20737	2	24	Weekly
A56	15.08	229	15	2	219	15	2	1	2	30007	3	24	Weekly
A627(M)	6.606	157	24	3	128	19	2	6	2	24393	2	24	Weekly
M57	16.09	214	13	2	196	12	2	6	2	34286	3	24	Weekly
M61	43.59	792	18	2	481	11	2	12	2	55631	3	24	Weekly
M58	18.66	191	10	2	219	12	2	2	2	21757	2	16	Weekly
M65	32.24	529	16	2	384	12	2	11	2	29863	2	16	Weekly
A5103	2.003	21	10	2	23	11	2	0	1	55945	3	12	Weekly
A556	6.753	18	3	1	185	27	3	2	2	28774	2	12	Weekly
A663	4.361	59	14	2	300	69	3	6	2	16859	1	12	Weekly
M67	7.656	200	26	3	73	10	1	4	2	26586	2	12	Weekly
A41	0.628	5	8	1	20	32	3	1	2		1	6	Weekly
A55	13.53	77	6	1	54	4	1	4	2	26659	2	4	Monthly
A580	0.879	14	16	2	7	5	1	2	2	0	1	4	Monthly
A59	1.255	3	2	1	50	40	3	0	1		1	3	Monthly
A483	4.177	19	5	1	61	15	2	0	1	16723	1	2	Monthly
A494	4.488	31	7	1	28	6	1	0	1	21583	2	2	Monthly
A550	7.896	5	1	1	61	8	1	2	2	10214	1	2	Monthly
A5117	1.759	3	2	1	10	6	1	0	1	19904	1	1	Monthly

Table 7.2: – Route Inspection Matrix

8 PROGRAMME OF INSPECTIONS

The programme of asset condition inspections is used to inform the “network need”, and furthermore the output of is used to develop the renewals programme and the future risk based approach to asset condition inspections.

9 DEPARTURES, HOLD POINTS AND RELEASE MECHANISMS

AMOR Part	Departures	Hold Points and Release Mechanisms
5 – Drainage	There are currently no departures in place.	There are currently no hold points or release mechanisms in place.
6 – Fences, Screens and Environmental Barriers	There are currently no departures in place	There are currently no hold points or release mechanisms in place.
7 – Geotechnical	There are currently no departures in place	See A.7.5
8 – Lighting		See A.8.5
9 – Paved Areas	There are currently no departures in place	There are currently no hold points or release mechanisms in place.
10 – ROAD MARKINGS AND ROAD STUDS	There are currently no departures in place	There are currently no hold points or release mechanisms in place
11 – ROAD Restraint Systems	There are currently no departures in place	There are currently no hold points or release mechanisms in place
12 – ROAD TRAFFIC SIGNALS		
13 – SOFT ESTATES	There are currently no departures in place	There are currently no hold points or release mechanisms in place
14 – STRUCTURES	There are currently no departures in place	See A.14.5
15 – SWEEPING AND CLEANING	There are currently no departures in place	See A.15.5

APPENDIX A - ACTIVITY NOTES

A.5. AMOR PART 5 – DRAINAGE

A.5.1 Scope

AMOR defines the drainage system as;

"The system within the Area Network which removes water from trafficked surfaces, sub-layers and other parts of the highway asset, including components from the point at which water drains from paved or other areas to the outfall."

For the purpose of this MRP trafficked drainage channels are considered to be both drainage and paved area assets.

Out of Scope: Culverts with clear span or internal diameter of 900mm or greater are classified as Structures (see Appendix A.14 - Structures in this MRP).

AMOR Area 10 Specific Provider Outcomes for the drainage asset are as follows:

1. *The drainage system is managed and maintained to minimise the risk of Flood Events on trafficked surfaces and remove standing water from trafficked surfaces*
2. *The drainage system is managed and maintained to remove sub-surface water to enhance the longevity of paved areas and associated earthworks*
3. *The drainage system is managed and maintained to minimise the risk of pollution to receiving watercourses*

In addition to the Provider Outcomes above, the AMOR Area 10 Specific Deliverables require that the provider's approach to the following items be set out in the MRP:

- *Validation of HADDMS Flood Hotspots*
- *Validation of Priority Drainage Asset risk status in descending order of priority*

A.5.2 Condition data Information source(s)

Inventory in HAPMS, HADDMS and Network Information

Defect management in CONFIRM

- Subcontractor's reports on Area 10 dedicated drainage drive
- Flood risk management and priority drainage assets in HADDMS

For assistance with information sources e-mail Area10.DataStewards@bbmmjv.com

A.5.3 Response and repair timescales

Any defect causing or likely to cause flooding to a trafficked surface shall be treated as hazardous and made safe within the appropriate timescale specified in AMOR.

A.5.3.1 Defect Identification

Inspections of surface visible drainage assets from road centreline to back of kerb or pavement edge shall be delivered by the AMOR Team on the same timescales as the route inspection programme (Table 7.2). These inspections will be carried out in daylight hours at traffic speed, usually from lane 1, and will identify defects that can be seen from the main carriageway.

Inspections of surface visible drainage assets from back of kerb or pavement edge to highway boundary shall be delivered by the Asset Management Team on the same

timescales as the Asset Condition Inspection Programme. In addition to asset condition, these inspections will consider access arrangements and safe systems of work.

The NCC shall monitor weather services and divert resources to pre-emptive inspection and clearance of flood hotspots in the event of a Met Office Severe Weather Alert or other localised forecast for heavy rain.

A.5.3.2 Defect Verification

MRTs shall verify reports of ongoing flood events and file reports in CONFIRM supported by photographic evidence by end of shift.

AMOR Team supervisors shall verify the work of MRTs to make-safe hazardous drainage defects and file reports in Confirm supported by photographic evidence by end of shift.

The AMOR Programming Team/AMT Data Stewards shall upload subcontractors' reports (including photographic and/or video evidence) to OnePlace/Area 10 dedicated drainage drive within timescale identified within the Asset Data Management Manual (ADMM sub-process 3.3).

HADDMS Flood Hotspots will be validated by the Asset Champion and AMOR Programming Manager at the monthly Drainage Programming & Coordination Meeting with reference to Confirm and subcontractors reports. Temporary flood warning signs will be considered as temporary hazard mitigation (pending a scheme) for Flood Hotspots which cannot be controlled through increased frequency of cyclic maintenance.

Culverts, outfalls and soakaways on the HADDMS Priority Drainage Asset Register will be validated by the Asset Champion and AMOR Programming Manager at the monthly Drainage Programming & Coordination Meeting where required to enable discussion of flood hotspots. The remaining number of invalidated priority assets will be captured on the Asset Management Team Risk Register and a PDS proposed to validate them.

A.5.6 Planned Preventative Maintenance

In HADDMS Very High Risk Flood Hotspots, the following assets shall be inspected for and if necessary cleared of silt, debris and other obstructions once every 2 years by the AMOR team:

- Gullies
- Linear drainage channels
- Combined kerb drainage
- Surface channels on motorways and APTRs with retained litter clearing duties

Mechanical and electrical drainage assets should be inspected and maintained in line with manufacturer's recommendations where available.

Pumping Facilities will be inspected and maintained in line with manufacturer's recommendations by supply chain subcontractors managed by the BBMM Facilities Manager. Water levels are to be monitored 24/7 by telemetry which dials into the NCC and a nominated sub-contractor, with a response time and trigger level set to prevent flooding on the network. Locations of pumping stations are given in the network information.

A.6. AMOR PART 6 – FENCES, SCREENS AND ENVIRONMENTAL BARRIERS

A.6.1 Scope

All types of fences, screens and environmental barriers within the Area Network, inclusive of walls, stock proofing and wildlife fences.

***Out of scope**: structural maintenance of fences, walls, screens and environmental barriers classified as structures (i.e. >3m high).*

However BD62/07 defines what is classified as a structure and does not include fences, walls and environmental barriers except retaining walls above 1.5m in height so for the purposes of the MRP they are included in the fencing section.

The following table describes the scope.

Fences, Screens & Environmental Assets within scope		**Similar Assets not included**
Linear Assets	**Point Assets**	**Continuous Surface & Sub-Surface Assets**
• Boundary fences • Timber (e.g. post and rail and close boarded, including stock proofing) • Metal (e.g. chain link, palisade and wire) • Boundary & Retaining walls (not retaining walls above 1.5m) • Noise barriers • Environmental barriers • Anti-dazzle fences (not attachments to Road Restraint Systems) • Rock face fencing (normally chain link) • Handrails to emergency telephone boxes, steps and paths	• Carriageway Gates • Fence Gates • Stiles	• Handrail to structures e.g. along wingwalls (Structures asset) • Pedestrian guardrail (Road Restraint Systems asset) • Security fencing to structures (Structures asset) • Retaining walls above 1.5m (Structures asset)

Table: A6.1 – Fences, Screens & Environmental Assets within scope

On motorways the boundary fencing is owned and maintained by Highways England whereas on trunk roads it is normally the responsibility of the adjacent landowner. Currently all boundary fences on trunk roads are assumed to be the responsibility of the adjacent landowner. The issue has been raised as part of the data gap and as ownership is clarified it will be recorded on CONFIRM.

A.6.2 Condition data Information source(s)

The vast majority of condition data will come from fencing asset inspections. Additional data particularly hazardous defects will also come from:

- MRT inspections
- Asset inspections
- Enquiries via Network Control Centre (NCC) from
    - Customer enquiries
    - Regional Control Centre
    - Police
    - BBMM and contractors personnel

A.6.3 Response and rectification timescales

Hazardous defects will be mitigated within 24 hours.

Repair of hazardous defects will be prioritised based upon the type of defect and location, see table below.

As detailed in section 5 above, defects to end of life assets will be rectified by funded schemes.

The following table indicates the risk based timescale for hazardous defect rectification and inspection of any mitigation measures. Inspections are required if rectification cannot be completed in the timescale e.g. due to material procurement, adverse weather or scheme procurement).

Risk Rating	Example	Hazardous Defect Rectification or Inspection Period (Where rectification not possible)
Very High with additional risk factor	• As very high plus additional risk factors	7 days
High	• Boundary – School • Boundary – Field – stocked • Boundary – Playing Fields • Boundary – Footpath • Boundary – Railway • Any fence by watercourse or fall from height	14 days
Medium	• Boundary – Road • Boundary – Residential	28 days

Risk Rating	Example	Hazardous Defect Rectification or Inspection Period (Where rectification not possible)
	• Non-boundary near carriageway • Boundary – Commercial • Boundary – Field – stockproofed (no stock) • Boundary – Other urban locations	
Low	• Boundary – Field – not stockproofed Boundary – Rural within woods Non-boundary not near carriageway	3 months
Additional risk factors: 1. Fences not visible from MRT patrols should be increased a risk rating 2. Fences in vandalism hot spots should be increased a risk rating 3. Boundary fences in locations where an additional fence prevents access to the carriageway can be reduced a risk rating		

Table A6.2 - Defect Rectification/Inspection Period

Hazard mitigation will be undertaken by MRT teams and/or specialist subcontractors. Photographs are to be taken of completed mitigation works.

