

# Base Metals CSG Briefing

4 May 2006 - London and Sydney



# Introduction

- Welcome
- Team Presenting:
  - London
    - Diego Hernandez – President BHP Billiton Base Metals
    - Glenn Kellow – VP and CFO
    - John Crofts – Base Metals Marketing Director
  - Sydney
    - Roger Higgins – VP and COO Australia
- Presentation (approximately 60 minutes) followed by Q&A

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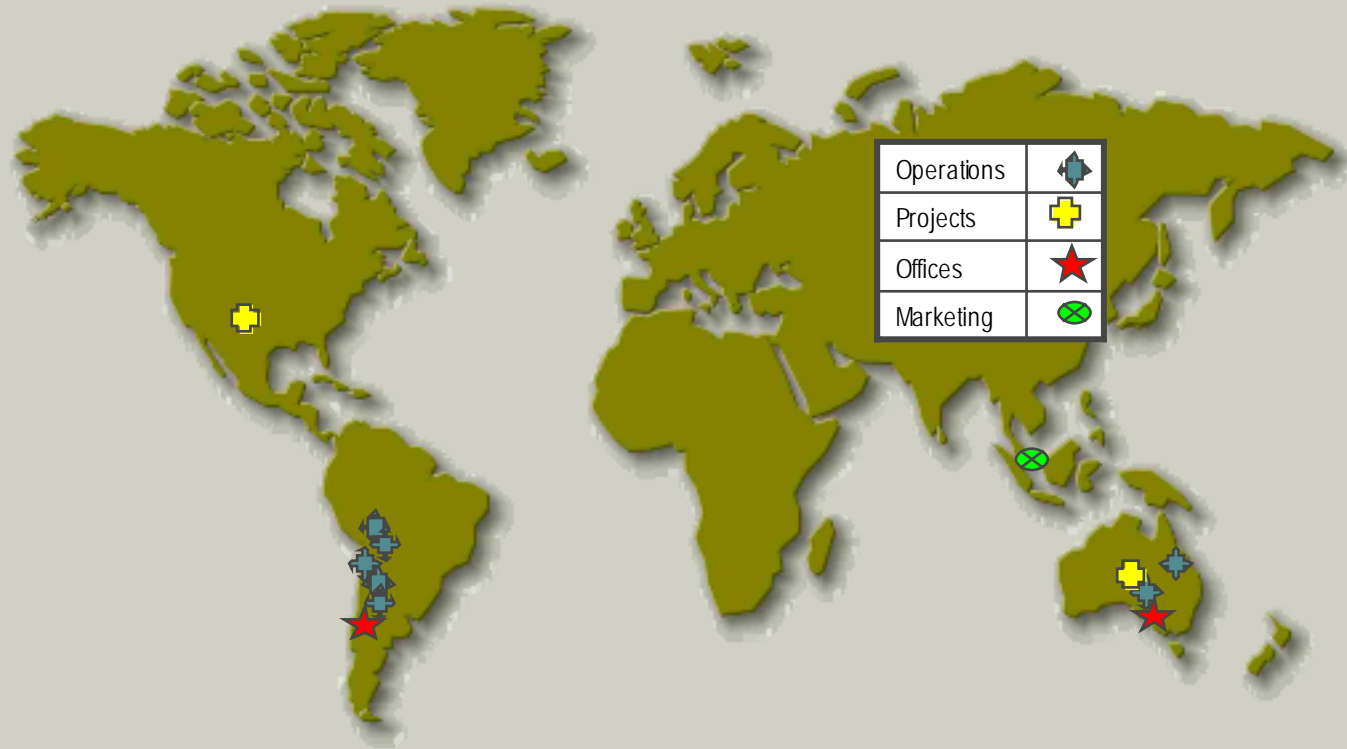
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# Base Metal's Global Footprint – Some things have changed

