



Rotherham MBC Code of Practice

Highway Inspection and Assessment 2018



Highway Service
Community Safety and Street Scene



Contents

	Page
1. <u>PREFACE</u>	1
2. <u>INTRODUCTION</u>	2
3. <u>HIGHWAY INSPECTION</u>	3
3.1 Inspection Regime	4
3.2 Safety Inspections	6
3.3 Service Inspections	13
3.4 Customer Reports	15
3.5 Defect Categories	16
3.6 Guidance and Procedures for Inspectors	19
3.7 Risk Based Approach	23
3.8 Training	29
4. <u>HIGHWAY ASSESSMENT</u>	
4.1 UKPMS Inspections	31
4.2 Coarse Visual Inspections	32
4.3 Machine Based Condition Surveys	33
4.4 Public Rights of Way Assessments	34
5. <u>SKIDDING RESISTANCE</u>	
5.1 Skidding Resistance Policy Statement	36
<u>APPENDICES</u>	
APPENDIX 1 Safety Highway Inspection Policy	37
APPENDIX 2 Skidding Resistance Policy	41
APPENDIX 3 Skid Resistance Procedure Document	45
APPENDIX 4 Glossary of Terms	58

1. PREFACE

Version	Date	Author / Designation
1.1	Jan 2018	Andrew Rowley / Inspection and Enforcement Manager / Highway Network Management Unit
1.2	Mar 2019	Andrew Rowley / Highway Inspection and Street Works Manager / Highway Services

This Code of Practice for Highway Inspection and Assessment (CoPHIA) only applies to adopted highways and will be reviewed and updated if required within a two yearly cycle reflective of revisions in national guidance, legislative changes and advice, safe working practice reviews, and changes to the Council's position on highway inspections.

Rotherham Council's 'Highway Network Management Service' is responsible for the associated 'Safety Highway Inspection Policy' (see 'Appendix 1') and the 'Skid Resistance Procedure' (see 'Appendix 3').

Rotherham Council's 'Highway Network Management Service' and 'Transportation and Highways Design Service' are responsible for the associated 'Skidding Resistance Policy (see 'Appendix 2').

This CoPHIA has been developed with the guidance of the CoPHMM, 'Well-managed Highway Infrastructure October 2016' (CoPWHMI) and 'Highway Infrastructure Asset Management Guidance Document May 2013' (HIAMG).

This CoPHIA will come into force on 01 October 2018 and supports the Council's 'Highway Asset Management Plan 2015-2021' (HAMP). It also takes account of further advice from:

- Gallagher Bassett International Limited (Insurers);
- The Council's Legal Services, Corporate Risk Manager and Insurance and Risk Manager;
- Kennedys Law (Solicitors) and Plexus (Solicitors).

Regard is given to the consultation with the Association of Public Service Excellence (APSE), Barnsley and Doncaster Councils, and reference to both Buckinghamshire and Herefordshire Councils' inspection policies and procedures.

2. INTRODUCTION

To reflect the current structure within the Rotherham Council's Community Safety and Street Scene Service and the Highway Network Management Group, routine inspection and maintenance, and the assessment and programmed maintenance have been divided into two sections within this Policy.

Rotherham Council (the Council) as Highway Authority is placed under a duty to maintain its highways by Section 41 of the Highways Act 1980. Section 58 of the Act allows the Council to mount a defence in actions against the Authority if it can demonstrate that it has taken reasonable care to ensure that the highway was not dangerous to traffic having regard to:

- The character of the highway and the traffic which was reasonably expected to use it;
- The standard of maintenance appropriate for a highway of that character and used by such traffic;
- The state of repair in which a reasonable person would have expected to find the highway;
- Whether the Authority knew or could reasonably have been expected to know that the condition of the highway was likely to cause danger to users;
- Whether warning notices were displayed when immediate repair could not reasonably be expected.

The establishment of an effective regime of inspection, assessment, recording and prioritisation of defect repairs is a crucial component of highway maintenance. It provides a robust framework to address key objectives for the maintenance of the highway in a safe and serviceable manner, as required by Section 41 of the Highways Act 1980, and consistent with the Council's HAMP.

3. HIGHWAY INSPECTION

3.1 Inspection Regime

The Council is responsible for the maintenance of over 1,160km (725 miles) of roads. These are split into different types of road classification as shown below:

- Principal roads (A class) are the main strategic routes that carry large volumes of traffic around through the Borough;
- Non-principal roads (B and C class) are main roads of local strategic importance. They are through routes that link together the principal roads;
- Unclassified roads are minor routes carrying local traffic only. They tend to be mainly residential estate roads and rural roads.

All Safety Highway Inspections (SHI's) are undertaken by area based Highway Inspectors within the Council's Community Safety and Street Scene Service. Street Works inspections, highway enforcement activities and actions to identify programmed maintenance activities follow separate procedures.

3.1.1 Network Hierarchy

Tables 3.1.1a, 3.1.1b, and 3.1.1c below are extracted from the CoPHMM and relate to individual highway sections. They are intended to be used as a reference point from which to develop local hierarchies. The review of road hierarchies across local authority boundaries, to ensure a consistent application of procedures, forms a part of the Council's HAMP.

Footway maintenance standards as with carriageway maintenance standards will not necessarily be reflected by the road classification, this being determined by pedestrian usage and not the importance of the road in the network. Local factors such as the age, distribution of the population, the proximity of schools or other establishments attracting higher than normal numbers of pedestrians to the area should also be taken into account.

The detailed descriptions in the tables relate to the most usual circumstances encountered in the UK.

Category	Hierarchy Description	Type of Road General Description	Detailed Description
1	Motorway	Limited access motorway regulations apply	Routes for fast moving long distance traffic. Fully grade separated and restrictions on use.
2	Strategic Route	Trunk and some Principal 'A' roads between Primary Destinations	Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40 mph and there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.
3 (3a in the Code)	Main Distributor	Major Urban Network and Inter-Primary Links. Short - medium distance traffic	Routes between Strategic Routes and linking urban centres to the Strategic Network with limited frontage access. In urban areas speed limits are usually 40 mph or less, parking is restricted at peak times and there are positive measures for pedestrian safety.
4 (3b in the Code)	Secondary Distributor	Classified Road (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions	In rural areas these roads link the larger villages and HGV generators to the Strategic and Main Distributor Network. In built up areas these roads have 30 mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On street parking is generally unrestricted except for safety reasons.
5 (4a in the Code)	Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions	In rural areas these roads link the smaller villages to the distributor roads. They are of varying width and not always capable of carrying two way traffic. In urban areas they are residential or industrial inter-connecting roads with 30 mph speed limits random pedestrian movements and uncontrolled parking.
6 (4b in the Code)	Local Access Road	Roads serving limited numbers of properties carrying only access traffic	In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGVs. In urban areas they are often residential loop roads or cul-de-sacs.

Table 3.1.1a Carriageways

Category No	Category Name	Brief Description
1a	Prestige Walking Zones*	Very busy areas of towns and cities with high public space and street scene contribution.
1	Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes.
2	Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres, etc.
3	Link Footway	Linking local access footways through urban areas and busy rural footways.
4	Local Access Footways	Footways associated with low usage, short estate roads to the main routes and cul-de sacs.

Table 3.1.1b Footways

*At present no footways in Rotherham are categorised as 'Prestige Walking Zones'.

Category	Description
A	Cycle lane forming part of the carriageway, commonly 1.5 m strip adjacent to the nearside kerb. Cycle gaps at road closure point (no entries allowing cycle access).
B	Cycle track, a highway route for cyclists not contiguous with the public footway or carriageway. Shared cycle / pedestrian paths, either segregated by a white line or other physical segregation, or un-segregated.
C	Cycle trails, leisure routes through open spaces. These are not necessarily the responsibility of the highway authority, but may be maintained by an authority under other powers or duties.

Table 3.1.1c Cycle Routes

3.2 Safety Inspections

Safety Highway Inspections (SHI's) are designed to identify, record and prioritise the repair of defects which may present an immediate danger, or significant inconvenience to users of the highway (emergencies), or to the structural condition of the highway and assets contained within the highway boundary. In addition, they may be used to identify defects of a lesser magnitude which may be included within future programmes of planned maintenance work or to indicate that a more in depth service inspection may be required.

SHI's are supplemented by other inspections and assessments undertaken in line with national standards and/or good practice, including but not limited to:

- Ad-hoc inspections undertaken in response to specific matters identified through correspondence;
- Specialist inspections of certain assets within the highway boundary (for example street lighting and highway structures);
- Technical assessments of carriageway condition generally undertaken using machine based equipment (for example SCANNER or SCRIM surveys);
- Structural Maintenance Visual Assessments (CVI or DVI);
- Street Works inspections.

SHI's are visual inspections undertaken in accordance with risk assessment principles as outlined through the risk based approach in section 3.7 of this document. They are designed to provide complete, accurate and timely information, as far as is reasonably practicable, on the safety maintenance needs of the highway network and its ancillary assets based on site observations and measurements. These are applied through a risk based evaluation reflective of the characteristics of the defect, the local environment and network usage.

In line with national codes of good practice, particularly CoPWMHI, published on 28 October 2016, the characteristics of the inspection regime, including frequency of inspection, items to be recorded and nature of response, are defined following an assessment of the relative risks associated with the potential formation of defects within the highway boundary.

The inspection regime must be applied and recorded systematically and consistently. As well as information relating to defects, all inspections must also therefore record the following through the use of mobile device technology (MDT):

- Time of inspection and defect location;
- Weather conditions;
- Any unusual circumstances of the inspection;
- Person(s) conducting the inspection.

Arrangements are made to review the inspection, assessment, frequency and recording regime at least every two years. The outcome of this review will be considered at a senior management level within the Council's Regeneration and Environment Directorate and will consider:

- Changes in network characteristics and use;
- Completeness and effectiveness of data collected;
- Trends within defect formation;
- Success of repair programmes;
- The need for changes/amendments/additions to the inspection regime derived from risk assessment.

Proposals to amend the inspection frequency or methodology may be made should such alterations be deemed to be beneficial.

3.2.1 Inspection Frequencies

Frequencies for safety inspections of individual network sections are based upon the Carriageway Maintenance Hierarchy adopted by the Council, which in itself considers:

- Road category;
- Traffic use, characteristics and trends;
- Characteristics of adjoining network elements;
- Wider policy or operational considerations.

Although the road category within the hierarchy, in combination with traffic use, will be the main determinant of inspection frequency, site specific factors may merit a decision to temporarily or permanently increase or reduce the frequency in a specific location, for example, where the condition of a highway is susceptible to rapid deterioration additional safety inspection (ASI) may be undertaken. The Council will therefore consider the following for individual network sections:

- Incidents, extreme weather and inspection history;
- Complaints about condition;
- Claims received;
- Condition assessments (UKPMS);
- Traffic flows and changes in use;
- Defect interventions recorded.

Circumstances outside our control, for example weather conditions, network and resource availability may result in SHI's not being carried out on their due date. The tolerances in table 3.2.1a below are considered reasonable and apply Monday to Friday excluding Bank Holidays:-

Target Insp Frequency	Tolerance
Monthly	+/- 1 week
3 Monthly	+/- 2 weeks
6 Monthly	+/- 3 weeks

Table 3.2.1a Safety Inspection Tolerances

Tables 3.2.1b, 3.2.1c and 3.2.1d below detail the safety inspection frequencies adopted by the Council which may be subject to temporary changes through the risk based approach.

