The AK6 kimberlite

How a junior developed a billion dollar asset

And a major walked away

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Outline

• AK6 today: Karowe Mine
• Discovery and early assessment
• Rediscovery and evaluation
• Reflections
• Conclusions

Note: James AH Campbell was General Manager Exploration at De Beers, Managing Director of AFD and Vice President for LUC and was involved in the AK6 project from 2005 to May 2011
AK6 today: Karowe Mine
Prime diamond real estate

• The Orapa province hosts 85 kimberlites
• Of these, 8 are (or have been) diamond mines
• Orapa (118 Ha) is the world’s largest Tier 1 diamond mine by area
Karowe has yielded 1.8 million carats, generating revenue of $1.02 billion at an average price of $566 per carat (as at December 2016).

Lucara has paid over $188M in dividends to date ($149.7M paid in 2016).

Diamond mines and projects ranked by operating margin

Source: Lucara Diamond, Macquarie Research
An exceptional producer

Karowe has produced many exceptional diamonds, including the world’s second largest diamond: Lesedi La Rona.

A 1,109-carat Type-IIa stone recovered in 2015, the Lesedi la Rona, is the world’s second largest diamond after the 3,106-carat Cullinan found in South Africa in 1905. The name means “Our Light” in Setswana.

In 2016, Lucara sold 14 exceptional stones at over $2M per stone (including 4 stones at over $10M per stone) as well as 20 exceptional stones between $1M - $2M per stone. The 813-carat Constellation sold for $63M.

Source: Lucara Diamond
Discovery and early assessment
Technical, economic and corporate perspectives
1970s-80s: AK6 early assessment

<table>
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<tr>
<th>Technical</th>
<th>Economic</th>
<th>Corporate</th>
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<tbody>
<tr>
<td>Discovered in 1969 De Beers assessment</td>
<td>Developed world in economic “stagflation”</td>
<td>A decade of big mine opening for De Beers:</td>
</tr>
<tr>
<td>• Small size (c. 3.3ha)</td>
<td>• High inflation</td>
<td>1971: Orapa</td>
</tr>
<tr>
<td>• Poor mineral chemistry</td>
<td>• Slow growth</td>
<td>1977: Letlhakane</td>
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<tr>
<td>• Low diamond grade (3.5cpht)</td>
<td>• High unemployment</td>
<td>1982: Jwaneng</td>
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<tr>
<td>Considered low interest</td>
<td>Arab oil embargo</td>
<td>De Beers share price closely correlated with Dow Jones</td>
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<tr>
<td>• Diamond potential downgraded</td>
<td>1973-4 stock market crash</td>
<td>Collapse of diamond prices</td>
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<td>• Kimberlite under-sampled</td>
<td>• NYSE’s Dow Jones lost 45%</td>
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<tr>
<td>• Excessive diamond breakage</td>
<td>• LSE’s FT30 lost 73%</td>
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![Dow Jones daily closing price graph]

Source: JAH Campbell, SAIMM, Lucara Diamond
Rediscovery and evaluation
Technical, economic and corporate perspectives
2000s: AK6 rediscovery and evaluation

**Technical**

Uneconomic kimberlites revisited

Phased approach to AK6 evaluation

Initial Evaluation (Deposit)
- New geophysical and drilling technologies
- Surface area increased
- 10-month lag between sampling and results
- JV formed ahead of first encouraging results

Evaluation Phases 1 and 2 (Mineral Resource)
- Drilling, bulk sampling and trenching
- Valuation on 50% of planned carats: $131/ct

**Economic**

2009: *Annus Horribilis*

Aftermath of Global Financial Crisis

End of the mining boom
- Investment activity in mining sector dropped dramatically
- Juniors (‘project generators’) hardest hit
- Investors reluctant to fund a project deemed marginal

