

Advanced Condition Assessment & Pipe Failure Prediction Project

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A non-technical overview of Fact Sheet No. 4 (December 2012)



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Progress on Activity 3

In August 2011 international water research organisations, Australian water utilities and three Australian universities came together through a collaborative research agreement, and committed overall funding of \$16 million (including \$4 million cash) over five years to find ways of finding a solution to the problem of failure in critical pipes.

The partners in this research project include Sydney Water Corporation, Water Research Foundation of the USA, UK Water Industry Research Ltd, Water Corporation (WA), City West Water, Melbourne Water, South Australia Water Corporation, South East Water Ltd and Hunter Water Corporation. Monash University leads the research supported by University of Technology Sydney and the University of Newcastle. Other collaborators include Water Environment Research Foundation and Dr Balvant Rajani of Rajani Consultants Inc.

Round 1 of the project covers three activities initially:

Activity 1 How, when and where will pipes fail within the entire network?

Activity 2 How do we assess the condition of the pipe cost effectively?

Activity 3 How do we calculate pipe deterioration rates accurately with respect to the pipe environment?

Further Activities planned for Round 2 include:

Activity 4 What is the time-dependent probability of failure along the pipeline?

Activity 5 How do we transfer the new knowledge to the industry for optimal pipe management?

All five activities are due for completion by 2016.

Activity 3 How do we calculate pipe deterioration rates accurately with respect to the pipe environment?

The overall aim of Activity 3 is to develop models to predict the long-term external corrosion of cast-iron cement lined pipes. The approach currently being used is to develop a corrosion model based on corrosion fundamentals and on documented field observations. The model is intended to describe the amount of corrosion (both general losses and pit depths and, eventually pit size) as a function of exposure period and the main influencing factors. Professor Robert Melchers of the University of Newcastle is leading this Activity.

Industry Partners



Research Partners



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Outcome of Activity 3

The outcome of Activity 3 will be the development and calibration of a realistic predictive model for pipe corrosion in soil. Associated with this outcome is the collection of data sets for measured pit depths and associated soil conditions, covering a wide range of climatic conditions.



Figure: Corroded pipe section (Courtesy of Hunter Water)

Reference: Petersen RB and Melchers RE (2012) Long-term corrosion of cast iron cement lined pipes, (In) Corrosion and Prevention, Nov 11-14, Melbourne, Australia

For information on data exchange for Activity 3 contact Robert.petersen@newcastle.edu.au

Research Partners



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