Carriageway Hierarchy Classification	Frequency of safety inspection	Hierarchy Category
1	Not currently used	
2	Monthly	Strategic Road
3A (Rotherham Cat 3)	Monthly	Main Distributor Road
3B (Rotherham Cat 4)	3 Monthly	Secondary Distributor Road
4A (Rotherham Cat 5)	3 Monthly	Local Link Road
4B (Rotherham Cat 6)	6 Monthly	Local Access Road

Table 3.2.1b Safety Inspection Frequency for Carriageways

Footway Hierarchy Classification	Frequency of safety inspection	Hierarchy Category
1	Monthly	Primary Walking Route
2	3 monthly	Secondary Walking Route and Safer Routes to School
3	6 monthly	Linked Footway
4	6 Monthly	Local Access Footway

Table 3.2.1c Safety Inspection Frequency for Footways

Cycle way Hierarchy Classification	Frequency of safety inspection	Hierarchy Category
1	As per carriageway frequency	Cycle lane - contiguous with the carriageway
2	6 Monthly	Cycle Track, Shared Cycle/Footway - a route for cyclists not contiguous with the public footway or carriageway or a shared cycle/pedestrian path

Table 3.2.1d Safety Inspection Frequency for Cycleways

Carriageways and footways are inspected simultaneously, with the frequency of inspection being set as the more frequent of the two intervals. Subsequently, some footways and shared cycle/footway lanes will be inspected more frequently than indicated in the tables above. Additionally, Council owned car parks will be inspected during the inspection of the adjacent highway.

3.2.2 Inspection Methodology

Safety inspections may be carried out from a slow moving vehicle. Where the Highway Inspector determines that in their reasonable opinion the inspection cannot be undertaken and defects effectively observed from a vehicle, then the inspection will be walked.

Carriageway and Cycle Lane inspections may be undertaken by slow moving vehicle, at frequencies that reflect the characteristics of the particular highway and its use. In heavily used urban areas it may be difficult to obtain the necessary level of accuracy from vehicle based inspections and therefore the inspection may be walked.

All following parts of the highway will be walked inspections as will any other parts of the highway where it may be difficult to obtain the necessary level of accuracy from vehicle based inspections:

- Flagged or other modular footways;
- Urban Principal Roads;
- Cat 1 footways;
- Footpaths;
- Cycle ways (remote from the carriageway).

All other parts of the highway may be inspected for safety from a slow moving vehicle with an inspection team of two comprising observer and driver.

Chapter 8 of the Traffic Signs Manual 2009 (Part 2 Operations) deals with slow moving continuous operations such as highway maintenance inspections, road testing and white lining operations

The requirements are:

- The work should be carried out at off-peak times;
- Operatives should wait for a sufficient gap in the traffic prior to marking any defects on the carriageway. Safe gaps in the traffic are only likely to occur in traffic flows of less than 40 vehicles per minute on three-lane carriageways. At least three seconds per lane, or a safe gap of 150 metres per lane, should be allowed when estimating crossing times;
- Operatives should face oncoming traffic or use a lookout while marking defects;
- Where gaps in the traffic are insufficient, operatives should not attempt to mark the defect but instead should estimate the dimensions of the repair;
- Work on three-lane single carriageway roads should be carried out from the nearside lane at a speed limit of minimum 30 mph.

In order to determine the appropriate method of working, single and dual carriageway roads are split into categories depending on the daily vehicle flow per carriageway.

The road categories are:

- Category 1: greater than 80,000 vehicles/day;
- Category 2: 20,000 to 80,000 vehicles/day;
- Category 3: less than 20,000 vehicles/day.

3.2.3 Inspection by Vehicle

Rotherham's highway network does not include any Category 1 roads. For Category 2 and 3 roads, the following method should be followed by the Highway Inspector (Operative):

- Drive at a minimum of 30 mph on the nearside lane of the carriageway;
- Pull up on the hard shoulder if available or at a safe location to record or assess defects;
- On roads where a slow moving vehicle could be a hazard to other road users an amber light should be attached to the roof of the surveying vehicle;.
- On a dual carriageway with a hard shoulder, the inspection should be undertaken from the hard shoulder if this is practicable and safe to do so.

Table 3.2.3a indicates the 'Safety Inspection Approach Risk Assessment'.

Hazards Identified	Risk Level	People at risk	Controls	Comments / actions
Hazards associated with the post of Highway Inspector	Various	Inspector and Highway Users	Refer to Chapter 8 Traffic Signs Manual 2009 (Part 2 Operations) and 'Lone Working Risk Assessment'.	
Survey vehicle being driven at low speeds (≤ 10 mph)	Med	Inspector and highway users	Vehicle to be equipped with warning amber lamp and 'Highway Maintenance' signage displayed on the vehicle.	
Vehicular traffic queuing behind survey vehicle	Med	Inspector and highway users	Highway Inspector to monitor build-up of traffic travelling behind, and pull over where safe to do so to allow queuing vehicles to overtake.	Hazard warning lights to be used in addition to flashing beacon when survey vehicle is stationary.

Highway inspector walking and marking out on the highway.	High	Inspector and highway users	Inspector to wear reflective clothing, walk towards oncoming traffic and face oncoming traffic when marking out defects. Awareness required of traffic volumes and not to spray mark defect if site conditions dictate otherwise.	
Weather (fog/heavy rain/snow)	Med	Inspector and highway users	Inspections to be rescheduled when conditions/visibility has improved.	
Lack of forward and rear visibility (brows, bends and dips in the road)	High	Inspector and highway users	Highway Inspector to assess whether the survey vehicle can be driven safely at 10 mph	

Table 3.2.3a Safety Inspection Approach Risk Assessment

3.2.4 Inspection Procedure

- Driven safety inspections shall only be undertaken as detailed in Safety Inspection Approach and the Safety Inspection Method Risk Assessment;
- Vehicles used for inspection will carry “Highway Maintenance” signs displayed in the rear window;
- On roads where a slow moving vehicle could be a hazard to other road users an amber light should be attached to the roof/rear window of the surveying vehicle;
- Reflective clothing will always be worn when undertaking inspections;
- Inspections should, wherever possible, be carried out from the footway. The recording of data must be carried out from the footway or other safe place;
- In heavy traffic it is essential that marking out be undertaken by two people. The second person will concentrate on safety and be on the lookout for traffic;
- Where traffic is very heavy further safety measures may be necessary such as rescheduling the inspection for a time of day when traffic is lighter. In some circumstances traffic management measures may be required;
- Under no circumstances should the officer undertaking the inspection handle needles, syringes or other sharp objects;
- All observed defects will be risk assessed taking into consideration the ‘Minimum Investigatory Levels’ specified in Table 3.7.1a;
- Defects representing a risk to highway users will be recorded using MDT and the level of response will be determined on the basis of risk assessment (see sections 3.5, 3.6 and 3.7).

3.3 Service Inspections and Programmed Maintenance.

3.3.1 Risk Management

Service inspections should be strongly focused on ensuring that the network meets the needs of users and comprise more detailed specific inspections of particular highway elements, to ensure that they meet the levels of service defined within the Council's HAMP. Such inspections may be prompted by Highway Inspectors through the safety inspection process and subsequent provision of regular reports to Service Managers.

Risk assessments for service inspections are dealt with differently to safety inspections. Serviceability related defects are mainly related to network reliability and integrity and the ability of the network to meet the needs of users. Risks are assessed by reference to the HAMP by taking due consideration of levels of service, relative priorities and available budget.

Operational Risks are faced in the day to day delivery of services. Street Lighting for example is associated with increased personal security, so any potential service level changes to lighting levels will require consideration of risk impact. Flood risks associated with drainage assets pose operational risk through potential flooding to highway and properties. Regular maintenance of existing highway drainage assets is a priority of the Council in maintaining the safety of the public highway.

In order to capture these risks, and to ensure compliance with corporate procedure, the Managers' of highway assets including Roads (carriageways, footways and verges), Street Lighting, Drainage, Bridges/Structures and Traffic Systems identify risks, at least quarterly, in respect of their individual assets/services. A risk assessment is then undertaken to evaluate a risk factor and an appropriate RAG (red, amber, green) rating in accordance with the Council's "Risk Management Policy and Guide 2015" culminating in an overarching Service Risk Register.

Any red or amber risks that are subsequently considered of significance for possible inclusion in the Council's Strategic Risk Register are referred on to the Council's Corporate Risk Manager for consideration. The remaining risks remain on the Operational Service Risk Register for ongoing management and assessment.

3.3.2 Road Maintenance

As a result of the regular condition surveys of various types undertaken on the network (see section 4.3), the Council holds condition data on all of the roads, footways and footpaths making up the highway network. This data is mapped within the highway asset management system. In addition to prioritising programmes for maintenance schemes, the data is also used to identify areas where more routine programmed maintenance repairs would be beneficial.

Wherever possible such programmed repair will be coordinated with the other programmes of work to ensure the most efficient delivery of repair work. It also demonstrates a coordinated approach to highway users.

3.3.3 Street Lighting

Routine electrical inspections are carried out at six year intervals to ensure street lighting units comply with relevant electrical regulations. At each attendance for routine electrical testing and other reactive maintenance the condition of the unit is assessed visually. This visual inspection forms a risk based evaluation with regards identification of ageing columns that are prioritised for replacement in line with ILE technical report 22 Managing a Vital Asset : Lighting Supports.

In addition to visual inspections, in ten year intervals, each street lighting unit should be inspected and assessed by an independent testing contractor to assess the structural condition of the street lighting units. The testing contractor will provide a report on the street lighting units structural and visual condition with recommendations for replacement programmes.

3.3.4 Highway Structures

General inspections are undertaken every 2 years to ensure highway bridges, including subways and culverts as well as footbridges are safe for the passage of vehicular and/or pedestrian traffic. Bridge condition details are recorded at these inspections.

Principal inspections are carried out at intervals of between 6 and 12 years at the more significant highway structures. This interval is determined through a risk assessment following national guidance. These inspections together yield urgent defects that are repaired as well as refurbishment needs for each structure that are detailed and prioritised around a risk based approach in order to complete appropriate work programmes.

3.3.5 Traffic signals

Programmed inspections to all traffic signal equipment are undertaken 3 times per year to all equipment and urgent defect repaired at the time by the traffic signals term maintenance contractor. Special inspections in response to defects reports will also be made if appropriate when reports are received.

3.3.6 Highway Trees

Generally, the inspection of highway trees by the Council's Tree Officers is prompted by Highway Inspectors identifying possible defects and risks to highway users through safety inspections and on receipt of reports from local residents, the general public and / or Ward Members.

A risk based approach in developing a pro-active inspection regime in accordance with CoPWMHI is being considered. This follows the acquisition of a new Tree Management System that is expected to support the implementation of such a regime.

3.3.7 Highway Drainage

The road gullies in Rotherham (of which there are currently 45,446) are inspected, and if necessary cleansed, at least once per year in accordance with CIRIA (Construction Industry Research and Information Association) Report 183. The road gullies on the majority of roads (generally estate roads) are inspected once per year with frequencies increasing up to four times per year on roads such as Rotherham Gateway. The visits are recorded electronically using a GPS (Global Positioning System) fitted to the Gully Flushers.

Any defects with road gullies are recorded using the GPS system and a list of highway drainage assets (which includes road gullies) requiring repair is held electronically. Due to a backlog of highway drainage assets requiring repair, remedial works are prioritised according to the severity of the flooding, the frequency of the flooding and the length of time the Highway Authority has been aware of the defect.

