

# EMBEDDING CLIMATE ADAPTATION IN THE MANAGEMENT OF IRELAND'S NATIONAL ROADS NETWORK

**ABSTRACT** Transport Infrastructure Ireland (TII) is the approving authority for Ireland's National Roads network, a critical asset comprising approximately 5,300 km of motorways, primary, and secondary roads. Despite representing 5% of Ireland's total road network, these roads carry over 50% of national traffic and facilitate most goods movement, underpinning economic activity, social connectivity, and access to essential services across the country.

Ireland's changing climate – characterised by more frequent and severe weather events, increased precipitation, flooding, and rising sea levels – poses increasing risks to National Roads, much of which was not designed for these emerging hazards. In response, TII published their Climate Adaptation Strategy in 2022 and Climate Impact Screening report in 2023. Following these publications, TII developed its first Climate Adaptation Implementation Plan ('the Plan') to systematically reduce climate-related risks and enhance infrastructure resilience.

The Plan employs a risk-based, adaptive methodology aligned with international best practice and embeds Dynamic Adaptive Policy Pathway (DAPP) principles in TII's Climate Adaptation approach. This framework enables flexible, staged delivery of adaptation measures, allowing for adjustments as new data and climate projections emerge. Measures are prioritised based on hazard, exposure, asset vulnerability, and network criticality, ensuring resources target locations where disruption would have greatest social and economic impact.

Adaptation measures are grouped by asset type, including overarching (e.g. policy and standards), bridges, drainage, tunnels, motorway operations, geotechnical assets, and pavements. The Plan details the actions that TII will focus on in 2026–2030, including updating standards, improving flood data, expanding asset management plans to include climate adaptation, targeted risk assessments, and upgrading vulnerable infrastructure.

The Plan is supported by a monitoring, evaluation, and learning (MEL) framework to ensure continuous improvement and evolve as new insights and data emerge. TII's climate adaptation approach provides a replicable model for resilient infrastructure planning, balancing immediate action with long-term flexibility.