Blaenau Gwent County Borough Council becomes the first Welsh local authority to perform an annual condition survey with RoadMetrics AI

About Blaenau Gwent

Blaenau Gwent is a county borough situated in South Wales, UK and has over 518 km in road network length. The borough is renowned for its rich industrial heritage, particularly in coal mining and ironworks.

The council's highways asset team, led by Nicola Davies and Darren Richards, commissioned RoadMetrics AI to conduct smartphone-based video surveys and provide an automated road condition assessment and asset mapping of their roadways.

Challenges

Blaenau Gwent County Borough Council were allocated fresh funding in 2023 for resurfacing roads within the borough.

To arrive at schemes, their Highways Asset Management Team evaluated various technologies and identified RoadMetrics as their preferred provider to provide a condition assessment of their road network.

A smartphone based AI style condition survey was picked due to its ease of use, faster processing times and cost-savings.

Benefits in using RoadMetrics:

- Ability to perform an assessment for BGCBC's entire classified and unclassified network
- No requirement for expensive survey equipment
- Constant learning of AI model for future surveys
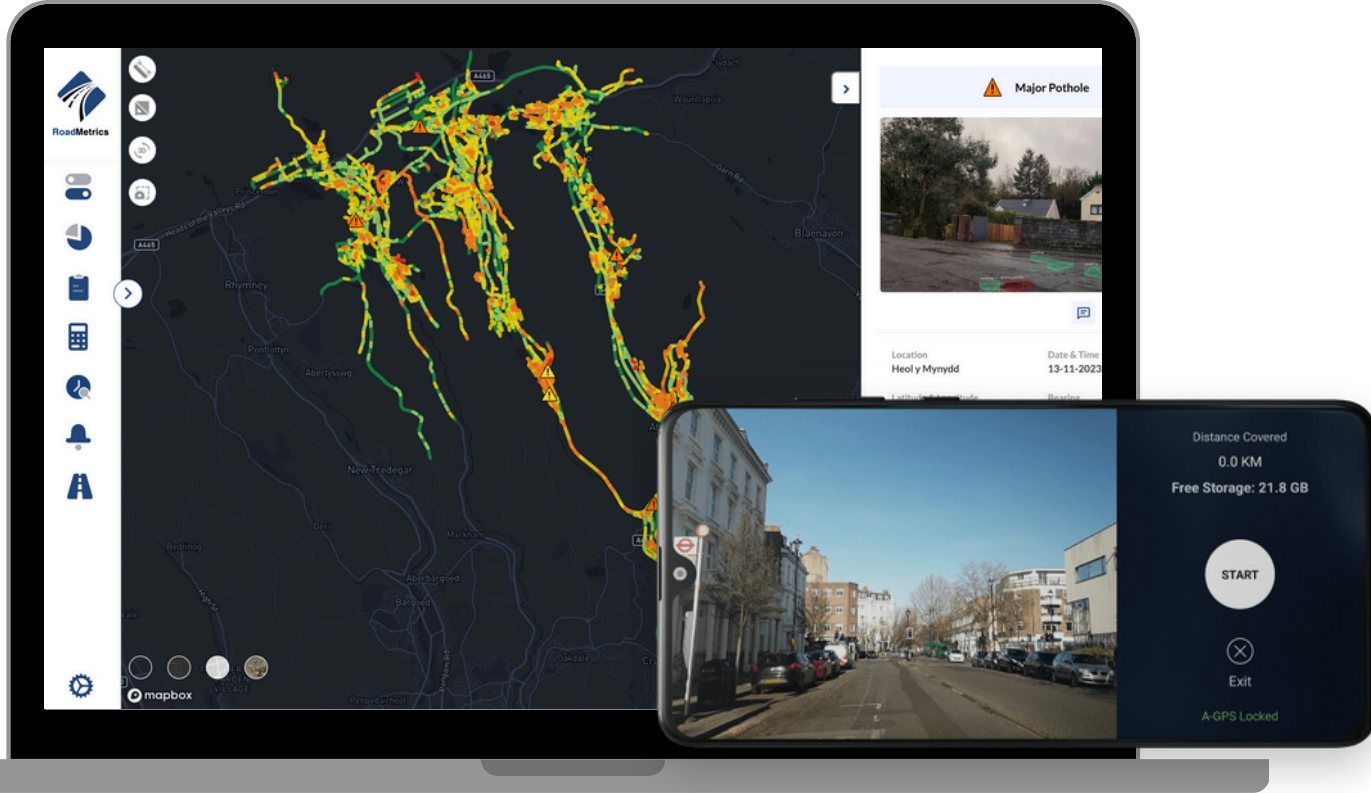
Implementation

A shapefile of BGCBC's road network was provided, that included classified roads (Cat A, B, C), unclassified roads and other adopted roads to a total of 518 km.

RoadMetrics partnered with a contract driver to undertake condition surveys using RoadMetrics' standard hardware kits and the RoadMetrics Data Collection and RouteNav Apps.

The entire network condition surveys were conducted by RoadMetrics in November 2023, and completed within a 2-week timeframe.

All data was uploaded to RoadMetrics' secured cloud data servers in London.

RoadMetrics Team with the contract driver for data collection

Solution

The RoadMetrics AI provides artificial intelligence-based road condition assessments and asset mapping.

Road defects are identified using the latest computer vision based AI models trained by RoadMetrics. Once processed, a road condition rating is assigned for 10m and 100m sections, as well as full-length road sections.

RoadMetrics' AI models are capable of picking up early-stage and late-stage road defects including, but not limited to, longitudinal and transverse cracking, alligator/crocodile cracking and potholes.

To facilitate smooth integration with asset management systems, road condition data can be exported in popular formats, including HMDIF (UKPMS), and GeoJSON formats.

Benefits

As opposed to traditional machine based surveys, RoadMetrics AI is an innovative technology that increases efficiency 10 times and enhances the surveying capacity by using a smartphone-based infrastructure and a dedicated data collection app. This results in cost savings and more informed decision making. It provides automated and objective results, enabling proactive planning for maintenance schemes.

Single day turnaround time
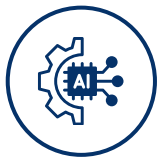
Automated results

Cost effective

2	Smatphones deployed
4×	Faster than traditional methods
640 km	Road network length surveyed
35,947	Total no of defects
19,951	Total no of assets

Results

With RoadMetrics AI, BGCBC was able to receive a 5-level road condition assessment, asset inventory mapping and digital survey video footage of the road network. All condition and asset data was available in CSV, GeoJSON and HMDIF (for UKPMS) formats.

The web-GIS platform generated a comprehensive road analysis report for BGCBC entire road network, highlighting high priority roads that need resurfacing and other areas for investigation.

Achieved from the annual license:

- *cost effective and end-to-end solution*

- *Web-based GIS platform for visualisation*

- *Entire road network surveyed in two weeks.*

- *Overall network information including road condition and asset data*

Conclusion and Way Forward

Using RoadMetrics AI, Blaenau Gwent County Borough Council successfully conducted their annual condition survey with an innovative AI-style approach using cost-effective smartphone devices for data capture.

With the baseline annual condition survey for FY 23/24, Blaenau Gwent have the ability to perform repeat inspections for following years with further retraining of the machine learning dataset.

> *"The site is very user friendly and fit for purpose for the Authority. RoadMetrics were also quick to add and assess additional areas of the network that needed to be picked up on the survey."*
>
> *– Darren Richards, Senior Engineer*