Other assets, such as soakaways, silt traps, linear drainage, petrol interceptors, outfalls and flow regulators, are inspected, and if necessary cleansed, between once per year and twelve times per year. The frequency is determined using data collected during previous inspections. If an asset is inspected twice per year and requires maintenance during each inspection the frequency of visits will be increased to four times per year. Should an asset which is inspected twice per year be found to require no maintenance during inspections, the frequency of inspections will be decreased to once per year.

3.4 Customer Reports

Complaints, reports and requests for maintenance from members of the public and other stakeholders will be received via the Council's Customer Contact Centre which is contactable 24 hours per day and 7 days per week. These reports are allocated a unique reference number. Reports of situations that could be potentially hazardous to highway users will be telephoned directly through to the appropriate Highway Inspector.

Through the risk based approach, should the Highway Inspector evaluate that urgent action be required to make the highway safe, then the Highway Delivery Team will be contacted immediately to arrange for relevant resources to be deployed and a record made using MDT.

3.5 Defect Categories

This CoPHIA defines defects in two categories:

- Emergency (Cat 'A') are those requiring prompt attention because they represent an immediate hazard;
- Category 1 (Cat '1') are those requiring priority attention as they represent a potential risk to road users or to the integrity of the highway asset.

Cat '1' defects are then further subdivided into High, Medium and Low categories to enable the inspector to make an appropriate assessment of risk.

3.5.1 Cat 'A' Defects

Defects will be made safe at the time of the inspection, if reasonably practicable. In this context, making safe may constitute the Highway Inspector parking a vehicle in such a manner as to protect users of the highway from the defect, or by maintaining a presence to advise highway users accordingly. The emergency call procedures will be adopted by the Highway Inspector in circumstances where it is not possible to make safe the highway at the time of inspection, thereby ensuring that appropriate resources are mobilised by the Highway Delivery Team to make the defect safe. Examples of typical Cat 'A' defects are shown below.



Lighting Column access cover
Removed exposing cables



Carriageway Collapse



Missing Chamber Cover

3.5.2 Cat '1' Defects

Cat '1' defects are categorised according to priority: High (Cat '1H'), Medium (Cat '1M') and Low (Cat '1L'), with response times specified in section 3.7 (see table 3.7.6a). A means of appropriately categorising Cat '1' defects is also covered in section 3.7 (see subsection 3.7.5).

Examples of typical Cat '1' defects are shown below.



Carriageway Pothole



Uneven flagged Footway

3.5.3 Safety Inspection Defect Types

The Highway Inspector's decision in categorising defects through the risk based approach may be critical in securing the safety of highway users and may also be subject to legal scrutiny in the event of an accident occurring at or near to the defect location. Complete and accurate records will be essential.

Table 3.5.3a indicates typical issues that may be identified by the Highway Inspector during SHIs (Section 3.6 provides further guidance). Such issues are coded and recorded through the use of MDT, and where required reported to the relevant asset owner or Service Manager.

Type	Code	Footways / Verges /Car Parks	Carriageways
Surface Maintenance	FURN	Arrange urgent repair or making safe of serious footway defects, defective ironware, kerb or edging defects and third party reinstatements/apparatus.	Arrange urgent repair or making safe of potholes and other surface defects including ironwork and channel defects
	SKID		Report any areas where serious loss of skidding resistance suspected.
Highway Drainage	DRAN	Report excessive standing water or water flowing onto the footway. Report blocked gullies, drainage channels, or grips.	Arrange to make safe as necessary and report excessive standing water or water flowing onto or across the carriageway. Report blocked gullies or kerb drainage systems.
Obstruction	OBST	Report or action serious obstruction of the footway from whatever cause.	Report or action serious obstruction of the Carriageway from whatever cause.
Verge Maintenance	VERG	Arrange for urgent repairs or make safe potential hazards.	Report any obstruction to visibility caused by verge overgrowth.
Carriageway Channel Detritus	CHAN		Arrange for carriageway to be swept / cleansed to help prevent gulley blockages.
Safety Fences & Barriers	FENC		Arrange to make safe as necessary and report damaged safety fences and barriers.

Road markings / road studs	MARK		Remove any displaced road studs from trafficked areas. Report missing Stop/ Give Way markings. Report on deteriorated line markings.
Highway Trees / trees affecting highway	TREE	Report potential hazards caused by the condition of trees, shrubs and hedges including surface disturbance from roots.	Report potential hazards caused by the condition of trees, shrubs and hedges
Moss growth	MOSS	Arrange for treatment to remove any slipping hazard. Report for inclusion on moss treatment programme.	
Japanese Knotweed	JPKW	Arrange for treatment to remove any hazard. Report for inclusion on treatment programme.	
Highway Structures	STRU	Report potential hazards caused by the condition of bridges, footbridges, retaining walls and subways	Report potential hazards caused by the condition of bridges, footbridges, retaining walls and subways.
Street Cleansing	CLEA	Remove any debris from footway which might trip pedestrians. Report serious or extensive accumulations of leaves / litter. Report spillages.	Remove any easily moved potentially hazardous debris from trafficked areas or arrange removal. Report serious or extensive accumulations of leaves / litter. Report spillages.
Traffic signs / Signals	SIGN	Report potentially hazardous damage to signs, signals and bollards	
Street Lighting	LIGH SLVG	Report potentially hazardous damage to columns Report or action significant obstruction of street lighting by tree or shrub growth.	
Street Name Plates	NAME	Arrange to make safe potentially hazardous damage, report for replacement.	
Litter Bins	BINS	Report potentially hazardous damage	
Other	OTHR	Report any other potential hazard observed.	
Scheme Required	SCH	Report if scheme may be required.	Report if scheme may be required.
Bin Collection Day	BINC	Bins left on highway on bin collection day.	Information only.
Car Parks	CPOW	Car park requires other works.	
Hedges	HEDG	Overhanging vegetation.	
Snow Cover	SNOC	Highway covered in snow.	
Arrestor Bed	ARRE	Report and arrange remedial works following vehicle intrusion(s).	

Table 3.5.3a Types of defects to be recorded

3.6 Guidance and Procedures for Inspectors

3.6.1 Surface Maintenance

Some defects may not be the responsibility of the Council to repair, for example, the adjustment or replacement of a Utility Company inspection chamber cover and frame. In such cases the defect will be recorded in line with normal procedures. It will also be temporarily made safe should such actions be necessary to protect the safety of the travelling public or the integrity of the highway. All relevant information will be notified directly to the third party who will be responsible for continued maintenance of the temporary repair and for the subsequent full repair of the defect. Should the third party not provide an acceptable response, then the Council may take appropriate action itself to instigate appropriate repairs and to recover the costs of works undertaken from the third party responsible.

3.6.2 Council Owned Car Parks

The safety inspection of car parks (SCI) shall be undertaken at the same time as that of the adjacent highway. The minimum investigatory level (MIL) for surface defects will be as for footway defects.

Any 'Cat A' and 'Cat 1' defects identified at the inspection will be ordered for repair within the timescales specified in Table 3.7.6a by the appropriate highway response team. If required to clearly record the location of the defect then a photograph of the location shall be taken and attached to the inspection record.

Any other potential safety issues, for example relating to barriers or furniture, will be identified in line with the guidance below.

General deterioration needing more extensive repair or replacement will be recorded and reported to Parking Services.

3.6.3 Highway Drainage

Water on the carriageway can cause a danger through aqua-planing, vehicles swerving to avoid standing water and through ice formation in the winter. It will also cause annoyance to pedestrians through spray affecting the footways. The most common causes of extensive standing water are blockages to gullies, drainage channels or grips.

Water flowing across the footways or carriageway is of particular concern because of the danger of ice formation.

All potentially hazardous issues recorded by the Highway Inspector will be reported to the Drainage Group (R&E-drainage@rotherham.gov.uk) should further action be required.

3.6.4 Obstruction

Physical obstruction can be caused by anything deposited on, growing in, growing over or suspended over the highway. The extent of any potential danger can only be judged in each individual circumstance taking into account the nature of the obstruction, site layout and the level of traffic using the highway.

In the majority of instances the most appropriate first action will be to seek the removal of the obstruction by the person responsible for it. If this results in a refusal or no action within a reasonable period then enforcement action should be considered.

In exceptional circumstances direct action by the Delivery Teams to remove the obstruction may be warranted. This should be discussed with the Team Leader before instructing the work.

3.6.5 Verge Maintenance

Verges can present hazards to highway users through poor surface condition or through overgrowth. Hazardous defects within the surface of the verge should be dealt with as for other surface repairs having due regard to the risk based approach in section 3.7. Any obstruction to sight lines should be reported for action.

3.6.6 Safety Fences and Barriers

Potentially hazardous faults with safety barriers should be made safe and will be recorded and reported to the Street Lighting Manager.

Hazards may possibly include:

- Projections from the damaged fence or barrier extending into areas which may reasonably be used by pedestrians or vehicles;
- Lengths of missing guard rail where a danger to highway users or others could be anticipated. For example, a length of safety fencing protecting a lighting column from impact would not indicate a need for temporary action but a missing section of pedestrian guard rail above a vertical drop would indicate a need for urgent action;
- Vehicle impact damage to the guard rail that may not have been previously reported / identified.

3.6.7 Road Markings and Road Studs

Loose road studs should be removed from trafficked areas and reported to the Street Lighting Manager, as should any missing 'Stop' or 'Give Way' road markings. Also lengths of missing or worn regulatory markings such as yellow lines or box junctions should be reported.

3.6.8 Highway Trees

Trees and shrubs can be the cause of potential danger to highway users through their physical condition. Any tree appearing to be dead, damaged or badly diseased should be recorded and reported to the Tree Service Manager for further investigation.

3.6.9 Street Cleansing

Any debris having the potential to cause a danger to highway users should be removed and placed in a safe location if this can be achieved. The Highway Cleansing Teams and the Council's Customer Contact Centre will be informed by telephone should immediate action be required to remove the following from the highway:

- Debris or fly-tipped material;
- Needles and other sharp objects;
- Large scale spillages;
- Dead animals etc.;
- Racist or obscene graffiti.

An accurate description of the material to be removed must be provided for the Delivery Team such that appropriate resources are deployed. Any fly-tipped material suspected of containing asbestos must be reported.

Under no circumstances should Highway Inspectors handle needles, syringes or other sharp objects.

3.6.10 Arrestor Beds

Any observed disturbance to the surface of an Arrestor Bed should be considered for remedial works and subsequently reported to The Highway Inspection and Street Works Manager.

3.6.11 Traffic Signs and Traffic Signals

Potentially hazardous faults should be recorded and telephoned through to the Council's Customer Contact Centre immediately on locating them.

Faults that may represent a hazard include:

- Electrical covers missing or dislodged;
- Wiring exposed;
- Illuminated bollards or their temporary replacements missing, Insecurely rooted furniture, including sign posts;
- Traffic signal heads or sign lighting units hanging loose;
- Missing or damaged sign poles and sign faces;
- Red/Amber/Green missing signals or twisted around or hanging loose;
- Inoperative red or green man signals.

3.6.12 Street Lighting

Potentially hazardous faults should be phoned through to the Council's Customer Contact Centre immediately on locating them.

Faults that may be hazardous include:

- Missing doors from columns;
- Severely leaning or visibly damaged columns;
- Rocking columns;
- Hanging lanterns and lantern bowls.

Appropriate action will be arranged where street lighting is likely to be significantly affected by tree or shrub growth. In the majority of instances the most appropriate first action will be to seek the removal of the obstruction by the person(s) responsible. If this results in a refusal or no action within a reasonable period then enforcement action should be considered.

