Leicester City Council receives an AI based road condition asseessment in compliance with the DfT's PAS2161 New Data Standard

Introduction

Leicester City is situated in the heart of the East Midlands in England, and renown for its cultural heritage.

With a population of over 350,000, Leicester City Council is responsible managing the city's 850 km road carriageway network.

Council-Market Engagement

Earlier in July 2023, Leicester City Council arranged for a CPD session for their Highways Asset Team. The topic was around the usage of a smartphone based AI method for road condition surveys.

CPD Session at Leicester City Council

Led by Abul Tarafdar and Rupert Bedder, the Highway Asset Management Team conducted a market engagement exercise through CPD sessions with suppliers at the council, to identify best approach and explore new technologies for road condition assessments at LCC.

This involved evaluating innovative technologies to traditional methods like the SCANNER and CVI surveys.

Following careful consideration, the council selected RoadMetrics as their preferred supplier for a 12-month trial license, commencing in August of 2023.

The Highways Team opted to perform driven road condition surveys in-house, using RoadMetrics enabled smartphone devices.

Implementation

The data collection and output review was led by Alex Cameron, Sr. Engineer at LCC. A rigorous pilot of their entire road network was undertaken.

The easy installation of the hardware kit was a bonus for network inspectors, allowing them to use smartphone devices, thereby reducing the need for customised special fixtures.

Further, the equipment is affordable, easy to use after brief training, and installs in any vehicle with a windshield mount. Unlike traditional survey vehicles, it can be transferred between vehicles for flexible surveys.

Result and Impact

Using RoadMetrics, LCC have been able to conduct their own road condition surveys conveniently, avoiding the delays and limitations of traditional machine-based surveys.

Their highways team are using the results to build their maintenance prioritisation schemes and forward works programmes.

New Developments

- RoadMetrics developed a feature to toggle ward and council boundaries on the GIS map

- Integration of road condition assessment and asset information with their Alloy asset management system is in progress
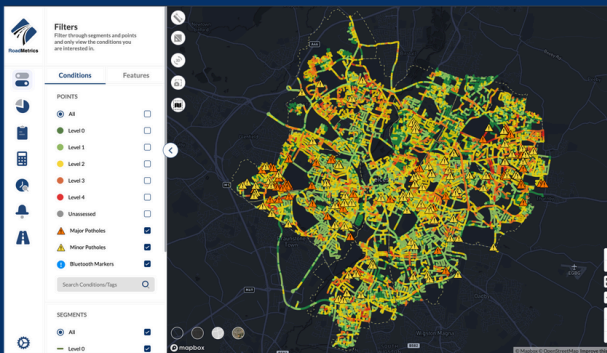
"The road condition surveys provide both photos and video, which enables more desk-based maintenance assessments; reducing unnecessary site visits, enabling more efficient use of our officer time and avoiding unnecessary emissions." - Abul Tarafdar, Highway Asset Manager, LCC

Conclusion and Next Steps

Throughout the 12-month pilot, RoadMetrics collaborated closely with the council to meticulously customise the assessment uniquely suited to the requirements of Leicester City, and further improving the AI models.

The system successfully identified and categorised defects with a high level of reliability, notwithstanding a marginal percentage of model inaccuracies.

Based on the positive overall response from the team, the Management at Leicester City Council have renewed their contract for the second year.

Summary Key Points

➤ Two hardware kits deployed by LCC and surveys uploaded by highway officers over one year

➤ Assessment used to drive maintenance prioritisation schemes and forward works programmes

➤ Integration to LCC's Alloy asset management system ongoing

➤ PAS2161 allows for new surveying methods and technologies for Road Condition Monitoring (RCM) by Leicester City Council

2 Smatphones deployed

4× Faster than traditional method
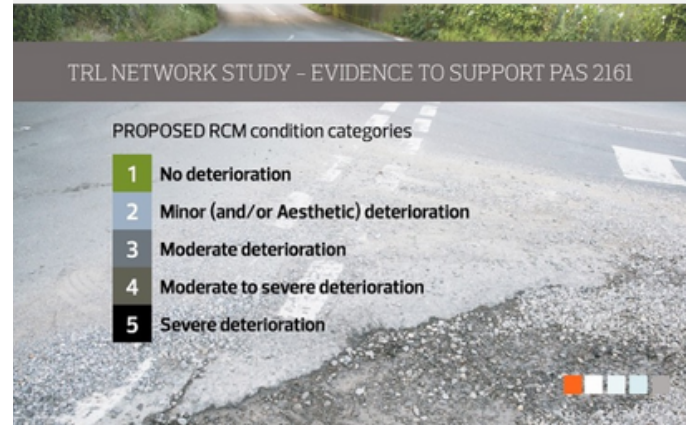
847 km Total network length

50,194 Total No. of Defects

79,984 Total no. of Assets

DfT's PAS2161 New Data Standard

TRL NETWORK STUDY – EVIDENCE TO SUPPORT PAS 2161

PROPOSED RCM condition categories

1 No deterioration
2 Minor (and/or Aesthetic) deterioration
3 Moderate deterioration
4 Moderate to severe deterioration
5 Severe deterioration

- Auto-generated report is based on the DfT's 1-5 RCM condition categories
- Cost savings by using AI and smartphone based low-cost data collection

BY ELIMINATING COSTLY EQUIPMENT AND INTRICATE CALIBRATION PROCEDURES, ROADMETRICS AI REDUCED ASSESSMENT COSTS BY UP TO 30% AND EXPANDED THE SCOPE OF ASSESSMENTS