Resourcing the Olympic Dam Expansion

Rob Williams
Manager Strategy and Resourcing
BHP Billiton, Base Metals (Australia)
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Structure driven by customer needs

Petroleum

Aluminium

Base Metals

Carbon Steel Materials

Diamonds & Spec Prod

Energy Coal

Stainless Steel Materials
Base Metals CSG - A Global Footprint

- Resolution Project, Arizona
- Cerro Colorado, Chile
- Escondida, Chile
- Spence Project, Chile
- CSG Head Office, Santiago, Chile
- Antamina, Peru
- Olympic Dam, Australia
- Cannington, Australia
- Base Metals (Australia) Adelaide SA
- Marketing presence in Shanghai, Tokyo, Delhi and Seoul
- The Hague
- Base Metals Marketing, Singapore
- CSG Head Office, Santiago, Chile
Olympic Dam & The Expansion Project
Olympic Dam – Current Status

• Australia’s largest underground mine

• Current Production Capacity
  - mining up to 10 mtpa
  - copper – 200,000 tpa
  - uranium oxide – 4,500 tpa

• Mineral Resource

<table>
<thead>
<tr>
<th>Classification</th>
<th>tonnes (million)</th>
<th>Cu %</th>
<th>U308 kg/tonne</th>
<th>Au g/tonne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>680</td>
<td>1.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Indicated</td>
<td>1,360</td>
<td>1.1</td>
<td>0.4</td>
<td>0.4</td>
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<tr>
<td>Inferred</td>
<td>2,390</td>
<td>0.9</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>4,430</td>
<td>1.1</td>
<td>0.4</td>
<td>0.5</td>
</tr>
</tbody>
</table>

The information in this report that relates to Mineral Resources is based on information compiled by Stuart Hayward who is a Member of the Australian Institute of Geoscientists.
Olympic Dam - looking West
Olympic Dam – Expansion Potential

• Olympic Dam’s uranium represents about 40% of known world uranium resources in the ground
• Resource is large enough to support a significant increase in annual production
• Pre-feasibility study for options up to 500,000 tpa copper (15,000 tpa uranium)- requiring ~40 mtpa open-pit mining operation
## Phases of the expansion project

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept</td>
<td>understand what might be possible</td>
</tr>
<tr>
<td>Pre-feasibility</td>
<td>rigorously examine development alternatives and analytically select a preferred development plan</td>
</tr>
<tr>
<td>Feasibility</td>
<td>refine and optimise the single go-forward case</td>
</tr>
<tr>
<td>Execution</td>
<td>construct and commission</td>
</tr>
<tr>
<td>Operation</td>
<td>ramp-up to full scale production</td>
</tr>
</tbody>
</table>
Olympic Dam – Pre-Feasibility Work

- Ore resource delineation
- Mine planning – open pit preferred option
- Ore processing options
- Major infrastructure (water, power, rail, township expansion) in a remote and arid area
Olympic Dam – Expansion Schedule

- Pre-Feasibility tollgate – end 2007
- Feasibility tollgate – early 2009
- Execution Phase – 2009 – 2013
- Operation of Expanded Facilities – from end 2013
Olympic Dam – Government Approvals

• Environmental Impact Statement published in 2007 – to seek approvals from Federal and South Australian Governments – extensive public consultation already underway

• Indenture Agreement with South Australian Government – sets regulatory regime and provides legislative certainty to encourage long term investment – re-negotiation during 2007
Olympic Dam Expansion Summary

• Perhaps the largest Pre Feasibility plus Feasibility study undertaken in the mining industry

• Required by scale and complexity of proposed expansion

• Plans need to be well developed and understood before seeking final BHP Billiton and government approvals – includes investment evaluation and customer commitment.

• Successful execution will transform this world class orebody into a world class mining and mineral processing operation
Australian Mining Industry Labour Market Outlook

- Industry needs 70,000 more people in 2015 than it has now
- Largest shortages will be in trades and semi skilled personnel
- Projected economy wide labour force growth in these categories will be slowest.
- Challenge of attracting people to skills shortage professional areas is “strategically critical”
- Additional demand will be focussed:
  - WA 42,000
  - QLD 15,000
  - NSW 5,000
  - SA 5,000
- Fastest growth projected between 2006 and 2010.
- Shortages will continue to worsen

Resourcing in the Study Context

• Variables in project evaluation
  – Initial project expenditure estimate
  – Ongoing revenue forecasts
  – Operating cost estimates

<table>
<thead>
<tr>
<th>Project Capital Cost</th>
<th>Contractor’s Labour Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Cost</td>
<td>Higher Project &amp; Operating Wage Costs</td>
</tr>
<tr>
<td>Operating Revenue</td>
<td>Higher Project &amp; Operating Recruitment &amp; Training Costs</td>
</tr>
<tr>
<td>Steeper Learning Curve</td>
<td></td>
</tr>
</tbody>
</table>

Shortage of Skilled Labour

- Higher direct cost of labour
- Higher indirect cost of labour
- Lower average productivity
**Owner’s Task in three stages**

1. **Recruit a team to conduct the studies**
   - Professionals and support staff (~250)
   - *Approximately 50% complete with majority complete by Dec 2006*

2. **Recruit a workforce to complete mine development prestrip**
   - Operators (~1,000) and maintainers (~700) and their supervision
   - Commence ramp-up in 2008

3. **Recruit a workforce to operate and maintain expanded processing plant**
   - Operators and maintainers and their supervision (~1,500)
   - Commence long lead time training as early as 2009
   - Commence commissioning 2014
2\textsuperscript{nd} Task - Workforce Planning for the Operations Ramp-Up

- **Estimate Demand**
  1. Identify all facilities and operations
  2. Identify the drivers for labour in each
  3. Agree organisation design parameters
  4. Design organisation structures
  5. Aggregate demand by useful descriptors

- **Test Supply**
  - Review literature
  - Learn from the experience of others
  - Expressions of interest by geographic area
  - Estimate labour & skill gaps
Contractors’ Tasks

• Challenge
  – Recruit workforces to fabricate, build and install the infrastructure and processing facilities
  – Trades, semi-skilled and unskilled labour from 2008 to 2013

• Estimate Demand
  – Estimates of requirements will emerge from engineering studies currently underway
  – Availability of fabrication and construction labour could affect scheduling or construction method
  – Project pipeline will affect availability (majority of this workforce not required until 2010 – 2013)
Where to from here?

• Clearly we are facing a skills shortage
• It is likely that we also face a labour shortage
• Response must be to grow the supply or bid up the price
  – As price increases projects are stopped (WA)
• Training and education are essential for medium term growth
  – BHP Billiton will use its existing operations to commence training for its requirements particularly apprentices for trades
  – BHP Billiton will integrate training plans with operational development plans as a part of the pre-feasibility study
  – BHP Billiton will invest in scholarships, bursaries, vacation programs and graduate schemes to attract graduate mining professionals
• Response in Summary
  – Training
  – Education
  – Marketing