In exceptional circumstances direct action by the Delivery Teams to remove the obstruction may be warranted. This should be discussed with the Team Leader before instructing the work.

3.6.13 Street Name Plates

Signs that are potentially hazardous due to damage, possibly with sharp edges or being insecurely fixed, should be recorded and telephoned through to the Council's Customer Contact Centre immediately on locating them.

Reports of missing plates should be reported to the Street Lighting Manager for permanent replacement.

3.6.14 Litter Bins

Bins that are potentially hazardous due to damage, possibly with sharp edges or being insecurely fixed should be recorded and reported by telephone through the Council's Customer Contact Centre.

3.6.15 Weekly Defect Report

Defects that have not been risk assessed at 'Cat A' or 'Cat 1' are recorded through MDT and through the use of the codes displayed in Table 3.5.3a. These records form part of the Highway Asset Database. On a weekly basis a report is produced and circulated to the appropriate managers for them to assess any action required.

3.7 Risk Based Approach

The purpose of the risk assessment is to determine the scale of the risk presented by a defect in order to prioritise the appropriate response. The implementation of a risk based approach (RBA) to safety highway inspection is set out below. The Council's 'Risk Management Policy and Guide' adopts a '5x5' risk matrix, which is consistent with that included within the HIAMG on page 79 'Figure 10 Qualitative Matrix Approach'. A '5x5' matrix is adopted within this CoPHIA (see table 3.7.5a) which also provides for a risk factor score range from 1 to 25.

3.7.1 Minimum Investigatory Levels

Any highway feature with a defect level which corresponds to, or is in excess of, the Minimum Investigatory Level (MIL) is to be assessed by the Highway Inspector using the risk based approach.

To establish minimum investigatory levels a number of comparable local authority's criteria have been taken into consideration. The following definitions are adopted by 75% of authorities surveyed:

- A depth of 40mm or greater and extending in any one direction >300mm in the carriageway;
- A rapid change of profile >25mm and extending in plan dimension <600mm in the footway.

The remaining 25% of authorities worked to a 50mm depth in the carriageway and 20mm depth in the footway but did not specify any horizontal dimensions.

Table 3.7.1a sets out the MIL's for consideration by Rotherham's Highway Inspectors. The MIL's specified are similar to the intervention levels specified in previous editions of the Council's "Code of Practice for Highway Inspection and Assessment" up to June 2017. These intervention levels were established with reference to CoPHMM taking into account all types of highway users.

Defects which do not meet the MIL will not generally be identified on a safety inspection, unless the inspector deems it necessary to do so. The MIL is provided as a guide only. Should the Highway Inspector deem it necessary to categorise any specific defect at a higher level, following risk assessment, then this will be recorded.

Highway Feature	Surface Type	Defect	Minimum Investigatory Level (action subject to RBA)
Carriageway and Cycle Way contiguous with carriageway	Flexible/Rigid	Pothole	40 mm depth and 250 mm width
	Modular/Rigid	Missing unit Abrupt difference in level.	All occurrences 40mm
Pedestrian Crossings Crossover Points Steps Footway Area Cycle Route Type B Kerb, Channel or Edging adjacent to a pedestrian paved area	Flexible/Rigid	Pothole	20 mm depth
	Modular/Rigid	Missing unit. Abrupt difference in level. Misaligned. Damaged. Rocking.	All occurrences 20mm 20mm 20mm 20mm
Kerb, Channel or Edging not adjacent to a pedestrian paved area		Missing unit. Abrupt difference in level. Misaligned. Damaged. Rocking.	All occurrences 20mm 20mm 20mm 20mm
Verge	Unpaved	Damaged	RBA

Table 3.7.1a Minimum Investigatory Levels

3.7.2 Risk Impact

Potential impact is quantified by the Highway Inspector assessing the extent of damage likely to be caused should the risk be realised. The impact/severity is affected by the magnitude or dimension of the defect and other variables such as mode of transport, road speed and the vulnerability of those involved.

The impact of a risk occurring is assessed as follows:

- Catastrophic;
- Major;
- Significant;
- Minor;
- Insignificant.

The impact of a risk occurring is measured on a scale of 1 to 5 (1 insignificant to 5 catastrophic). Table 3.7.2a provides guidance.

Impact rating	Score	Description	Possible Indicators
CATASTROPHIC	5	The Hazard presented by the defect, or due to the short term structural deterioration in the defect, could result in a fatality or serious injury.	Impact will result in serious damage to persons or property. Highway users will instinctively react to avoid the defect and this will place them in peril. The defect could destabilise a vehicle and this will place highway users in peril.
MAJOR	4	The Hazard presented by the defect, or due to the short term structural deterioration in the defect, could result in injury or serious claim against the Authority.	Impact will result in damage to persons or property, from which they are likely to recover. Highway users will instinctively react to avoid the defect. The defect could destabilise a vehicle.
SIGNIFICANT	3	The Hazard presented by the defect, or due to the short term structural deterioration in the defect, could result in minor injury or claim against the Authority. If untreated the defect will contribute to the deterioration in the overall condition of the Highway Asset. The defect is likely to deteriorate further before the next safety inspection.	Most impacts will not result in any injury. Highway users are unlikely to react to avoid the defect and the impact will not interrupt their passage. The defect will be felt and recognised as a defect by most Highway users, and its presence will be a negative influence on their perception of the Highway Asset. If untreated the defect will accelerate the local deterioration of the Highway Asset.
MINOR	2	The Hazard presented by the defect, or due to the short term structural deterioration in the defect, is unlikely to result in injury or claim, but the defect will contribute to the deterioration in the overall condition of the Highway asset. The defect is unlikely to deteriorate further before the next scheduled safety inspection.	The defect will be recognised by Highway Inspectors as requiring attention, but is unlikely to be felt and recognised as a defect by most Highway users. It is unlikely that the defect will cause any injury.
INSIGNIFICANT	1	The defect is due to the short term structural deterioration. It is highly unlikely to result in both an injury or claim and further deterioration.	Whilst the defect will may be recognised by Highway Inspectors as requiring attention, it is highly unlikely to be recognised as a defect by Highway users. The defect is very unlikely to cause injury.

Table 3.7.2a Impact Ratings

The vulnerability of all highway users, including cyclists and pedestrians to certain highway defects will be reflected in the risk assessment carried out when deciding the category of the defect.

3.7.3 Risk Likelihood

Likelihood is the Highway Inspector’s assessment of probability of the defect affecting the safe passage of traffic along the highway, or affecting the structural integrity of the highway between scheduled inspections. It follows an assessment of the Road Hierarchy and the location of the defect within the highway in relation to other risk factors/features in the environment.

The likelihood of a risk occurring is assessed as follows:

- Almost certain;
- Very likely;
- Likely;
- Possible;
- Unlikely.

The probability is quantified by assessing the likelihood of users, passing by or over the defect, encountering the risk. As the probability is likely to increase with increasing vehicular or pedestrian flow, the network hierarchy and defect location are important considerations in the assessment. The likelihood of a risk occurring is measured on a scale of 1 to 5 (1 unlikely to 5 almost certain). Table 3.7.3a provides guidance.

Likelihood Rating	Score	Description	Possible Indicators
ALMOST CERTAIN	5	More than an 80% chance of occurrence.	Vehicular, cycle and / or pedestrian flows are high. A high percentage of vulnerable users may pass through the site. The location of the defect and the topography of the site will mean that it is difficult to a highway user to recognise and hence avoid the defect. Forward visibility may be compromised.
VERY LIKELY	4	60 to 80% chance of occurrence.	Vehicular, cycle or pedestrian flows may be high, but differing modes are less likely to share the Highway at this location. Responsible Highway users may be able to recognise and take action to mitigate the impact of the defect. Forward visibility is good.
LIKELY	3	40 to 60% chance of occurrence.	Vehicular, cycle or pedestrian flows are moderate or low. Different transport modes are unlikely to share the Highway at this location. The majority of responsible Highway users will be able to recognise and take action to mitigate the impact of the defect.
POSSIBLE	2	10 to 40% chance of occurrence.	Vehicular, cycle or pedestrian flows are low. The speed differential between users is likely to be low. The majority of responsible Highway users will be able to avoid the defect.
UNLIKELY	1	Less than 10% chance of occurrence.	Vehicular, cycle or pedestrian flows are very low. The speed differential between users is very likely to be low. It is expected that responsible Highway users will be able to avoid the defect.

Table 3.7.3a Likelihood Ratings

3.7.4 Risk Factor

The risk factor for a particular risk is calculated as follows:

Risk Factor = Impact Score X Likelihood Score

It is this factor that identifies the overall seriousness of the risk and consequently the appropriateness of the speed of response to remedy the defect.

3.7.5 Defect Categorisation

Table 3.7.5a (Risk Matrix) and table 3.7.5b (Risk Factor Scoring) below enable the appropriate categorisation of defects.

LIKELIHOOD	Almost Certain 5	5	10	15	20	25
	Very Likely 4	4	8	12	16	20
	Likely 3	3	6	9	12	15
	Possible 2	2	4	6	8	10
	Unlikely 1	1	2	3	4	5
		Insignificant 1	Minor 2	Significant 3	Major 4	Catastrophic* 5
	IMPACT					

Table 3.7.5a Risk Matrix (for defect response categorisation)

Score of 1 to 8	Cat 1 Low
Score of 9 to 12	Cat 1 Med
Score of 15 to 20	Cat 1 High
Score of 25	Cat A (emergency)*

Table 3.7.5b Risk Factor Scoring (mechanism within Risk Matrix)

* An emergency response may be requested where the impact of a risk is catastrophic. Examples may include missing man hole covers, collapsed carriageways, fallen trees, subsidence, and flooding.

3.7.6 Works Orders and Response Times

Works can be ordered for completion within a range of timescales. Table 3.7.6a below provides the timescales for responding to Cat 'A', Cat '1H', Cat '1M' and Cat '1L' defects along with the corresponding works order/priority codes.

Defect Category	Works Order/ Priority Code	Response	Repair type	Comments
Cat 'A' (emergency)	A	2 hours from time of identification or 4 hours from receipt of report.	Temporary	Used to deal with defects which form an immediate hazard to the highway user.
Cat '1H'	1	24 hours from time of identification	Temporary	Defects which may impact on the highway user but are not safety critical, e.g., potholes, missing, misaligned or rocking flags/paving units.
Cat '1M'	2	7 days from the date of identification	Temporary or Permanent	These defects are not required to be urgently rectified and focus more on the serviceability needs of the highway.
Cat '1L'	0	3 months	Permanent	Response of a more routine nature that supports the serviceability and sustainability of the highway network. No temporary repair necessary
	X	48 hours	Temporary	See 3.7.7 'Priority 'X' and '5' Works Orders
	4	6 months	Permanent	Used for planned maintenance
	5	10 days	Permanent	See 3.7.7 'Priority 'X' and '5' Works Orders

Table 3.7.6a Works Order Priorities and Response Times

3.7.7 Priority 'X' and '5' Works Orders

Alternative methods of repair have had to be sought to reduce the number of reactive repairs, provide a permanent repair and improve customer perception. The Works Order / Priority Codes 'X' and '5' are an attempt to do all three with the added function of providing pre-patching for surface treatments. Where defects that are risk assessed as a Cat 'A', or as a Cat '1H', then the repair of the defect will be actioned accordingly.

Defects other than a Cat 'A' or a Cat '1H' may be considered as a Work Order / Priority Code 'X'.

It is recognised that on any highway network, a multitude of minor defects will exist which do not pose any risk to either the safety or the integrity of the highway and for which it may be impractical and inefficient to expend limited financial resources to undertake repairs.

