

Water Utility Experience



SA Water

Service:

ARMS Reliability Engineers were engaged to undertake:

Reliability Modelling

- Model the Heathfield Wastewater Treatment Plant in RCMCost
- Develop asset hierarchy based on process / function.
- Perform FMEA analysis

Generic Water Pump Station Model

- Recommend good reliability practices for pumping stations



Goulburn Murray Water

Service:

ARMS Reliability Engineers were engaged by the Water for Rivers organisation to undertake a RAMS analysis of Flume Gates and develop an effective maintenance plan



Brisbane Water

Service:

Brisbane Water has engaged ARMS Reliability Engineers to build a Failure Modes and Effects (FMEA) based model to review/develop and optimise maintenance strategies, and then constructing a Reliability Block Diagram (RBD) based Availability model to determine availability of the Sewer Pump Control System. Brisbane Water has also purchased Availability Workbench RCMCost & AvSim Modules to support and monitor the maintenance improvement initiatives



Sydney Water

Service:

ARMS Reliability Engineers were engaged by Sydney Water to provide project & technical support in building a RCM model for the Sewer Pump Station, Water Pump Station and Sewer Treatment Plant facilities for Sydney Water. Sydney Water have purchased the Availability Workbench RCMCost module, and training to help support their maintenance improvement initiatives. Sydney Water has taken the pilot approach strategy to maximise the skills transfer between the ARMS Reliability Engineers project engineers and Sydney Water staff assigned to the project.



BHP Nickel Ravensthorpe

Service:

Develop Reliability based maintenance plans, work instructions and spares recommendations for new desalination plant. Work completed February 2009.

Water Utility Experience

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ARMS Reliability Engineers have had a great deal of success with water utilities utilizing our software suite to improve their maintenance and reliability. Contained in here are some of the projects that we have completed for various clients and the objectives of those projects.



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South East Water



Reliability modelling of Water Pumping Stations:

South East Water own, operate and maintain a total of 79 water pumping stations, consisting of 167 pumps and associated equipment.

The objectives of this study were;

- Evaluate the cost benefit associated with current maintenance practices
- Determine the optimum age to replace major capital expenditure items
- Pumps
- Generate a 10 year budget prediction for
- Capital
- Scheduled Maintenance
- Unscheduled Maintenance

The sewer pumping stations were grouped into categories to reflect the common configurations. Each individual pumping station was then assigned a category in order to develop a reliability model containing the entire population of sewer pumping stations.

RCM Analysis of Water Treatment Plant: Quantifying the monetary impact associated with replacing / not replacing plant and equipment at various sites

The RCM (Reliability Centred Maintenance) analysis undertaken aimed to quantify the monetary impact associated with replacing/not replacing plant and equipment at various sewage treatment facilities that is deemed to be reaching the end of its economic life

cycle due to rising maintenance requirements. Comparisons were made using plant upgrade scenarios with consideration being taken for maintenance costs and the cost of risk (public image, EPA fines etc) only.

The assessment of RCMCost is based on plant failure frequencies that have been determined using data from the Mainpac CMMS (Computerised Maintenance Management System) and data from equipment suppliers.

The work history available from the Mainpac CMMS covers a period of six years and details all works performed by Siemens (the maintenance contractor) at the sewage treatment station in question.

Ongoing Support

SEW continue to utilize the RCMCost and AvSim+ software programs to review and optimise their maintenance and then evaluate system performance. ARMS provide ongoing support to the SEW organisation ranging from model refinement, annual budget predictions and data analysis.

Water Care Services Limited



Sewer Pump Station Models

ARMS Reliability Engineers were engaged by Watercare Services Limited to undertake a RAMS analysis of Sewer Pump Stations which would address the dominant failure and provide an effective maintenance plan and generate budget and performance predictions.

The pump stations completed were:

- DPS016 - a large critical station
- DPS015 - a medium sized medium criticality station
- DPS012 - a small sized low criticality station

The approach taken for this analysis was to build a Failure Mode Effect and Criticality Analysis (FMECA) model that represented the likely failure modes, provides an assessment of the Effects of Failure, and to allow the most effective maintenance tasks to be chosen. Once the maintenance tasks were chosen, the information was loaded into an Availability model so that the predicted spares can be generated. These models were used as templates to allow rapid building of stations across the network.

Water Pump Station Models

ARMS Reliability Engineers were engaged by Watercare Services Limited to undertake a RAMS analysis of Sewer Pump Stations which would address the dominant failure modes and provide an effective

maintenance plan and generate budget and performance predictions.

Water Treatment Plant System Availability model

ARMS Reliability Engineers were engaged by Watercare Services Limited to undertake an Availability analysis of a water treatment plant which would predict system performance on the basis of maintenance plans derived.

The model also identifies critical items within the treatment plant which may be targeted for improvement.

Water Pipe Network Criticality Model

ARMS Reliability Engineers were engaged by Watercare Services Limited to undertake a high level criticality model of their entire water pipe network including dams, reservoirs and treatment plants. This was a Reliability Block Diagram model which generated a criticality ranking of elements within the network in order to assist long term asset planning.

Ongoing Support

Watercare continue to utilize the RCMCost and AvSim+ software programs to review and optimise their maintenance and then evaluate system performance. ARMS provide ongoing support to the Watercare organisation ranging from periodic support meetings, remote model review rapid model building, and training

“SEW continue to utilize the RCMCost and AvSim+ software programs to review and optimise their maintenance...”

“A Reliability Block Diagram based criticality model generated a criticality ranking of elements within the network in order to assist long term asset planning.”