Ma’aden - Saudi Arabian Mining Company
Ad Duwayhi Gold Project
Feasibility Study

METS Engineering was involved in the development of the Ad Duwayhi gold project feasibility study, including metallurgical testwork, flowsheet development and plant layout drawings for this Saudi Arabian gold project.

**OUTCOME**
- Processing plant design
- Project infrastructure
- Capital and operating cost
- Technical drawings

**BACKGROUND**
Ma’aden is a mid-tier mining and exploration company which operates out of Saudi Arabia. The Ad Duwayhi gold project is located in the central Arabian gold region and contains over two million ounces of gold. The proposed Ad Duwayhi processing facility is a 2,000,000 tonne per annum CIL plant producing approximately 190,000 ounces of gold from a head grade of 3.3 g/t.

**PROJECT OBJECTIVES**
Ma’aden engaged METS to review results from a previously completed metallurgical testwork program. From the interpretation of these results, METS was asked to complete a feasibility study design for a gold processing plant and appropriate infrastructure. The operating and capital cost for the plant were also completed as part of the project. METS provided a plant layout and general arrangement drawings together with a 3D model of the proposed plant.

**CHALLENGES**
After a review of the previously completed metallurgical testwork program, it was found that some required test data had not been completed. METS endeavoured to complete this requested testwork while not severely impacting the predetermined project timeframe. METS completed this project from its Perth based office while communicating regularly and effectively with the Ma’aden project team located in Saudi Arabia.

**OUR APPROACH**
During the review of the previous testwork, METS completed a gap analysis to determine the testwork required for the feasibility study. This testwork was completed in parallel to the required project work so as to not impact the timeline of the project.

METS designed a process flowsheet from the mineralogy of the ore body and the necessary plant throughout. METS then completed a mass balance for the process, which was used for engineering design and equipment selection. Once complete, capital and operating costs for the plant were developed.

An infrastructure study was completed with key items being power, water and access via roads. The Ad Duwayhi project was sensitive to these infrastructure items due to the isolation of the proposed location.

The costs of infrastructure, plant operating and capital were used to determine the project economics and viability.