Antamina 33.75%



Tintaya



Cerro Colorado



Spence



Escondida 57.5%



Olympic Dam



Cannington



# Vision - Base Metals in 2010

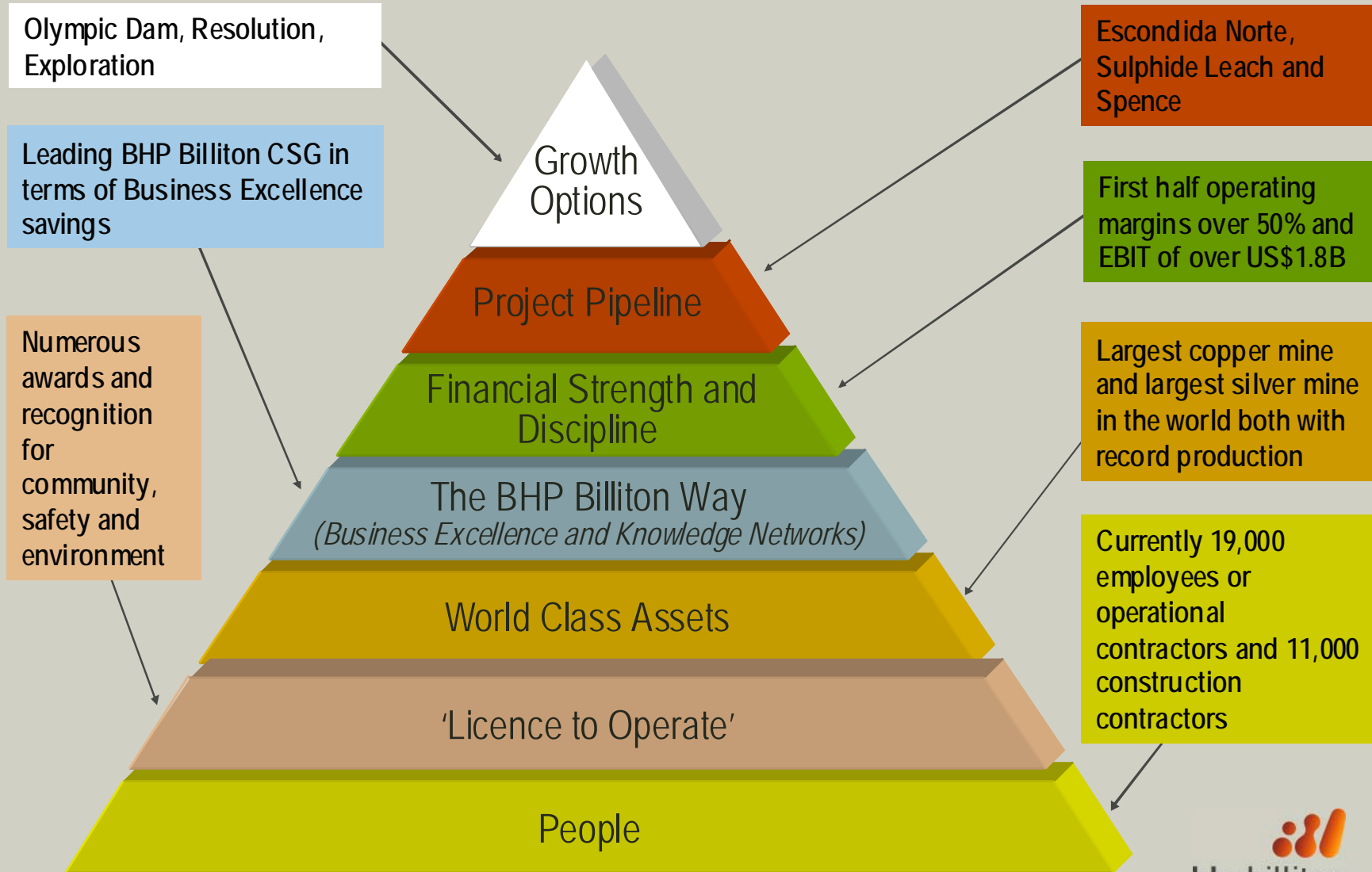
Creating value and sustainability for our stakeholders through being the *pre-eminent* base metals supplier.

*Pre-eminent* means:

