

## Improved Weather Information Drives Operational Efficiencies for Derby City

*After examining the efficiency of Derby City's winter maintenance treatment practices, Mr. Dave Kinsey and the Derby City Council turned to Vaisala's Road Weather team to build a new maintenance program designed around Derby City's road network system. The innovative approach, using both Road Weather Information Systems and Vaisala's RoadDSS® Navigator software, saw an immediate positive return on investment, which is forecasted to continue through coming years.*



### Looking for a Solution to an Urban Road Network Problem

Located in the East Midlands region of England, Derby is a city of approximately 250,000 people, covering an area of 30 square miles (78 km<sup>2</sup>) and is traversed by 455 miles (732km) of roadway. Historically, the city council winter maintenance treatment regime followed the decision-making of Derbyshire County Council, which is responsible for the road network surrounding the city. The County of Derbyshire is divided into a number of forecast domains, the most southerly of which included Derby City. Treatment decisions for the city were therefore aligned with those of the more rural county network.

#### Challenge

- The urban environment of Derby city provided defense from hard winter conditions, but maintenance practices were based on colder, rural routes
- Gritter drivers were applying preventative measures when road conditions were safe, wasting time and resources
- Derby City was without their own Road Weather Information System, which provides local weather and surface condition observations

#### Solution

- Derby City installed a Vaisala Road Weather Station on the city road network, including non-invasive road surface condition and temperature sensors
- Observations were viewed through Vaisala's web-based RoadDSS Navigator Software
- A thermal-mapping exercise was completed, highlighting sections of the roadway that were relatively cold to the network average
- Using Vaisala RoadDSS Manager gave all users one concise location for all decision making information, from observations to policies and procedures

#### Benefits

- Through the Road Weather Information System and Vaisala RoadDSS Navigator, it was discovered that, on average, Derby City observed surface temperatures 1-2 degrees warmer than rural areas
- During the first winter, 2012/13, 25 fewer treatments were applied, saving approximately £50,000
- Winter of 2013/14 saw similar treatment savings; 21 treatments were prevented through early January 2014

*“The software was easy to use and provided a number of reporting options resulting in less staff time taken in preparing third party claim reports. With Vaisala there is no hard selling, and they are ready to take feedback to further research and development of the products. Vaisala also allowed us to ‘try before buy’ demonstrating the efficiency of the system and its decision-making support capabilities before the actual purchase decision was made.”*

Mr. David Kinsey  
Streetpride Area Manager – Highways  
Derby City Council



## Finding a Solution

During 2011, Mr. David Kinsey, Streetpride Area Manager - Highways and Derby City Council began to reflect on the city’s winter maintenance treatment practices, questioning the efficiency of the approach. Instinctively he believed that the infrastructure of the urban environment should offer some defense to the impact of adverse weather conditions, meaning that preventative salting activity should not be required as often in the city as on the more rural, and often colder, county roads. Mr. Kinsey set about investigating the situation further, evaluating Derby City treatment operations against nearest neighbor Nottingham City and researching options for introducing the city’s own Road Weather Information System. Discussions followed, both with the UK Meteorological Office and Vaisala, about the potential benefits from delivering a service specifically for the city network. In summer 2012 a Vaisala Road Weather Station was installed on the city network and for the first time, during the winter of 2012/13, a Derby City domain forecast was produced using observation data from the new station.

## Developing a Solution

This service enabled Mr. Kinsey and his team to make independent treatment decisions for Derby City. The benefits were noticed immediately with the Derby forecast typically 1-2 degrees warmer than the Southern Derbyshire domain, which had previously driven treatment decisions. During the first winter, 25 fewer treatments were carried out when compared to the Derbyshire County operations. In real terms, this equates to approximately £50k savings in the first year.

The initial reason for choosing Vaisala was the option to install the non-invasive road surface condition and temperature sensors and access to the Navigator software. By choosing non-invasive sensors, the installation was

much more straightforward, removing the need to cut in to the road surface. It also offered the option to relocate the station more easily and cost effectively, if needed. According to Mr. Kinsey, “The software was easy to use and provided a number of reporting options resulting in less staff time taken in preparing third party claim reports”.

To further enhance the city’s winter maintenance services, during Winter 2012/13 Vaisala undertook a thermal mapping exercise across the treatment network. This highlighted sections of the highway that were relatively cold compared with the network average. Armed with this information, Vaisala’s consultants designed three “cold” routes for the City. This now means that under certain forecast conditions the City has the option to selectively treat only those sections of the network where hazardous conditions are forecast. This offers the potential for a financial saving in resources and salt. Mr. Kinsey reports: “We aim to have these operational by winter 2014/15 and would be happy to report back at the end of the 2014/15 season”.

“At the end of the 2012/13 season we trialed the Manager Software and decided to purchase it in advance of the current season”, Mr. Kinsey explains. RoadDSS Manager is Vaisala’s decision support software (DSS). Mr. Kinsey liked the fact that with RoadDSS Manager “Vaisala also allowed us to ‘try before buy’ demonstrating the efficiency of the system and its decision-making support capabilities before the actual purchase decision was made.”

He is also happy with Vaisala’s readiness to further develop the system. “We are in discussions now about some of the Key Performance Indicators (KPI’s) we would like to add to the system. For example, an auto-feed of data from our gritter into the RoadDSS Manager software would improve our reporting process, saving time and eliminating the potential for errors in copying information from one tool to another”, he says.

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