RoadMetrics
Case Study

Stoke-on-Trent City Council Performs a Full-Network AI Based Road Condition Survey

About Stoke-on-Trent

Stoke-on-Trent City Council is a unitary authority in the West Midlands, serving over 250,000 residents.

Known as "The Potteries," the city has a strong industrial heritage and growing urban development.

The council manages over 900 km of road network across the city and is responsible for delivering both county and district-level services.

Challenges

After a CPD session with the Highways Asset Management Team in August 2024, it was identified that they had difficulties in obtaining accurate and consistent road condition data when using traditional methods for condition surveys.

Further, the process of data collection was time consuming, without video evidence to verify road condition data.

Pilot Objectives

- To explore the feasibility of implementing an AI system for performing Stoke's road condition surveys.
- Test the ease-of-use, accuracy and reliability of the system
- Build forward works treatment programmes and bid for further funding

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Implementation

The trial commenced in December 2024, and covered the council's entire road network of 924 km, using one RoadMetrics hardware kit.

All driven surveys were carried out by the council's highway officers.

The hardware kit included a RoadMetrics enabled Android smartphone, polarising lens, a specialised windshield mount and an anti-glare dashboard cloth.

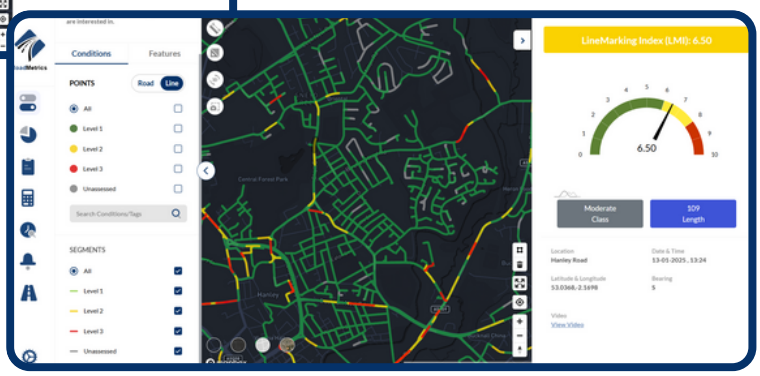
Solution

Once the videos were uploaded using the RoadMetrics Data Collection App, the results were immediately available on RoadMetrics Enterprise, a web-GIS platform for analysis and visualisation.

Using computer vision and AI, the system processes video data to identify road defects and provides an automated assessment in accordance with the Department for Transport (DfT), UK's, PAS 2161 guidelines for road condition monitoring.

Stoke-on-Trent CC were also an early adopter of the automated line marking condition feature that provides 3-level condition ratings for road line markings based on their deterioration. The results will help assist SOTCC in prioritising line marking schemes.

Road condition assessment and rating as visualised on the Platform



Road line marking condition assessment and rating as visualised on the Platform

Customisation

- **Suggested treatment plan:** for planned and reactive maintenance works based on percentage of green and red on the platform, developed internally by the RoadMetrics team.
- **Integration to Confirm:** asset classes and road condition configured to be accepted by Confirm asset management.
- **Data reporting:** upon request, road hierarchy and line marking condition scores were added to the Stoke-on-Trent Report on the platform.

City of Stoke-on-Trent

"The use of AI-driven highway surveys has enabled us to assess the entire road network, not just our traditional A, B and C roads. This approach provides a comprehensive overview of network condition, supporting better planning and prioritisation. In addition, the technology captures a detailed asset inventory across the city, helping to build a fuller picture of our pathway infrastructure and inform future maintenance and investment strategies."

-Steven Lovatt, Head of Highways

Conclusion

Throughout the trial, RoadMetrics closely collaborated with the council to provide customised reports, suited for Stoke-on-Trent CC's requirements.

Further, the line marking condition feature identified and suggested areas requiring fresh line marking, helping provide better overall value with the system.

Following the positive results from the trial, Stoke-on-Trent City Council have decided to further renew their pilot with RoadMetrics AI for the second year.