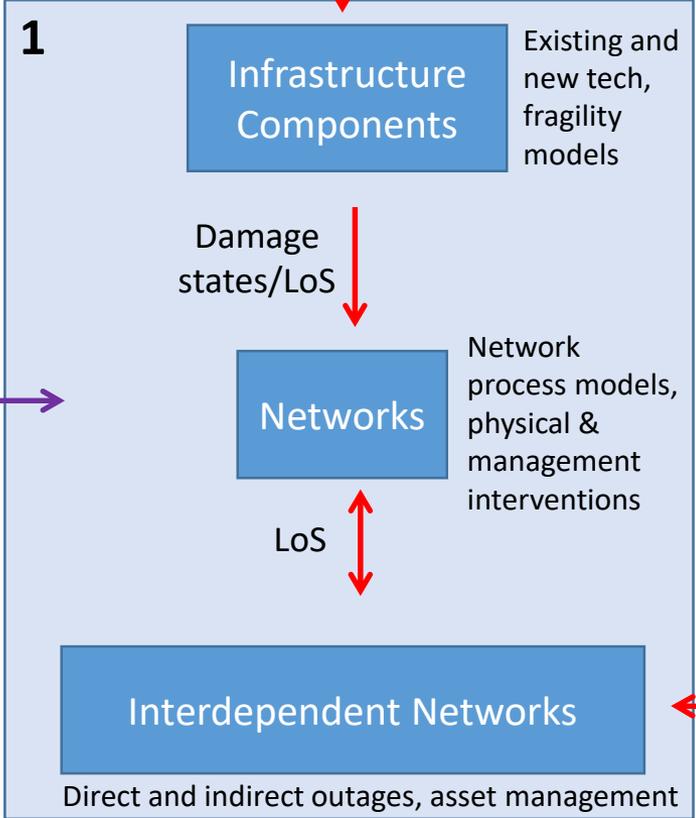


Built Environment

- Resilience to Nature's Challenges 2019-2024
- QuakeCoRE

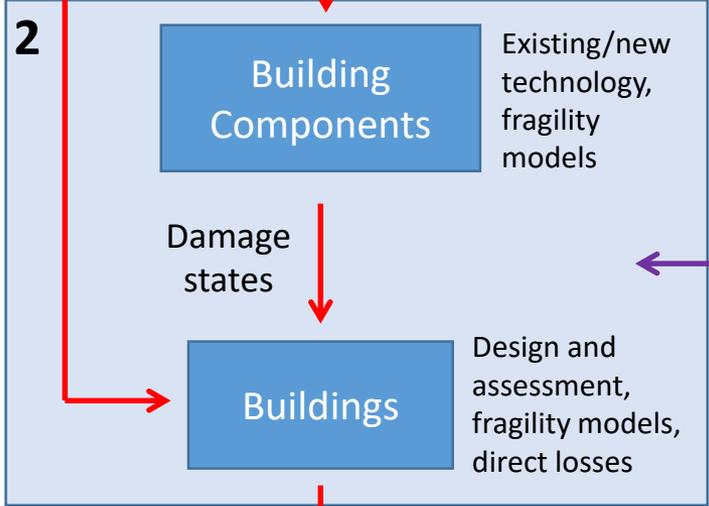
Weather/Coastal/Volcanism/EQ/Tsunami

Intensities



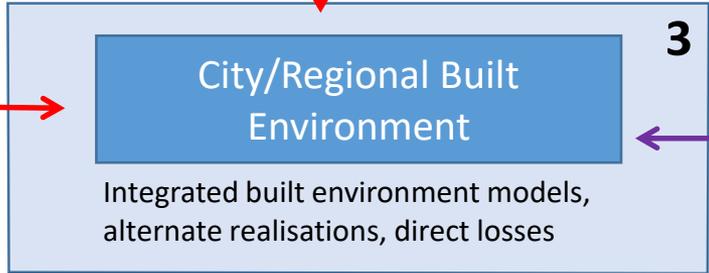
Rural, Urban, Māori, MRM, RPM

Intensities



Urban, Māori, MRM, RPM

LoS/damage states



Rural, Urban, MRM, RPM

Volcanic/Rural co-funding

- Rural infrastructure systems modelling
 - Waikato & Taranaki
 - Wider interdependencies
 - Inform rural interventions related to range of hazards
- Vulnerability of infrastructure components and small systems (ash and pyroclastic flows)
 - Physical modelling and case history based vulnerability models
 - Electricity distribution networks

