**Operational Resilience of The Road Network (ASM and South Island)**

Different incidents on the network can disrupt the transportation network, resulting in increased travel time, accessibility issues, and economic costs. The impact of incidents/disasters on a road network can be assessed based on the physical impact and/or the operational impact. The physical impact examines the effect of incidents/disasters on different assets such as pavements, structures, bridges, and tunnels, which in turn can disrupt the network, completely or partially. Therefore, the travel behaviour of the users will vary, causing increased travel time and travel cost, or even unsatisfied demand. This is referred to the operational impact of a(n) incident/disaster. Responding to incidents in a timely manner will reduce the recovery time and therefore, the delay on the network, resulting in saving the cost of congestion.

The operational resilience of the road networks is assessed using a Normalised Trip Resilience (NTR). It incorporates three different dimensions of resilient systems, namely, Robustness, Redundancy, and Recovery. The proposed measure reflects the impact of increased travel time (redundancy impact) and eliminated trips (robustness) on the resilience of trips, in percentage, averaged over the recovery period. To facilitate ranking of the post-disaster impact on districts, a new measure, namely the Equivalent daily number of Impacted Trips (EIT), is proposed. The proposed measure provides an opportunity for decision-makers to estimate and rank the trip resilience between each (group of) Origin-Destination pair(s) using pre- and post-disaster flow and travel time.

Two case studies, a hypothetical Alpine Fault Magnitude 8 (AF8) scenario in the South Island of New Zealand and SH16 WB direction of Auckland Motorway System, were conducted to demonstrate the newly developed trip resilience measures.