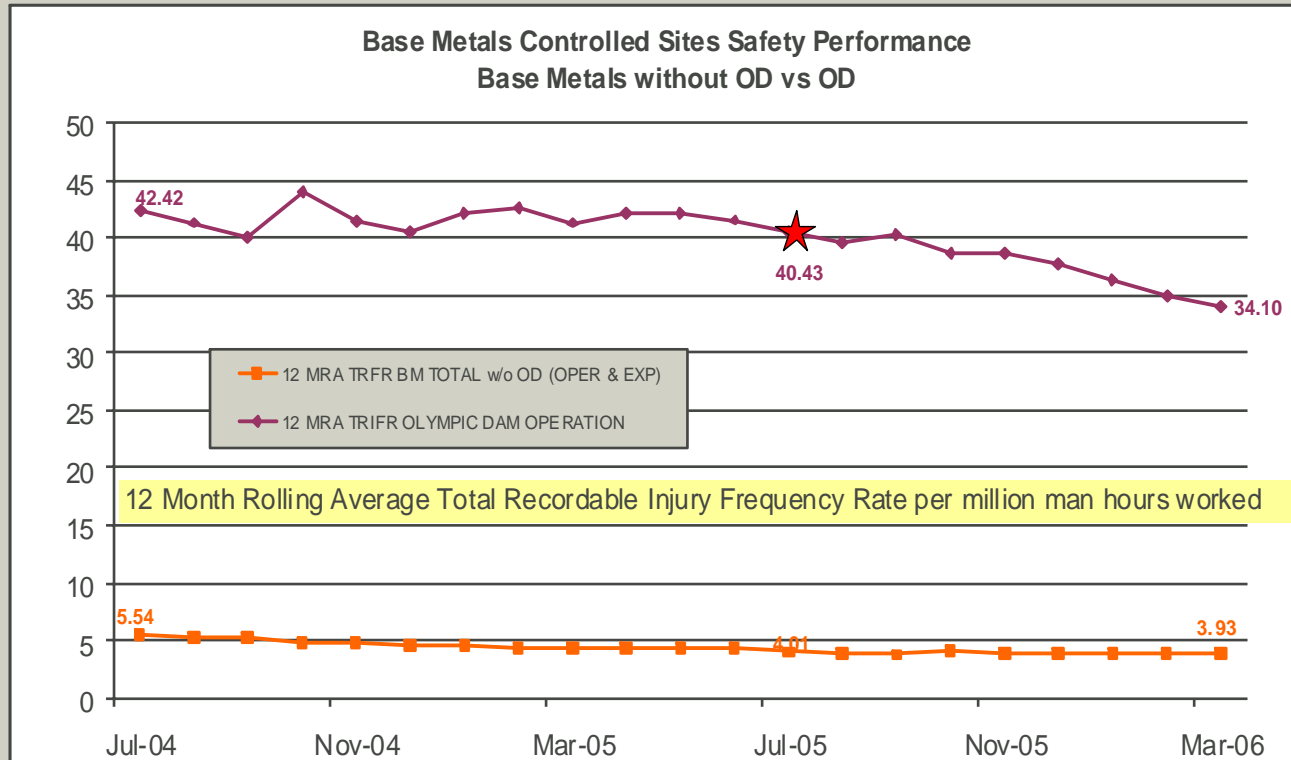
- Zero Harm embedded, an industry leading HSEC performance
- Sustained superior financial returns compared to our competitors
- A great workforce
- World-class operating practices in cost, production and marketing
- New technologies that provide a competitive advantage
- A portfolio of high-quality, long-life mining assets with a global pipeline of exploration targets and new projects under development
- The respect and cooperation of our customers, business partners and communities