As guidance, hazard mitigation may include:

- Visible marker indicating that the defect has been recorded (to help avoid repeat notifications and indicate that we are progressing rectification)
- Remove / reattach materials that are loose and liable to fall or be blown off, causing injury or damage to the public
- Re-erect / prop fencing that has collapsed / liable to collapse
- Remove items protruding into live carriageway or footpath
- Protect sharp edges adjacent to pedestrian access, including access paths and steps
- If it is a stock-proofed boundary fence with stock present, notify landowner, and discuss whether animals can be moved

For minor damage hazard mitigation may also include:

Fence Type	Minor Defect	Repair
Post and Rail	Loose / Missing Rails	Re-attach or renew rails
Paladin	Loose / Missing Pales	Re-attach or renew pales
Concrete post & panel	Missing panels	Fill sections where panels are less than 1.5m high with plywood sheet
Chain link / Palisade	Holes in mesh large enough for dogs / children to access	Medium risk area - cover holes with netting High risk area - cover holes with wire mesh
	Holes in mesh >1.5m above ground	No action
Close boarded and wooden noise fence (on boundary / by hazard)	Holes in panels large enough for dogs / children to access	Any location - Nail timber across holes Medium risk area - cover holes with netting High risk area - cover holes with wire mesh

Table A6.3 – Hazard Mitigation Guidance for Minor Damage

Warning notices for weak fence near falls from height / watercourses / damaged handrails.

Warning notice for boundary.

For damage affecting posts and larger defects hazard mitigation may also include:

Fence Purpose	Main Types	Location	Purpose	Warning Signs / Contact	Temp fencing
Non Boundary & Specific Purpose					
Prevention of fall from height / into watercourse	Various	Above walls, culverts or landings on staircases	Prevention of fall from height or into water	Erect warning notices	On Boundary - Temporary barriers set back from edge Within Motorway Network - Netting set back from edge
Noise	Timber Noise Fence Plastic Noise Fence	Within network	Noise reduction	No additional requirement	
Handrail	Kee klamp	Steps within network	Safety on steps	Warning sign on both sides of the damage.	Flexible / Netting where there are gaps
Visibility screening	Close Boarded	Within network	Visibility screening	No additional requirement	
Other Boundary					
Very Low Risk of Access	P&R not stockproofed	Field with Crops Rural woods Road without footpath	Boundary		Flexible Netting
Low Risk of Access	Chain Link Palisade	Railway	Boundary	Contact Network Rail	Temporary Barriers
Medium Risk of Access	P&R Close Boarded Chain Link Palisade	Residential Commercial Urban	Boundary		Netting Temporary Barriers
High Risk of Access	P&R Close Boarded Chain Link Palisade	Residential Commercial Urban	Boundary with known intrusion / vandalism issues		Temporary panels
Very High Risk of Access	Chain Link Paladin Palisade	Schools Playing fields Footpath / bridlepath	Access Prevention		Temporary panels
Very High Risk of Access	Concrete Post & Panel Tylon				Temporary panels - solid preferred
Very High Risk of Access	P&R stockproofed	Stocked fields	Access Prevention		Stock Fencing

Table A6.4 - Hazard Mitigation Guidance for Larger Defects

Permanent Fence Types	Repair
Post and Rail 	Chain Link 
Close Boarded 	Concrete Post & Panel 
Kee klamp handrail 	Noise Fence 
Noise Fence 	Paladin 
Palisade 	Tilon Fence 

Table A6.5 – Permanent Fence Types

Temporary Fencing Types	
Flexible	
	Wire / TM tape with 'Motorway No Pedestrian' warning notices
Netting	
Orange Barrier Fence 	Debris Netting 
Temporary Barriers	
Plastic 	Metal 
Temporary Panels	
Mesh Panels 	Solid Panels 
Stock Fencing	
Cattle Post and barbed wire 	Sheep / horses / cattle Stockfencing 

Table A6.6 – Temporary Fencing Types and Usage

Defect rectification will be undertaken by MRT teams and/or specialist subcontractors. Fencing will be rectified on a like for like basis. If there are reasons why changes should be made (e.g. vandalism or fencing no longer serving a purpose) these shall be escalated to the Asset Champion for discussion with Highways England to determine whether changes should be made and the appropriate funding.

The AMOR team will organise rectification of Damage to Crown Property defects resulting from accidents, fire, vandalism or theft. For vandalism or theft crime numbers should be obtained. Hazardous defects will be rectified as per the guidance above. Non-hazardous defects are expected to be rectified within 6 months.

A.6.3.1 Defect Identification

Guidance is provided in the Area 10 ASC Highway Inspection Guides regarding hazardous, non-hazardous and superficial defects.

Route inspections will be undertaken as described in Table 7.2. These inspections will identify hazardous defects that can be seen from the carriageway, in particular:

- Accident damage
- Fire, theft or vandalism
- Missing rails and stock proofing.
- Fences, screens and walls in imminent danger of collapse
- Loose components liable to be blown off / fall causing damage to third party property or injury to members of the public or our own workforce.
- Alterations by third parties / stockpiling materials against fences (Highways England will be consulted regarding any works necessitated by third party alterations/materials)

The route inspections are supplemented by asset inspections which are primarily identifying the condition, non-hazardous and superficial defects. The frequency of these inspections is based on a combination of adjacent land use, condition and whether fencing can be seen from the carriageway. More details regarding these inspections can be found in the Fencing Asset Management Plan.

Ad hoc inspections will be undertaken for enquiries dealt with through the NCC. Whilst primarily investigating potential hazardous defects non-hazardous defects, superficial defects and condition may also be identified during these inspections.

A.6.3.2 Defect Verification

Defects reported via the NCC will be verified through ad hoc inspections.

If rectification works are over and above routine maintenance rectification works brief details of the location and nature of the defects that require addressing shall be passed to the Asset Champion. These will be raised as a network need for discussion with Highways England and developed as a scheme. Multiple defects may be included within single schemes for efficiency.

The following table indicates the approach that will be adopted. Works to rectify localised defects are expected to include:

- Re-nailing / replacement of end of life components
- Concreting footings where footings are loose
- Limited to works requiring less than 1 shift overall to complete ‘holding’ type works for a length of 1km

Routine Maintenance	Scheme (Renewal unless noted)
Make safe of hazardous defect	
Rectification of theft / vandalism	Rectification of repeated theft / vandalism (normally LNMS)
Rectification of damage to crown property defects (normally Road Traffic Collision / fire)	
	Rectification of defects temporarily repaired on previous contract

Rectification of hazardous defects:
• Localised and isolated defects to aging assets (see above)
  ○ Missing / loose / damaged rails
  ○ Insecure foundations
• Damage from falling trees / branches
	Rectification of defects resulting from:
	• Aging asset that is no longer maintainable (e.g. corroded metal, rotten or splitting timber and cracked / spalling concrete)
	• Geotechnical faults (e.g. subsidence)

	Superficial defects will be promoted as renewals for the later years of the forward programme.

Table A6.7 – Routine Maintenance v's Scheme

A.6.6 Planned Preventative Maintenance

Vegetation clearance is covered in the soft estate section of this document.

Graffiti cleaning is covered in sweeping and cleaning section of this document.

There is no requirement for routine maintenance of fences except gates. Gates shall be checked to ensure that they can be opened and operate safely and that locks are correctly fitted. If necessary, hinges and locks shall be lubricated.

Locations of gates are being compiled and are listed in Area 10 Vehicular Gates and Area 10 Pedestrian Gates stored in OnePlace. Locations are also being recorded in Confirm but cannot be recorded in HAPMS.

Currently no additional maintenance requirements have been identified for noise and environmental fences.

A.6.6.1 Delivered by

Planned preventative maintenance will be undertaken by MRT crews.

A.6.6.2 Frequency

The maintenance of gates shall be undertaken at 2 yearly intervals

A.6.6.3 Timescale

There are no seasonal restrictions on the timing of this work. To minimise travel time the work should be undertaken in conjunction with other works. Works at any location should only take a few minutes

A.7. AMOR PART 7 – GEOTECHNICAL

A.7.1 Scope

Geotechnical assets within the Area Network, comprising: embankment and cuttings on which the pavement and other assets are founded, and noise/landscape bunds.

***Out of Scope**: physical works (inc. surveys and renewals) beyond short term management of safety critical Defects.*

A.7.2 Condition data Information source(s)

Principal inspections of geotechnical assets, and hence identification of condition and respective defects, are to be the primary source of information. Inspections are to be carried out annually, in accordance with the GeoAMP.

The requirement for geotechnical Principal Inspections is stated in HD41/15. With the agreement of the Overseeing Organisation Geotechnical Advisor [OOGA], when the inventory is close to 100 per cent, the repeat cycle of inspections can vary based on the risk identified on a particular route or section of route. The risk based approach is also in accordance with the ASC.

The GeoAMP will manage inspections as detailed in HD41/15. It is understood that the last programmed inspections, undertaken in 2014/15, brought the Area 10 asset inventory close to 100 per cent. On this basis the inspection regime can return to a risk based approach for future works; this is in line with current guidance [HD41/15].

Highways England Geotechnical Database Management System [HA GDMS] provides a platform to record asset data, observations and defects that have historically been documented on the Area 10 network.

It is envisaged that additional condition data will also be available from incoming customer care enquiries and from the MRT Teams, during routine programmed inspections.

A.7.3 Response and repair timescales

The MRP has a duty to carry out short term management of Safety Critical Defects. Existing defects will be monitored through Route Inspections, undertaken by the MRT's, and the Area 10 Contract Risk Register.

The Asset Champion will assess risk associated with defects based upon relative density of historical records, proximity to significant infrastructure, carriageway type and time elapsed since last inspection. Consideration will also be given to the asset risk register.

General sources of risk known to be associated with earthworks present in Area 10 are mining [both coal and other], glacial lacustrine deposits, historical landslides and dissolution features. A risk profile for each route located within Area 10 is included in the GeoAMP. Typical geotechnical failures that may be encountered on the network are included in the Hazardous Inspection Defect Guide.

A.7.3.1 Defect Identification

The principal inspection programme is set out within the GeoAMP, which will manage all physical works.

Where the AMOR team notices any defective earthwork during routine inspection of adjacent HA assets, they are to alert the Asset Champion - Geotech. The AMOR Team is to record the following information:

- Location [including MP and carriageway direction]
- Type of earthwork [i.e. embankment, cutting or at grade]
- Nature of defect
- Any temporary works that have been deployed to make safe
- Where possible, photographs of the respective defect.

A.7.3.2 Defect Verification

Where geotechnical defects are identified, the Asset Champion – Geotech is to be notified; the defect is to be assessed by a geotechnical engineer. Physical works will be managed by the GeoAMP.

A.7.5 Hold Points and Release Mechanisms

Hold points and release mechanisms are specified in Annex 24, sub process 2.01 & 2.03

The geotechnical renewals cycle is the sequence of inspections, study and works that fits into a programme which suits the requirements of HD41/15, HD22/08 and the Value Management process. This process is controlled by the GeoAMP.

In any given financial year, a combination of the cycle stages would be undertaken at the same time.

A.7.6 Planned Preventative Maintenance

Due to the nature of the geotechnical asset, planned preventative maintenance is not typically undertaken.

The GeoAMP will manage all physical works [including inspections and renewals].

A.7.6.1 Timescale

Geotechnical defects that cause a hazard to persons or property shall have the hazard mitigated within 24 hours, and early warning notice to be raised. Remedial solutions are to be agreed with the Employer and managed in the GeoAMP.

