# Problem Statement Worksheet (Hypothesis Formation)

**What specifics actions Monaco Mining need to take to reduce operating costs until 24M/year in maintenance to consider it an acceptable level**

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## 1 Context

Monalco Mining is one of the world's largest iron ore mining companies. Demand for iron has been increasing around the world and market prices have ramped up significantly to $110 per ton of iron ore .

To accommodate market demand, Monalco, along with many other mining organizations, has invested heavily in operating technologies such as ore-crushers and has poured money into maintenance to maximize production of iron ore. However, with the increased market supply, which is rapidly overtaking demand,prices have now shifted downwards, averaging $55/ton.In response to worsening market conditions, the management team at Monalco has decided to focus on streamlining costs, particularly maintenance expenditure, to limit the impact this has on the business' profitability.

## 2 Criteria for success

Able to shave off ~ %20 worth of costs over the year w.r.t ore crusher maintenance, this will be enough of a buffer to weather future downward shifts in pricing.

**3** Scope of solution space

We want to cut down our maintenance events in Bass-Shingle Basin in Western Australia

**4** Constraints within solution space

We can't cut more than the recommended OEM limit of one maintenance event at every 50,000 tons of iron ore processed. And we will face Resistance from the reliability engineering team

**5** Stakeholders to provide key insight

Chanel Adams – Reliability Engineer,
Jonas Richards – Asset Integrity Manager,
Bruce Banner – Maintenance SME,
Jane Steere - Principal Maintenance,
Fargo Williams – Change Manager,
Tara Starr - Maintenance SME

## 6   Key data sources

With respect to maintenance cost reductions, we would probably want to focus on getting information from:

1. Data Historian - This includes information on how many tonnes of Iron Ore we have processed with the ore crushers.
2. Ellipse - This includes information on the old work orders that used to be raised for our equipment, before our upgrade to SAP.
3. SAP - This is the most up-to-date information source on our equipment logs and work order requests that have been raised for maintenance work for our ore crushers and other pieces of equipment

Additional systems which might be worth considering are:

1. T3000 DCS – Sends raw streaming data on vibrations, temperature, and the humidity of the ore crushed to Data Historian
2. Ore Crusher System - This includes a high-level process map outlining how the Ore Crusher System works for individual ore crusher models.