*Reliable, credible, innovative, opportunistic, transparent*

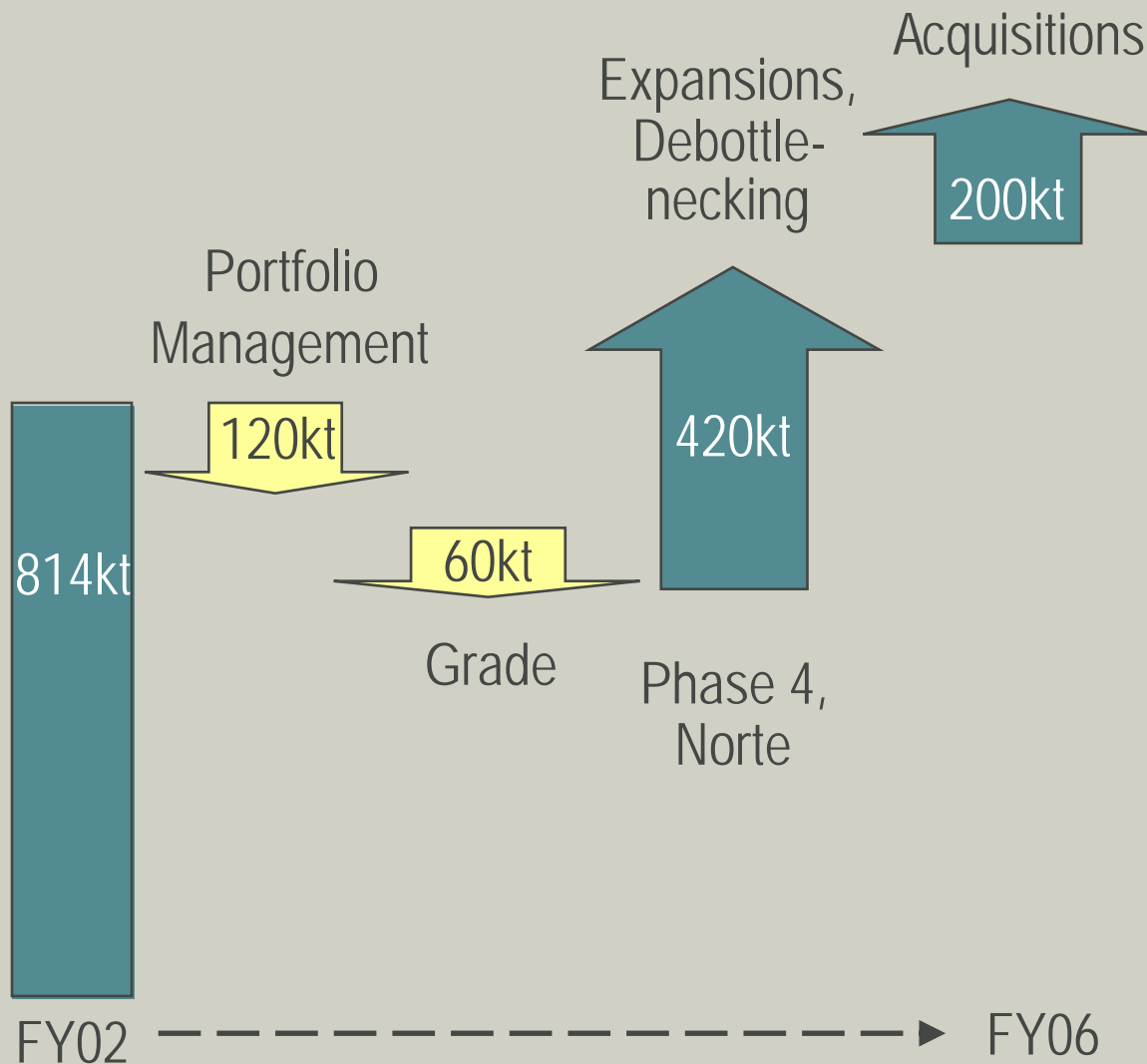
# Strategic Focus



# Sustainability



# Production Growth



## FY07 Start-Up:

- Sulphide Leach - 180kt (BHP Billiton share 57.5%)