The current forward programme of inspections is presented in Table 8.1 of the GeoAMP.

A.8. AMOR PART 8 – LIGHTING

A.8.1 Scope

Lighting equipment within the Area Network, specifically:

- *Luminaires, including their internal control electronics & electrics (including the photocell if fitted) and lamp & reflector.*
- *Lighting columns, including attached accessories, base or, if on a structure, mounting bracket.*
- *Road traffic sign lighting, including lamp, luminaire, photocell, cables, ducting.*
- *Other access lighting such as pedestrian walkways, cycle ways and subway lighting.*
- *The electrical and optical elements of tall mast lighting systems (20m or more in height) and catenary lighting systems.*
- *Associated electrical supplies, including ducting, chambers, cables and feeder pillars and all switch gear, control equipment (including the photocell if fitted), monitoring equipment and heaters therein.*
- *Alternate energy sources such as solar panels or wind turbines etc. used for the purpose of road lighting or sign lighting.*
- *Any energy saving equipment, i.e. midnight switch off equipment and/or dimming equipment.*
- *Any power distribution cables downstream of the Distribution Network Operator (DNO) connection point.*

Out of Scope:

- *Lighting situated in road tunnels.*
- *Road traffic signals.*
- *The non-electrical and structural elements of tall mast lighting systems (20m or more in height) and catenary lighting systems which are classified as structures. The objective is to maintain lighting to a standard that does not present a hazard to road users, road workers or third parties. Road lighting is to continue to fulfil its intended purpose as an accident reduction intervention.*

Other lighting continues to fulfil its intended purpose: road traffic signs lighting to highlight the location of a road traffic sign, gantry lighting to highlight the presence of the sign and to help read the sign, and other lighting (subway & access) is to provide route guidance and hazard identification.

The Asset Champion will assess risk associated with lighting with consideration given to the age of the asset, traffic flows, PIA statistics, maintenance costs and previous maintenance history.

A.8.2 Condition data Information source(s)

The Asset Champion shall develop and implement an Area 10 Lighting Asset Management Plan (LAMP) to demonstrate how the outcomes and deliverables will be achieved in the forthcoming year

A.8.3 Response and repair timescales

The Lighting Maintenance Manager will programme and rectify non-compliance as identified by the Asset Champion from the LOPS.

Category	Description	Examples	Rectification Time
Safety Hazard	Where a lighting column has been damaged and is likely to cause harm to public or property	Leaning lighting column, Exposed cabling and damaged lanterns.	Make safe within 24 hours and Permanent repair within 6 months
Consecutive Lamp Failure	Where there are 6 or more unlit lanterns out of every 20	Phase faults	Within 7 days of identification
Sequential Lamp Failures	Where there are more than two unlit lanterns in succession	Supply failure in Feeder pillar. Cable faults	To rectified by the next Lighting Operational Survey (LOPS)
Random Lamp Failures			At the next routine maintence visit or planned repair programmes

Table A.8.3 Repair Time scales

Life expired equipment shall follow the VMR process.

A.8.3.1 Defect Identification

Route inspections will be undertaken at frequencies outlined in Table 7.2. These inspections will be carried out at traffic speed, in daylight hours and will identify defects that can be seen from the main carriageway. These inspections are to identify lamps that are lit during the day and hazardous defects as follows:-

- Damaged columns and lit signs.
- Missing doors.
- Damaged feeder pillars.

The Asset Champion will programme Lighting Operational Performance Surveys (LOPS) as scheduled in AMOR, deliverable 5.

A survey will be undertaken by the Lighting Maintenance Team in each of the following months, April; August; October; November; January and February amounting to 6 per annum, plus one additional undertaken within 5 days following 26th December. All results are to be reported to Employer by the third working day the following month, with the exception of the 26th December scout, which shall be with the Employer within 10 working days after 26th December.

The Asset Champion will analyse the results from the LOPS and in conjunction with LAMP and maintenance deliverables determine the scouting regime, based on risk and consequence.

Detailed inspections will be carried out at the intervals described in the LAMP – Bulk Lamp Replacement Programme

A.8.3.2 Defect Verification

The results of the Lighting Operational Performance Surveys (LOPS) are recorded on the Area 10 API excel spread sheet.

Detailed inspections will assess the condition of the asset and will be recorded on the Area 10 Lighting Asset Condition Record

The Asset Champion is to review inspection data and the Maintenance Manager will produce a maintenance schedule for rectification.

A.8.4 Performance

The performance levels may relax with the agreement of the Employer if the following criteria can be demonstrated:-

- There has been a failure by 3rd party to facilitate or co-operate with fault rectification, excluding sub-contractors and equipment.
- The cause of the fault is such that fault rectification required substantial remedial works requiring extensive planning and scheduling.
- Access to site is not possible due to circumstances wholly outside the control of the contractor.
- The Employer has requested that the fault is not rectified.
- A risk assessment has shown that the most appropriate action is to switch off all or the vast majority of lights within the lighting scheme.
- Adverse weather conditions prevent setting out of traffic management, operation of equipment or effective fault rectification.

A.8.5 Hold Points and Release Mechanisms

The MRP will be updated with any revised inspection intervals and defect management strategy as detailed in the Area 10 Lighting Asset Management Plan

A.8.6 Planned Preventative Maintenance

The lighting shall be maintained to performance levels as described in the Area 10 Lighting Asset Management Plan

A.8.6.1 Delivered by

The Street Lighting maintenance will be delivered by the Lighting Maintenance team based in Hale Depot.

A.8.6.2 Frequency

Maintenance operations shall be integrated within a co-ordinated maintenance programme and be planned so that the lamp change, detailed inspections occur at the same time as detailed in LAMP – Bulk Lamp Replacement Programme

Electrical test and inspection will be completed separately as detailed in LAMP – Periodic Test and Inspection Programme

During the maintenance visit the following activities are to be carried out:-

A.8.6.2.1 Luminaires

The external surfaces of luminaries shall be cleaned during bulk lamp change. The internal surfaces shall only be cleaned where significant deposits are observed.

All electrical terminations shall be cleaned, tightened and renewed where necessary

All locks, catches and hinges are to be lubricated.

Spigot mounting screws shall be checked to ensure that the luminaire is in the correct alignment. Also inspect for signs of fatigue, cracking or abnormal wear.

The end cap of each lamp shall be indelibly marked with the date of installation.

A.8.6.2.2 Columns

The base compartment of the column shall be left clean and clear of any debris. The column number shall be clean and legible. Damaged or illegible numbers are to be replaced.

All electrical components shall be cleaned, tightened and renewed where necessary.

Circuit protective devices shall be checked for correct rating and replaced where defective or incorrect.

The cabling between the cut out and the luminaire shall be tested IAW the electrical test as specified by BS7671 every six years.

The column shall be inspected for any structural or mechanical defects.

All locks, catches hinges and studs etc are to be lubricated.

The following records are to be collated on site and passed to lighting supervisor at end of shift handover:-

- Maintenance undertaken inclusive of materials
- Condition of lighting asset
- Any residual issues encountered.

The Lighting Supervisor and the Lighting Maintenance Manager to discuss operation undertaken and record any opportunities for improvement, taking into account the Task, Constraints of Individuals/Operatives and the Environment. All information to be returned to Asset Champion for review

A.9 AMOR PART 9 – PAVED AREAS

A.9.1 Scope

Paved areas, comprising: trafficked areas, hard shoulders, footways, cycle tracks, bridle ways, paved pedestrian areas, hard-standing paved areas, paved central reserves, traffic islands and cross-overs, covers, gratings, frames, boxes, kerbs, edgings and preformed channels which fall within the Area Network.

A.9.2 Condition data Information source(s)

The vast majority of condition data will come from pavement asset inspections and machine based survey data. Additional data particularly hazardous defects will also come from:

- MRT inspections
- Asset inspections & Network Tours
- Enquiries via Network Control Centre (NCC) from
    - Customer enquiries
    - Regional Control Centre
    - Police
    - BBMM and contractors personnel

A.9.3 Response and repair timescales

On notification of the likelihood of an actionable defect, either via a customer complaint communicated via the Customer Care team or through a direct call or email to the NCC, a response including a site visit will be required within 24hours to verify the nature and risk provided by the defect, unless we are confident we are already aware and can link existing records, e.g. a defect is picked up via routine inspection by MRT's and is also reported by a customer on the same day.

Pavement defects have set performance metrics with prescribed dimensions within the Asset Maintenance and Operational Requirements – Part 9 – Paved Areas Maintenance Requirement document. There is a performance requirement level dependent upon these dimensions, many with a time limit requiring repair within 24 hours. The type of repair is not specified as it is a risk based requirement therefore the default position will be to make the area safe however for a large number of the typical types of defects encountered e.g. the breaking up of the surfacing via pothole type defects, the repair technique deployed by the MRT's, with specified material types/products, can be suitable and qualify as a temporary repair as well as the make safe.

A.9.3.1 Carriageway

HD31/94 states "there are circumstances when an emergency pothole repair or carriageway patch is required. In these circumstances use of a pre-bagged proprietary material is allowed. The majority of BBA approved Permanent Cold-lay Surfacing Materials (PCSM) or other cold applied bituminous materials that are tamped into the defective area are only suitable as make safe repairs due to the durability of the material after this type of installation and the traffic flows on the strategic road network.

To make safe a carriageway defect it may be feasible to initiate a repair there and then using appropriate materials (such as a PCSM) or methods such as sweeping, however in certain instances due to high traffic flows, size/depth of the defective area, condition of surrounding material this may not be possible. In these instances the defect may need to be segregated, by traffic management, if sufficiently hazardous, and/or appropriate warning signs deployed

e.g. a defect that has taken out the surfacing to the depth of the bridge deck. The initial defect report should be closed out following this action however a new defect, linked to the original, needs to be raised in the same location in order for the mitigation to be effectively monitored until further repair is completed. This will form the Section 58 defence. For slippery road warning signs these will be put in place and monitored until skid resistance is restored, normally via renewal activity.

The following tables/diagrams define the most common type of defect to the paved asset on Area 10 and BBMM's approach to deliver the outcomes of AMOR. This table gives an indication as to the type and frequency of occurrence to a defect that could be expected before an asset is deemed "end of life" and requires renewal activity;

The maintenance and renewal history has a bearing on the type of action required.

- There may be funded renewal schemes in the programme with the potential to be brought forward however if not in these instances make safe and temporary repairs would be more economical until the renewal activity is delivered, unless the risk from the type of defect means Section 58 defence would be compromised in the interim.
- Some surfacing materials may still be within a warranty period and consideration as to who completes the permanent repair is required unless it impacts upon the Section 58 defence. The installer should be given the option to complete the repair. Areas of the network that have residual warranty can be clarified with the Asset Team so that the original installer can be notified of the failures.

