The LASR Approach: A new method for prioritising local authority skid resistance

Executive summary

Research funded by the Road Safety Trust funded has led to the development of a prioritisation method to help local highway authorities identify the locations that will most benefit from treatment to improve skid resistance. The research has been carried out in collaboration with 19 local authorities and consisted of a desk study followed by a pilot implementation trial.

The prioritisation method, known as the LASR (local authority skid resistance) approach, combines information about the road characteristics, skid resistance, traffic and collision history to obtain a priority ranking for each location. The method uses the estimated benefit-to-cost ratio of treatment and the relative likelihood of collisions in wet conditions, based on evidence that was obtained from local roads during the desk study. It provides a practical and balanced approach to assessing risk, consistent with best practice in asset management.

Full details of the LASR approach are available on the project website (https://www.lasr-approach.org/). Local authorities wishing to pilot or implement it are invited to collaborate with the established local authority Steering Group, contactable through the project website or the authors listed at the end of this document.

Recommendations / Key findings

Skid resistance improvements can be effective in reducing injury collisions on wet roads.

The LASR prioritisation approach is a practical and effective method of identifying lengths that can deliver safety benefits, with advantages over conventional methods.

Introduction

Many highway authorities measure the skid resistance on key routes and carry out targeted improvements to reduce the risk of collisions in wet conditions. Typically, decisions about when and where to invest are guided by the approaches taken for national roads, which have different characteristics. A lack of evidence to support a risk-based approach on local roads posed a challenge for the effective management of these networks and this research project was carried out to address that gap. Its aim was to develop an evidence base on local roads to inform the prioritisation of maintenance treatments.

Project design and activities

The project was carried out in two phases:

Phase 1, carried out in 2020-21, was a desk study that combined data from 11 local authorities. It developed models for junctions, bends/gradients, roundabouts and "non-event" sections,

describing the excess wet collisions on wet roads as skid resistance falls. These models are used in the LASR approach to estimate the benefit-to-cost ratio of treatment. Also, a novel approach was developed to assess the collision history at each location, which forms the other component of the LASR prioritisation.

Phase 2, in 2022-25, was a practical trial to assess whether the safety benefits predicted are achieved in practice. Surface treatments were carried out to improve the skid resistance at a mixture of urban and rural locations in 13 local authorities. The collision history was monitored for approximately 5 years before and 2 years after treatment, and the results compared with a similar number of untreated sites selected to have similar characteristics.

Project findings

The key research findings are:

1. Where it achieved a significant improvement in skid resistance, surface treatment was associated with a 38% reduction in wet collisions, compared with untreated comparison sites.
2. The reduction affects collisions on wet, rather than dry roads, as expected.
3. The reduction in wet collisions was greatest on the sites with lower initial skid resistance.
4. The high skid resistance thresholds for junctions, currently required by default in many local authority policies, are not supported by the evidence gathered in either phase of this research.
5. Treatments on bend/gradients were particularly effective.
6. The LASR method was found to be a practical and effective method of identifying lengths that can deliver safety benefits, with advantages over conventional methods.

The extensive data obtained from road different networks has provided a robust evidence base for decisions and the technical feedback obtained through the Steering Group has contributed to a practical approach with support for implementation.

Recommendations for policy or practice

On roads that are subject to regular skid resistance surveys, adopting the LASR approach is recommended to rank the priority of lengths with low skid resistance. The resulting prioritisation can inform further investigations for potential treatment to improve skid resistance, within existing asset management frameworks. This data-led approach can maximise the benefit of maintenance funding. Furthermore, knowledge of the casualty reduction potential can help local authorities maximise funding for appropriate interventions.

The LASR method is published in full and is available to any party wishing to implement it. The original method has been refined and updated following the Phase 2 research and practitioners should obtain the latest version, currently v3, from the project website.

Funders, Acknowledgements and Author Contact

A description of the LASR method and the project reports from both phases of research are available on the project website: https://lasr-approach.org/

The Phase 1 research won the DfT Special Recognition award at LCRIG Strictly Highways in 2021 and was shortlisted in the Steve Berry Innovation category of the Highways Awards in the same year.