- Spence - 200kt +

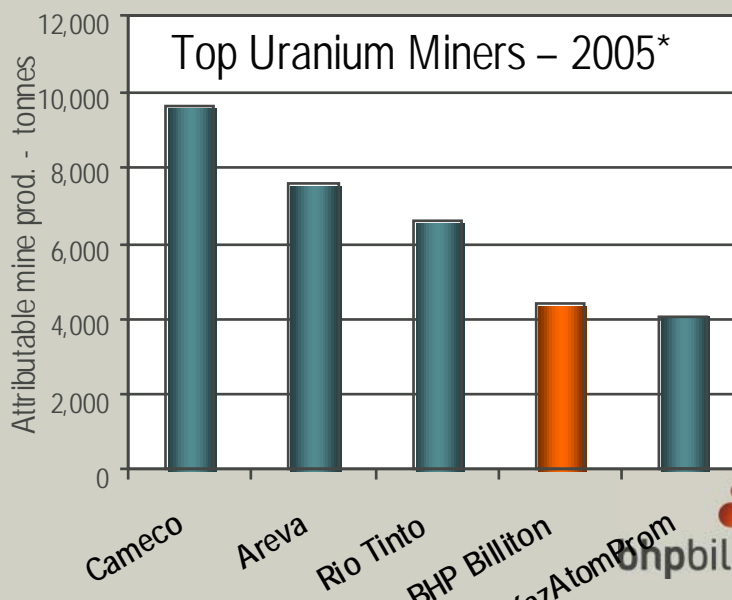
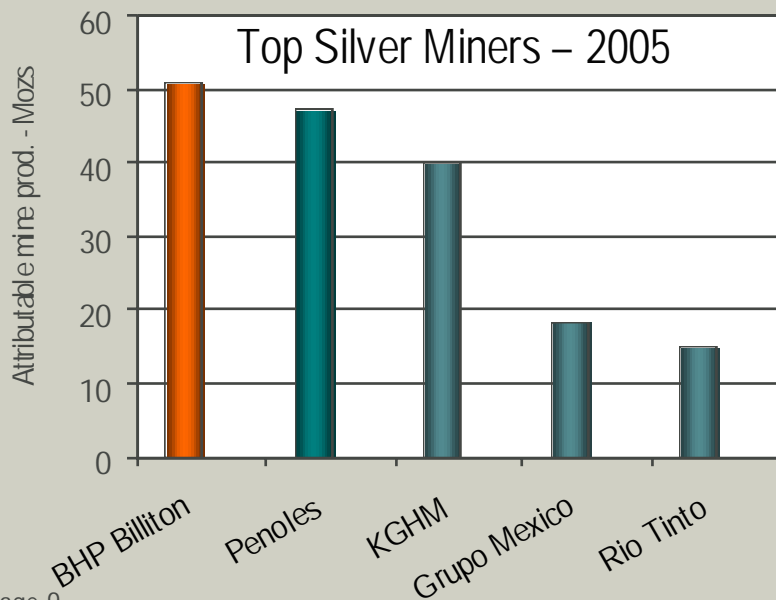
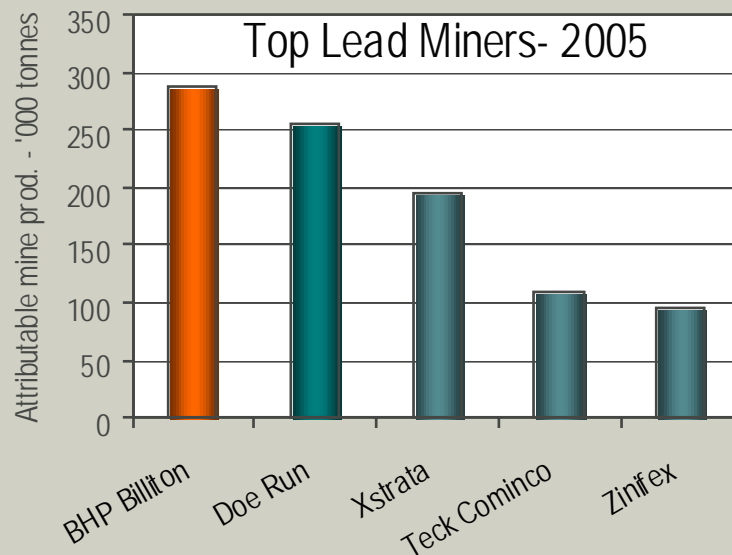
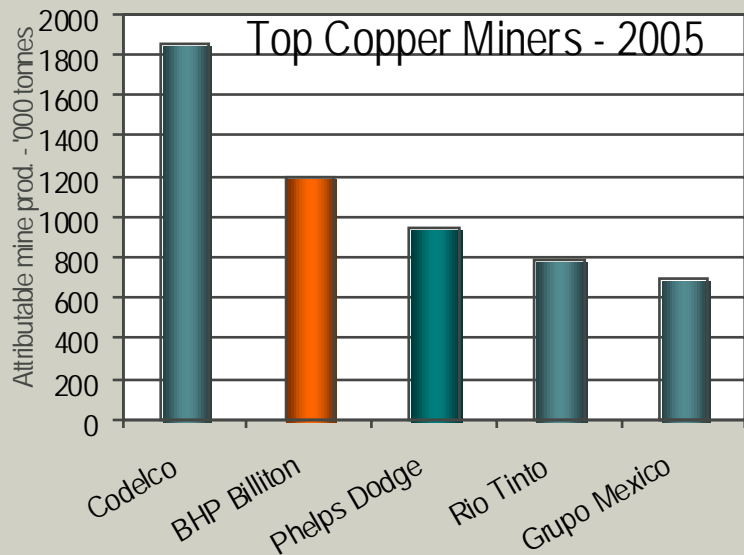
## Pipeline:

- OD Expansion
- Resolution

FY07+



# Calendar 2005 ranking in base metals mine production



# Key Issues

- **Market**

- Demand remains healthy while stocks are at an all time low.
- Particularly susceptible to supply disruptions
- Prices in uncharted waters
- TC/RC softening as the concentrate market moves into deficit

- **Production**

- Escondida delivering exceptional returns
- Cannington reduction in production through to the end of Calendar 2006 due to intensive ground support program
- Olympic Dam focusing on lifting mine production in the short term while understanding the full potential of this world class resource

- **People and costs**

- Different parts of the world are facing large cost pressures and scarcity of suitably qualified personnel. This is impact both the current industry cost base and the viability of new projects

# BHP Billiton Base Metals

- Delivered production growth at the right time
- The only major copper company bringing on major new copper capacity in 2006
- Continue to develop long term growth options
- A portfolio that can perform in a lower price environment as well as delivering exceptional returns in a high price environment

# Finance



Glenn Kellow



## Underlying EBIT (\$USM)

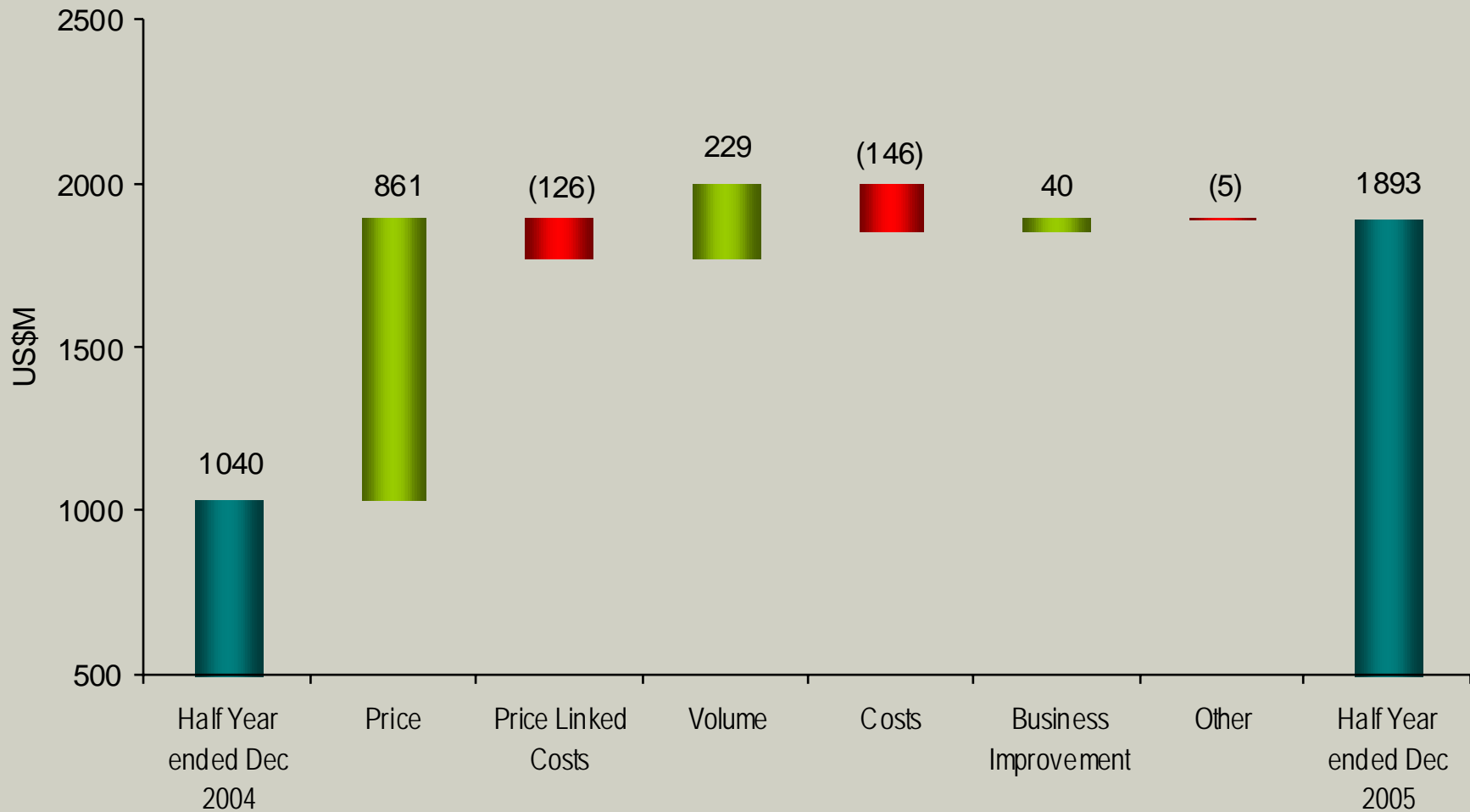
Half Year Ended December	2005	2004	% Var.
Escondida	1,157	683	69%
Antamina	252	141	79%
Cerro Colorado	64	63	2%
Tintaya	120	61	97%
Olympic Dam	160	0	
Cannington	190	153	24%
Exploration/Business Develop.	(27)	(16)	69%
Divisional Activities	<u>(32)</u>	<u>(34)</u>	<u>(6)%</u>
<b>Total from Group Production</b>	<b>1,884</b>	<b>1,051</b>	<b>79%</b>
Third Party Products	<u>9</u>	<u>(11)</u>	
<b>Total – Underlying Result</b>	<b>1,893</b>	<b>1,040</b>	<b>82%</b>

# Underlying EBIT sensitivities

Annualized Impact	\$USM
1 cent change in copper price / lb.	33
10 cent change in the Silver price / ounce	4
1 cent change in the Zinc price / lb.	3
1 cent change in the Lead price / lb.	4
10 dollar change in the Gold price/ ounce	2
1 cent change in the \$US/\$A exchange	7
10 peso change in the Chilean Peso rate	6