Defect type	**Size & frequency of occurrence**	**Existing Surfacing material**	**Make Safe/Hazard Mitigation Action**	**Typical Techniques for Temporary (T) and Permanent Repair (P)**
Defect repair (Surface course only	≥ 20 mm depth and ≥ 100 mm diameter to a maximum of 20 number defects per lane or carriageway km in material of the same source, age & installation date	HRA	Temporary fill where possible. Warning signs and/or segregation by traffic management	Mechanically Compacted PCSM (T) EPM (P) Mastic (T) Fill & screed (T) Thermal repair (P) Hot patching (P)
Defect repair (Surface course only)	≥ 150 mm diameter, or of ≥ depth than that of the surface course thickness, or of > depth than 40mm to a maximum of 10 no per lane or carriageway km in material of the same source, age & installation date	HRA	Temporary fill where possible. Warning signs and/or segregation by traffic management	Mechanically Compacted PCSM (T) EPM (P) Mastic (T) Fill & screed (T) Thermal repair (P) Hot patching (P)

Defect type	Size & frequency of occurrence	Existing Surfacing material	Make Safe/Hazard Mitigation Action	Typical Techniques for Temporary (T) and Permanent Repair (P)
Defect repair (surface course only) Longitudinal or wheelpath cracking, open construction joints	>20mm but <50mm width between 1 and 10 linear m to a cumulative maximum of 50 m per lane or carriageway km in material of the same source, age & installation date	HRA	Temporary fill where possible. Warning signs and/or segregation by traffic management	Mechanically Compacted PCSM (T) EPM (P) Mastic (T) Fill & screed (T) Thermal repair (P) Hot patching (P)
Defect repair (surface course only) Not just “Potholes” but includes surface disintegration in form of Fretting/ Ravelling	≥ 20 mm depth and ≥ 100 mm diameter to a maximum of 15 number defects per lane or carriageway km in material of the same source, age & installation date	TSCS	Temporary fill where possible. Warning signs and/or segregation by traffic management	Mechanically Compacted PCSM (T) EPM (P) Mastic (T) Fill & screed (T) Thermal repair (P) Hot patching (P)
Defect repair (surface course only) Not just “Potholes” but includes surface disintegration in form of Fretting/ Ravelling	≥ 150 mm diameter, or of ≥ depth than that of the surface course thickness, or of > depth than 40mm to a maximum of 15 number defects per lane or carriageway km in material of the same source, age & installation date	TSCS	Temporary fill where possible. Warning signs and/or segregation by traffic management	Mechanically Compacted PCSM (T) EPM (P) Mastic (T) Fill & screed (T) Thermal repair (P) Hot patching (P)

Defect type	Size & frequency of occurrence	Existing Surfacing material	Make Safe/Hazard Mitigation Action	Typical Techniques for Temporary (T) and Permanent Repair (P)
Defect repair (surface course only) Longitudinal or wheelpath cracking, open construction joints	>20mm but <50mm width between 1 and 10 linear m to a cumulative maximum of 30 m per lane or carriageway km in material of the same source, age & installation date	TSCS	Temporary fill where possible. Warning signs and/or segregation by traffic management	Mechanically Compacted PCSM (T) EPM (P) Mastic (T) Fill & screed (T) Thermal repair (P) Hot patching (P)
Defect repair (old core holes)	<300mm diameter	Any	Temporary fill where possible. Warning signs and/or segregation by traffic management	Mechanically Compacted PCSM (P) Mastic (P)
Defect on detector loops	Any size	Any	Temporary fill where possible. Warning signs and/or segregation by traffic management	EPM (P) Mastic (T) Fill & screed (T) Re-commission of loop as an opportunity/ emergency renewal scheme
Potholes on/near structures as a result of “tanking”, bearing collapse, wing wall settlement etc.	Any size and depth	Any HRA	Temporary fill where possible. Warning signs and/or segregation by traffic management	Hot patching (P) After one intervention subsequent promotion as essential works/ holding schemes until underlying issue resolved
Defect repair (Delaminated HFS or Surface Dressing including paver laid surface dressing)	Any area	HFS/ Surface Dressing/TSCS	Temporary fill where possible. Warning signs and/or segregation by traffic management	EPM (P) Fill & screed (T) Promotion as an opportunity/ emergency renewal scheme

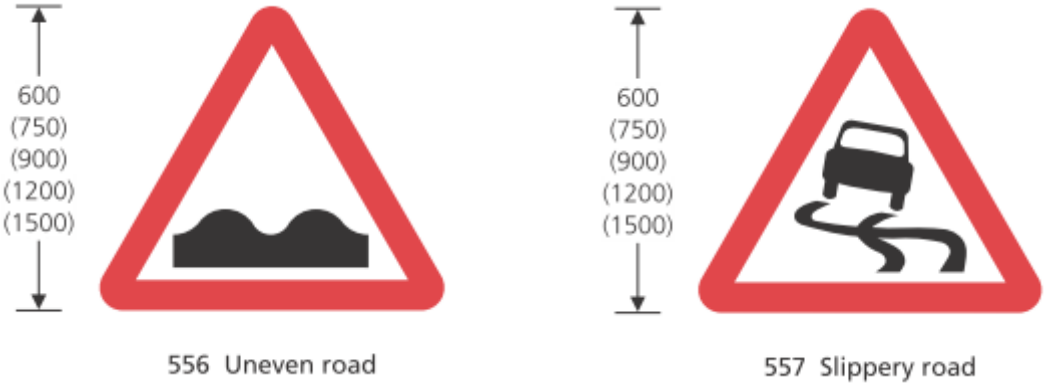
Defect type	Size & frequency of occurrence	Existing Surfacing material	Make Safe/Hazard Mitigation Action	Typical Techniques for Temporary (T) and Permanent Repair (P)
Defect repair (Surface course with evidence of temporary lining removal)	Any length	All	Temporary fill where possible. Warning signs and/or segregation by traffic management	EPM (P) Fill & screed (T) Promotion as an opportunity/ emergency renewal scheme
Defect repair (Structural failure to pavement)	Any size and depth	All	Temporary fill where possible. Warning signs and/or segregation by traffic management	Hot patching (P) 556 warning signs to remain until promotion & delivery as an opportunity/ emergency renewal scheme
Defect repair (Spalling joints, stepping, cracking to bays)	Any size and depth	Concrete	Temporary fill where possible. Warning signs and/or segregation by traffic management	EPM (P) Fill & screed (T) One off emergency permanent repair to make safe. 556 warning signs to remain until promotion & delivery as an opportunity/ emergency renewal scheme

Table A9.1 – Carriageway Pavement Defect Repair Guidance

Defect type	Size	Make safe/Temporary action/Hazard Mitigation Action	Follow up Action
Defective ironwork including covers, gratings, frames and boxes	Any size and depth	Ensure ironwork is the HA's Asset. Temporary fill to defective surround where possible. Secure loose covers. Warning signs (see below) and/or segregation by traffic management	**Repair as per HCD or type approved ironwork reinstatement system** Promotion as an opportunity/ emergency renewal scheme

Table A9.2 – Other Carriageway Asset Defect Repair Guidance

Diagram 556 schemes are to be used as a temporary measure only. The signs should be installed where make safe repairs are installed and the repair area could fail again prior to next routine inspection. Typical examples of this will be on ironwork; structural failures to the pavement or on defects associated with structures but they could also be on areas within a planned renewal scheme when the weather forecast for the interim period could increase deterioration e.g. prolonged wet or cold periods.



Warning Signs

A.9.3.2. Footway

HD40/01 states "Defects which may be identified as requiring emergency treatment are significant trips, depressions, bumps, cracks, potholes, missing modular units or contamination. If it is not possible to eliminate the defect in the short term, then pedestrians should be warned of the defect by barriers being placed around it."

To make safe a footway defect it may be feasible to initiate a repair there and then using appropriate materials (such as a PCSM) or methods such as sweeping/high pressure jetting however in certain instances due to high footfall, proximity to the running lanes, size of the defective area, or the type of defect e.g. rocking flag/slab this may not be possible. In these instances the defect should either be segregated and/or appropriate warning signs deployed. The initial defect report can be closed out on this action however a new defect should be raised in the same location in order for the mitigation to be effectively monitored until a temporary or permanent repair can be completed. This will form the Section 58 defence.

Defect type	Size	Make safe/Temporary action/Hazard Mitigation Action	Follow up Action
Defective ironwork including covers, gratings, frames and boxes	Any size and depth	Ensure ironwork is the HA's Asset. Temporary fill to defective surround where possible. Secure loose covers. Warning signs and/or segregation by traffic management	**Repair as per HCD or type approved ironwork reinstatement system** Promotion as an opportunity/ emergency renewal scheme
Kerbs in pedestrian areas	Any	Temporary fill where possible. Warning signs and/or segregation by traffic management	**Reset kerbing**

Defect type	Size	Make safe/Temporary action/Hazard Mitigation Action	Follow up Action
Flagged/Block paved footways	Any	Temporary fill where possible. Warning signs and/or segregation by traffic management	**Reset Flags/Blocks**
Concrete hard standings	Any	Temporary fill where possible. Warning signs and/or segregation by traffic management	**High strength flash set concrete** **EPM**

Table A9.3 – Footway Asset Defect Repair Guidance

A.9.3.3 Defect Identification

Guidance is provided in the Hazardous Defect Inspection Guide and the Asset Condition Inspection Guide links to AMOR Part 9

Route inspections will be undertaken at frequencies outlined in *Table 7.2.* These inspections will be carried out at traffic speed, in daylight hours and will identify hazardous defects, as defined in the Hazardous Defect Inspection Guide associated with the main carriageway.

Where serious defects are identified by the MRTs they should immediately notify the Supervisor who will inspect the Defects and escalate to the Maintenance Manager as necessary.

Footways will require a walked inspection in order to assess defects as per the user would encounter them and due to the nature of the hazards the defects can present e.g. tripping. The frequency of this inspection will depend upon the hierarchy of the footway within the network. The hierarchy for the footways and cycleways within Area 10 has been assessed to determine inspection frequency and can be found in OnePlace, as well as in the Pavement, Road Markings & Studs Asset Management Plan April 2015. The identification of hazardous defects on footways will take place at the same time as any service inspections. In addition to the defects requiring rectification within 24hrs of verification the other defects listed under AMOR namely, Pothole > 20 mm depth and > 100 mm diameter and Local Surface Deformation > 20mm when measured under a 2m straight edge should be identified.

Where the footways and pedestrian crossings intersect, the defect dimension for the footway classed as “All other areas” within AMOR, will take precedence over the defect dimension for the carriageway classed as “Trafficked Areas and Hardshoulder”, due to the increased risk of tripping to the pedestrian. This means that the ≥ 25mm depth or ≥ 150mm diameter tolerance becomes actionable in the carriageway and have performance requirements of zero within 24 hours of verification as stipulated under AMOR.

*There is no agreed definition of a pothole. Many would agree that they are isolated failures in a road, footway or cycleway that have caused a sizeable hole. It is the precise size and possible cause where there is less agreement. Latest research has developed the definition “a local deterioration of the pavement surface in which the material breaks down in a relatively short time and is lost, causing a steep depression”

The dimensional aspects within AMOR combined with the definition “pothole” can lead to confusion as to identification of defects. Due to the various types of surfacing materials, pavement construction and failure mechanisms and means that many of the defects that manifest in the road surface are commonly referred to as potholes when they are often something different. Any loss of integrity to the pavement either through localised areas such as “potholes” to surface disintegration in the form of fretting and ravelling will provide a

hazard to the road user and is actionable under the performance requirements criteria within AMOR. The aspects of the defect definitions for paved area maintenance requirements in this section have been set out on this basis.