Any defects which do not meet the Minimum Investigatory Levels may be recorded should the Highway Inspector deem this appropriate, for example, where a cluster of such defects may form a potential preventative maintenance scheme in the future. Where such defects are recorded, they will be considered as a Works Order/ Priority Code '0' or '4'.

3.8 Training

3.8.1 Qualifications and Guidance

CoPWMHI provides advice regarding Highway Inspector training. The successful completion of a certification scheme provided by a training centre approved by the UK Roads Board enables Highway Inspectors to be included on the National Register of Highway Inspectors for a period of five years.

Registration with the Highway Inspectors Board can contribute positively to risk management and defence of compensation or liability cases.

Those involved in managing, developing and implementing the risk based approach for safety inspections will be competent. Highway Inspectors will be provided with clear guidance and training regarding the establishment of the risk based approach and practical implementation. A programme of Continuing Professional Development and training for all staff and others involved in developing and implementing the risk based approach will be provided.

Where appropriate, following inspection audits, performance reviews and an annual review of this document, refresher training will be provided.

All Highway Inspectors are expected to become qualified to the recommended standards as specified in WMHI. This qualification shall where possible be undertaken within 12 months of appointment.

Prior to qualification, newly appointed Highway Inspectors or Trainee Highway Inspectors shall work under the guidance of such qualified Highway Inspectors as necessary, in order to gain up to date knowledge and on the job experience.

3.8.2 Audits

To maintain the quality of the service and improve consistency in the application of the Risk based approach, regular internal inspection audits based on the contents of this document will be undertaken by the Council's Highway Inspection and Enforcement Manager. Following an audit repeat SHIs shall be undertaken if considered necessary.

4. HIGHWAY ASSESSMENT

Highway assessment is driven by the principals and policy of the Highway Asset Management Plan 2015-2021.

All forms of highway assessment whether visual inspection or mechanical forms of survey are programmed by the Highway Asset Management Team in Network Management Group. Visual inspections are undertaken by trained Highway Assessment Technicians within the Group and mechanical surveys are procured on a regional basis.

4.1 UKPMS Inspections

4.1.1 UKPMS Defined

UKPMS, the United Kingdom Pavement Management System, is a standard for computer systems that support the management of programmed maintenance of hard paved surfaces within the highway, and the monitoring of condition and of the need for funding, on local authority road networks.

As well as software the UKPMS standard also covers the associated survey techniques, and rules and parameters that allow the systems to be operated in a consistent standard way.

4.1.2 UKPMS Visual Inspections

The Coarse Visual Inspection (CVI) is intended to be a coarse, rapid survey, usually carried out from a slow moving vehicle, that allows a large part of the network to be assessed each year. However, in Rotherham these are carried out on foot as cyclic surveys enabling both carriageway and footway conditions to be assessed at a single visit.

In addition to production of Performance Indicators, UKPMS processed visual survey data forms a key input into the preparation of the Council's annual maintenance programmes.

Detailed guidance on undertaking surveys is contained within the UKPMS Visual Survey Manual published by Chris Britton Consultancy on behalf of the UKPMS Owners Forum.

4.1.3 Purpose of UKPMS Visual Inspections

In many authorities UKPMS Visual Inspections were initially carried out for a single purpose, to produce performance indicators required by the government. In order to make the maximum use of these surveys Rotherham uses this:

- To support and audit decisions about how, when and where to carry out maintenance schemes;
- To target areas for other programmed maintenance;

- To determine a required level of budget and investment over time to maintain or achieve a required level of service or network condition (needs budgeting);
- To assess the future implications of current / proposed levels of funding, to support the development of Asset Management Planning for our Highways;
- To assist in the calculation of the highway asset valuation for Whole Government Accounting.

4.1.4 Training

UKPMS surveys are designed to be carried out by staff trained in the relevant survey techniques, and who are able to record defects accurately and consistently, in accordance with the definitions and procedures defined in the manual. UKPMS inspections are not expected to indicate the cause of defects, indicate the preferred treatment or record engineering judgement. Objectivity and consistency are paramount. UKPMS Inspectors should be accredited to the current nationally accepted standard for such surveys.

4.2 Coarse Visual Inspections

Up until 2004, Best Value Performance Indicators (BVPIs) for all elements of the road network required the use of Coarse Visual Inspection (CVI) data gathered during the previous two or four years.

Since 2004/2005, the Best Value Performance Indicator (BVPI) for principal roads required data to be collected using machine type surveys. This survey type was subsequently changed to a SCANNER (Surface Condition Assessment of the National Network of Roads) type survey from 2005/2006 onwards with a requirement to survey 100% of the network within a two year period. From 2005/2006 the BVPI for non-principal classified roads was also required to be measured using SCANNER surveys. From 2008/2009 the Performance Indicator for unclassified roads was removed from the national indicator set. Despite this, Rotherham continues to produce a local indicator using in-house walked CVI (Coarse Visual Inspection) survey data for benchmarking purposes.

Since 2011/2012 the NI168 (Principal Roads) and NI169 (Non-principal Classified Roads) have no longer been required to be published. However, condition data for these classes of roads are still required as part of the Government's single data set which is provided by local authorities.

CVI surveys will therefore continue to be undertaken on all classes of roads in Rotherham in order to:

- Evaluate long term trends in network condition;
- Produce the local PI for unclassified roads (65% of Rotherham's highway network);
- Measure footway condition data;
- Provide data for scheme prioritisation.

In addition to mechanical surveys being undertaken on classified roads, walked CVI condition surveys are also carried out on these roads on a four year cycle

(which is the same frequency as unclassified roads and footways).

CVI surveys are used to collect data for both carriageway and footways. CVI data is used to report a local PI for all footways and it is also used to prioritise the footway maintenance scheme programme.

CVI surveys are also undertaken on council maintained car parks in conjunction with the survey for the adjacent street.

Audits on CVI surveys are carried out in-house on a small sample of road sections each month and they are recorded within the highway asset management system.

4.3 Machine Based Condition Surveys

As these surveys are based on vehicle mounted data collection devices they are solely targeted towards the assessment of carriageway conditions. The principle of machine based data collection is to make surveys objective and repeatable. We employ two types of machine surveys; SCANNER, and SCRIM (Sideways Force Coefficient Routine Investigation Machine).

Skid resistance is influenced by surface texture, and texture depth is an output from SCRIM surveys. Skid testing results shall be correlated with output from SCANNER to identify priority sites where low/ marginal skid resistance coincides with low texture depth.

4.3.1 SCANNER Surveys

SCANNER surveys are carried out on a rolling programme of Rotherham's classified roads (A, B and C roads) on a two year cycle. This programme of sites is held on Rotherham's Pavement Management System and roads are tested in both directions unless the road layout dictates otherwise. The surveys are carried out at traffic speed by accredited machines and data is collected on transverse and longitudinal profiles, texture and cracking. These surveys were required to be undertaken on all classified roads from 2005/06 in order to produce national performance indicators. These indicators are also used locally to monitor performance, works identification and also to support highway asset valuation.

The surveys identify lengths of road where the surface condition is deteriorating. The survey will not identify structural deterioration until it is evidenced through wheel- track cracking and rutting.

SCANNER reports the condition of 10 metre section lengths of carriageway using the RED / AMBER / GREEN traffic signal warning system. The RED lengths of road contribute to the national indicator. This data can be displayed in a graphical format along road centre lines to allow for prospective scheme lengths of carriageway to be identified for further investigation. The survey data can be used to identify lengths of the network that require treatment.

SCANNER data results are received in HMDIF format. Rotherham's computerised United Kingdom's Pavement Management System (UKPMS) is used to process and store this data. SCANNER survey data is calculated in the Pavement

Management System in 10m lengths and provides individual readings for each direction of travel along the carriageway.

To consider and analyse the current skid resistance of Rotherham's principal road network, non-principal road network and selected unclassified roads through the utilisation of 'continuous friction measuring equipment', and when combined with other relevant attributes, identify sections of road that may be considered for planned maintenance.

4.3.2 Method of Survey

Routine monitoring of skid resistance is carried out on a rolling programme of the defined network on a three year cycle using a Sideways Force Coefficient Routine Investigation Machine (SCRIM). This machine is a surface friction tester which accurately measures skidding resistance under constant load and at a constant speed on a wet road. It makes continuous measurements following a single line, typically along the inside wheel path and it provides survey data at ten metre intervals. On multi-lane roads, measurements are taken in lane one.

A defined programme of sites is held on Rotherham's Pavement Management System and roads are tested in both directions unless the road layout dictates otherwise.

Rotherham has adopted the Characteristic SCRIM Coefficient (CSC) approach to SCRIM surveys. This means that surveys are rotated in an early, mid and late season sequence. Three years of survey results are used to give a more stable set of data than the alternative Mean Summer SCRIM Coefficient (MSSC) method. The MSSC approach tests control sites three times a year and takes into account only 'in year' variations.

SCRIM results are received in HMDIF format. Rotherham's computerised United Kingdom's Pavement Management System (UKPMS) is used to process and store this data. SCRIM survey data is calculated in the Pavement Management System in 10m lengths and provides individual readings for each direction of travel along the carriageway.

4.4 Public Rights of Way Assessments

Modified CVI condition surveys are carried out on PROW's to collect surface condition data as part of the BVPI 178 assessment survey. These assessments are undertaken by the Assessment Technicians within Network Management Group.

A general assessment of public rights of way is undertaken at intervals of 30 months. This allows for the season of inspection to change between each assessment so that any seasonal problems are progressively identified.

As well as the identification of maintenance issues the inspections allow for the calculation of the Rights of Way Performance Indicators. To enable this assessments are undertaken using a standard survey format produced by the Countryside Agency and ADEPT.

The surfaces of ROW vary a great deal in their nature and materials. As a general rule the surface will be maintained in a manner appropriate to its construction using materials as closely matching as possible those used in its construction or in former maintenance.

Paths surfaced with unbound materials and earth paths will require the exercise of discretion on the part of the inspector in evaluating the risks whether the surface is potentially hazardous or in need of repair. Surfaced paths, particularly in an urban setting, should be maintained as if they were adopted.

The Council are under a duty to sign all PROW where they leave a metalled road. Waymarks or additional signs may be erected anywhere along the route where they would be of assistance to users who are unfamiliar with the area.

Any requirements for surface repair, repair or replacement of furniture, replacement or additional signage shall be reported to members of the Rights of Way team.

Other issues/risk factors to be noted and reported include:

- Obstruction - Where a path is found to be obstructed by vegetation growing from an adjacent property;
- Ploughing / Cropping - The occupier of the land may plough the surface of a cross field path to cultivate the land. However they must make good the surface so that it is reasonably convenient for use within 14 days;
- Other Cases of Nuisance - such as; dangerous animals, materials deposited on the path, misleading notices, barbed wire adjacent to the path likely to injure users, or frequent misuse of the path by traffic not permitted to use it.

PROW also has a Rights of Way Improvement Plan (ROWIP), which includes an action plan. The ROWIP is reviewed each year.

5. SKIDDING RESISTANCE

5.1 Skidding Resistance Policy Statement

Rotherham Council is responsible for the maintenance of the roads in their respective areas. This is a statutory duty under Section 41 of the Highways Act 1980 'to maintain highways that are maintainable at public expense'.

Skid resistance is an important property relating to the safety of highway users, particularly in damp or wet conditions. Over the course of the life of a road the surface can lose some of its characteristics associated with skid resistance.

