

Reimagining cleaner, smoother, local transportation How Transport for West Midlands is paving the way for less traffic and cleaner communities through a collaborative project with VivaCity and Vaisala



The client:

Transport for West Midlands

Products provided:

62 Vaisala Connected Compact Station BWS500

300 VivaCity traffic monitoring sensors



The West Midlands is the second largest region in the United Kingdom, where nearly six million residents live and work. In this geographically diverse area, Transport for West Midlands (TfWM) has embarked on a journey that will change the way residents and others see and use local transportation. The vision to reimagine how people get around the community will result in an efficient transport system that's fairer, safer and healthier, reducing the impact on the environment and encouraging sustainable travel.

Searching for comprehensive road network data over a new 5G network

TfWM is developing a new Local Transport Plan to accomplish their goals based on real-time traffic flow data. In addition to improving

the overall traffic network, the data will help TfWM to make journey times more predictable, lower the region's carbon footprint and make journeys safer for all by integrating weather information.

Through a tender process, TfWM sought a comprehensive, dense sensor network with several high priorities including collecting census traffic data as well as air quality and weather data. Not only would the sensors have to be compatible with their new 5G wireless network, they would also need to be easy to install and relocate with minimal maintenance and optimal total cost of ownership.

Gaining collaboration with innovative technology

TfWM engaged VivaCity, who specializes in providing data on urban movement and transport use, to deploy the sensor network including Vaisala weather and air quality measurement technology.

The solution gives the organization a strong combination of detailed and accurate weather data and traffic information on a large network.

VivaCity distributed 300 AI-powered computer vision traffic monitoring sensors across the region based on population density. The sensors utilize machine learning technology and can detect and classify the presence of cyclists, pedestrians and other micro-mobility modes, and track their paths across the road space, whilst maintaining the highest data protection standards.

With such a large deployment, TfWM required a platform that provided a resilient and secure network and allowed access to data from multiple endpoints — which meant processing high frequency data from hundreds of sensors simultaneously with quick access to the data. The VivaCity

“Our Local Transport Plan, Reimagining Transport in the West Midlands, is a critical project for addressing social, economic and environmental issues. Success for this large-scale endeavor begins with accurate data, and we are surprised at the insights this solution is already delivering. VivaCity and Vaisala are excellent organizations to work with, and I am confident the data the technology provides will lead us to accomplish even more than we imagine in the near future.”

Paul Burrow
Senior Transport
Innovation Project Lead

system processes heavy data loads by scaling resources appropriately, ensuring that TfWM receives the most reliable and resilient service possible.

Vaisala supplied 62 Vaisala Connected Compact Stations BWS500 as well as installation, data monitoring and maintenance for a five-year period. BWS500 is the ideal modular solution for hyperlocal air quality monitoring and weather intelligence

in dense urban networks, delivering accurate and reliable measurements, data collection, and data visualization in one package.

Each BWS500 is equipped with the proven and trusted Vaisala Air Quality Transmitter AQT530 to measure the most important urban pollutant gases (NO, NO2, O3, CO) and particles (PM1, PM2.5, PM10,) and Vaisala Weather Transmitter WXT536 to measure six of the most important weather parameters: air pressure, temperature, humidity, rainfall, wind speed and wind direction. True mobility and 5G network connectivity quickly fill observation gaps, while platform-level security — an important feature for TfWM — keeps the data intact while preventing unauthorized access.

Benefitting the community and environment into the future

The collaborative effort reflects multilayered expertise and high-quality data, all of which lead to short- and long-term benefits for TfWM, West Midlands residents and tourists, and the environment.

TfWM, VivaCity and Vaisala worked together to research and plan where to co-locate all of the sensors. The data from different systems is amalgamated, bringing a wealth of useful information that enables more data-driven decisions in real time and on a wider scale for a positive impact.

With long-term, highly accurate multimodal road user data, TfWM can monitor and evaluate the success of sustainable transport methods — including active travel uptake and modal shift — to inform future initiatives and objectives.

The weather and air quality insights help TfWM to understand not only current conditions across the region, but also the relationship between weather and traffic. For example, TfWM can measure local carbon emissions and air quality while identifying dates and times of changes, along with information on traffic flows.

Weather is one major cause of changes in traffic behavior, and idle vehicles pollute much more than moving ones. The weather and air quality insights offer the potential for TfWM to optimize traffic signals and speed limits to help traffic move more smoothly so people spend less time driving.

This innovation-led approach by TfWM, VivaCity and Vaisala will continue to evolve and be used for other purposes to serve the public. TfWM is already looking to see how they can use this information to promote active travel and further reduce the region’s carbon footprint, such as using weather data to decide when to encourage people to use more sustainable modes of transport.

West Midlands Combined Authority wmca.org.uk

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