A.9.6 Planned Preventative Maintenance

There is no definition of preventative maintenance within the AMOR Defined Terms. Activity note MSRP5 of Figure 0.4, Risk Based Make Safe and Repair Process states that preventative maintenance is required “To avoid deterioration of the asset – this could be for economic reasons i.e. it is better value to incur cost in order to avoid a higher cost later, or more importantly for safety reasons to avoid deterioration of the defect that could cause a danger to users of the highway

Maintenance to repair defects can and should be planned however, once a pavement defect has been instigated, the opportunity for true “preventative maintenance” is likely to have passed and it is more a case of monitoring and managing the rate of its deterioration, often through the optimum use of make safe, temporary or permanent repairs. For this reason, in the context of AMOR, preventative maintenance is seen as timely application of the guidance in tables A9.1, 9.2 & 9.3.

A.9.6.1 Delivered by

The maintenance activities will be delivered in-house or by specialist subcontractors.

A.10. AMOR PART 10 – ROAD MARKINGS AND ROAD STUDS

A.10.1 Scope

Road markings and road studs in all materials within the Area Network.

A.10.2 Condition data Information source(s)

Primary data source is HAPMS, hazardous defects are in CONFIRM and other condition data is available within OnePlace.

The vast majority of condition data will come from road-marking asset inspections and machine based survey data. Additional data particularly hazardous defects will also come from:

- MRT route inspections
- Asset inspections & Network Tours
- Enquiries via Network Control Centre (NCC) from
    - Customer enquiries
    - Regional Control Centre
    - Police
    - BBMM and contractors personnel

A.10.3 Response and repair timescales

A.10.3.1 Defect Identification

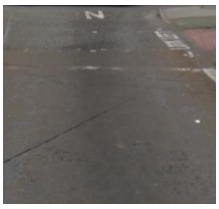
Defective road markings and studs requiring an immediate make safe and repair will be those that present an immediate or imminent hazard and have a legal requirement e.g. a stop and give way line, double white centre lines, or a missing single stud associated double white centre lines. Warning signs to diagram 7012 (with or without distance) shall be displayed until the lines/studs can be renewed. Signs will require removal within 28 days of the works being completed. The wording on the sign can be amended to cover “No Give Way Markings” and “No Stop Markings”

Flow diagram B in Annex A of TD26/07 states if an inspection shows deficiency in “a critical safety area e.g. stop lines at a junction” then this should be a CAT1 defect equivalent to an AMOR/ASC Immediate Defect requiring a make safe. It goes on to state “Critical areas of the network refer to those areas of the network that may pose a risk to the road user if badly worn “ but no further guidance or definitions on safety are given.

As this leaves an element of subjectiveness to the application of this statement the definition will be applied as:-

Safety Critical

- Give way lines and/or stop lines.
- Double white centre lines not measured for reflectivity by High Speed Machine
- Longitudinal lane markings on roundabouts that guide user to a specific destination/exit e.g. spiral markings
- Deflection arrows with no associated or missing fixed signage
- Solid white lines at segregated left turn lanes & lane gains/drops with ghost islands (not the hatching)

Defect type	Typical condition of immediate defect	Maximum timeframe between make safe repair and temporary or permanent	Make Safe/Hazard Mitigation Action	Typical Techniques for Temporary (T) and Permanent Repair (P)
Give way or stop line	 	6 months	Warning signs	Preformed line (T) Screed applied (P)
Double white centre lines and/or missing studs		6 months	Warning signs	Preformed line (T) Surface mounted stud (T) Screed applied (P) Insert (P)
Lane markings on roundabouts		9 months	Warning signs	Preformed line (T) Screed applied (P)

Defect type	Typical condition of immediate defect	Maximum timeframe between make safe repair and temporary or permanent	Make Safe/Hazard Mitigation Action	Typical Techniques for Temporary (T) and Permanent Repair (P)
Deflection arrows		9 months	Warning signs	Preformed line (T) Screed applied (P)
Solid white lines at segregated left turn lanes& lane gains/drops	 	12 months	Warning signs	Preformed line (T) Screed applied (P)

Handheld retro reflective and luminance surveys will not be completed as the inspection data for wear and conspicuity should be suitable for promoting timely renewal. The safety aspects of installing traffic management arrangements for a survey then again for a subsequent scheme when combined with the additional factor of the survey and subsequent renewal costs (almost equivalent) means it is disparate in terms of risk and whole life cost to visit the area twice.

A.10.3.2 Defect Verification

Verification is as per AMOR Part 10 and for immediate defects should be 24hrs.

Guidance is provided in the Area 10 ASC Highway Inspection Guides (Hazardous Inspection Defect Guide and Asset Condition Inspection Guide) regarding hazardous and non-hazardous defects which link to AMOR Part 10.

TD26/07 defines road markings that are <=80 mcd/m 2 /lux on unlit single carriageways or on unlit dual carriageways and motorways at an interchange, or of a continuous length >1mile as a CAT1 defect equivalent to an AMOR/ASC Immediate Defect requiring a make safe. This measured condition will come from retro reflectivity data from a high speed monitor (HSM) that has known deficiencies when it comes to the repeatability and accuracy of the measurements. Before a defect is raised by the Asset Champion on the strength of these values alone, consideration will be given to other sources of data and may result in additional inspection to confirm the condition. In this instance 28 days applies. Where renewal has not been programmed in these areas it will require a make safe arrangement, in the form of warning signs to diagram 7012, instructed by the Asset Champion and be displayed until the lines can be renewed.

A.10.6 Planned Preventative Maintenance

For all longitudinal and transverse road markings including stop lines, give ways and legends deterioration is generally a gradual process which can be monitored and programmed for renewal. AMOR requires the service provider to “Manage deterioration of road markings and road studs such that they give effect to regulatory provision in the Traffic Signs Regulations and General Directions (TSRGD).” Machine based surveys can assist in monitoring condition although not in all areas.

There is no definition of preventative maintenance within the AMOR Defined Terms. Activity note MSRP5 of Figure 0.4, Risk Based Make Safe and Repair Process states that preventative maintenance is required “To avoid deterioration of the asset – this could be for economic reasons i.e. it is better value to incur cost in order to avoid a higher cost later, or more importantly for safety reasons to avoid deterioration of the defect that could cause a danger to users of the highway.”

For the roadmarking and stud assets preventative maintenance can only be achieved through a renewal activity. This requires good inspection data to ensure an accurate handle on service lives which in turn assists in formulating a robust renewal programme linked in with the pavement asset & other temporary scheme works and then requires appropriate funding streams. Maintenance to repair defects e.g. missing inserts or worn stop lines can and should be planned however, once a defect/condition has been instigated or reached, the opportunity for true “preventative maintenance” is likely to have passed and it is more a case of monitoring and managing the rate of its deterioration, often through the optimum use of make safe, and localised temporary or permanent repairs.

With regard to hazardous defects, as the road marking and stud asset becomes defective it requires timely identification, intervention with an appropriate repair, effectively becoming an aspect of preventative maintenance.

A.10.6.1 Delivered by

The maintenance activities will be delivered in-house or by specialist subcontractors.

A.11 AMOR PART 11 – ROAD RESTRAINT SYSTEMS

A.11.1 Scope

All vehicle restraint systems and pedestrian restraint systems within the Area Network, including: vehicle safety barriers, crash cushions, terminals, transitions, pedestrian guard rails, vehicle parapets and pedestrian parapets on bridges and other structures.

However vehicle parapets and pedestrian parapets are not recorded in Highway Agency Pavement Management System and renewal for them is funded from renewal of structures not renewal of roads. Inspection of these assets is undertaken as part of the structures inspections so for the purposes of the MRP they are covered in structures.

The following table describes the scope. The asset types listed in ADMM are in bold.

Road Restraint Systems within scope		**Similar Assets not included**
Linear Assets	**Point Assets**	**Continuous Surface & Sub-Surface Assets**

Vehicle Restraint System
• Non-proprietary barrier systems
  ○ Tension Corrugated Beam (TCB) Single & double sided
  ○ Open Box Beam (OBB) – Single & Double Sided
  ○ Wire Rope
  ○ Double Rail Open Box Beam
  ○ Untensioned Corrugated Beam – Single & Double Sided
  ○ Rectangular hollow section
• Proprietary barrier systems such as Vetex & Flexbeam
• Rigid Concrete Barrier (RCB)
• Higher Vertical Concrete Barrier
Pedestrian Guard Rail
VRS Add On Motorcycle protection
• Temporary Barriers including BarrierGuard & Varioguard
	End Terminals
	Crash Cushion
	Transitions
		• Parapets and handrail to structures e.g. along wing walls (See Structures section)
		• Handrail to culverts, steps and emergency telephone boxes (See Fencing section)

Table A11.1 – Types of Road Restraints Systems

A.11.2 Condition data Information source(s)

The vast majority of condition data will come from fencing asset inspections. Additional data particularly hazardous defects will also come from:

- MRT inspections
- Enquiries via Network Control Centre (NCC) from
    - Customer enquiries
    - Regional Control Centre
    - Police
    - BBMM and contractors personnel

A.11.3 Response and repair timescales

Hazardous defects will be mitigated within 24 hours.

Hazardous defects shall be scored in accordance with AMOR appendix 11 Lane Restrictions at Barrier Repairs. The timescales for repair are not fixed within AMOR appendix 11, but have been agreed for CPF as:

- High — 7 days (initial treatment can occur that will reduce the risk associated with the defect to medium)
- Medium — 28 days
- Low — 28 days (Previously agreed with HE that this timescale is subject to the prioritisation of the higher risks)

A.11.3.1 Defect Identification

Guidance is provided in the Area 10 ASC Highway Inspection Guides regarding hazardous, non-hazardous and superficial defects.

Route inspections will be undertaken as described in Table 7.2. These inspections will identify hazardous defects that can be seen from the carriageway, in particular:

- Damage resulting from road traffic collisions, theft and vandalism
- Very heavy corrosion (holes in beams, complete loss of section in posts)*
- Signs etc. attached to pedestrian guardrail obstructing visibility

*As VRS reaches end of life it should be replaced through renewal schemes so very heavy corrosion should not have been allowed to develop. As such when these defects are identified they will be notified to the Asset Champion and funding sought for their renewal.

Asset inspections will be undertaken every two years for vehicle restraint systems by MRT RRS crews and/or specialist crews. and annually for pedestrian guardrail. This frequency may be altered if additional information is obtained to develop a more risk based inspection frequency.

Defect mitigation will be undertaken by MRT RRS teams and/or specialist subcontractors.

The mitigation methods for VRS are outlined within AMOR appendix 11. For pedestrian guardrail mitigation could include:

- Removal of posts, panels or pales protruding into road or footway.
- Installation of temporary plastic or metal barriers to fill gaps in the barrier.
- Installation of netlon to highlight damaged sections.

Defect repair will be undertaken by MRT RRS teams and/or specialist subcontractors. For vandalism or theft crime numbers should be obtained. RRS will be normally be repaired on a like for like basis except:

- Where components are no longer permitted to be used (e.g. welded angle beams).
- As described in BS7669:3 section 4.
- Consideration will be given to use of socketed foundations for pedestrian guardrail to ease future maintenance but with consideration to theft / vandalism

Other suggestions for alterations should be escalated to the Asset Champion for discussion with Highways England to determine whether changes should be made and the appropriate funding.