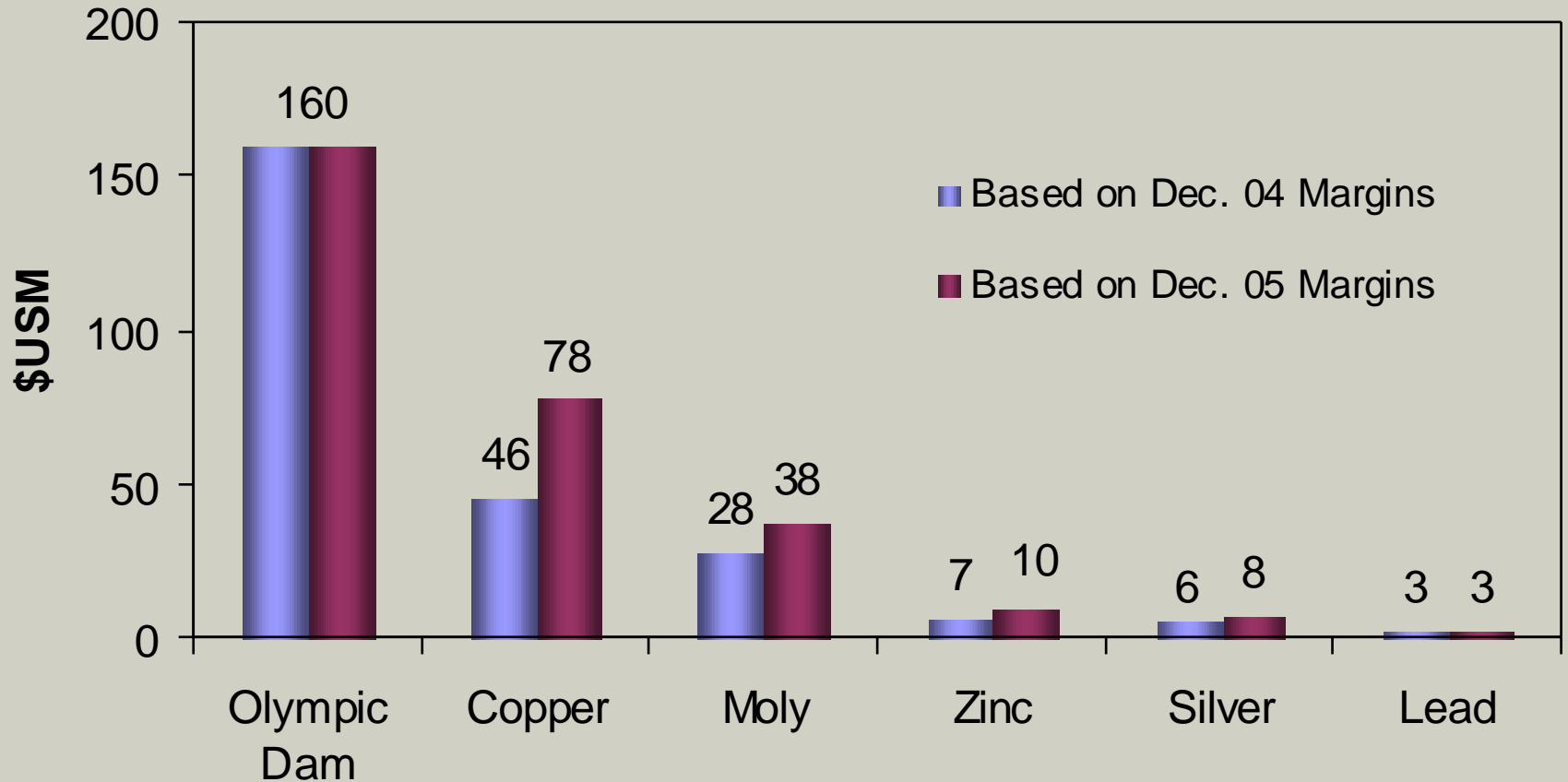
# Underlying EBIT analysis

## Half Year ended Dec 05 vs half year ended Dec 04



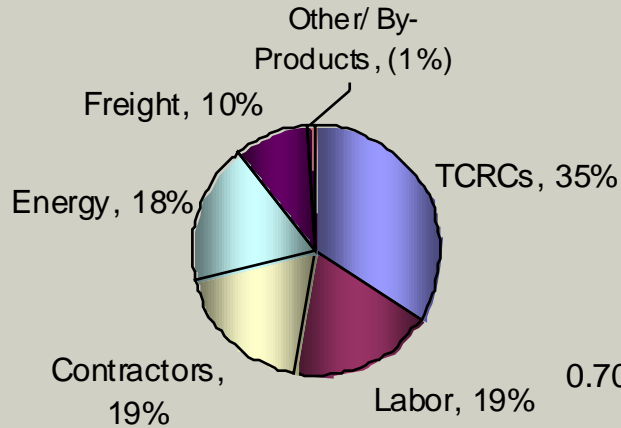
# Impact of Volume Changes on EBIT

## Half year ended Dec 05 vs half year