



PROJECT CASE STUDY

Keeping rail running during critical earthworks strengthening

- ▶ Maintained safe rail operations at full line speed (100 mph) throughout construction
- ▶ Delivered continuous, real-time track geometry monitoring across the full works area
- ▶ Enabled rapid alerting to support immediate operational decision-making
- ▶ Achieved full compliance with Network Rail standard NR/L2/CIV/177
- ▶ Ensured uninterrupted monitoring through a self-sustaining power solution

How we helped our customer

Summary

DYWIDAG supported Murphy on a major embankment strengthening programme between Ardley and Bicester North by delivering a fully integrated remote monitoring solution.

Working on a live railway with a known history of instability, the project required continuous assurance of track geometry while enabling construction to progress without disruption. DYWIDAG's monitoring system provided real-time visibility of asset behaviour, allowing engineers to make informed decisions quickly and maintain safe operating conditions throughout the works.

► Location	Launton & Bicester, Oxfordshire, UK
► Client	Network Rail
► Timeline	July 2025 to February 2026
► Partners	J Murphy & Sons Ltd
► Products	Remote track monitoring – design, supply, installation and maintenance. 320 railway sleeper-mounted tilt sensors. 2 gateways. Solar panels and battery enclosures.

Project Wins

Maintained safe rail operations at full line speed: Continuous monitoring ensured track geometry remained within tolerance throughout construction.

Real-time risk management during live construction: Instant alerts enabled rapid response to any movement, reducing operational risk.

Reliable monitoring in a remote environment: Self-sustaining power solution ensured uninterrupted system operation with no reliance on mains power.

Continuous assurance for stakeholders: Live data access and daily reporting supported transparent, informed decision-making.

Integrated delivery with construction programme: Monitoring deployed in phases to align with works, minimising disruption and maintaining focus on critical areas.



Case Study: Launton and Bicester

The Problem

The works were carried out on a live twin-track railway supported by an embankment that had historically experienced instability.

Extending for approximately three-quarters of a mile and reaching heights of up to eight metres, the embankment had previously contributed to operational constraints and service disruption. Strengthening works, including sheet piling and reprofiling, were required to deliver long-term resilience.

The challenge was clear: deliver major earthworks while maintaining safe, uninterrupted rail operations.