Effective maintenance of the highway network includes the requirement to monitor the skid resistance of the road surface and to take an approach to ensure that the skid resistance across the network is maintained to an appropriate standard. Guidance on this may be found within the document 'Well-managed Highway Infrastructure: A Code of Practice'.

In 2015 Highways England published an updated comprehensive methodology for managing carriageway skid resistance on the UK Strategic Network and this is set out in their document HD 28/15.

Whilst HD 28/15 is not intended for the management of skid resistance on local roads, similar principles may be applicable and the document will form a basis for the Council's Skid Resistance Procedure document for its entire classified network and the unclassified network which forms part of the Authority's salting routes.

The Skidding Resistance Policy in Appendix 2 of this document should be read in conjunction with the Skid Resistance Procedure in Appendix 3.

APPENDIX 1 – SAFETY HIGHWAY INSPECTION POLICY

Document History

<u>Date</u>	<u>Description</u>	<u>Name</u>
Dec 2017	Initial Draft	Andrew Rowley / Inspection and Enforcement Manager / Highway Network Management

Index

<u>Section No</u>	<u>Section Title</u>	<u>Page</u>
1	Introduction	36
2	Objectives	37
3	Approach	38
4	Legal Duties and Responsibilities	38
5	References	39

Definitions

The term “Safety Highway Inspection” used in this document refers to a regime of inspection for the prioritisation of defect repairs and is a crucial component of highway maintenance. It provides a robust framework to address key objectives for the maintenance of the highway in a safe and serviceable manner, as required by Section 41 of the Highways Act 1980, and consistent with the Council’s HAMP.

All Safety Highway Inspections are undertaken by area based Highway Inspectors within the Council’s Community Safety and Street Scene Service. Inspections following customer reports, Street Works inspections, enforcement activities and actions to identify programmed maintenance activities are undertaken separately.

1. Introduction

- 1.1 Rotherham Council is responsible for the maintenance of the roads within the Rotherham Borough boundary. This is a statutory duty under Section 41 of the Highways Act 1980 ‘to maintain highways that are maintainable at public expense’.
- 1.2 Safety Highway Inspections are important in aiming to secure the safety of highway users and the duty is further expanded in the CoPWHI document which recommends that ‘a risk-based inspection regime,

including regular safety inspections, should be developed and implemented for all highway assets’.

- 1.3 Authorities are strongly advised to undertake safety inspections in accordance with the guidance of CoPWHMI in order that, when necessary, they are able to support a defence under Section 58 of the Highways Act 1980 and equivalent legislation. This requires that a court shall have regard to “whether the highway authority knew or could reasonably be expected to know that the condition of the part of the highway to which the action related was likely to cause danger to users of the highway”.
- 1.4 It is against the above guidance and legislative backdrop that Rotherham Councils’ Safety Highway Inspection Policy is hereby determined and applied by working with the guidance of CoPWHMI.
- 1.5 Rotherham Councils’ Safety Highway Inspections are visual inspections undertaken in accordance with the appropriate risk assessments. They are designed to provide complete, accurate and timely information, as far as is reasonably practicable, on the safety maintenance needs of the highway network and its ancillary assets based on site observations and measurements. These are applied through a process of risk evaluation reflective of the characteristics of the defect, the local environment and network usage (Risk Based Approach).
- 1.6 This Policy supports Rotherham Councils’ HAMP.

2. Objectives

The objective of this Safety Highway Inspection Policy is to:

- 2.1 Ensure that the highway is maintained, thereby safeguarding users of the highway.
- 2.2 Contribute to a reduction in the number of highway accidents and accident claims.
- 2.3 Align with the guidance document CoPWHMI.
- 2.4 Enable Rotherham Council to robustly defend against highway claims and corporate manslaughter charges.
- 2.5 Ensure that the procedures within the ‘Highway Inspection and Assessment Code of Practice’ (CoPHIA) enable a risk based approach to the management of highway defects.

3. Approach

To achieve the above objectives Rotherham Council has produced and will review the CoPHIA document which supplements this 'Safety Highway Inspection Policy'.

This will include:-

- 3.1 That Rotherham Council's 'Community Safety and Street Scene Service' section 'Highways Network Management' is responsible for the policy.
- 3.2 Details of a safety inspection regime and Network Hierarchy.
- 3.3 Characteristics of the safety highway inspection regime, including frequency of inspection, the methodology, items to be recorded and nature of response.
- 3.4 Processes for receiving and responding to customer complaints, reports and requests for maintenance from members of the public and other stakeholders.
- 3.5 Establishing 'Minimum Investigatory Levels' applicable to highway defects.
- 3.6 A risk based approach for categorising highway defects and response times for removal/repair of defects.
- 3.7 Training and development of officers to fulfil their allotted duties competently and assist in the defence of compensation or liability cases.
- 3.8 Inspection audits to ensure compliance with CoPHIA to drive the provision of service excellence.

4. Legal Duties and responsibilities.

4.1 Highway Authorities have a statutory duty under Section 41 of the Highways Act 1980 "to maintain highways that are maintainable at public expense"

4.2 Section 58 Defence

4.2.1 Section 58 of the Highways Act 1980 provides the ability to form a statutory defence to counter legal actions for negligence. Any Authority must be able to prove in a court of law that it has taken 'such care as is in all the circumstances reasonably required to secure that part of the highway to which the action relates was not dangerous for traffic.'

4.2.2 Section 58 of The Highways Act 1980 does not stipulate the standard of maintenance applicable to the highway. It is accepted by the Courts that different standards of maintenance are applicable to different parts of the

highway network; this may relate to vehicle and pedestrian usage as well as the speed of the vehicles using the highway.

4.3. When considering a third party legal action against Rotherham Council, the Court will consider such factors as:

4.3.1 The character of the highway and the traffic which was reasonably to be expected to use it

4.3.2 The standard of maintenance appropriate for a highway of that character and used by such traffic

4.3.3 The state of repair in which a reasonable person would have expected to find the highway

4.3.4 Whether the 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

4.3.5 Whether the Authority could reasonably have been expected to repair that part of the highway before the cause of action arose.

4.4 The development of this Safety Highway Inspection Policy is to ensure a suitably structured CoPHIA is implemented and to ensure that highway users are safeguarded through a risk based approach in the management of highway defects.

4.5 Importantly, this policy will provide documentary evidence of Rotherham Council's proactive approach to the management of highway defects.

5. References

5.1 Highways Act 1980

5.2 Well-Managed Highway Infrastructure: A Code of Practice (CoPWHMI)

5.3 Highway Asset Management Plan (HAMP)

5.4 Highway Inspection and Assessment Code of Practice (CoPHIA)

APPENDIX 2 – SKIDDING RESISTANCE POLICY

Document History

<u>Date</u>	<u>Description</u>	<u>Name</u>
19/5/17	Initial Draft	P Turland (DMBC)
1/6/17	DRAFT 2	P Turland
12/2/17	Draft 3	P Turland
15/6/17	Draft 4 following discussions with RMBC and BMBC	P Turland
18/9/17	Minor edit in blue.	P Turland
26/10/17	Draft 5 amendments on behalf of RMBC following discussions with RJ	N Ayrton

Index

<u>Section No</u>	<u>Section Title</u>	<u>Page</u>
1	Introduction	41
2	Objectives	41
3	Individual Authority approach	42
4	Legal Duties and Responsibilities	42
5	References	43

Definitions

The Highway Authorities of South Yorkshire shall mean Doncaster MBC, Rotherham MBC and Barnsley MBC (Sheffield City Council are not included as they have a PFI in place).

The term “skid resistance” used in this document refers to the frictional properties of a road surface, measured using a specified device, under standardised conditions. Skid resistance testing is carried out on wet or damp surfaces, unless stated otherwise, as the skid resistance of a surface will be substantially lower than when that same surface is dry.

Skid resistance measurements are used as an empirical assessment of a road surface’s level of grip and as an indication of the potential need for further investigation based on known acceptable limits. However, it should be noted, it does not represent the definitive grip available to a road user making a particular manoeuvre at a particular time and at a particular speed.

1. Introduction

- 1.1 The Highway Authorities of South Yorkshire are responsible for the maintenance of the roads in their respective areas. This is a statutory duty under Section 41 of the Highways Act 1980 'to maintain highways that are maintainable at public expense'.
- 1.2 Skid resistance is an important property relating to the safety of highway users, particularly in damp or wet conditions. Over the course of the life of a road the surface can lose some of its characteristics associated with skid resistance.
- 1.3 Effective maintenance of the highway network includes the requirement to monitor the skid resistance of the road surface and to take an approach to ensure that the skid resistance across the network is maintained to an appropriate standard. Guidance on this may be found within the document 'Well-managed Highway Infrastructure: A Code of Practice'.
- 1.4 In 2015 Highways England published an updated comprehensive methodology for managing carriageway skid resistance on the UK Strategic Network and this is set out in their document HD 28/15.
- 1.5 Whilst HD 28/15 is not intended for the management of skid resistance on local roads, similar principles may be applicable and the document will form a basis for RMBC's Skid Resistance Procedure document for its entire classified network and the unclassified network which forms part of the Authority's salting routes.
- 1.6 This policy document should be read in conjunction with Rotherham Council's 'Skid Resistance Procedure'.

2. Objectives

The objective of this Skid Resistance Policy is to:

- 2.1 Enable the public to travel safely and easily
- 2.2 Align with the guidance document 'Well-managed Highway Infrastructure : A Code of Practice'
- 2.3 Help reduce the number of Killed or Serious Injury accidents on the South Yorkshire Authorities road network
- 2.4 Ensure the procedures in the individual Authorities Skidding Resistance Procedure document will set out a long-term strategy to manage the skid resistance across the Authorities highway network to an appropriate level.
- 2.5 Ensure the Highway Authorities of South Yorkshire adhere to the duty under the Highways Act 1980
- 2.6 Enable the Highway Authorities of South Yorkshire to robustly defend against claims and Corporate manslaughter charges.

3. Individual Authority Approach

To achieve the above objectives each Authority will produce a supplementary document 'Skid Resistance Policy' and Skid Resistance Procedure Document.

This will include:-

- 3.1 The Rotherham MBC sections 'Transportation and Highways Design' and 'Highways Network Management' are responsible for the policy.
- 3.2 Identification of the Highway Network to which this policy will apply - "the defined network"
- 3.3 Processes for monitoring skid resistance across the Authorities road network on an ongoing basis
- 3.4 Definition of Investigatory Levels to be assigned to the defined network - this will depend on a range of factors including the speed limit and geometry of the road.
- 3.5 Procedures for identifying skid deficient sites and sites for further investigation including the use of collision data to determine whether inadequate skidding resistance could be a factor.
- 3.6 Setting out a process for determining any subsequent treatment
- 3.7 Recommending appropriate actions to negate risks
- 3.8 Identifying how sites will be prioritised
- 3.9 Prioritising Skid deficient sites for any treatment or improvement works
- 3.10 Incorporating prioritised sites into annual highway maintenance works programmes taking account of budget and programme considerations.

4. Legal Duties and responsibilities.

4.1 Highway Authorities have a statutory duty under Section 41 of the Highways Act 1980 "to maintain highways that are maintainable at public expense"

4.2 Although the formal management of highway skid resistance is not a legal requirement it is considered good practice as guided by the document 'Well-managed Highway Infrastructure: A Code of practice', and it supports the aims and objectives as set out in the Highway Authorities of South Yorkshire Overarching Highway Asset Management Plan(s) and Safer Roads Strategy as well as Rotherham MBC's Highway Asset Management Plan (HAMP).

