PUBLIC

REACTIVE MAINTENANCE TEAMS OPERATIONAL MANUAL

JANUARY 2019

AN ELEMENT OF THE HIGHWAY INFRASTRUCTURE ASSET MANAGEMENT SYSTEM

Document Information

Title	Reactive Maintenance Teams Operational Manual
Author:	Teri Ford
Reviewed:	Neill Bennett

Document Issue Status

Table of Amendments

NO	APPROVAL DATE	SECTION	DETAILS	AUTHOR
1	31/01/2019	All	First Issue	TF
2	13/03/2019	see review schedule 1	First Review	TF
3	01/06/2019	see review schedule 2	Second Review	TF
4	03/07/2019	see review schedule 3	Third Review	TF
5	01/01/2022	see review schedule 4	Fourth Review	BT

Contents

1 BACKGROUND

1.1 This document supersedes the previous version of the Reactive Maintenance Teams Operational Manual issued on 6 May 2014.

1.2 The changes required to the previous version, as set out in this new edition, are essential to reflect the latest standards being adopted by the Council as guided by the Midland Highways Alliance + (MHA+)[1] the Highways Maintenance Efficiency Programme (HMEP)[2] and national guidance. This document forms part of the suite of 'Highway Infrastructure Asset Management' documents

1.3 This manual is intended for employees involved in providing a reactive response to the following:

a. *Customer enquiries and ad-hoc inspections*
b. *Defects identified during highway safety inspections*

1.4 This is a controlled document and it will be updated as details of legislation, national guidance and resources etc. change.

1.5 This document includes information on various inter-related topics and aspects of particular issues that may be covered in different places, therefore individual sections should not be read in isolation.

1.6 This document should be read in conjunction with the following documents, where appropriate:

a. *Highway Infrastructure Assets Safety Inspections Manual*
b. *2016 Code of Practice for Well-Managed Highway Infrastructure*
c. *HMEP CL 946SR Patching and Repairs to Potholes and Depressions (Including Emergency Patching)*

1.7 This manual is available from at least one of the following:

a. *in EDRM*
b. *your Line-manager*

2 THE NEED FOR REACTIVE MAINTENANCE

2.1 Under Section 41 of the Highways Act 1980 Derbyshire County Council has a statutory duty to maintain highways that are maintainable at public expense. Neglecting this duty can lead to claims against the County Council for damages resulting from a failure to maintain a highway.

1 Midlands Highway Alliance Plus (MHA+) was formed from the merger of three regional efficiencies groups, the Midlands Highway Alliance, the Midlands Service Improvement Group and the West Midlands Highway Alliance. The new Alliance (July 2020) has a membership of 35 local highway authorities from across the Midlands and beyond.

2. The Highways Maintenance Efficiency Programme (HMEP) is a sector-led transformation initiative that will maximise returns from investment and deliver efficiencies in highway maintenance services.

2.2 Under **Section 58** of the **Highways Act 1980**, the highway authority can use a *'**Special Defence**'* in respect of action against it for damages for non-repair of a highway if it can prove that it has taken such care as was reasonable. **Section 58** of the Highways Act 1980 also states that:

'The court shall, in particular, have regard to:

a. *The character of the highway and the traffic which was reasonably to be expected to use it*
b. *The standard of maintenance appropriate for a highway of that character and used by such traffic*
c. *The state of repair in which a reasonable person would have expected to find the highway'*
d. *Whether the highway authority knew, or could reasonably have been expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway'*
e. *Whether warning notices were displayed when immediate repair could not reasonably be expected.*

2.3 The Well-managed Highway Infrastructure – A Code of Practice 2016 defines reactive maintenance as follows:

"attending to defects and other safety matters that require urgent action arising from inspections or user information in accordance with the locally determined levels of response"

3 REACTIVE MAINTENANCE TEAMS

3.1 General

3.1.1 The Reactive Maintenance Teams were introduced on 1st June 2013 throughout the County as part of the Road Works Centre Review.

3.1.2 The Reactive Maintenance Teams are multi-skilled teams which form part of the Council's Direct Labour Organisation workforce. They operate throughout the six highway maintenance districts of Derbyshire. See Appendix A for a plan of the areas.

