

How Transport Infrastructure Ireland built an advanced road weather network

Case Study



The client:

Transport Infrastructure Ireland

Vaisala solution:

RWS200
Maintenance and help-desk services
GroundCast
TempCast
Xweather Horizon

THE CHALLENGE:

Maintaining safe roads in unpredictable weather

Transport Infrastructure Ireland (TII) is responsible for maintaining approximately 6,000 kilometers of roads across Ireland, a task that becomes particularly challenging during the winter months. The Irish climate presents unique difficulties, with temperatures frequently fluctuating between +2° and -2° C, which, combined with high moisture levels, create ideal conditions for ice formation.

These marginal weather conditions pose significant safety risks for road users, especially on newly developed high-speed routes where accidents can have devastating consequences. The challenge is further complicated by localized weather events such as hail, which can occur suddenly and create hazardous driving conditions across specific road sections.

TII recognizes that maintaining road safety requires more than basic weather monitoring – it demands comprehensive, real-time data and the ability to respond quickly to changing conditions.

Furthermore, TII has always been committed to leveraging cutting-edge technologies and solutions to ensure the highest standards of safety and operational efficiency throughout its network.

THE APPROACH:

Building a comprehensive solution over three decades

Vaisala's partnership with TII demonstrates how sustained collaboration can evolve to meet changing infrastructure needs. The relationship began over 30 years ago with the deployment of Vaisala Road Weather Stations (RWS200) across Ireland's road network.

This foundation has grown to include comprehensive support services, help desk assistance, and both preventative and reactive maintenance. As technology has advanced Vaisala has worked with TII to ensure that the latest solutions and innovations have been deployed across the road network in Ireland.

In 2024, the partnership was further strengthened through the renewal of services for TII's network of 136 RWS200 stations. Alongside this, support was extended to include the deployment of modern connected IoT sensors – Vaisala TempCast and GroundCast – to create a denser, hybrid observation network. These IoT-based enhancements contribute to greater accuracy and reliability of road condition monitoring and forecasting.

This same year also saw the collaborative development of a hail detection system using specialized sensors to address Ireland's specific weather challenges. The approach has always focused on understanding TII's operational needs and providing tailored solutions that enhance both safety and efficiency.

"TII Network Management are looking forward to the next chapter of the road weather information partnership with Vaisala, with the integration of our 163 road weather stations and IoT road sensors across the national road network into the Vaisala Xweather Horizon platform.

TII are optimistic that this transition will enhance the performance of our road maintenance organisations and local authorities in providing a sustainable and efficient winter service to all road users."

Owen Smith,
Winter Service Manager & Network Management
Engineer, Network Management, TII



Photo: TII

THE RESULTS:

Enhanced safety through integrated technology

The latest integration of TII's expanded sensor network with the Vaisala Xweather Horizon platform, along with additional TempCast and GroundCast sensors, will deliver high-resolution forecasts and real-time insights. A milestone in road weather management, this transition provides TII with an end-to-end solution that combines decades of operational experience with cutting-edge data integration capabilities.

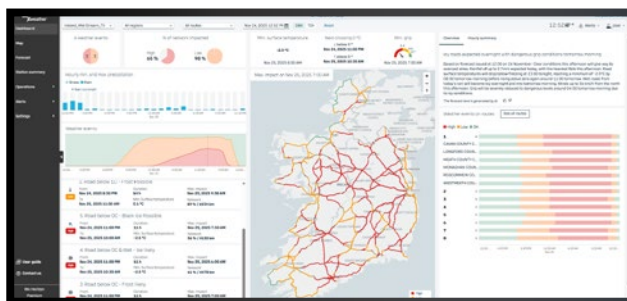
The enhanced, denser monitoring network now delivers more accurate road condition data, enabling confident decision-making for maintenance crews and improved safety communications and alerts for road users. The partnership has created a framework for continuous innovation, allowing TII to adapt to future challenges while maintaining the highest standards of road maintenance.

Beyond the technical achievements, this relationship demonstrates the value of sustained partnership in public infrastructure. TII now operates with improved operational efficiency, enhanced road safety capabilities, and a robust foundation for future technological advancement.

The success of this collaboration shows how customer-focused innovation and comprehensive support can deliver measurable improvements in public safety and infrastructure management over multiple decades.



Photo: TII



Why Vaisala?

Vaisala's weather and environmental technologies take every measure for unrivaled road network awareness – keeping roadways safe and efficient in any season.

Our instruments and intelligence are built on nearly 90 years of expertise, and are known as the gold standard for precision and reliability. We understand how accurate data and insights do even more by driving sustainable road operations and climate action. Our holistic approach provides customers with end-to-end simplicity, valuable partnership, and a comprehensive portfolio that is constantly evolving.

As recognized experts in transportation, we continue to channel our curiosity into innovative ways of making roadways safer and more efficient than ever.