4.3 Section 58 Defence –

4.3.1 Section 58 of the Highways Act 1980 provides the ability to form a statutory defence to counter legal actions for negligence. Any Authority must be able to prove in a court of law that it has taken 'such care as is in all the circumstances reasonably required to secure that part of the highway to which the action relates was not dangerous for traffic.'

4.3.2 Section 58 of The Highways Act 1980 does not stipulate the standard of maintenance applicable to the highway. It is accepted by the Courts that different standards of maintenance are applicable to different parts of the

highway network; this may relate to vehicle and pedestrian usage as well as the speed of the vehicles using the highway.

4.4. When considering a third party legal action against any of the Highway Authorities of South Yorkshire the Court will consider such factors as:

4.4.1 The character of the highway and the traffic which was reasonably to be expected to use it

4.4.2 The standard of maintenance appropriate for a highway of that character and used by such traffic

4.4.3 The state of repair in which a reasonable person would have expected to find the highway

4.4.4 Whether the 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

4.4.5 Whether the Authority could reasonably have been expected to repair that part of the highway before the cause of action arose.

4.5 The development of this skid resistance policy is to ensure a suitably structured procedure and strategy is implemented by each authority for the highway under its care and appropriate levels of skid resistance are maintained.

4.6 Importantly, this policy will provide documentary evidence of the Highway Authorities of South Yorkshire proactive approach to skid resistance management.

5. References

5.1 Highway Act 1980

5.2 Well-managed Highway Infrastructure: A Code of practice

5.3 HD28/15 Skidding Resistance

5.4 South Yorkshire Safer Roads Strategy

5.5 Rotherham MBC – Highway Asset Management Plan (HAMP)

APPENDIX 3 – SKIDDING RESISTANCE PROCEDURE DOCUMENT

Contents

Executive Summary	45
The Policy	
Rotherham’s Skid Resistance Policy	46
Method of Survey	46
The Strategy	
Introduction	47
The Defined Network	47
Exemptions to the Defined Network	47
The Procedure	
Principles of the Procedure	48
Skid Resistance Testing	48
Investigatory Levels	49
Early Life Skid Resistance of Road Surfacing	49
Roles and Responsibilities	
The Network Management Team	49
The Transportation and Highway Design Team	50
Appendix 3(A) - The Action Plan	51
Appendix 3(B) - Site Categories and Investigatory Levels	
Design Manual for Roads and Bridges Table 4.1	52
Appendix 3(C) - Prioritisation of Treatment	
The Use of Slippery Road Warning Signs	54
Detailed Investigation	
Site Investigation	54

Document History

<u>Date</u>	<u>Description</u>	<u>Name</u>
31/03/14	Draft 1 (old policy document)	S Finley/ N Ayrton
16/11/17	Draft 2	R Jackson/ N Ayrton

Executive Summary

Rotherham MBC is responsible for the maintenance of over 1,160km (725 miles) of roads. These are split into different types of road classification as shown below:

- Principal roads (A class) are the main strategic routes that carry large volumes of traffic around through the Borough.
- Non-principal roads (B and C class) are main roads of local strategic importance. They are through routes that link together the principal roads.
- Unclassified roads are minor routes carrying local traffic only. They tend to be mainly residential estate roads and rural roads.

The Council's Highway Asset Management Policy outlines the policies and procedures for highway and infrastructure maintenance, ensuring that assets are maintained in a strategic way. It contains a wide range of plans and strategies for the effective maintenance of the highway network including the requirement to monitor the skid resistance of roads so that the skid resistance across the network can be maintained to a safe and appropriate standard. These documents are continuously revised to ensure the information within remains current.

Skid resistance is an important property of the road surface relating to the safety of highway users, particularly in damp or wet conditions. Over the course of a road's life the surface can lose some of its characteristics associated with skid resistance.

- Formalise processes for monitoring skid resistance across the Council's road network on an ongoing basis.
- Identify sites where skid resistance may be a potential safety issue.
- Prioritise skid resistance deficient sites for improvement works.

The Policy

Rotherham's Skid Resistance Policy

To consider and analyse the current skid resistance of Rotherham's principal road network, non-principal road network and selected unclassified roads through the utilisation of 'continuous friction measuring equipment', and when combined with other relevant attributes, identify sections of road that may be considered for inclusion on a maintenance programme.

Method of Survey

Routine monitoring of skid resistance is carried out on a rolling programme of the defined network on a three year cycle using a Sideways Force Coefficient Routine Investigation Machine (SCRIM). This machine is a surface friction tester which accurately measures skidding resistance under constant load and at a constant speed on a wet road. It makes continuous measurements following a single line, typically along the inside wheel path and it provides survey data at ten metre intervals. On multi-lane roads, measurements are taken in lane one.

A defined programme of sites is held on Rotherham's Pavement Management System and roads are tested in both directions unless the road layout dictates otherwise.

Rotherham has adopted the Characteristic SCRIM Coefficient (CSC) approach to SCRIM surveys. This means that surveys are rotated in an early, mid and late season sequence. Three years of survey results are used to give a more stable set of data than the alternative Mean Summer SCRIM Coefficient (MSSC) method. The MSSC approach tests control sites three times a year and takes into account only 'in year' variations.

SCRIM results are received in HMDif format. Rotherham's computerised United Kingdom's Pavement Management System (UKPMS) is used to process and store this data. SCRIM survey data is calculated in the Pavement Management System in 10m lengths and provides individual readings for each direction of travel along the carriageway.

Site specific testing may be undertaken as a separate exercise using the 'Grip Tester' method in instances where a sideways coefficient routine investigation machine cannot be used. The results from 'Grip Tester' surveys will be converted to equivalent CSC values using correlations developed by the County Surveyors' Society Grip Tester User Group.

The network which will be subject to skid resistance testing is subject to revision if there are changes or amendments to the network. Testing will be carried out within the early, mid or late parts of the testing season over a three year period.

The Strategy

Introduction

Rotherham MBC, as Highway Authority, has a duty under the Highways Act 1980 to maintain the highway in a condition that is safe and fit for purpose. Adequate levels of skidding resistance on road surfaces is an important aspect of highway maintenance, and one that contributes to road safety.

The purpose of this document is to outline Rotherham MBC's approach to maintaining the appropriate levels of skid resistance on the adopted road network.

It provides a step by step approach to identifying and managing skid resistance deficient sites and sets out a process for determining options and recommendations and how these will be prioritised taking into account budget and programme considerations.

The procedures in this document set out a long term strategy to manage the skid resistance of the Borough's network to a consistent and safe level.

The document is structured around the Highways England Technical Standard HD28/15 – Skidding Resistance published in the Design Manual for Roads and Bridges (DMRB) Volume 7: Section 3.

The term 'skid resistance' used in this policy refers to the frictional properties of a road surface in wet conditions, measured using a specified device, under standardised conditions. The skid resistance of a wet or damp road surface can be substantially lower than the same surface when dry, and is more dependent on the condition of the surfacing material.

Skid resistance measurements are used as an assessment of a road's level of skid resistance and as an indication of the potential need for further investigation. However, it should be noted it does not represent the definitive skid resistance available to a road user making a particular manoeuvre at a particular time and at a particular speed.

The Defined Network

For the purpose of this strategy, the defined network comprises all principal roads (A roads), all non-principal roads (B and C roads) and the network of unclassified roads which are treated on a precautionary salt as part of Rotherham's Winter Service.

Exemptions to the Defined Network

Routine testing will not be carried out on the following sections of Rotherham's road network unless specifically requested to do so:

- Any road that is not on the 'defined network'
- Temporary road surfaces
- Roundabouts

- Unclassified roads that do not form part of the precautionary salting network
- Footways
- Coloured surfaces i.e. cycle lanes
- Worn manhole covers

Testing on these sections of the highway would only be undertaken if an assessment of the current data, a site visit and consultation with a materials consultant indicate that it is warranted.

The Procedure

Principles of the Procedure

Rotherham MBC will use the methodology in HD 28/15 as a template for its own Skid Resistance Policy; however this will be adapted to reflect local needs and resource constraints.

The broad principles of HD 28/15 and also the Council's policy are as follows:

- Skid resistance surveys will be undertaken annually on defined parts of the road network;
- The 'defined network' will be assigned 'site categories' and 'investigatory levels' in accordance with the table in Chapter 4: Volume 7: Section 3 of HD 28/15;
- Reviewing of the investigatory levels will be carried out in accordance with Chapter 4 and Annex 5 of HD 28/15 and will take place within three years which is consistent with the survey frequency;
- Skid resisting data for each part of the defined network will be analysed and compared against the investigatory level;
- Sites where skid resistance is at, or falls below the investigatory level will be considered for further investigation in accordance with Chapter 5 of HD 28/15. This further investigation will take into account other factors such as road traffic accident history;
- Detailed investigations shall be carried out in accordance with Chapter 6 of HD 28/15 where identified by Annex 7 of HD 28/15. A site investigation report will be completed for all sites which require a detailed investigation;
- Where treatment is deemed to be required, maintenance sites will be prioritised using a risk assessment approach and included into a work programme for action;
- The above principles will be applied on an ongoing basis so that skid resistance across the highway network is continually monitored and managed appropriately.

Skid Resistance Testing

Skid resistance is not a constant. It is influenced by various factors such as test speed, temperature, weather conditions and also longer term effects such as seasonal weather variations or change of traffic flows. Conditions are controlled as far as is practicably possible by:

- Measuring skid resistance in accordance with the defined criteria, within the nationally recognised testing periods
- Specifying a standard testing speed of 50km/h
- Providing up-to-date network details to the survey contractor

Investigatory Levels

Investigatory Levels (IL's) are an early warning sign and are set solely to trigger investigations at the locations identified. They are NOT an indication of inadequate skid resistance. Where measured values are above the IL's then the skid resistance is regarded as satisfactory when drivers follow the requirements of the Highway Code. Where measured values are below the IL's then the road should be considered to have a more detailed investigation of the skid resistance requirements. IL's are set in accordance with the Highways Agency's National Guidance HD 28/ 15 (Table 4.1 shown below). Rotherham's IL's are based on this document and are listed in Appendix B.

The IL's and SCRIM survey results will be shared with RMBC's Transportation and Highway Design Team.

Early Life Skid Resistance of Road Surfacing

The decision making process leading to the identification and prioritisation of sites for treatment is defined in Appendix A.

Newly laid asphalt surfaces can exhibit lower skid resistance than the same surface after a period of trafficking, which is caused by the binder film that initially coats the aggregate particles. In practice, a short-term drop of skid resistance below the IL is not unusual for sites where the average skid resistance over the summer period is above the IL. On its own, this should not necessitate the use of slippery road warning signs. However, where the skid resistance prior to maintenance was substantially above the IL, the new surface could result in a significant reduction in skid resistance. The use of slippery road warning signs is detailed in Appendix C.

Roles and Responsibilities

This section sets out the various roles and responsibilities for the management of the Skid Resistance Policy.

An annual skid resistance survey programme will be procured by Rotherham MBC.

