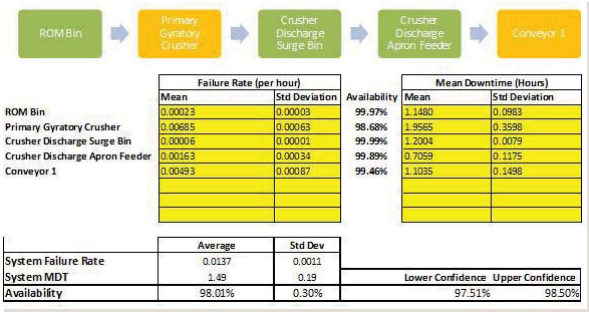
Ausenco Rylson

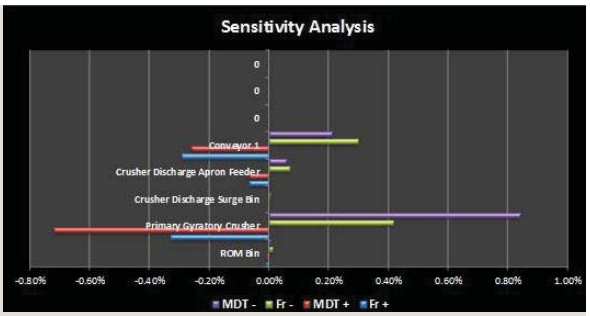
Case study

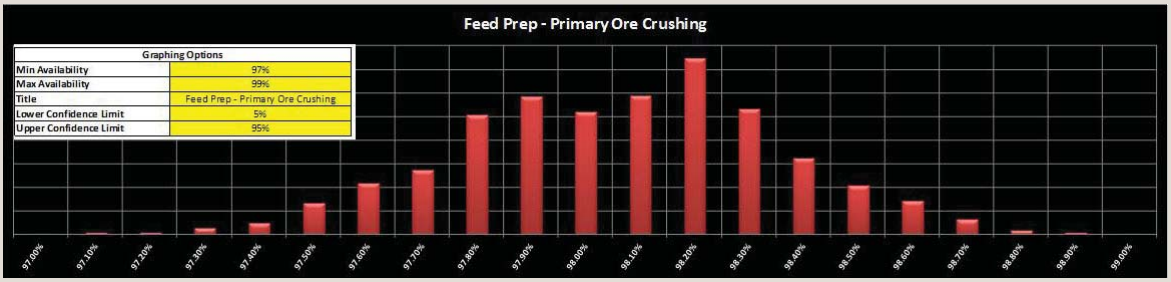
# RAM Study with Critical Spares Analysis




| | Failure Rate (per hour) | | | Mean Downtime (Hours) | |
|---|---|---|---|---|---|
| | Mean | Std Deviation | Availability | Mean | Std Deviation |
| ROM Bin | 0.00023 | 0.00003 | 99.97% | 1.1480 | 0.0983 |
| Primary Gyratory Crusher | 0.00685 | 0.00063 | 98.68% | 1.9565 | 0.3598 |
| Crusher Discharge Surge Bin | 0.00006 | 0.00001 | 99.99% | 1.2004 | 0.0079 |
| Crusher Discharge Apron Feeder | 0.00163 | 0.00034 | 99.89% | 0.7059 | 0.1175 |
| Conveyor 1 | 0.00493 | 0.00087 | 99.46% | 1.1035 | 0.1498 |

| | Average | Std Dev | | |
|---|---|---|---|---|
| System Failure Rate | 0.0137 | 0.0011 | | |
| System MDT | 1.49 | 0.19 | Lower Confidence | Upper Confidence |
| Availability | 98.01% | 0.30% | 97.51% | 98.50% |




**Above** Typical RAM study analysis

## Analysis of RAM models for proposed pipeline

**The Woleebee Creek to Glebe Weir Pipeline is a combined pipeline approximately 120 km in length that will transport treated coal seam gas (CSG) water from the QGC Queensland Curtis LNG project for beneficial use by mining and irrigation customers along the pipeline route and in the Dawson Valley Water Supply Scheme. SunWater will build, own, operate and maintain the Woleebee Creek to Glebe Weir Pipeline.**

Ausenco Rylson were engaged during the design phase of the project to carry out analysis to determine the inherent reliability, availability and maintainability (RAM) models of the proposed design and to advise on possible alternatives to achieve the desired performance.

A complete model was developed for the pipeline and refined in consultation with the client ensuring that client historical asset performance was captured. Various design scenarios were modelled to achieve optimum performance. A complete report detailing the analysis, sensitivity and scenario modelling was delivered.

**Achievements**

- Completed RAM model for proposed design giving stakeholders confidence that reliability, availability and maintainability targets will be met
- Modelled various arrangement scenarios enabling RAM parameters to be understood for various design configurations
- Highlighted key availability constraints in the system
- Made recommendations to the client to improve and optimise system design
- Delivered critical spares listing for the first five years of production.

**www.ausenco-rylson.com**

**Location**
Queensland, Australia

**Business stream**
Optimisation

**Client**
SunWater

**Timeframe**
2012

**Contract type**
Optimise