

Case Study

Metropolitan Municipality Pump Station Maintenance Plans

Client Background

The reticulation network at a local municipality has more than 600 pump stations across the region. The pump stations range from 8kW to 1600kW total installed capacity. An analysis of failure frequencies over the past three years showed that some pump stations have more than 80 failures per year with maintenance costs reaching as much as R2.2m per year. This is a conservative estimate because many secondary costs are incurred by other departments when a pump station fails. It is therefore very important to consider criticality when prioritising maintenance.

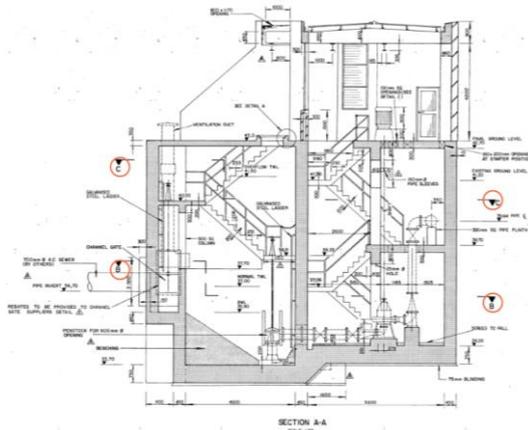
A Criticality Analysis was conducted to determine the criticality of all pump stations within the reticulation network. The following consequences were considered:

- Cost
- Downtime/Service delivery
- Health and Safety
- Environmental impact
- Legal compliance
- Reputation impact

“By taking redundancy into account we can identify the business risk exposure and prevent the negative effects of a failure.”

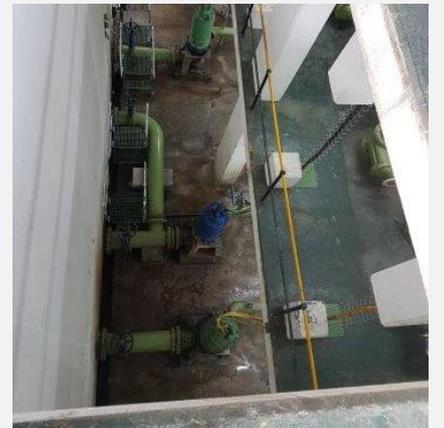
Key Challenges

- High frequent failures of equipment with high resulting cost.
- Consequence of critical equipment failure can have a major negative impact on the public and environment.
- No critical spares kept on site. Long lead times to procure spares and perform maintenance.
- Maintenance work is not prioritised according to criticality.
- Lengthy supply chain delays because of stringent legal requirements.
- Limited resources to open pump stations and perform maintenance work.
- No standardisation of pumps. Spares are not interchangeable because there are various brands and models.
- Pump station operation and maintenance are managed by two separate departments. This causes logistical challenges when maintenance needs to be performed.



Value Add

- Criticality analysis conducted on all pump stations within the reticulation network.
- Maintenance work is prioritised.
- RCA investigations are targeted according to criticality.
- Critical spares identified.
- Shorter lead times for spares.
- Better motivation to obtain spares, specifically for A-critical equipment.
- Reduction in business risk exposure.



Pragma Intervention

- Criticality completed on all pump stations.
- DMAIC process launched and completed on one of the critical pump stations.
- Multiple project teams assigned to perform DMAIC investigations on A-critical pump stations.
- Critical spares identified.
- Sourcing of critical spares currently in progress.
- Criticality to be applied in the ERP system. Work order priority to be introduced and managed using the Work Planning and Control business process.

Tools and Technology

- DMAIC (Define, Measure, Analyse, Improve, Control) process
- Criticality Analysis
- Pareto Analysis
- Root Cause Analysis
- SAP
- MS Excel
- Fishbone diagrams
- Spare parts optimisation