The Network Management team will be responsible for the following:

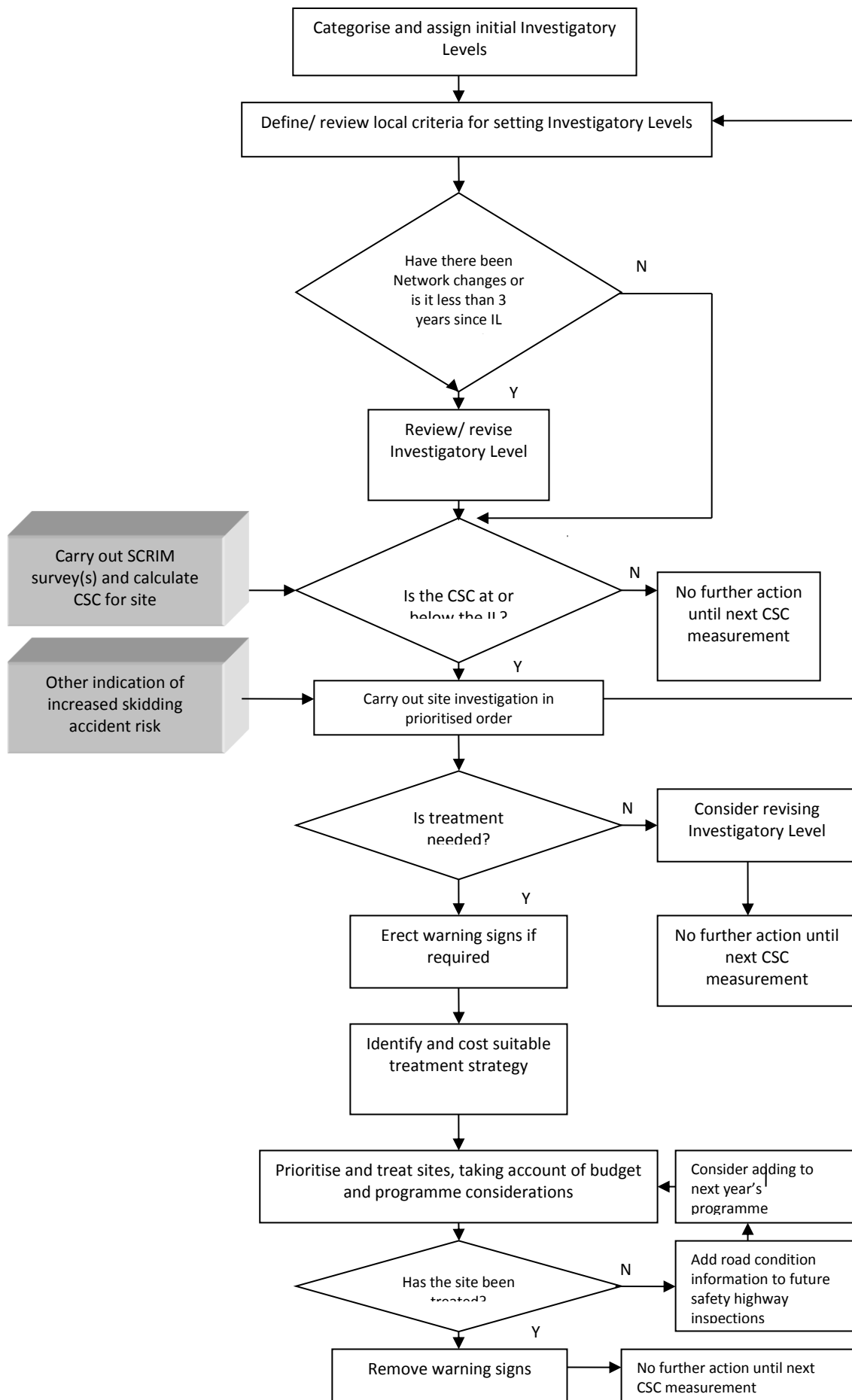
- Management, development, implementation and regular review of Rotherham MBC's Skid Resistance Policy;
- Identification of the defined network;

- Assignment of 'site categories' and 'investigatory levels';
- The timely procurement, management and delivery of skid resistance surveys through specialist accredited contractors;
- Developing a prioritised list of maintenance sites that would require works to improve the skid resistance and making informed decisions about when these are integrated into the annual highway works programme;
- Informing other Council departments of any issues affecting the site which may be additional to skid resistance issues, for example faded road markings or defective traffic signs;
- Reviewing of the 'site categories' and 'investigatory levels' for the defined network;
- Maintaining the appropriate records of site visits and associated documents.
- Results of the SCRIM condition surveys will be shared with the Transportation and Highway Design team.

The Transportation and Highway Design team will:

- Maintain records of personal injury accidents and incidents for interrogation.
- Process, analyse and review the skid resistance data at locations where accidents have been reported;
- Carry out an analysis of the results of the SCRIM condition surveys;
- Carry out an analysis of accident hot spots. 'Accident hot spots' are defined areas of 1,000sm, where five or more personal injury accidents have been reported.

Appendix 3(A) – The Action Plan



Appendix 3(B) - Site categories and Investigatory Levels

(Table 4.1 From Design Manual for Roads and Bridges, Volume 7; Pavement Design and Maintenance; Section 3, Pavement Maintenance Assessment; Part 1 HD 28/15 Skidding Resistance)

Site Category and definition	IL for CSC data (Skid data speed corrected to 50km/h and seasonally corrected)							
	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
A Motorway								
B Non-event carriageway with one-way traffic								
C Non-event carriageway with two-way traffic								
Q Approaches to and across minor and major junctions, approaches to roundabouts and traffic signals (see note 5)								
K Approaches to pedestrian crossings and other high risk situations (see note 5)								
R Roundabout								
G1 Gradient 5-10% longer than 50m (see note 6)								
G2 Gradient >10% longer than 50m (see note 6)								
S1 Bend radius <500m - carriageway with one-way traffic (see note 7)								
S2 Bend radius <500m - carriageway with two-way traffic (see note 7)								

- IL's for CSC data employed from the previous skid policy.
- IL's to be reassessed on the 'defined network' and changes implemented.

Notes applicable to all:

1. The IL should be compared with the mean CSC, calculated for the appropriate averaging length.
2. The averaging length is normally 100m or the length of a feature if it is shorter, except for roundabouts, where the averaging length is 10m.
3. Residual lengths less than 50% of a complete averaging length may be attached to the penultimate full averaging length, providing that the Site Category is the same.
4. As part of site investigation, individual values within each averaging length should be examined and the significance of any values that are substantially lower than the mean value assessed.

Notes applicable to specific site categories

5. IL's for site categories Q and K are based on the 50m approach to the feature and, in the case of approach to junctions, through to the extent of the junction. The approach length shall be extended when justified by local site characteristics.
6. Categories G1 and G2 should not be applied to uphill gradients on carriageways with one-way traffic.

7. Categories S1 and S2 should be applied only to bends with a speed limit of 50 mph or above, except if the radius of the bend is <100m, where the S1 and S2 categories shall be applied at all speeds.

Appendix 3(C) - Prioritisation of Treatment

The most appropriate form of treatment will be identified for each site which is found to require works to restore an adequate level of skid resistance. Often this will be a surface treatment.

Where works are identified as being necessary following skid resistance investigations a system of works prioritisation will be adopted.

Prioritisation uses both technical appraisal and a risk based approach.

In collaboration with RMBC's Transportation and Highway Design team, once sites have been confirmed from the site inspection process a series of factors will be applied to reflect the likelihood of vehicles being involved in accidents and therefore prioritising roads for treatment based on the score.

The Use of Slippery Road Warning Signs

The use of these warning signs would normally be considered where any of the following situations apply and following a site investigation:

- As part of a highways maintenance programme
- Where anti-skid surfacing is to be applied
- Where carriageway resurfacing is to be carried out
- Where any type of surface treatment is to be applied
- Where it is known that the skid resistance is substantially below the IL
- Where Rotherham's Transportation and Highways Design Team's investigations show that there are known accident cluster sites

The signs are in accordance with diagram 557 of the Traffic Signs Manual, chapter 4 and in conjunction with an appropriate supplementary plate, diagram 570.

Where slippery road warning signs are erected, they shall be maintained until the maintenance works are carried out. They would be removed as soon as they are no longer required.

Detailed Investigation

The detailed investigation will be carried out on sites identified through the initial investigation process in order to reach a decision about the best course of action. The data obtained during the initial investigation shall be transferred through into the detailed investigation and recorded on a Site Investigation Report Template.

Site Reference						Line Score
Criteria and Scores						
Number of RTC's	0	1	2	3+		
	0	3	6	9		
Fatal RTC's	No	Yes				
	0	1				
Wet Weather RTC's	No	Yes				
	0	1				
Likely Impact	Slight	Slight/ Serious	Serious	Serious/ Fatal		
	1	2	3	4		
Skid Resistance Difference	>0	>0.05 and <=0.05	>-0.10 and <=0.05	>-0.15 and <=0.1	>0.15	
	0	1	2	4	6	
Poor Texture	No	Yes				
	0	1				

Site Investigation

The Site Investigation Report Template will also obtain other data if considered relevant. The level of detail appropriate for the investigation will depend upon the nature of the site and the time since a detailed investigation was last carried out. As a result of the detailed investigation, a clear recommendation shall be recorded, including if no treatment is required.

There are a number of recommendations available to the investigating engineer:

1. Other road safety measures

If the detailed investigation identifies any characteristic of the site or road user behaviour that suggests other road safety engineering measures could be appropriate, then the relevant department will be advised.

2. Additional routine maintenance

If the detailed investigation identifies requirements for additional routine highway maintenance, such as sweeping, renewal of markings, then the relevant department will be advised.

3. Surface treatment or resurfacing

Treatment to improve the skid resistance shall be recommended if, taking into account the nature of the site and the recorded crash history, it is likely to reduce the risk of collisions in wet conditions. Treatment may also be recommended if the skid resistance, combined with the nature of the individual site, suggests that the recorded collision count underestimates the level of risk.

4. Reclassified of Intervention Levels

If the skid resistance and collision pattern at sites at or below the IL have remained stable for more than three years, then the IL can be lowered by 0.05 units of CSC providing it remains within the range of IL's for that particular site category.

APPENDIX 4 – GLOSSARY OF TERMS

Abbreviation	Description
ADEPT	Association of Directors of Environment, Economy, Planning and Transport
APSE	Association of Public Service Excellence
ASI	Additional Safety Inspection
BMBC	Barnsley Metropolitan Borough Council
BVPI	Best Value Performance Indicator
CAT	Category
CIRIA	Construction Industry Research and Information Association
CoPHIA	Code of Practice Highway Inspection and Assessment
CoPHMM	Code of Practice for Highway Maintenance Management
CoPWHMI	Code of Practice Well-managed Highway Infrastructure
CSC	Characteristic SCRIM Coefficient
CVI	Coarse Visual Inspection
DMBC	Doncaster Metropolitan Borough Council
DMRB	Design Manual for Roads and Bridges
GPS	Global Positioning System
HAMP	Highway Asset Management Plan
HGV	Heavy Goods Vehicle
HIAMG	Highway Infrastructure Asset Management Guidance
IL	Investigatory Level
ILE	Institute of Lighting Engineers
LA	Local Authority
MBC	Metropolitan Borough Council
m	Metre
mm	Millimetre
mph	Miles per hour
MIL	Minimum Investigatory Level
MDT	Mobile Device Technology
MSSC	Mean Summer SCRIM Coefficient
NI	National Indicator
PFI	Private Finance Initiative
PI	Performance Indicator
PROW	Public Rights of Way
PU	Public Utility
RBA	Risk Based Approach
RMBC	Rotherham Metropolitan Borough Council
ROW	Rights of Way
ROWIP	Rights of Way Improvement Plan
SCANNER	Surface Condition Assessment of the National Network of Roads
SCI	Safety Car Park Inspection
SCRIM	Sideway-force Coefficient Routine Investigation Machine
SHI	Safety Highway Inspection
UK	United Kingdom
UKPMS	United Kingdom Pavement Management System