A.11.3.2 Defect Verification

Defects reported via the NCC will be verified through ad hoc inspections.

If permanent repair works are over and above routine maintenance repair works brief details of the location and nature of the defects that require addressing shall be passed to the Asset Champion. These will be raised as a network need for discussion with Highways England and if agreed, developed as a scheme.

The following table indicates the approach that will be adopted.

Routine Maintenance	Scheme (Renewal unless noted)
Make safe of hazardous defect	
Repair of theft / vandalism	Potential LNMS scheme if there are repeat occurrences
Repair of Road Traffic Collision damage	
	Permanent repair of defects temporarily repaired on previous contract
Defects potentially affecting integrity of system*: • Missing bolts, washers, nuts, clamp plates • Seized bolts • Incorrect bolts, washers, nuts	Defects / issues relating to original installation and mounting height: • Posts installed with the incorrect orientation • Slot bound posts • Timber posts • Incorrect height

Routine Maintenance	Scheme (Renewal unless noted)
	• Incorrect laps on beams • Non-standard components • Components no longer permitted for use • Alignment / working width / approach and departure lengths
	End of life issues: • Corrosion • Cracking
	Superficial defects • Minor corrosion / cracking

*Defects identified as part of the first round of inspections or within an area of a previously proposed network need will be treated as schemes.

Table A11.2 – Routine Maintenance v Scheme

A.11.6 Planned Preventative Maintenance

A.11.6.1.1 General

Proprietary systems shall be maintained in accordance with manufacturer's guidance. Currently the locations of proprietary systems and the special requirements of the manufacturers are not known. Until these are clarified no additional maintenance requirements will be undertaken to those specified below. There are no tensioned proprietary systems known to be on the network.

A.11.6.1.2 Re-tensioning

Re-tensioning is required for

- Tensioned corrugated beams
- Wire rope
- Rectangular hollow section

The frequency for undertaking re-tensioning of non-proprietary VRS is not clearly specified in AMOR as it refers to BS7669:3 which states that requirements for maintenance should be specified and an example can be found in Trunk Road Maintenance Manual. However TRRM, Network Maintenance Manual and Well Maintained Highways all require re-tensioning at 2 yearly intervals.

BBMM will adopt re-tensioning at 2 yearly intervals.

As required by AMOR the set screws for tensioned corrugated beam will be renewed when undertaking re-tensioning. Re-tensioning will be undertaken in accordance with BS7669:3. The standard describes suitable anchorages and the process of tightening the adjuster bolts and lap screws along with the torque settings. Section 2.1.1.9 for single sided tensioned corrugated beam, 2.1.2.9 for double sided tensioned corrugated beam, 2.4.1.9 rectangular hollow section and 2.5.1.9 for wire rope.

A.11.6.1.4 Find and Fix

When the VRS maintenance re-tensioning is being undertaken the VRS will also be inspected.

Various defects identified in the asset inspections shall be recorded and repaired on a find and fix basis.

- Missing bolts, washers, nuts, clamp plates
- Seized bolts
- Incorrect bolts, washers, nuts

A.11.6.1.5 Steel Systems

Details of any special requirements are yet to be confirmed.

In conjunction with re-tensioning works reflectors installed on beams shall be cleaned.

Figure A11.1 – Barrier Reflectors

A.11.6.1.6 Concrete Systems

Where weep-holes are installed these need to be rodded to ensure that they are kept clear

A.11.6.1.7 Temporary Barriers

For the purposes of the MRP temporary barriers are those being used as hazard mitigation (e.g. at parapet damage) on the network, not barriers forming part of an ongoing scheme. As such the barriers have associated traffic management.

When temporary barriers are installed for a long period of time, it is important that debris is not allowed to build up around the barriers as it is likely to impede the flow of water with the potential to causing flooding. Due to limited access to the rear of the barriers sweeping by hand may be required. Reflectors on the barriers should be periodically cleaned.

A.11.6.1.8 Emergency Crossing Point Gates

Details of the requirements for emergency crossing points are given in the Emergency Crossing Point Gates Operational Plan.

A.11.6.1.9 Emergency Gates

There are emergency gates for the Trafford Centre. There are three gates/barriers. There is a barrier within Trafford Centre, a gate on the boundary and an emergency crossing type

RRS gate. The first two are understood to be maintained by the Trafford Centre. The RRS gate has currently been removed by Manchester Smart Motorway scheme but is due to be reinstalled as part of their works. The type that will be reinstalled and its maintenance requirements are currently unknown.

A.11.6.1.10 Snow Gates

There is a set of snow gates situated on the M62 between J22 and J23. This is a gated crossing point which is to be used by Area 10 winter maintenance vehicles & plant only. The gates are situated within the Area 12 network and are situated within an area of widened central reserve at MP 77/5. The gates are only used during ploughing conditions when the westbound main carriageway is down to single lane running. The gates allow Area 10 winter maintenance vehicles to turn around without having to travel to J23. This saves a significant amount time and cuts down free run travel.

The gates are to be checked prior to the onset of the winter period with the hinges and lock being greased / oiled as appropriate.

Figure A11.2 – M62 Snow Gates

A.11.6.1.11 Crash Cushions and Terminals

Details of any special requirements are yet to be confirmed. In conjunction with re-tensioning works, hi-visibility markings and covers shall be cleaned.

Figure A11.3 – Examples of Terminals

A.11.6.1.12 Pedestrian Guardrail

No routine maintenance requirement.

A.11.6.2 Delivered by

The maintenance activities will be delivered by in-house or subcontract RRS trained operatives.

A.11.6.3 Frequency

The maintenance frequencies are as shown below:

Asset / Activity's	Frequency
• Re-tensioning of tensioned corrugated beam & wire rope • Find & fix • Cleaning of reflectors / hi-visibility markings • Rodding of weep holes	2 yearly
• Emergency Crossing Point Gates	Annual
• Snow Gates	Annual, just prior to winter
• Temporary barriers – cleaning reflectors / sweeping	Inspected in association with traffic management maintenance and cleaned as required

Table A11.3 – Maintenance Frequencies

A.11.6.4 Timescale

Assuming re-tensioning is undertaken at 4km per shift and there is approximately 880km then the works will take approximately 220 shifts.

A.12. AMOR PART 12 – ROAD TRAFFIC SIGNS

A.12.1 Scope

Traffic signs within the Area Network, including all posts, supports and fastenings; all bollards; mechanical variable message signs, together with associated electrical equipment where appropriate.

Out of Scope:

- *The lighting of road traffic signs (which are included in Lighting Maintenance Requirements);*
- *Structural aspects of road traffic signs classified as structures in BD 63 (which are included in Structures Maintenance Requirements);*
- *Management of soft estate to preserve road users' visibility of road traffic signs (which is included in the Soft Estate Maintenance Requirements);*
- *Light emitting variable message signs (which are included in the Technology Management and Maintenance Manual); and, • Proprietary Motorway Service Area signs.*

A.12.2 Condition data Information source(s)

The Asset Champion shall develop and implement a Traffic Signs Asset Management Plan (TSAMP) to demonstrate how the outcomes and deliverables will be achieved in the forthcoming year

A.12.3 Response and repair timescales

The Maintenance Manager will programme and rectify non-compliance as identified by the asset inspection reports.

The condition of traffic sign defects identified though inspections shall be categorised as specified in Table A12.1.

Typical defects and category of defects and rectification times are as detailed in Table A12.1

Category	Description	Examples of Defect	Rectification Time
Critical	**Safety Hazard** A defect which requires prompt attention because it represents an immediate or imminent hazard, **Breach of statutory duty.**	**Visual Performance** Where a regulatory or warning sign has been damaged and incomplete by distracting road users hindering the uptake of critical information **Structural Safety** Where the condition of posts and supporting structure have failed	**For a safety hazard:** Make safe at time of identification or as soon as reasonably practicable. Temporary repair within 24 hours. Permanent repair 28 days. **For a breach of statutory duty:** Permanent repair as soon as reasonably practicable.

Category	Description	Examples of Defect	Rectification Time
		Electrical Safety Exposed cabling and damaged lighting units Missing regulatory and Warning signs	
Non Critical	**All other defects**	**Visual Performance** Other than regulatory or warning signs where there is no immediate safety hazard **Structural Condition** Where the failure of a component does not represent an immediate safety hazard	**Permanent Repair** within 6 months

Table A12.1 Categorisation and Rectification of Defects

A.12.3.1 Defect Identification

The purpose of the inspections is to detect sign defects, including lighting failures to ensure that their legal status is not affected and also to identify locations where the signs cannot be clearly seen due to dirt, graffiti or obscured by vegetation.

Route inspections will be undertaken at frequencies outlined in the Traffic Signs Asset Management Plan

Lighting Operational Patrols (LOPS) will identify unlit illuminated signs and will be carried out 7 times per year. The LOPS will be undertaken in each of the following months, April; August; October; November; January and February amounting to 6 per annum, plus one additional undertaken within 5 days following 26th December.

A Safety Inspection of each sign installation is necessary to identify defects which may affect safety or operational performance; to determine the overall condition of the asset; and to gather intelligence for use in determining the frequency of subsequent safety inspections.

The key elements included in the safety inspection are:

i. Visual performance;
ii. Structural integrity
iii. Electrical safety

The frequency and requirements of the inspections are detailed in the Traffic Signs Asset Management Plan

Inspections for illuminated Signs will be carried out at a 24 month interval by the Lighting Maintenance team based at Hale Depot.

This activity is to include electrical safety and operation and be carried out at the same time as the lantern cleaning and lamp change and include:-

a) General condition and safety
b) Operation of the luminaires
c) Alignment of the luminaires
d) Operational effectiveness

The requirements of BS7671 for street furniture shall be taken into account and the inspection and testing regime detailed in the LAMP, Annex C Periodic Test and Inspection Programme

A.12.3.2 Defect Verification

During the course of inspections data relating to the condition of the network will be collected graded and added to CONFIRM.

A.12.6 Planned Preventative Maintenance

A.12.6.1 Delivered by

Electrical Safety and operation to be carried out by the Lighting Maintenance team based at Hale Depot.

These activities to be carried out at the same time as the lantern cleaning and lamp change frequency every 24 months and include:-

a) General condition and safety
b) Operation of the luminaires
c) Alignment of the luminaires
d) Operational effectiveness

The requirements of BS7671 for street furniture shall be taken into account and the inspection and testing regime detailed in the LAMP, Annex C Periodic Test and Inspection Programme

A.12.6.2 Frequency

Preventive maintenance shall be carried out at a 24 month interval and coincide with the detailed inspections and bulk lamp changes.

Maintenance will include :-

a) Cleaning and lubrication of moving parts
b) Cleaning out of base compartment of lit signs
c) Examination of electrical components
d) Cleaning of reference number and sign face
e) Minimum Clear visibility of sign plates as detailed in Table A12.4

	Speed of Road	Minimum clear visibility of sign			
		Advanced Direction Signs	Direction Signs	Route Confirmation Signs	Warning and Regulatory Signs
		m	m	m	m
1	30 to 40 mph	75	60	60	60
2	40 to 50 mph	105	105	75	75
3	50 to 60 mph	135	135	105	90
4	60 to 70mph	180	180	180	105
5	70mph Speed Limit	240	240	240	120

Table A12.4 Minimum Clear Visibility

The Maintenance Manager shall review the current works programme within Area 10 to incorporate Road Traffic Signs maintenance into other activities where achievable through the Risk managed approach, bringing other works forward if necessary.

