

GREATER MANCHESTER
SKID RESISTANCE FRAMEWORK



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Document Information

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Document History

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01	**Template**	**XAIS/RSTA**	**June 2020**	**First Internal Release for Council Template**
02	**Draft**	**TK**	**25/11/2020**	**GM AM Group amendments**
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1. Overview

Greater Manchester (GM) is one of the country's most successful city-regions. Home to more than 2.7 million people and with an economy bigger than that of Wales or Northern Ireland
The Greater Manchester Combined Authority (GMCA) is made up of the 10 Greater Manchester councils and Mayor, who work with other local services, businesses, communities and other partners to improve the city-region.

The ten councils (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan) have worked together voluntarily for many years on issues that affect everyone in the region, like transport, regeneration, and attracting investment. Our highway network comprises over 10,000 km (6,000 miles) of roads.

The Code of Practice, Well managed Highway Infrastructure (WmHI), published on 28 October 2016 recommends. '*In the interest of route consistency for highway users, all authorities, including strategic, local, combined and those in alliances, are encouraged to collaborate in determining levels of service, especially across boundaries with neighbours responsible for strategic and local highway networks'*.

This GM skid resistance framework document has been developed through a collaborative GM working group of officers who are directly involved at varying levels of responsibility in the function of maintaining adequate skid resistance. This ensures consistency on cross boundary networks, such as the GM Key Route Network, whilst the format allows each local authority the autonomy to manage their network appropriate to the local conditions in accordance with their skid resistance policy and procedures.

2. Skid Resistance

The term "skid resistance" refers to the frictional properties of the road surface in wet 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. It should also be noted that there is no boundary at which the skid resistance passes from being "safe" to being "dangerous".
Effective maintenance of the highway network includes the requirement to systematically monitor the skid resistance of the road surface and to take a proactive approach so that the skid resistance across the network is maintained to an appropriate standard.
Skid resistance measurements are used as an empirical assessment of a road surfaces level of grip and as an indication of the potential need for further investigation based on defined acceptable limits. However, it should be noted it does not represent the definitive grip available to a road user making a manoeuvre at a particular time and at a particular speed.

3. Objectives

This GM framework takes an Asset Management and a Risk-based approach to managing skidding resistance and puts a greater emphasis on engineering assessment.

The objective of the Skid Resistance Framework is to:

- Enable the public to travel safely and easily
- Enable the GM Councils to robustly defend against claims
- Reduce the number of killed or seriously Injured due to collisions on the GM road network
- Ensure the GM Councils adhere to their duty of care under the Highways Act 1980
- Ensure the GM Councils have adequate defence in a Corporate Manslaughter case

To achieve this the GM Councils will:

- Formalise processes for monitoring skid resistance across the road network on an ongoing basis
- Identify deficient sites using skid resistance survey methods for further investigation
- Use collision data on sites identified for further investigation to determine whether inadequate skidding resistance could be a factor
- Recommend appropriate actions to reduce skid risks
- Prioritise identified sites for improvement works based on where the greatest risks lie
- Ensure that the prioritised improvements are incorporated into annual highway maintenance works programmes

4. Skid resistance procedure

Each constituent authority will have a Skid Resistance Policy that details how the common GM skid resistance framework will be implemented.
In 2015 Highways England published an updated comprehensive methodology for managing carriageway skid resistance on motorways and trunk roads and this is set out in their design bulletin, HD 28/15.
Following a review of the Design Manual for Roads and Bridges (DMRB) in autumn 2019 HD28/15 was withdrawn and replaced with CS228. The fundamentals of HD28/15 have been retained in CS228 and the update is primarily a 'cosmetic review' in line with all other documentation contained in DMRB.
The methodology detailed in CS228 forms a basis for this GM Skid Resistance Framework, although it is recognised that GM's highway network has significant differences and expectations from the road user to the UK's motorway and trunk road network.

Each GM authority will define the road network (the Skid Network) that shall be surveyed on an annual basis based on road hierarchy, as outlined in "Well Managed Highway Infrastructure – A Code of Practice".
These roads also encompass the Key Route Network (KRN), defined across Greater Manchester, which is an integral contributory to the regional economy with around 64% of vehicles relying on it for parts of their journey.
The Skid Network which will be subject to skid resistance testing is subject to modification if there are changes in crash patterns or amendments to the network. Any sites of concern will be added to the testing schedule as required.

4.1 Single Annual Skid Survey (SASS) Approach to Calculation of CSC

The method shall use measurements from the preceding three years to characterise the long-term skid resistance of the network.

