Problem Statement Worksheet

How can we scale back the annual maintenance costs of ore crushers in at least 20% to reach a budget buffer during 2019 to account for possible iron ore price drops in the market?

1 Context

Price of iron ore had ramped to $110/ton but after sector investments in operating technologies to meet market demands, the prices dropped to $55/tone. There is a risk of entering negative numbers since our current break-even point is at $50/ton. Our analysis shows that our maintenance expenditure is higher than industry standards. Additionally, there are discrepancies in *per-annum* investments on OPEX. Reducing maintenance costs can be a solution to this detected risk. The overall goal will be increasing business profitability and reducing risk exposure.

2 Criteria for success

Short-term: reaching a +20% cost reduction for ore crusher annual maintenance which translates into at least $9M ($45M * 20%) in cost savings ($45M is the expense forecast for 2019).

Long-term: Lowering excessive wear (currently at 80% of work requests) to get closer to industry standards and to avoid yearly maintenance expenses of +$30M. The goal is getting closer to a 3 year maintenance period (not yearly) without doing less than 1 maintenance event every 50.000 tons of iron processed.

3 Scope of solution space

Our focus will be on the ore crushers, their excess wear and the effect that this has in the annual costs

4 Constraints within solution space

Stakeholder resistances: reliability engineering team might oppose reducing maintenance events.
Reliability of Data: two sources of information for maintenance work exist (Ellipse and SAP).
The ore crushers have to have at least 1 maintenance for every 50.000 tones of iron processed

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

Data Historian - Data on tones of Iron Ore processed by crushers.

Ellipse - Data on old work orders for our equipment (before SAP)

SAP - Most up-to-date data source on our equipment logs and work order requests

Note: using a source on financial data to follow iron ore prices would be interesting. This would allow to see if drastic fluctuations might require further cost savings. Look into Bloomberg, Yahoo Finance or other financial data platforms.