The following records are to be collated by MRT on site and passed to supervisor at end of shift handover:-

- Asset reference attended
- Works undertaken
- Any issues unresolved
- Condition of asset
- Condition of surrounding assets
- Any residual issues that were encountered.

Supervisor and MRT to discuss operation undertaken and record any opportunities for improvement, taking into account the Task, Constraints of Individuals/Operatives and the Environment. All information to be returned to Area Manager for works sign off

A.13 AMOR PART 13 – SOFT ESTATES

A.13.1 Scope

The semi-natural, improved / semi-improved and landscaped parts within the Area Network, including cultural heritage assets and hard landscaping areas.

The objective is to ensure that the Soft Estate condition is managed and maintained to minimise risks to road users, road workers and adjacent affected parties in the main by;

- *Maintaining and preserve road users' sight lines and stopping distances at junctions, access points, bends and road users' visibility of road traffic signs and signals.*
- *Maintaining the soft estate to enable access to other assets, enable assets can function to their primary purpose, enable safe access to footways, cycle tracks, etc.*
- *Minimise the risk of trees falling on trafficked or pedestrian areas.*
- *Manage the soft estate to minimise the spread or increase of instances of injurious weeds.*
- *Manage and maintain soft estate to minimise the risk of adversely affecting the stability, integrity or operation of other highway assets.*
- *The landscape and environmental functions of plots within the soft estate are maintained.*

Further specific information can be found in the Area 10 Landscape Management Plan (LMP).

A.13.2 Condition data Information source(s)

Primary data source is ENVIS, hazardous defects are in CONFIRM and other condition data is available within OnePlace.

A.13.3 Response and repair timescales

The Asset Champion or the Soft Estate Inspector shall assess the defects identified and assign timescales for rectifying them. Safety-critical works can be undertaken at any time of year. For other works, the timescale to remedy any defect should take into account seasonal constraints and practical considerations such as the time required to deploy traffic management.

Delivery of soft estate works which are not safety related and/or off operational land, may only be completed following a service managers instruction.

Timescales shall be set according to the following categories:

Table A13.1 below identifies responsibilities for managing different types of soft estate works and how they are programmed.

Type of works	Funding Source		
	Lump sum	**Cost Reimbursable**	**Third Party**
Cyclic (Planned)	Clearance of vegetation (twice per year) to achieve visibility of signs, at junctions, and at bends.	Thinning of woodland blocks.	
	Clearance of vegetation (once per year) to maintain effectiveness of CCTV and lighting and avoid obstruction of paths used by the public.	Works to maintain or enhance the landscape/ecological function of a plot.	
Reactive only	Vegetation posing a hazard to highway users, third parties or their property (dead or diseased trees in the falling zone, trees in the clear zone, and trees damaging third party property).	Vegetation clearance to provide safe access and/or a safe working area at the site.	Pruning of healthy trees or shrubs encroaching on third party land, not causing imminent damage to property or presenting a safety hazard.
	[EW[1]: where the trees can be shown to be dead or dying at inception of the contract.]	Removal of injurious weeds[2].	
	Works to vegetation causing damage to highway assets.	Removal of invasive plants[3]. [EW]	
		Pruning of healthy trees or shrubs encroaching on third party land, causing imminent damage to property or presenting a safety hazard.	

Table A13.1 – Responsibilities for Managing Soft Estate Works

1 EW: works which may justify an early warning.
2 Injurious weeds are common ragwort, broad-leaved dock, curled dock, creeping thistle and spear thistle.
3 Invasive plants include Japanese knotweed, Himalayan balsam and giant hogweed.

The Maintenance Manager shall review the schemes and overall maintenance programmes within Area 10 to incorporate soft estate maintenance into other activities where achievable and without undue risk, bringing other works forward if necessary.

Anyone managing soft estate works shall observe the seasonal constraints set out in Table 5.3 in the LMP as far as practicable and confirm with the Environmental Design Team Leader any environmental control measures required.

Clearance of shrubs, grasses and herbs will usually involve strimming followed by treatment with growth retardant. Injurious weeds and invasive plants shall be treated as indicated in Table A13.2 below.

Weed	Treatment	Treatment season
Ragwort	2-4D amine (2-4D amine with adjuvant of synthetic latex during June to September)	mid March to end April then June to September
Japanese knotweed	Glyphosate ('Round-up Proactive') and/or cutting	May to September Most effective in early autumn
Himalayan balsam	Glyphosate	May to September Most effective before June
Giant hogweed	Glyphosate	As soon as the plant is about 1m high, usually in March, until the end of summer

Table A13.2 - Treatment of injurious weeds and invasive plants

Vegetation adjacent to structures will not be routinely cleared, unless the circumstances in Table A13.1 apply. Neither will works be undertaken on trees affecting only daylight on third party land; such trees are likely to be felled in due course under landscape schemes for thinning of woodland blocks.

A Safe System of Work (SSW) will be produced by the Supervisor and approved by the Maintenance Manager.

The Supervisor will brief the ganger into the Safe System of Work (SSW) during the start of shift briefing, ensuring all resource is available to undertake assigned task.

The AMOR Operations Team will carry out the activity in accordance with the SSW and as directed by Maintenance Manager.

The following records are to be collated by MRT on site and passed to supervisor at end of shift handover:-

- Asset reference attended
- Location of works (marker posts);
- Treatment or technique employed.

Supervisor and MRT to discuss operation undertaken and record any opportunities for improvement, taking into account the Task, Constraints of Individuals/Operatives and the Environment. All information to be returned to Maintenance Manager for works sign off

A.13.3.1 Defect Identification

The route inspections will be undertaken as scheduled in Table 7.2, and will identify hazards relating to visibility, access to equipment and obstructions;

Route inspections will be undertaken by the MRT. Hazardous tree inspections and soft estate inspections will be undertaken by the Asset Management Team. All inspections will be undertaken in daylight.

Hazardous tree inspections programme is identified within the. LMP

Soft estate inspections programme is identified within the LMP, and will identify injurious weeds, invasive plants and plot condition.

A.13.3.2 Defect Verification

The Asset Champion for Soft Estates is to determine if non compliance is hazardous, requiring mitigation by the AMOR team or if the defect is to be repaired through forward renewals programme. The MRT will rectify and record as a find and fix.

There are currently no departures in place

A.14. AMOR PART 14 - STRUCTURES

A.14.1 Scope

A civil construction within the Area Network situated under, over or adjacent to the Strategic Route Network.

Structures include, but are not limited to;

- *Overbridges*
- *Underbridges of enclosed length of less than 150m*
- *Subways of enclosed length less than 150m*
- *Footbridges*
- *Cycle bridges*
- *Retaining Walls or Earth Retaining Structures (>1.5m)*
- *Culverts with a clear span or internal diameter of >0.9m*
- *Buildings*
- *Structural maintenance of fences, walls, screens and environmental barriers greater than 3m in height Not in BD63 for structures inspection?*
- *Gantries, Signs, Lighting columns or catenaries, CCTV Masts classified as structures in BD63*

Non-structural elements also included within the scope of this maintenance requirement include, but are not limited to:

- *Cross carriageway ducts, ducts through structures, technology equipment cabinets and all ancillary equipment (e.g. hoists, winches, covers).*

A.14.2 Condition data Information source(s)

Primary data source is SMIS, hazardous defects are in CONFIRM and other condition data is available within OnePlace.

A.14.3 Response and repair timescales

Any offensive graffiti will be removed within 24hrs of reporting by either over painting or blast removal. Where structures are subject to repeated vandalism/graffiti attacks, the Structures Asset Champion will engage Highways England to address the problem either through schemes to apply anti-graffiti coatings or engagement with local authorities to encourage local ownership through murals etc.

Maintenance operatives will, in addition to specific requirements of the above, be responsive to the needs of structure types as follows;

A.14.3.0.1 Overbridges

- Remove from sight offensive graffiti on the Area Network.
- Remove vegetation from around access steps, drainage and any sapling growth which if left would result in structural damage.
- Check parapets for damage to either post/rails and or mesh. Report findings to Asset Champion.

- Remove debris from Bearing Shelves, where access is required this will be carried out during Principal Inspections.
- Remove debris and road grit from expansion joints
- Clean and rod any drainage systems on the bridge deck.
- Grease bearings where directed, where access is required, this will be carried out during a Principal Inspection.
- Rod outlet pipes and check operation
- Remove debris and bird droppings from flanges where access is required, this will be carried out during a Principal Inspection.
- Remove grass and weeds from verges and channels

A14.3.0.3 Underbridges

- Remove from sight offensive graffiti on the Area Network
- Remove vegetation from the tops of wing walls to a width to allow safe access for inspectors.
- Remove any pigeon guano from footpaths under the bridges using a suitably accredited sub-contractor.
- Clean debris from bearing shelves, where access is required this will be carried out during Principal Inspections.
- Remove debris from expansion joints
- Grease bearings where directed, where access is required, this will be carried out during a Principal Inspection.
- Remove debris and bird droppings from flanges where access is required, this will be carried out during a Principal Inspection.

A14.3.0.4 Retaining Walls

- Clear debris from weep pipes
- Remove from sight offensive graffiti on the Area Network
- Remove vegetation from around the base and top of the wall where safe to do so.
- Check pedestrian protection measures

A14.3.0.5 Culverts

- Remove all debris from trash screens and from around the aprons and inverts. **Caution: Maintenance Manager to develop RAMS for each location prior to undertaking any work.**
- Undertake de-vegetation around the tops of the headwalls and 3m to each side of the upstream and downstream banks to allow for inspection access.
- Visual check for any blockages in the culvert without actual entry to the culvert.

A14.3.0.6 CCTV Masts & High Mast Lighting

- De-vegetation of approach access steps
- Removal of sapling growth from within 3m of the base of the columns.

A14.3.0.2 Portal Sign Gantries & Cantilevered Message Signs

- De-vegetation of approach access steps
- Removal of sapling growth from within 3m of the base of the columns. (nearside only for columns in the central reservation)
- Grease hinged access doors and oil locks

Subways

- Remove from sight offensive graffiti on the Area Network
- Clean drainage systems if directed by the Asset Champion
- Remove vegetation from the top of the portal and down the wing walls to facilitate inspections.
- Report any lighting outages

Footbridges

- Remove vegetation from around bank seats and wing walls to facilitate inspections
- Remove any sapling growth from within 3m of the structure which if left unchecked would cause structural damage
- Clean any debris from the expansion joints
- Clean any debris from the bank seats/abutments and bearings. Where access is required, this will be carried out during the Principal Inspection.
- Remove from sight offensive graffiti on the Area Network
- Clean drainage channels and weep pipes.

A.14.3.1 Defect Identification

The route inspections will be undertaken as scheduled in Table 7.2, and will identify hazards relating to the following aspects:-

- Flooding in and around structures;
- High water levels to structures over rivers or streams;
- Offensive graffiti on the Area Network
- Vandalism;
- Impact damage to parapets or other vehicle restraint systems around structures;
- High load impact damage to over-bridges;
- Loose or spalling concrete over or adjacent to live running lanes.

