Valuation of Iron Ore Mineral Properties – Challenges and Opportunities

Presenter: Caue ‘Paul’ Araujo (BSc Geology, MBA, MAusIMM)
Principal Consultant (Project Evaluations)

Email: caraujo@srk.com.au
Agenda

• Introduction
• Iron Ore Special Characteristics
• Market Considerations
• Challenges and Opportunities
• Discussion
Outcomes

- A straight to the point technical/economic/market assessment of iron ore deposits/mines
- An update on current industry trends and market considerations, and its impact on valuations
- A better understanding of the global iron ore and steel markets
Technical Value

Technical Value is an assessment of a Mineral Asset’s **future** net economic benefit at the Valuation Date under a set of assumptions deemed most appropriate by a Practitioner, excluding any premium or discount to account for market considerations.

Here is a table that outlines the approach for different types of projects:

<table>
<thead>
<tr>
<th>Valuation Approach</th>
<th>Exploration Projects</th>
<th>Pre-development Projects</th>
<th>Development Projects</th>
<th>Production Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Income</td>
<td>No</td>
<td>In some cases</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cost</td>
<td>Yes</td>
<td>In some cases</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: VALMIN 2015
Market Value

Market Value is the estimated amount (or the cash equivalent of some other consideration) for which the Mineral Asset should exchange on the date of Valuation between a willing buyer and a willing seller in an arm’s length transaction after appropriate marketing where the parties had each acted knowledgeably, prudently and without compulsion.

Market Value may be higher or lower than Technical Value. A Public Report should take such factors into account, stating the results of the principal Valuation Method(s) used and disclosing the amount of and reasons for the difference between the Market Value and Technical Value.

Source: VALMIN 2015
Special characteristics

- Iron ore is more of an industrial mineral than a precious or base metal
- Reserves are not determined by a traditional cut-off grade but by customer specification
- Significant changes in the industry (i.e. haematite Brockman to martite-goethite Marra Mamba, haematite to itabirites, magnetite ore types) have to be carefully taken into account
- Spot prices less than 10 years old; relatively undeveloped futures market
- Trends in the steel industry substantially impact valuations and investment decisions
Relevant factors

- Location and size
- Impurities, grade, coarseness (not only grade)
- Ore type
- Density
- Moisture content estimations
- Lump/ Fines ratio, coarseness of fines (reliable test works?)
- Geological/ metallurgical characteristics of in situ ore and final product
- May require skillful blending of ROM / Product
Iron ore market considerations

- Price: Local Price, CFR China, CFR Europe; Spot or Contract, or Contract linked to Spot; Penalties, Discounts or Premiums; (i.e. CFR China Fines price and DR Pellet feed price in the US)
- Cost: CFR or FOB; wet or dry; all-in-costs inclusive or exclusive of debt costs
- Lump, Fines, Haematite Concentrate, Magnetite Concentrate, BF Pellets, DR Pellets, “Super Concentrate”, coarse sinter feed; well tested product brands vs new brands
- Chinese concentrate high grade (but commonly low grade in situ resources and reserves)
- Steel scrap impact in iron ore demand
Iron ore market trends

- Price: What is the bottom? How high it can get?
- Product Type: High quality Lumps decline? Increase in medium grade Fines supply? Decrease in low grade supply?
- Pellets - the “future of iron ore”
- Iron ore companies: Big 4 or even bigger 3? Why Vale/ FMG deal could make sense?
- The role of India and South East Asia; China goes west
Challenges

• Iron ore valuations require strong technical and commercial knowledge

• Price forecasts and assumptions need to be reasonable and pass the common sense test

• Comparable Transactions are hard to find and need to be carefully interpreted

• Lack of independence can have a significant impact on the valuation outcome
Opportunities

- Strategic value of iron ore: different value for different companies/countries
- Opportunity for refining feasibility studies, improving processes and efficiencies
- Lower entry point for investment in quality assets (CVRD example)
- Asset sellers and potential buyers more likely to reach an agreement due to more reasonable price expectations