

# Practitioners Guide to Building Resilience into Infrastructure Networks

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## SUMMARY

SCIRT is responsible for rebuilding horizontal infrastructure in Christchurch following the earthquakes. A challenge faced by asset assessment and design engineers at SCIRT has been to justify to themselves, funders and asset owners, investing taxpayer and ratepayer funds into more expensive but more resilient infrastructure. SCIRT's response has been to develop a whole life costing methodology that can be used to evaluate rebuild options. The methodology is based on net Present Value (NPV) analysis of wholelife costs and takes into consideration capital costs, capital renewals, operation and maintenance costs, and the risks and costs associated with responding to future earthquake events. The paper presents how the methodology has been developed and applied to the evaluation of wastewater rebuild options and other asset b rebuild decisions. It examines how it has been refined as SCIRT's focus has shifted from highly damaged areas to other areas that have sustained less earthquake damage and how the evaluation of options has changed as the rebuild has shifted from a response to a rebuild, with a significant emphasis on returning levels of service across the city.