Route inspections will be undertaken by the MRT predominantly in daylight hours at 50 mph and are to be undertaken as per the Hazardous Defects Inspection Guide

Where inspectors find a defect which they consider to present an immediate safety hazard to the travelling public either through structural failure or safety related defect, they will bring it to the attention of either the Structures Asset Champion, NCC, RCC or Asset Manager at the earliest opportunity.

The AMOR maintenance team will provide dated before and after pictures for each structure where maintenance has been carried out.

The AMOR maintenance team will provide signed and dated copies of the maintenance sheets, which will be issued from SMIS by the Structures Asset Champion, showing the following;

- Asset reference attended
- Maintenance carried out
- Any areas of concern they wish to bring to the attention of the Asset team.

Highway structures maintenance, including inspections, testing and monitoring, must be managed to comply with the Health & Safety at Work Act 1974. The purpose being to minimise the risks to people carrying out the work and the public affected by the works.

The list is not intended to be exhaustive and all work must be subject to a review of all specific risks and their mitigation and agreed method statements covering how the work will be implemented.

Asbestos was widely used in the construction industry up to its formal ban in 1999. Highways England initiated compliance with the Control of Asbestos Regulations by undertaking Management surveys of their assets. The 20 year process started in 2005 looks to identify all asbestos in Highway structures. The reports and locations are detailed in the Highways Agencies SMIS Database. The Asbestos Management Plan identifies the locations where asbestos management surveys have been and are due to be undertaken.

Any maintenance work including inspections will ensure knowledge and location of all confirmed or presumed Asbestos Containing Materials is known and mitigation measures introduced to avoid direct contact or disturbance.

Where maintenance work is undertaken, personnel should have standard procedures for dealing with typical situations. It is important that personnel are trained to recognise unusual situations and carry out dynamic risk assessments when necessary.

Maintenance work on Highway structures, including inspection, should be undertaken giving due consideration to the environment. There are significant areas of legislation that must be complied with.

Particular consideration should be given to protected species of flora and fauna, bats, otters, water voles, great crested newts, etc.

General Inspections are likely to be undertaken by the supply chain. These inspections will be undertaken from ground level, often under a short duration stop and as per structure specific risk assessment and safe system of work.

Access to culverts and other confined spaces will not be carried out, by MRT's / untrained persons..

The Structures Asset Champion will determine the advance programme of General Inspections from SMIS. This will be issued to the supply chain responsible for inspections in advance of the next financial year.

General Inspections will be undertaken every two years except where a Principal Inspection takes precedent over it. SMIS schedules the inspections to be carried out each year.

Where inspectors find a defect which they consider to present an immediate safety hazard to the travelling public either through structural failure or safety related defect, they will bring it to the attention of either the Structures Asset Champion, NCC, RCC or Asset Manager at the earliest opportunity.

A.14.3.2 Defect Verification

On finding any of the above during route inspections, defects will be reported to the Asset Champion via the iPad and Confirm as soon as is reasonably practicable and safe to do so.

Where any of the defects present an immediate hazard to the travelling public, the MRT Operatives will bring it to the attention of the Asset Champion, NCC, RCC or Asset Manager at the earliest opportunity. The Structures Asset Champion will arrange for a review of all defects found during route based inspections in accordance with the Risk managed Defect Management Procedure in Appendix C. Defects will be classified for repair either through schemes or maintenance.

Where required, defects will be entered as a Special Inspection into SMIS.

A.14.5 Hold Points and Release Mechanisms

Where a structure crosses over a railway, whether it is thought to be in use or not, operatives and inspectors ***must not*** access the track without a full railway possession in place.

For routine maintenance and General Inspections, access through the culvert must not be undertaken. All culverts are classed as confined spaces and as such all necessary measures must be implemented when undertaking Principal Inspections.

The two Thelwall Viaducts located just south of the M6 junction 21 are listed by the Government as part of the Critical National Infrastructure. As a result the two structures have extensive security measures installed and no maintenance should be carried out without prior acknowledgement through the Regional Control Centre (RCC).

There are 28 large viaducts on the Area 10 Network. Many of these structures have very specific access and maintenance requirements. Maintenance for these will be detailed explicitly for each one.

A.14.6 Planned Preventative Maintenance

The Structures Asset Champion will develop an advance programme of Principal inspections in accordance with BD 63/07 and subsequent iterations through the DMRB, to ensure safety to the road user and identify maintenance issues that may cause detriment to the structure. Where the frequency changes the Principal Inspection date may be brought forward. The programme of inspections will be provided to the supply chain responsible for the delivery of Principal Inspections prior to the start of each financial year to allow adequate time to establish a forward programme. Principal inspections will make the best use of existing or planned traffic management where available within the timescales for inspections to be carried out. Advance planning will be required for some structures which require the utilisation of Temporary Traffic Regulation orders or Railway Possessions. The use of GIS will be developed and utilised for advance planning and prioritization.

The Structures Asset Champion will arrange at the start of each financial year for a detail list of essential routine maintenance to be carried out to each structure. This data will be gathered from SMIS collated from recent General & Principal Inspections to target those structures and elements which require treatment to enhance and maintain the sustainability of the structure. The Asset Champion for Structures will issue schedules of Maintenance works to the AMOR Team which will then programme this maintenance to make best use of traffic management through schemes, DCP and Principal Inspections.

The Area 10 Management of Scour & Hydraulic Action Plan requires the risk assessment of all the Area 10 structures which could be at risk from one or all of the following;

- Scour
- Hydraulic Action
- Impact from shipping traffic
- Ice build up
- Debris accumulation at trash screens
- Blockage of culverts

The management plan provides guidance during periods of heavy or sustained rainfall or snow melt to undertake safety inspections to those structures assessed to be at risk.

The Structures Asset Champion will review the need for safety inspections according to prevailing weather conditions or forecasts and instruct the AMOR team to visit those structures to review specific elements. Photographic evidence at each structure will be taken by the MRT or AMOR team member.

Where inspectors find a defect which they consider to present an immediate safety hazard to the travelling public either through structural failure or safety related defect, they will immediately bring it to the attention of, NCC/ RCC and then advise the Structures Asset Champion at the earliest opportunity.

Photographs and details of defects found, including nil returns, will be entered into the HA SMIS by the Asset Team's Data Stewards as a record of inspection.

A.15. AMOR PART 15 – SWEEPING AND CLEANING

A.15.1 Scope

Sweeping and cleaning of:

- All motorways and their surrounds within the Area Network;
- APTRs and their surrounds within the Area Network only when listed in tables 15.1 or 15.2 in the Appendix to this requirement.
- Cleaning and servicing of amenity facilities within the Area Network.

Out of Scope:

- Initial response to Incidents involving or giving rise to debris, detritus or animal carcasses (see Incident Response requirements).
- Sweeping and cleaning of APTRs and their surrounds not listed in tables 15.1 or 15.2 in the Appendix of AMOR v1.71.

A.15.2 Condition data Information source(s)

Primary data source is CONFIRM

A.15.3 Response and repair timescales

The Code of Practice does not outline an inspection regime, but rather is outcome based with restoration periods highlighted.

The required outcomes are specified in AMOR Part 15 as follows:

Maintain Paved Areas (Carriageway, paved verges and paved central reservations of motorways and APTRs) to grade A as defined in the Code of Practice on Litter and Refuse.

- Restore to grade A from grade B or C as defined in the Code of Practice on Litter and Refuse within 28 days
- Restore to grade A from grade D as defined in the Code of Practice on Litter and Refuse within 7 days

Maintain Paved Areas (motorway and APTR roundabouts and lay-bys, approach and slip roads) to grade A as defined in the Code of Practice on Litter and Refuse.

- Restore to grade A from grade B or C as defined in the Code of Practice on Litter and Refuse within 14 days
- Restore to grade A from grade D as defined in the Code of Practice on Litter and Refuse within 7 days

Maintain all other parts of the Area Network (non paved) to Grade B as defined in the Code of Practice on Litter and Refuse

- Restore to grade B from grade C as defined in the Code of Practice on Litter and Refuse within 28 days
- Restore to grade B from grade D as defined in the Code of Practice on Litter and Refuse within 7 days

Litter Grading Definitions are as follows:-

- Grade A – No litter or refuse
- Grade B – Predominately free of litter and refuse apart from some small items
- Grade C – Widespread distribution of litter and /or refuse with minor accumulations
- Grade D – Heavily affected by litter and/or refuse with significant accumulations.

It is the intention for the MRT to maintain standard at Grade B (grade A for paved areas) as such these intervention levels will not be required.

- Examples where it is considered impracticable to clear within duty timescales include:-
  a) when there are severe weather conditions;
  b) when special events present practical difficulty in meeting response times;
  c) health and safety considerations;
  d) to avoid damage to sensitive areas (can include natural habitats and heritage sites as well as, for example, the need to preserve forensic evidence at a crime scene)
  e) where advance notice is required for traffic management or road-space booking.

The MRP will address offensive graffiti as follows:-

- Graffiti deemed to be offensive will be over-sprayed using grey masking paint, on structures and removed from sign faces within 24hrs.

A.15.3.1 Defect Identification

There will not be a separate inspection for sweeping and litter, however the inspection will be incorporated into the route inspections. Additional sources of information will be available from the watchman process.

The AMOR Manager will liaise with relevant stakeholders to identify departures (relaxations and enhancements) from contractual requirements at site specific locations that are not detrimental to the asset. Current known locations can be associated with areas of long grass and vegetation that pose a risk to the individual associated with carrying out the activity. Relaxation are to be applied for until vegetation has died back and the risk of slips, trips and falls has been reduced.

As previously highlighted there will not be an individual inspection associated with the Sweeping and Cleaning Maintenance Requirement, information will be obtained by the AMOR Manager from route inspections, EAI reports and Watchman process.

During the course of inspections, data relating to the condition of the network will be collected and graded in accordance with CoP for litter and refuse.

The AMOR Manager will determine if non-compliance is subject to departure, otherwise confirm grading and forward to Maintenance Manager for rectification within forward programme.

The Maintenance Manager will programme and rectify non-compliance as identified by the inspection process.

The Maintenance Manager shall review current works programme within Area 10 to incorporate sweeping and cleaning into other activities where achievable through Risk

managed approach, bringing other works forward if necessary. Waste shall be controlled as outlined in the EMP.

The following records are to be collated by MRT on site and passed to supervisor at end of shift handover:-

- Record of no of bags of litter collected off network, including location.
- Lengths of sweeping undertaken
- Waste transfer notes
- Before & After photo's
- Any residual issues that were encountered.

A.15.5 Hold Points and Release Mechanisms

The AMOR Manager will liaise with relevant stakeholders to identify departures (relaxations and enhancements) from contractual requirements at site specific locations that are not detrimental to the asset.

Current known locations can be associated with areas of long grass and vegetation that pose a risk to the individual associated with carrying out the activity. Relaxations are to be applied for until vegetation has died back and the risk of slips, trips and falls has been reduced.

APPENDIX B - RISK MANAGED DEFECT MANAGEMENT PROCEDURE

MANT-PRD-002 Defect Management Procedure