3.1.3 Each team comprises two operatives who generally work from a mid-sized commercial vehicle, which is equipped with a range of small plant, hand tools and materials that meet the needs of the work that they undertake. However, if additional equipment and/or resource is required then agreement should be sought between the relevant Assistant Contracts Manager and Senior Technician.

3.1.4 The teams operate a 24/7 service during the working week however between 1600 hours and 0800 hours the following day there is a reduced level of resources available. However on a Friday this reduced level of resource starts at 1530.

3.2 Assigned Duties

3.2.1 The main aim of their responsibilities is to undertake permanent repairs and/or reduce the risk (see appendix C) of defects on any highway, which is maintainable at

public expense. The work should be delivered within the respective timescales in all maintenance district areas of Derbyshire. See Section 6 for details on methodologies.

3.2.2 The work assigned for action by the teams is generally from either customer enquiries or from the Council's highway inspectors who have identified defects during their highway safety inspections, but may also be from emergency services requesting assistance.

3.2.3 Low risk and non-urgent work may also be issued to the teams to deal with minor problems or as preventative work rather than reactive work.

3.2.4 The specified reactive maintenance tasks requested will generally be derived from the defect type and are shown in the table below:

Table 1: Reactive Maintenance Tasks

	Defect type	**Potential Task(s)**
1.1	Pothole	Signing and guarding, or pothole repair Type A or B
1.2	Standing/running water	Attempt to clear water if appropriate, culvert screen clearing, signing and guarding
1.3	Embankment/bank slips/retaining wall collapses	Removal of obstruction, signing or guarding of area
1.4	Spillages/Debris	If required either: signing and guarding of area Treat spillage with appropriate material and sweep surface if necessary
1.5	Overriding	Signing and guarding of area, reinstate edge
1.6	Defective high friction surfacing	Erect slippery road signs if necessary
1.7	Dangerous or obstructing trees	Signing and guarding of area, minor pruning.
1.8	Obscured visibility and overgrown hedges, bushes and verges.	Signing and guarding, cut back overgrowth, hedge cutting and strimming
1.9	Defective roadmarks	Signing if required
1.10	Defective ironwork	Signing and guarding, replace/relay/adjust gully grate and frame
1.11	Defective cattlegrids	Signing and guarding
1.12	Defective overhead cables	Signing and guarding

1.13	Defective roadworks signing	
1.14	Obstructions – materials, goods, equipment and signs	Signing and guarding
1.15	Cracks and gaps	Signing and guarding, repair as appropriate
1.16	Abrupt level difference/trip	Signing and guarding, repair as appropriate.
1.17	Rocking flag	Signing and guarding, relay or undertake an action to reduce the risk of a rocking flag.
1.18	Damaged road restraint systems	Signing and guarding
1.19	Defective boundary fences and walls	Signing and guarding
1.20	Streetlights, illuminated or variable message traffic signs and illuminated bollards.	Signing and guarding
1.21	Defective road signs	Signing and guarding, correct signage orientation, re-erect/secure signage to existing post, reset/realignment of existing post in same foundation
1.22	Defective traffic signals	Signing and guarding
1.23	Damaged steps	Signing and guarding, repair as appropriate
1.24	Damaged handrails	Signing and guarding
1.25	Defective escape lanes/arrester beds	Signing and guarding
1.26	Carriageway/footway/cycleway deterioration	Signing and guarding, minor patching
1.27	Defective traffic calming features	Signing and guarding
1.28	Damaged kerb/channel	Signing and guarding, replace or relay kerbing
1.29	Street furniture	Signing and guarding, remove debris, replacing bollards
N/A	Offensive graffiti (on non-structure assets)	Removal or cover

Note: Signing and guarding incorporates all temporary traffic management measures including closure of the road/footway/cycleway

4 HIGHWAY DEFECTS AND CUSTOMER ENQUIRIES PROCESS

4.1 Highway Defects

4.1.1 The aim of responding, as soon as practically possible, to identified safety defects is to remove or reduce the risk (See Appendix C) of those defects that have the potential to cause danger to highway usersFurthermore, this practice also helps to preserve certain assets and keep the highway in a serviceable condition. This is in line with the Council's overall objectives of network safety, serviceability and sustainability.

