

1 Introduction

- 1.1 Maintaining adequate levels of skidding resistance is an important aspect of highways maintenance and can make a significant contribution to the safety of the highway network. Highways Agency Standard (HD 28/15) describes skid resistance as the “frictional properties of the road surface in wet conditions”. Low skid resistance on a road surface is seldom the sole cause of wet skid accidents, however, it can be a contributory factor and should be managed accordingly.
- 1.2 The Code of Practice ‘Well Maintained Highway Infrastructure’ (UKRLG, 2016) includes guidance for highway authorities on Skidding Resistance Surveys. It encourages authorities to form a strategy for managing skid resistance on the highway network. It recommends that the strategy be based on regular condition measurements prioritised against pre-determined investigatory levels and the proportion of accidents occurring in wet / damp conditions.
- 1.3 This Policy, in accordance with the Code of Practice, defines:
- The extent of the highway network on which skid resistance is managed, according to traffic flow and accident risk;
 - The method of measurement used;
 - The survey approach adopted in order to determine the Characteristic SCRIM Coefficient (CSC);
 - Quality assurance procedures for data collection;
 - Frequency of surveys;
 - The approach when setting investigatory levels, including the range of investigatory levels which are to be used for different categories of site;
 - Frequency of re-assessment of investigatory levels;
 - Competence levels of staff authorised to set or approve investigatory levels;
 - The approach to be followed in site investigation, including prioritisation of investigations, and staff competent to undertake site investigations. Each site investigation should be undertaken or led by suitably competent personnel;

- The approach to setting and maintaining investigatory levels for different site categories across the highway network;
- Details of a follow up site investigation procedure and the method by which this is prioritised;
- Details of how remedial actions / treatments are prioritised in relation to available funding;
- Responsibilities for each part of the Policy.

1.4 This Policy supports the following outcomes of the Asset Management Policy

A safe network: helping users to feel safe

A serviceable network: achieving and maintaining a target condition of all major assets

A sustainable network: maximising the value of investment

1.5 The Policy reflects guidance and recommendations made in:

- Well Managed Highways Infrastructure – UK Roads Liaison Group (2016).
- Highways Agency Standard HD28/15 – “Skid Resistance”, Design Manual for Roads and Bridges (DMRB): Volume 7.
- “Skidding Resistance” – County Surveyors’ Society (CSS) Guidance Note (May 2005).

1.6 Budgets are limited. This policy must ensure good use of these limited resources. At individual sites, action should only be taken where deemed to be effective, thereby preserving resources for other improvements.

2 Objective

2.1 The objective of Shropshire’s Skidding Resistance Policy is to control the risk of skidding incidents on a defined network of major roads by the provision of a level of (wet-road) skid resistance that is appropriate for each location.

3 Scope

3.1 This policy relates to the management of (wet-road) skidding resistance on the carriageway surface on a defined network of A, B and Main Distributor roads.

Skidding resistance on other parts of the highway is not included in this policy and is controlled by our general duty of care under the Highways Act (1980).

- 3.2 Asphalt surfacing can exhibit different skidding resistance values in an initial period after installation compared with the same surfacing that have been trafficked for a period of time. This Policy covers in-service conditions rather than the conditions observed in the initial period. Sections of the network that are considered to be in this initial period are excluded from this Policy.

4 Method

- 4.1 The objective of Shropshire's Skid Resistance Policy will be achieved by:

- Carrying out routine skid resistance surveys on a defined part of the highway network;
- Investigating sites where an increased risk for wet skidding incidents is apparent;
- Taking the appropriate measures to reduce the risk of wet skidding incidents at identified sites;
- Reviewing investigatory levels and site categorisation with appropriate regularity.

5 Operational Responsibility

- 5.1 The Head of Highways has overall responsibility for ensuring the implementation of this Policy. Two other roles are identified in the operation of this policy:

Role	Description
Survey Manager	A person who commissions the survey, validates the data and reports the results of the survey. They will have a sound understanding of the general measurement of skidding resistance and the basis of this Policy, and be able to validate the data.
Local Highway Manager	A person who is responsible for highways maintenance on a defined part of the network.

5.2 Table 1 provides an overview of operational responsibility.

Table 1: Operational responsibility for the skid resistance procedures

OPERATION	RESPONSIBILITY
Organising surveys and reporting results	Survey Manager
Setting site categories	Survey Manager
Setting, approving and reviewing Investigatory levels	Survey Manager
Risk rating sites	Survey Manager
Accident investigation	Survey Manager
Leading site investigations	Local Highway Manager
Organising erection & removal of warning signs	Local Highway Manager
Identification and programming of treatments	Local Highway Manager

6 Measurement of skidding resistance

6.1 Survey network

6.1.1 The survey network comprises:

- All A and B class roads
- All other Main Distributor Roads

6.1.2 The survey network will be referred to as the 'Defined Network'.

6.1.3 Some sections of the Defined Network may not be suitable for the measurement of skidding resistance in accordance with this Policy, due to obstructions which prevent the survey of the correct wheel paths, very slow speeds, the presence of traffic signals and traffic calming features.