The long-term value of skid resistance shall be used, with the mean network skid resistance in the current year, to calculate a correction factor that is applied to the current year's data to make current values consistent with the long-term average.

Sections which have had resurfacing carried out in the last four years shall be identified and removed from the calculation procedure for the correction factors.
Note: The SASS approach takes account of yearly variation and therefore the calculations are affected by maintenance carried out in the last four years.

The Skid network will be surveyed once during the testing season in each year. For continuity, the surveys are planned such that in successive years the network is tested in the early, middle, and late parts of the season as defined in CS228 section 3.7 and illustrated in Table 6.1 below:

Early 1st May -20th June
Middle 21st June -10th August
Late 11th Aug – 30th September

Season\Year	Year 1	Year 2	Year 3	Year 4	Year 5	Etc.
Early		✔			✔	
Middle			✔			✔
Late	✔			✔		

Table 6.1 – Annual Survey Regime

The local equilibrium correction factor (LECF) is the correction factor that shall be used within each locality to bring the current year data to a level consistent with the long-term average.
Note: The LECF is calculated in three stages.

The local equilibrium SC (LESC) shall be determined to represent the average skid resistance level for the locality over recent years.
Note: The LESC is the average SC, calculated for all valid 10-m sub-section measurements in the defined locality over the three years that precede the current testing season.

The LESC shall contain surveys from each of the three parts of the test season with valid measurements being those that were made in the required part of the test season, on the required test line, and on road surfaces that were at least 12 months old at the time of testing.
Where possible, if a length of road has been resurfaced within the last four years then that length should be excluded from the LECF calculation.

Where remedial treatment is deemed to be of benefit, sites will be prioritised using a risk assessment approach and inserted into the works programme for action within the resources and budget available. In summary, the procedure is as follows:

- Skid resistance surveys will be undertaken annually on defined parts of the highway network which are referred to as the Skid Network and based on hierarchy and traffic flows.
- The defined network will be assigned Investigatory Levels (IL) depending on a range of factors such as the speed limit and geometry of the road.
- Skid resistance data for a particular section of road (a site) will be scrutinised and compared against its Investigatory Level.
- Sites where skid resistance values are at or below the Investigatory Level will be identified for further investigation.
- The further investigation will consider other factors such as whether there is road traffic crash history at the site to establish whether remedial treatment is necessary.
- Where remedial treatment is deemed to be of benefit, sites will be prioritised using a risk assessment approach and inserted into a work programme for action within the resources available.

The above principles will be applied on an ongoing basis so that skid resistance across the GM highway network is continually monitored and managed appropriately.

5. Responsibilities

5.1 Legal Responsibilities

Councils have a statutory duty under Section 41 of the Highways Act to maintain highways that are maintainable at public expense. Although the formal management of highway skid resistance is not a legal requirement it is considered good practice and it supports the aims and objectives set out in the Asset Management Plans and Road Safety Strategies of the GM Councils.

Section 58 of the Highways Act 1980 provides the ability to form a statutory defence to counter legal actions for negligence. Councils 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.' When considering a third-party legal action against Councils the Court will consider such factors as:

- The character of the highway and the traffic which was reasonably to be 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 Council 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
- Whether the Council could reasonably have been expected to repair that part of the highway before the cause of action arose.

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 the road network; this is related to vehicle and pedestrian usage as well as speeds of the vehicles using the highway. The Court therefore considers that it would be unrealistic for Councils to monitor and maintain adequate levels of skid resistance on the whole network as this would not be deemed "reasonably practicable".

This skid resistance framework ensures that suitably structured procedures are implemented for the GM highway network and that adequate levels of skid resistance are maintained within reasonable expectations as outlined in the Highways Act 1980.

5.2 Roles, Responsibilities and Competencies

This section sets out the various roles and responsibilities for the management of skid resistance within the GM authorities.

The annual Skid Resistance Survey Programme will be procured through a specialist accredited contractor.

The staff responsible for managing skid resistance within each authority will have relevant competencies as set out by the Council, and all training, experience and other forms of staff development should be recorded and documented.
Staff should ensure that the most appropriate remedial action is taken at sites identified as requiring action. Some examples of the options available are:

- Monitor
- Erection and removal of warning signs
- Refresh of white lining markings on the carriageway
- Retexturing of the road surface with the appropriate treatments available
- Resurfacing of the carriageway with a material that will ensure that the road achieves the correct skid resistance for that road section