4.1.2 The safety defect reporting process is documented within the Highways Infrastructure Assets Safety Inspections Manual where identified safety defects are either risk assessed by the highways inspector, or forwarded to the relevant asset owner for action. For those that are risk assessed and require action a job is raised and forwarded automatically with the defect response time to the Highways Hub for scheduling.

4.1.3 Each job raised includes:

- The schedule of rates item code
- The schedule of rates item name
- Quantity
- Type of traffic management required
- Potential hazards
- Defect risk assessment questions and responses
- Risk assessed response time for repair
- Photograph of defect (if available)
- Additional comments

4.2 Customer Enquiries

4.2.1 The enquiries process is outlined in a separate document. For those that require a time based response a job is raised which is scheduled by the Highways Hub.

4.2.2. Each job raised includes:

- Comments provided in the original road fault enquiry
- The schedule of rates item code (the schedulers only use R105 Perm Repair Method A)
- The schedule of rates item name
- Quantity
- Response time for repair based on the locations position on the hierarchy

4.3 Highways Hub

4.3.1 The Highways Hub has the responsibility for scheduling all reactive maintenance works. Jobs are raised from defects / enquiries and then they are scheduled to respective teams depending on the geographical area, work type and response type.

4.3.2 Jobs are allocated to each Reactive Maintenance Team which are an element of Construction Services to be carried out on a particular day. The jobs go directly from the Highways Hub to the team who receive them on a mobile device.

4.4 Construction Services

4.4.1 Supervision staff can see what jobs are coming in and when by running a report. This gives the Assistant Contracts Manager (ACM) time to ensure that the Construction Design and Management (CDM) information, plant, materials and any traffic management are available on the day. All works are covered under the reactive maintenance generic notice/permit number, with the exception of where temporary traffic signals/road closures are required when the ACM is responsible for any noticing/permitting procedure.

4.4.2 The Reactive Maintenance teams must complete one of the following at the point of arrival at the defect site:

1. The required action itemised within the job (default response)
2. If that is not possible undertake an action to reduce the risk (see appendix C)
3. If the defect/road fault cannot be found appropriate evidence should be provided

4.4.3 The Reactive Maintenance teams will update the status of each job as the work proceeds. In particular, the teams must log 'job started' and 'job completed' times for each job when they arrive or depart from the location of the defect. Travelling time is not to be included in the time taken for a job.

4.4.4 The Reactive Maintenance teams must record job attributes and status, on their mobile device. For all jobs they must log:

a. if a dynamic risk assessment has been undertaken on-site
b. if the Cat and Genny equipment has been used to trace for underground services
c. what type of Traffic Management that they have used
d. what type of material(s) they have used
e. the start time i.e. the time of arrival at the site
f. the completion time i.e. the time the job was completed and the time left site
g. the nature of the repair effected – permanent or temporary
h. if the job was not completed the reasons why not
i. if the job requires further action and or referring elsewhere
j. alteration to the schedule of rates and quantity required

4.4.5 Photographs must be taken, as applicable, before and after each job.

Table 2: Job Attributes - Potholes

Attribute	Associated with	How recorded
CAT and Genny test carried out	CDM	Not Assessed (Default) Completed on Site
Type of Traffic Management used	CDM	Give and Take (Default) Lane Closure Mobile Work Priority Road Closure Stop and Go Stop Works Temporary Traffic Lights
Pothole Type	Quality of repair	Method A (Default) Method B (as per manual)
Repair material used	Quality of repair	Not Required (Default) Bound Macadam Proprietary Material (eg Viafix)

Table 3: Job Statuses

Title	Description
No defect found	This records that no defect has been found and has been evidenced by photographs
Job Started - Risk Assessment Satisfactory	This records the time the team arrives on site and work is initiated as scheduled
Rescheduled	This is when work has started, but it is not completed due to an operational reason. The job is returned to the Control Centre for rescheduling to construction services to be finished
Reduce Risk	This is when the required work cannot be undertaken and a reduce risk task has been completed by Construction Services. The original job is closed, however Control Centre copy and create a child job and forward this copy to the Area Manager for further investigation/action
Job Completed	This is where the required action itemised within the job has been completed

