MAKING RENEWAL INVESTMENTS WITH CONFIDENCE – A ROBUST DECISION SUPPORT PROCESS FOR 3 WATERS RETICULATION NETWORKS

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Abstract

Water utilities across the world are faced with the challenge of managing an aging stock of assets. At the same time, community expectations around levels of service and risk have increased and there are pressures to reduce expenditure in order to manage debt levels.

This paper describes a decision support process that has been developed for Dunedin City Council that prepares optimised renewals and maintenance programmes for potable water, wastewater and stormwater reticulation assets. The software tool produces budget forecasts, future risk profiles and level of service predictions for various scenarios. It enables water utilities to gain a better understanding of the trade-offs between investment, risk and levels of service.

The decision support tool has combined theory of optimised decision making and mathematical deterioration modelling of pipe decay with solid operational practices. Processes for modelling deterioration of pipes are outlined and the paper discusses how deterioration, risk and level of services influence the selection and timing of intervention measures. The paper describes the benefits that have arisen, not only from the outputs of the process, but also the learning’s during the development phase. Challenges with regard to business processes and data availability and how these have been overcome are also described.

Key Words: 3waters Renewals Optimisation, Decision Support, Deterioration Modelling