

TRANSPORT SCOTLAND'S FIRST TRUNK ROAD ADAPTATION PLAN: LAYING THE FOUNDATIONS FOR A CLIMATE RESILIENT NETWORK

ABSTRACT Scotland's climate is changing, temperatures are increasing and extreme rainfall events are becoming more frequent. Major impacts are already evident on the Scottish Trunk Road Network (TRN), causing damage to assets such as roads and bridges, causing disruption across the road network and result in safety risks for road users.

AtkinsRéalis, in collaboration with Transport Scotland, undertook a Climate Risk Assessment of the TRN, to understand current and future climate risk. The study mapped current and future risk to a 2km hex grid across the TRN, highlighting hotspots of climate risk across the network for nine climate hazards; flooding (pluvial, fluvial and coastal), river scour, landslides, extreme heat, cold spells, high winds and cascading risks.

Climate risk was mapped in GIS in two phases; firstly, a baseline screening of risk based on exposure, hazard and vulnerability (aligned with the IPCC risk assessment methodology) and secondly, a risk assessment based on likelihood and impact in line with Transport Scotland's corporate risk register. Risk scoring was produced for each 2km hex grid for each hazard, informed by spatial layers including UKCP18 future climate projections and community vulnerability and asset and network vulnerability data from Transport Scotland.

The outcomes of this study will be used to identify which parts of the network require prioritisation for climate adaptation and will support Transport Scotland in building a business case to invest in climate change resilience measures across the TRN.

This study provides an exemplar of climate risk assessment for infrastructure networks, making use of local stakeholder knowledge, client asset data, open source environmental mapping, climate change projections and spatial analytics. It delivers a key step towards Transport Scotland's vision of a safe, reliable, and resilient transport system for current and future generations.