High Impact Weather co-funding

- HIW fragility/vulnerability model development from NZ case histories
 - Use of nationwide case history data from HIW events
 - Storms, snow, flooding, etc
 - Expert elicitation & analytical modelling approaches
- Quantification of urban flooding resilience and assessment of mitigation strategies (with Urban)
 - Auckland focus – linked to HIW scenario storm
 - Stormwater modelling and resilience metrics
 - Built environment exposure
 - Assessment of stormwater devices and design

High Impact Weather co-funding

- Flood protection and detention system management strategies and impacts (with MRM, Rural)
 - Multiple potential case study areas (Rangitikei, etc)
 - Framework to assess system
 - Exposure assessment for range of strategies
 - System management to minimise flood exposure
- Assessment of electricity system impacts and management strategies pre- and post- HIW events (with Rural)
 - Multiple focus regions
 - Operational vulnerability of wind generation
 - Management of transmission and distribution
 - Potential to integrate volcanic ash impacts (hazards with lead times)

Coastal co-funding

- Flooding and storm surge impacts in the Hauraki District: mitigation and adaptation strategies (with HIW)
 - Adaptation strategies for coastal infrastructure networks and communities
 - Scale model testing of coastal defence designs
 - Staged engineering interventions & managed retreat

Multi-Hazard Risk Co-funding

- Multi-impact operability of infrastructure
 - Effect of impact from a previously occurring hazard on vulnerability to subsequent hazards
 - Range of infrastructure types and hazard combinations
 - Likely focus: stopbanks

BE- Horizontal

- Multi-Hazard Assessment of Operational Impacts on the Transportation Network
 - Builds on transport models developed in RNC1
 - Auckland case study
- Telecommunication-electricity system resilience
 - Focus on telecommunications post-event
 - Build on current industry led projects
 - Resilience interventions and post-event strategies
 - Wellington case study
- Resilience through an Asset Management Long-term Planning Process
 - holistic investment logic decision approach to guide infrastructure investments
 - Wellbeing perspective

BE- Horizontal

- Geospatial seismic and co-seismic assessment tools for infrastructure networks
 - tools for application to infrastructure networks
 - developed for NZ conditions
- Infrastructure-building interdependencies and recovery
 - process-based modelling of networks and building exposure
 - current risk, future risk
 - mitigation/adaptation strategies and network recovery priorities
 - Wellington case study – WeLG partnership

BE- Horizontal

- Tsunami infrastructure vulnerability & fragility of infrastructure components
 - Expand current suite for analysis
 - Loading characteristics to component performance
 - Assessment of mitigation measures
 - Wellington case study

BE– Integrated Scenario

- Wellington – EQ and Tsunami
 - Geohazard and tsunami modelling
 - Ground motion simulation
- Building stock seismic modelling
 - Loss modelling and decision making
- Infrastructure network analysis
 - Infrastructure-building interdependencies
 - Telco-electricity
 - Tsunami
- Resilience of current and future networks (ageing and investment)

Other Opportunities

- Infrastructure Interdependency Modelling
 - Application to other regions and hazards
- NZ Inventory of Stopbanks
 - Flood modelling and exposure
- South Island Transport Model
 - Assessment of other hazards and network modification
- Auckland Transport Model
 - Assessment of other hazards and network modification
- Buried Infrastructure Fragility model framework
 - Assess potable water networks in other regions
 - Apply to development using other data (pipes, cables)

Other Opportunities

- Geospatial hazard datasets
 - Seismic geohazards
 - Updated flood models
 - Sea level rise and storm surge
 - Volcanic hazard models
- Existing case history datasets
 - Infrastructure disruption for range of natural hazards