Problem Statement Worksheet (Hypothesis Formation)

<What is the business problem you are investigating? (Use SMART principles)>

1 Context

<Why are you working on this problem?>There is a need to scale back on the annual maintenance expenditure of $30M for the ore crushers. Need to develop specific quantitative metrics to use to determine if an ore crusher needs maintenance. The ideal schedule of maintenance is every three years not every year (the current model).

2 Criteria for success

<What is the key criteria that will deem this work successful?>The key criteria that will deem this work successful will be an annual maintenance expenditure of $30M - 20%(30M).

3 Scope of solution space

<**What is the focus of this business initiative? I.e. What specific items will you focus on exclusively?>**The recommended OEM limit is one maintenance event at every 50,000 tons of iron ore processed.The OEM guide says that The ore crushers are meant to be maintained every three (3) years – not every year (the current model). One basic question is how much iron ore is being processed per year by an ore crusher?

4 Constraints within solution space

<What constraints exist that may prevent this business initiative from succeeding?>Using collected data of temperature, etc, predict if a specified ore crusher needs maintenance before the three year maintenance check (machine learning model). The constraint that exists to prevent the initiative succeeding is that ore crushers process 50,000 tons of iron ore within a one year period, thus defeating the desired longer timeline for maintenance.

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

<What are the key pieces of data you need to answer the questions related to the problem you are trying to solve?> The key piece of data needed is the amount of ore processed by an ore crusher in a one year period. To construct the metric for ore crusher maintenance, use the data that is already being collected (temperature, etc) for a given set of ore crushers.