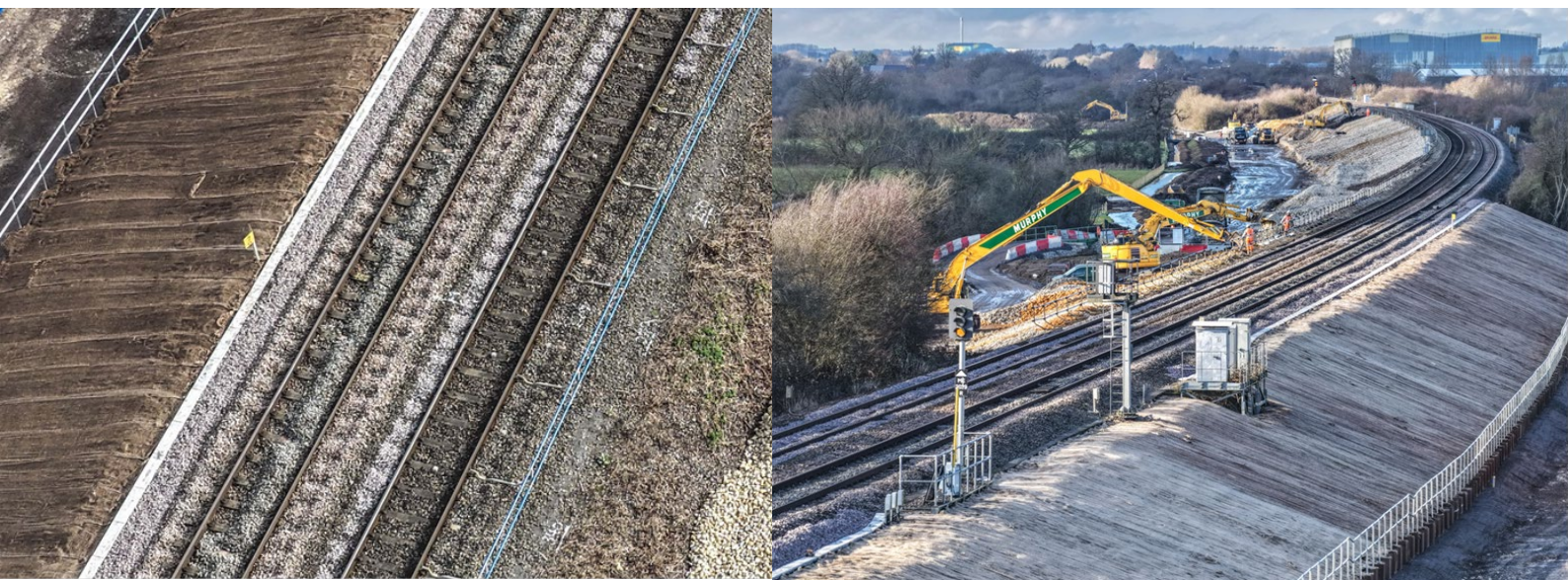
The Challenge

This project required more than monitoring in isolation. It demanded a system that could operate as part of the construction process itself.

A key requirement was to maintain full line speed of 100mph throughout the works, meaning track geometry had to remain within strict tolerances at all times. Any deviation needed to be detected immediately, with clear and reliable communication to site teams to mitigate reduction in line speed, or even the closure of the railway.

The environment added further complexity. The system had to perform consistently in exposed conditions, with no access to mains power and no tolerance for downtime. At the same time, multiple stakeholders required clear, accessible data to support ongoing assurance and decision-making.

In practical terms, this meant delivering a monitoring solution that was not only accurate, but dependable, responsive, and fully integrated into the operational demands of a live railway.



The Solution

DYWIDAG delivered a fully integrated remote monitoring system designed specifically for the operational and environmental constraints of the site.

A network of 320 high-precision bi-axial tilt sensors was installed along the affected section of track, providing continuous measurement of movement and behaviour. These were installed at 3m centres to report on geometrical change over the distance of the shortest train wheel-base. The system was configured in line with Network Rail standards, with overlapping coverage ensuring both compliance and data reliability.

Real-time monitoring formed the core of the solution. Utilising leading communications technology from DYWIDAG's partner, Worldsensing, the data from the sensors installed over this remote and extensive site was collected and transmitted to DYWIDAG's cloud-based data visualisation platform, Infrastructure Intelligence (II). Within II, pre-agreed intervention limits were set and any movement at or above these would initiate an automated alert being sent to stakeholders within 15 minutes, enabling action to be taken to maintain safety of the operational railway. Movement beyond predefined thresholds triggered immediate alerts, allowing site teams to respond quickly and maintain control of the works. This was supported by a secure online platform, giving stakeholders access to live data, trends, and system performance at any time.

Given the absence of mains power, DYWIDAG engineered a self-sustaining energy solution to support continuous operation. This ensured uninterrupted data capture and transmission, regardless of site conditions.

The system was delivered as a complete service, including installation, commissioning, ongoing supervision, and maintenance, ensuring consistent performance throughout the project lifecycle.

The Result

DYWIDAG's track monitoring system enabled construction works to proceed without disrupting rail operations, maintaining full line speed throughout the programme.

Continuous visibility of track behaviour provided confidence to both Murphy and Network Rail, allowing risks to be identified early and managed effectively. The combination of real-time alerts, reliable system performance, and clear reporting ensured that safety and operational requirements were consistently met at every stage.

More broadly, the project demonstrated how integrated monitoring supports more efficient construction delivery. By embedding real-time data into decision-making, the team reduced uncertainty, improved coordination, and maintained control across a complex live railway environment.



DYWIDAG handled the entire track monitoring package professionally from start to finish. Communication was clear, planning and logistics were well organised, and installation was completed on time without any issues. The level of preparation, documentation and service gave us confidence throughout the project.

Anthony Pollard, Project Manager, J Murphy & Sons Ltd



Creating safer, stronger, and smarter structures



Want to know more?

Discover how DYWIDAG Structural Health Monitoring solutions support infrastructure monitoring, construction risk management and long-term asset performance. Contact our UK sales team at sales.uk@dywidag.com or visit our website.

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