4.4.6 After completing a job, the team need to transfer the updated job details back to the Highways Hub.

5 HEALTH & SAFETY AND CONSTRUCTION DESIGN & MANAGEMENT

5.1 Health and Safety

5.1.1 Repairs or making safe or amenity maintenance must be carried out in a safe manner so as not to endanger staff or the public. All operations should have a current

risk assessment which must be followed by all staff. If in doubt, consult your manager and or refer to the risk assessments on either the internal intranet or in EDRM as appropriate.

5.1.2 Works on any Traffic-sensitive/Permitted streets must be undertaken at off-peak times, unless works are defined as emergency.

5.1.3 Other detailed categories of work e.g. clearing culvert trash screens, may also require additional risk assessments and toolbox talks etc.

5.2 Construction Design and Management (CDM) – (GCP 15)

5.2.1 When an inspector identifies defects on the highway he / she must identify hazards that potentially could affect work teams undertaking the subsequent repair. This hazard identification is not only a duty of designers under CDM but is an important part of risk evaluation in departmental procedures and also leads to improved efficiency when work teams are mobilised and well prepared. It is essential that work teams take note of all information provided by the Highway Inspector.

5.2.2 GCP15 is available on either the internal intranet or in EDRM.

5.3 Working on the Highway (GCP09)

5.3.1 This document advises employees of safety precautions that must be followed to reduce the risk of any incident, which may prejudice the Health and Safety of not only themselves, but all road users.

5.3.2 GCP09 is available on either the internal intranet or in EDRM.

5.4 Toolbox Talk No. 3 – Working on High Speed Dual Carriageways

5.4.1 This document reiterates the problems associated with works when traffic is travelling at high speed and what actions that can be taken to resolve them.

5.4.2 All Toolbox Talks are available on either the internal intranet or in EDRM.

6 WORKLOAD ITEMS

6.1 Pothole Repair Methods

6.1.1 All repairs shall ensure the presence of an impermeable seal with any joint and or interface with the surrounding material to prevent moisture ingress.

6.1.2 It is essential that pothole repairs are made permanent at every opportunity. In addition, they must be reported to that effect as the job is signed off.

6.1.3 Temporary repairs or an action to reduce the risk (see appendix C) will be permitted, but only:

a. *to effect a permanent repair that requires considerable planning and will not allow the defect to be completed within the response time*
b. *when the pothole is part of an area of larger work, which is already organised in a planned programme of work e.g. extensive patching or resurfacing works and as a consequence, to effect a permanent repair would be a waste of resources*
c. *when the pothole is located where the need for further traffic management and or weather conditions may prevent a successful permanent repair*
d. *due to environmental issues such as bad weather*

6.1.4 **Method A** (Cut edges) - will be used where the existing material is sound adjacent to the pothole:

1. Cut/saw the surfacing, to the correct depth, in a regular shape, such as a square or rectangle, ensuring that all loose and damaged material is enclosed within the saw/cut to help provide a cavity with straight vertical faces of the joints
2. Using the road-breaker, break out the damaged material back to the cut/saw line
3. Thoroughly remove any standing water from the pothole
4. Thoroughly remove all loose material, by hand, brush and or blower
5. Evenly apply bond coat to thoroughly coat the sides and the base of the excavation to ensure full adhesion. The bond coat should be a cationic emulsion containing at least 60% bitumen and preferably applied by a suitable brush to achieve an even covering
6. Fill the void, to a slight surcharge, with approved material and if the hole is deep it should be laid in more than one layer with each layer receiving appropriate compaction
7. Thoroughly compact the replacement material to refusal using either a vibrating plate or roller or hand tools as necessary
8. Seal the joint with an approved sealer
9. Clear the site of all debris and leave neat and tidy

6.1.5 **Method B** (Uncut edges) - where the surrounding area adjacent to the pothole is cracked or deteriorated, the following process should be carried out:

1. Release and remove all damaged material such that the sides of the hole are uniform to a sufficient width and depth to take the repair material without it spalling away
2. Remove all standing water from the hole
3. Evenly apply bond coat to thoroughly coat the sides and the base of the excavation to ensure full adhesion. The bond coat should be a cationic emulsion containing at least 60% bitumen and preferably applied by a suitable brush to achieve an even covering
4. Fill the void, to a slight surcharge, with approved material and if the hole is deep it should be laid in more than one layer with each layer receiving appropriate compaction
5. Thoroughly compact the replacement material to refusal using either a vibrating plate, roller or hand tools as necessary
6. Seal the joint with an approved sealer
7. Clear site of all debris and leave neat and tidy

6.2 Performance Requirements for the Repair Material

6.2.1 The repair material shall have the following characteristics:

a. It shall be capable of being arranged and spread by hand tools (not machine) to the appropriate thicknesses / layers and be able to be feathered at the edges when necessary with any larger aggregate being removed at the edges if required
b. None of the material shall debond or delaminate when laid over any existing surfaces of the road for a period of at least seven days from installation. Any subsequent delaminated material shall not be of sufficient size as to cause a hazard to traffic
c. It shall retain any surface applied aggregate
d. It shall have a minimum shelf life of 12 months

6.2.2 The performance shall be regularly demonstrated at site installation trials and by laboratory evaluations.

6.3 Pothole Repair Materials:

a. Approved bound macadam
b. Approved specialist, high specification, proprietary material such as 'Viafix' to be used in high stressed situations identified by the Inspectors in the case of defect jobs and by the gangs in the case of road fault enquiry jobs.

6.4 Ironwork

6.4.1 This may require making safe, re-setting and or replacing defective ironwork in the carriageway or footway.

6.4.2 If any lids are reported missing, the risk should be reduced by using either fitting plastic lids or by cones and, or barriers.

6.5 Kerbing

6.5.1 This may require re-setting and or replacing defective kerbs or pointing up any potential trips.

6.6 Vegetation

6.6.1 When vegetation is obstructing visibility splays, sight lines and road signs or pedestrian use of footways, it should be cut and or strimmed clear to establish full visibility / usability.

6.7 Salt Bins

6.7.1 All Derbyshire County Council bins should be pre-filled or topped up prior to the winter season and subsequently re-filled in a regulated manner throughout the winter season.

6.8 Culverts – Blocked or Obstructed and Screen Maintenance

6.8.1 This may require the reactive cleaning of a highway culvert with or without a trash screen either preceding or during, or post flooding, or times of high flow in the watercourse.

6.8.2 The type of debris and trash either blocking or obstructing a culvert / watercourse or on and around the culvert screen will dictate the method(s) of removal; consequently, site specific risk assessments / method statements may be required.

6.8.3 Based on the above, specific tools may be essential when the work is issued and there may be particular site access issues.

6.9 Emergencies

6.9.1 The Reactive Maintenance teams are required to respond to emergencies affecting the highway for example road traffic collisions, flooding and fallen trees etc.

6.10 Offensive Graffiti

6.10.1 The Reactive Maintenance teams are required to remove or cover offensive graffiti. If the offensive graffiti is on a structure the Structures Management Team will risk assess the asset and allocate a timescale based on its accessibility. The works could be carried out either by our inhouse reactive gangs or by specialist operatives. Structures Management could also choose to allocate this to planned works if the risk assessment allows.

6.11 Response Times

6.11.1 All work is issued with a response time, which is commences once the safety defect/ road fault enquiry is received:

a. Emergency calls should be attended within 2 hours
b. Other response times are:
    i. 32 hours - next working day
    ii. 9 days
    iii. 28 days