6.2 Measurement Equipment

6.2.1 Network testing will be carried out using SCRIM (Sideways Force Coefficient Routine Investigation Machine) in accordance with BS 7941, Part 1.

6.3 Survey Strategy

- 6.3.1 The survey will be carried out on the Defined Network in both directions.
- 6.3.2 The characteristic SCRIM co-efficient will be calculated using the single annual survey method as described in HD28/15.

6.4 Quality Assurance procedures for data collection

- 6.4.1 The test equipment will be operated in accordance with BS 7941, Part 1.
- 6.4.2 Each SCRIM used to measure skid resistance in accordance with this Policy will have taken part in the national correlation exercise (or equivalent requirements as set out by the Council) and will have proven satisfactory performance.
- 6.4.3 The survey season will be confirmed with the survey contractor prior to commencement of survey.

6.5 Quality Assurance procedures for reporting

- 6.5.1 The Survey Manager will report the survey results to the Local Highway Manager. The condition of the highway in terms of (wet-road) skidding resistance will be made known at this reporting stage.

7 Investigatory Levels

7.1 Establishing site categories and setting Investigatory Levels

- 7.1.1 A site category and investigatory level will be allocated for all parts of the Defined Network so that the investigatory levels can be compared to the CSC. The Survey Manager will approve the quality of these allocations.
- 7.1.2 The site categories and investigatory levels will be as defined in Table A.1.
- 7.1.3 Site categories and investigatory levels will be reviewed at a frequency of no more than three years. Investigatory Levels for some sites may be subject to review at more frequent intervals following site investigations.

8 Site Investigations

8.1 Objectives

- 8.1.1 The objectives of carrying out a site investigation are:

- To determine whether a surface treatment is justified to reduce the risk of accidents, specifically wet-skid accidents;
- To determine whether some other form of action is required;
- To determine whether the site should be kept under review.

8.2 Procedure

8.2.1 Sites requiring investigation will be carried out according to the process described in Appendix B.

8.2.2 Site investigations will be carried out as soon as is practicable by the Local Highway Manager.

8.2.3 Site investigations will be prioritised in the following order:

Four star and above with a wet-road accident history
Four star and above, no wet-road accident history
Three star with wet-road accident history
Three star, no wet-road accident history
One or two star with wet-road accident history

One and two star sites with no wet-road accident history are considered to be low risk sites, therefore site investigations will not normally be carried out at these locations. Further explanation of the above rating system is provided in Appendix C.

8.2.4 The results of a site investigation will be recorded using the Site Investigation pro-forma and retained for a defined period. A suitable template is provided in Appendix D.

8.3 Outcomes

8.3.1 The outcome of a site investigation will be one or more of the following:

- Keep the site under review.
- A change in investigation level.

- A treatment to mitigate the risk of wet-road skidding accidents; during the period between the investigation and the implementation of the treatment, warning signs may be used.

9 Use of warning signs

- 9.1 Warning signs will be erected where the need for treatment to improve skid resistance has been identified following a site investigation and their placement will provide an effective warning.
- 9.2 Securely mounted warning signs will be erected as soon as is practicable and only if recommended following a site investigation.
- 9.3 A visual inspection of the site will be carried out after the signs are erected to confirm that they have erected and correctly placed.
- 9.4 The placement of warning signs will be recorded at the local divisional office. The record will show the following:
- URS and location.
 - Date of installation.
 - Date of visual inspection, and by whom.
 - Programmed treatment.
 - Programmed date of treatment.
 - Actual date of treatment.
 - Actual date of warning sign removal.
- 9.5 Signs will be erected in accordance with the guidance set out in Traffic Signs Regulations and General Directions (2016).
- 9.6 Signs shall be removed as soon as practicable when no longer required. This may follow treatment, or where subsequent surveys have shown that skidding resistance has returned to an appropriate level.

10 Prioritisation of treatments

- 10.1 Where budget resources are limited, treatments to mitigate the risk of wet-road skidding accidents must be prioritised so that greatest reduction in these accidents is achieved.

10.2 The following site characteristics are taken into account in prioritising treatments:

- Skidding resistance is substantially below the Investigatory Level
- Low skid resistance combined with low texture depth
- Accident history shows a clear risk with wet-skidding accidents linked to skidding resistance.

11 References

- Design Manual for Roads and Bridges. TSO, London HD28/15: Skid Resistance (DMRB 7.3.1)
- UKRLG (2016) Well-Maintained Highway Infrastructure. London
- TSRGD (2016) The Traffic Signs Regulations and General Directions.