Source: JAH Campbell, SAIMM, Lucara Diamond
## 2000’s: Corporate milestones

<table>
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<tr>
<th>Timeframe</th>
<th>Technical trigger</th>
<th>Corporate action</th>
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<tr>
<td>April 2004</td>
<td>African Diamonds and De Beers have contiguous ground holdings</td>
<td>Boteti JV (51% Debot / 49% African Diamonds; DB is operator and can earn up to 70% on delivery of BFS</td>
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<td></td>
<td>New technology available</td>
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<td>Jan-Dec 2006</td>
<td>Positive evaluation results, incl. Type II diamonds; DB’s conceptual study</td>
<td>James Campbell moves from GM at DB to MD at AFD and joins Alex van Zyl previously Consulting Geologist for DB and now Technical Director at AFD</td>
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<tr>
<td></td>
<td>study suggests marginal economics</td>
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<tr>
<td>Feb-Sep 2007</td>
<td>AFD’s prefeasibility study indicates robust economics and lower capital</td>
<td>Boteti applies for Mining Licence, agrees to fund AFD’s share upon DB delivering BFS. <strong>DB forced to be the bank</strong> as bulk sampling inadequate for BFS</td>
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<tr>
<td>Jul-Oct 2008</td>
<td>Boteti’s (DB) feasibility study suggests marginal economics (negative NPV, $380M capital)</td>
<td>DB applies for Retention Licence, citing power shortages and its stance against auctioning diamonds on open market as reasons. <strong>AFD successfully opposes application</strong>, paving the way for <strong>award of Mining Licence</strong>. DB rejects AFD’s offer to buy their interest in AK6</td>
</tr>
<tr>
<td>Jun-Nov 2009</td>
<td>AFD’s alternative Value Engineering Study (rejected by DB) suggests robust economics</td>
<td>DB unable to finance; AFD scours the market to raise funds to buy DB out, or find alternative investor. AFD’s innovative approach to mining and belief in the resource paves way for new investor: Lucara buys DB’s stake in Boteti for $49M (<strong>acquisition fully funded by LUC insider</strong>) following introduction by JAHC and rapid negotiations.</td>
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<tr>
<td></td>
<td>and lower capital</td>
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<td>May-Nov 2010</td>
<td>LUC’s feasibility study confirms robust economics</td>
<td>LUC acquires AFD’s stake in Boteti for a c.30% premium. AFD’s exploration assets is spun off into Botswana Diamonds plc</td>
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Reflections on AK6
Technical, economic and corporate perspectives
Technical considerations

• Impact of technology
  • Developments in technology led to rediscovery
  • Diamond breakage reduced by advances in LDD technology
  • Improved understanding of diamond size frequency distributions (SFDs) from production data

• Diamond value
  • Abundance of Type IIa and larger diamonds inadequately considered in initial valuations
  • The impact of diamond breakage was (and is) poorly understood
  • Diamond value significantly underestimated in financial modelling
  • Two end members in diamond valuation: fixed price book or open tenders. Pros and cons

“The relatively high levels of diamond breakage not only cause challenges with the diamond valuation, but also with postulating a production diamond size frequency distribution from the sampling data. As a result of the high levels of diamond breakage in the sampling diamonds and the abundance of high value Type II diamonds ..., Boteti believes that there is considerable upside in the diamond value, even at today’s diamond prices” (Campbell et al., SAIMM 2009)
Joint Venture dynamics

- JV agreement signed ahead of first bulk sampling results (10-month lag)
- Different perspectives and funding structures
- Substantial variance in:
  - Risk appetite
  - Plant design philosophy
  - Capital estimates
  - Project economics
  - Approach to financing
  - Hurdle rates
  - Decision making processes
- Variances above reflected in techno-economic studies
- AFD dual-listed: London AIM & Botswana:
  - Strong local shareholding

<table>
<thead>
<tr>
<th>Techno-economic studies</th>
<th>De Beers</th>
<th>African Diamonds</th>
<th>Lucara</th>
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<tbody>
<tr>
<td>NPV range (US$)</td>
<td>-70M to 10M</td>
<td>25 to 209M</td>
<td>189M</td>
</tr>
<tr>
<td>Capital range (US$)</td>
<td>+/-380M (Phase 1&amp;2)</td>
<td>+/-88M (Phase 1)</td>
<td>+/-120M (Phase 1) +/-165M (Phase 1&amp;2)</td>
</tr>
<tr>
<td>Economics</td>
<td>Marginal</td>
<td>Robust</td>
<td>Robust</td>
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Construction and commissioning cost: **USD120M** (Phase 1)
Mining began in Q2 2012
Anticipated LOM 15 years
Economic value

• AFD raised cash at 2p, listed at 7p in 2004. Acquired by Lucara for 0.8 of a LUC share for each AFD share in 2012. Current LUC value plus dividends £2.21 = £1.76 for 7p share = **25 times your money plus BOD**.

• LUC acquired De Beers 70% share in the AK6 project for US$49M in 2009. LUC is now valued at CAD1.2BN. It had a market cap of c.CAD30M immediately prior to acquisition of DB’s stake in AK6 = **40 times increase in market cap**.
Conclusions
Conclusions

Corporate

• Contrasting strategic, corporate and financial agendas between initial joint venture partners
• Cash is king (... especially at the bottom of the economic cycle)!
• Different diamond pricing methodologies

Technical

• Too small a bulk sample led to possible deficiencies in the diamond size frequency distribution and value modelling
• Did not adequately take into account qualitative information gathered during the evaluation process
The Future

Experience hard won through the AK6 journey retained within BOD team

• Team:
  • Strong corporate, commercial & technical skills
  • Significant director/management shareholding
  • Partner with the best-in-class discipline consultants
  • Thin overheads

• Vision:
  • Development of quality, chiefly advanced, primary diamond deposits and generally close to current or historical diamond mines

• Best addresses:
  • Botswana: ‘The Switzerland of Africa’.
  • South Africa: under explored with strong infrastructure and history of diamond mining

• Technology:
  • Application of third generation exploration technology

• Partnerships:
  • In Botswana: Alrosa and BCL
  • Vutomi in South Africa
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