6.12 Cross-reference

6.11.1 Further details are available in the Highway Infrastructure Assets Safety Inspection Manual.

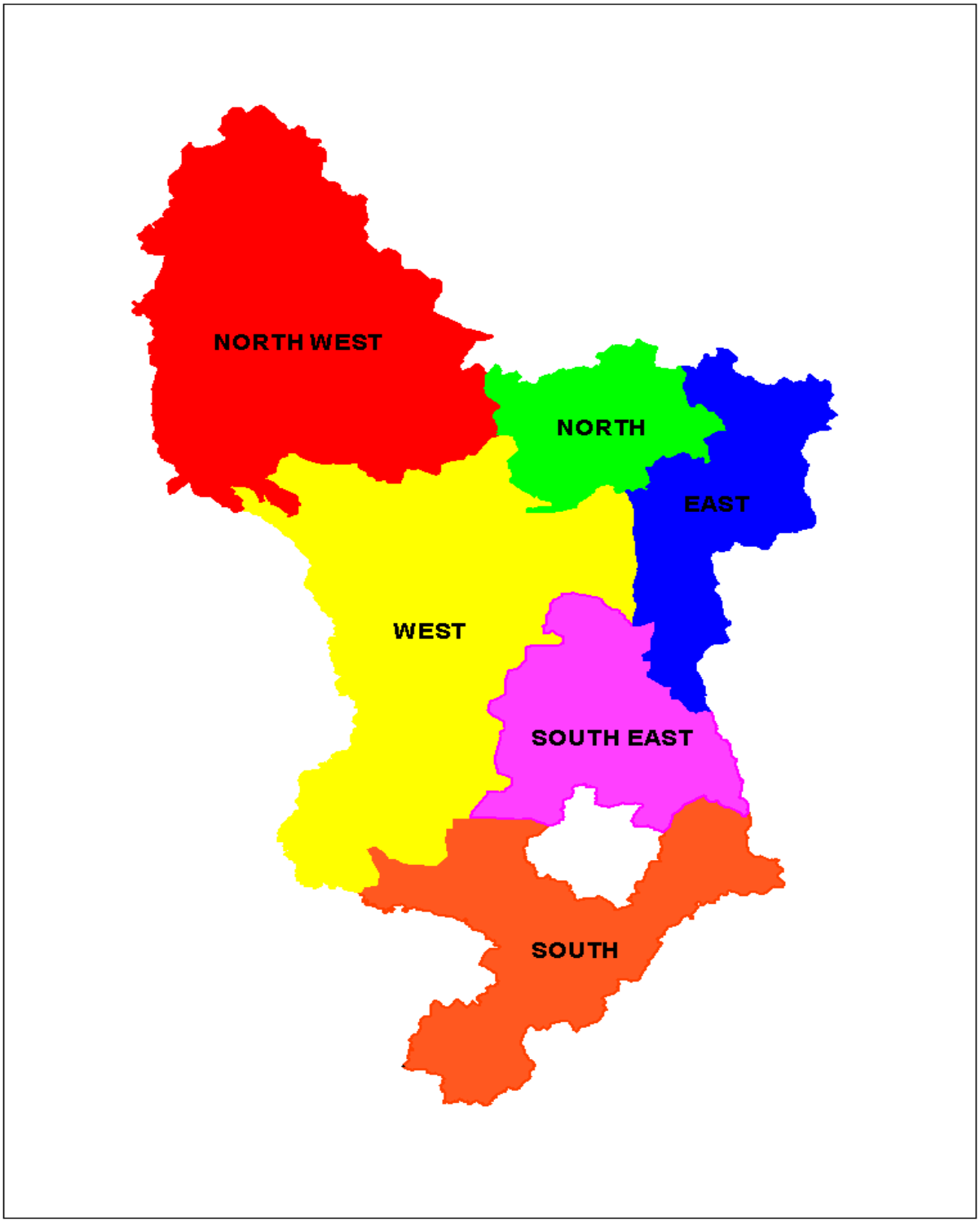
APPENDIX A – REFERENCES

The following publication may possibly be continuously being updated; consequently, care should be taken to refer to the latest version.

Highways Infrastructure Assets Safety Inspection Manual

This document is a companion for this manual. It is intended for employees involved in the safety inspections of Derbyshire's highway network. It is not intended to cover inspections of Public Rights of Way (generally rural footpaths and bridleways as shown on the Definitive Map), detailed Street Lighting inspections and other asset condition inspections.

APPENDIX B – MAINTENANCE AREAS



APPENDIX C – REDUCED RISK SIGNAGE GUIDANCE

Introduction
Warning signs can play an important part in improving road safety. However, they should only be used where there is a specific safety issue or hazard, not to sign readily apparent conditions or routine features of the road, such as bends and junctions.