12 History

- Review of Policy by February 2021, or unless national guidance is amended.
- Policy as presented to Cabinet February 2019.

End.

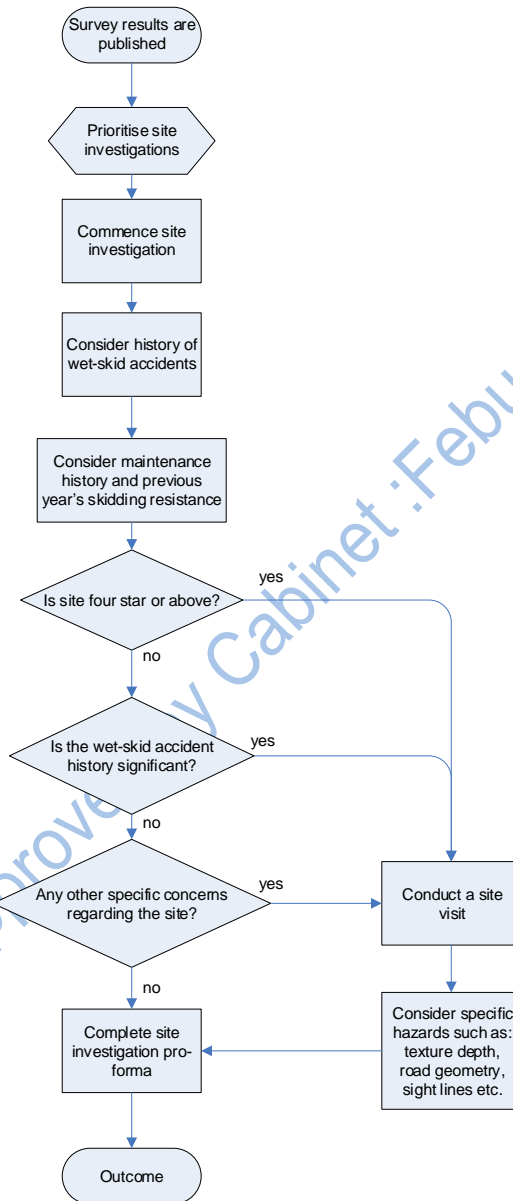
Appendix A: Site Categories and Investigatory Levels

Table A1. Default Investigatory Levels

Site Category	Definition	Investigatory Level
B	Dual Carriageway non-event	0.30
C	Single Carriageway non-event	0.35
Q	Approaches to and across major and minor junctions, and approaches to roundabouts	0.45
K	Approaches to pedestrian crossings and other high risk situations	0.50
R	Roundabout	0.45
G1	Gradient 5-10%, longer than 50m	0.45
G2	Gradient >10%, longer than 50m	0.45
S	Bend (not subject to 40 mph or Lower speed limit) Radius < 250m	0.45

Appendix B: Site Investigation Process

Commented [DM1]: Updated, now says Survey results are published rather than 'Receive Survey Results Book'



Appendix C: SCRIM Star Rating System

In order to rationalize them, the SCRIM star rating system groups different bands of SCRIM results, depending on how far below the site investigatory level the result is. This is detailed below:

XSDF 100M mean SCRIM difference		Star Rating
0	-4	1*
-5	-9	2*
-10	-14	3*
-15	-19	4*
-20	-24	5*
-25	-28	6*
<-28		7*

To be approved by Cabinet :February 2019

Appendix D: Site Investigation Pro-forma

USRN URS		SITE RATING	4★ 3★ 2★ 1★
LOCATION		ACCIDENT HISTORY	Total accidents in last 3 years
OTHER PARTIES CONSULTED			
COLLISION RISK	Comments		
<input type="checkbox"/> Head on <input type="checkbox"/> Side impact <input type="checkbox"/> Vulnerable road users			
HAZARDS			
Road design <input type="checkbox"/> Visibility <input type="checkbox"/> Poor layout	Inadequate signing <input type="checkbox"/> Road signs <input type="checkbox"/> Road markings	Environment <input type="checkbox"/> Texture depth <input type="checkbox"/> Surface water <input type="checkbox"/> Vegetation	Obstructions <input type="checkbox"/> Parked vehicles <input type="checkbox"/> Other
Comments			
OUTCOMES			
<input type="checkbox"/> Change investigation level <input type="checkbox"/> Treatment <input type="checkbox"/> Keep under review	New level Description <input type="checkbox"/> Warning signs would be effective		
Justification			
KEY ACTIONS	Date	By whom	
Receipt of survey results			
Site visit		Print name	
Completion of site investigation		Print name	
	Position	Signature	
RECORD OF ACTIONS FOLLOWING SITE INVESTIGATION			
First placement of warning signs			
Installation of securely mounted signs			
	Job number		
Visual inspection of signs		Print name	
	Position	Signature	
Planned treatment date			
Removal of warning signs			