Overuse of warning signs can dilute their effectiveness and tends to bring them into disrepute. Warning signs should only be installed where there is an identified hazard or road safety problem, and not to solely meet a perceived need. Unjustified signing should not be used at individual locations simply in response to complaints from the public.

Care should be taken to ensure that a route is treated consistently, especially where it crosses the boundary between two traffic authorities.

Permitted signs for use on Reactive Maintenance operations in conjunction with the Highways Infrastructure Asset Safety Inspection Manual (HIASIM), and the Reactive Maintenance Teams Operational Manual (RMTOM)

Uneven Road Sign – Diagram 556

Objective: To warn of danger arising from longitudinal or transverse irregularities in the road surface which at the normal speed of traffic might seriously impair control of a vehicle.

When to use: The use of this sign should be regarded as temporary, examples may include a landslip, subsidence or sunken trenches. It should not normally be used where potholes have been identified.

When to remove: When the defect has been remedied.

Flood Warning Sign – Diagram 554A

Objective: To warn of danger arising from the presence of standing water on the road surface which at the normal speed of traffic might seriously impair control of a vehicle.

When to use: To be displayed for as long as the hazard continues to exist or if it is expected to recur in the near future e.g. Defined flooding hotspots.

When to remove: When the hazard no longer exists.

If the water depth makes the road impassable, a “ROAD CLOSED” sign, placed at either end of the closure should be used, and the Highways Hub notified.

Ice Warning Sign – Diagram 554.2

Objective: To be used when a route is unusually dangerous as a result of extensive icing or heavy snowfalls.

When to use: Typical areas of network may include ice banding from adjacent run-off, standing water in the carriageway due to drainage problems or following an RTC where Ice may have been a contributory factor. These signs may be used on any length of road irrespective of whether it is located on a salted route.

When to remove: The signs should be removed when the hazard no longer exists.
Ice signs should only remain permanently following consultation with the Traffic and Safety section.

Slippery Road Warning Sign – Diagram 557 or Mud on Road sign

Objective: For use where the danger of vehicles skidding is greater than normal.

When to use: Reasons for use may include brake fluid, diesel, oil or mud on the road.

When to remove: When the hazard no longer exists.

If the mud on the road is related to a site development, the DCC Clerk of Works team should be contacted immediately to advise of safety concerns. They may already have a plan in place for cleansing the adjacent roads. Out of hours this decision will be made in conjunction with the Out of Hours Decision Maker.

REACTIVE MAINTENANCE GANGS ATTENDING MUST UNDERTAKE DYNAMIC RISK ASSESSMENT OF ALL REACTIVE MAINTENANCE TASKS TO ENSURE THE CARRIAGEWAY IS SAFE TO RE-OPEN TO LIVE TRAFFIC UPON CLEARANCE OF ANY DEBRIS OR SPILLAGE, IF A SLIPPERY ROAD SIGN IS USED REASONS FOR PLACING OUT SIGN MUST BE STATED

Temporary Road Surface Sign – Diagram number 7010.1

Objective: This should be used when a temporary road surface is in use.

When to use: This sign shall only normally be used if the surface is suffering widespread deterioration and in addition the site has already been identified for planned works within the next 3 months. The use of this sign will normally be upon instruction/agreement from Network Planning.

When to remove: When the planned works has been completed.

Reduced Risk Signage and Guarding – Diagram number 610

Objective: To reduce risk on site while awaiting works to be carried out.

When to use: The 610 arrow and cones can be used to reduce risk whilst awaiting resources for gully / manhole replacement works to be rescheduled back to the gang by the Highways Hub, or for awaiting other responsible agencies to take control of the site.

This may also be used for damaged guardrails, fencing, walling pending further planned works.

When to remove: When the defect has been remedied.

Road Closed Sign – Diagram number 7010.1

Objective: To indicate that the road ahead is closed

When to use: When all other measures have been explored, and either by instruction of the Police or by confirmation from Network Planning staff the only way to maintain highway user safety is to close the road.

When to remove: When road is safe to reopen.