ended Dec 04

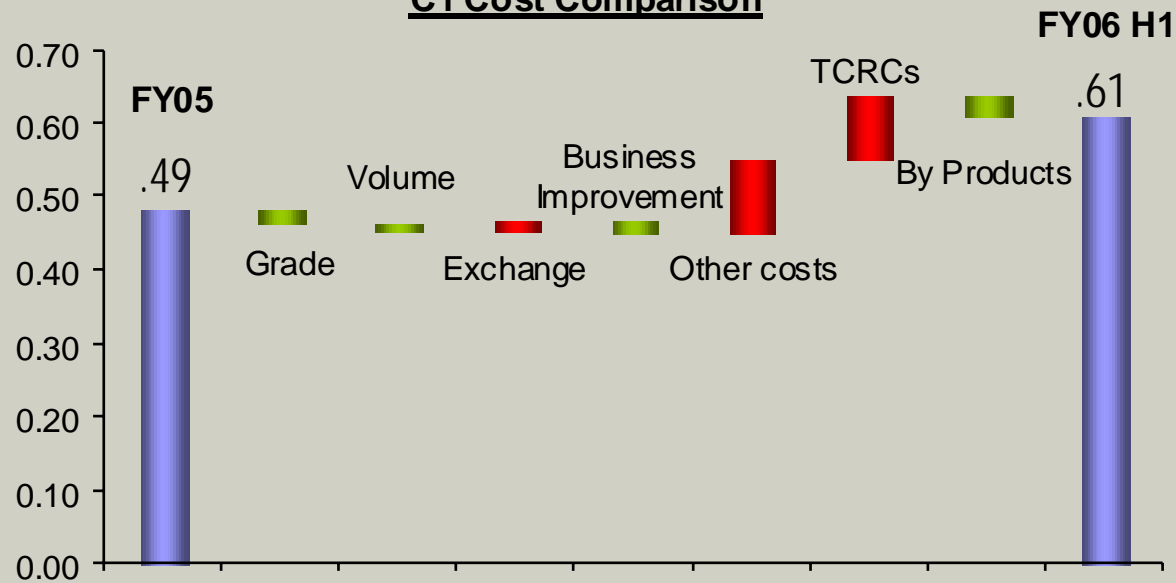


# C1 Copper Cash Costs per Pound

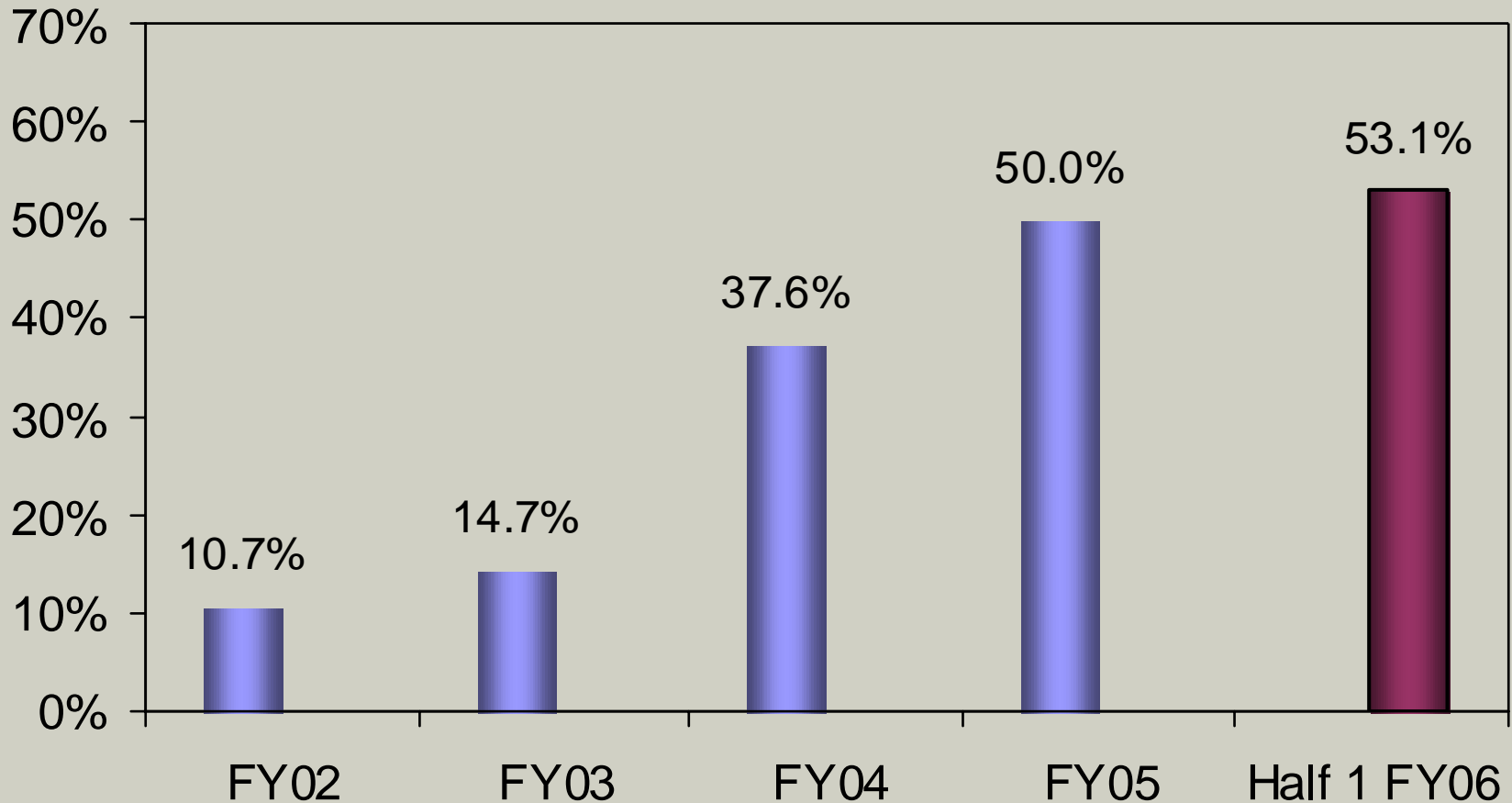
H1 FY06 C1 Costs



C1 Cost Comparison



# Underlying EBIT Margins



\* Excluding Third Party Trading

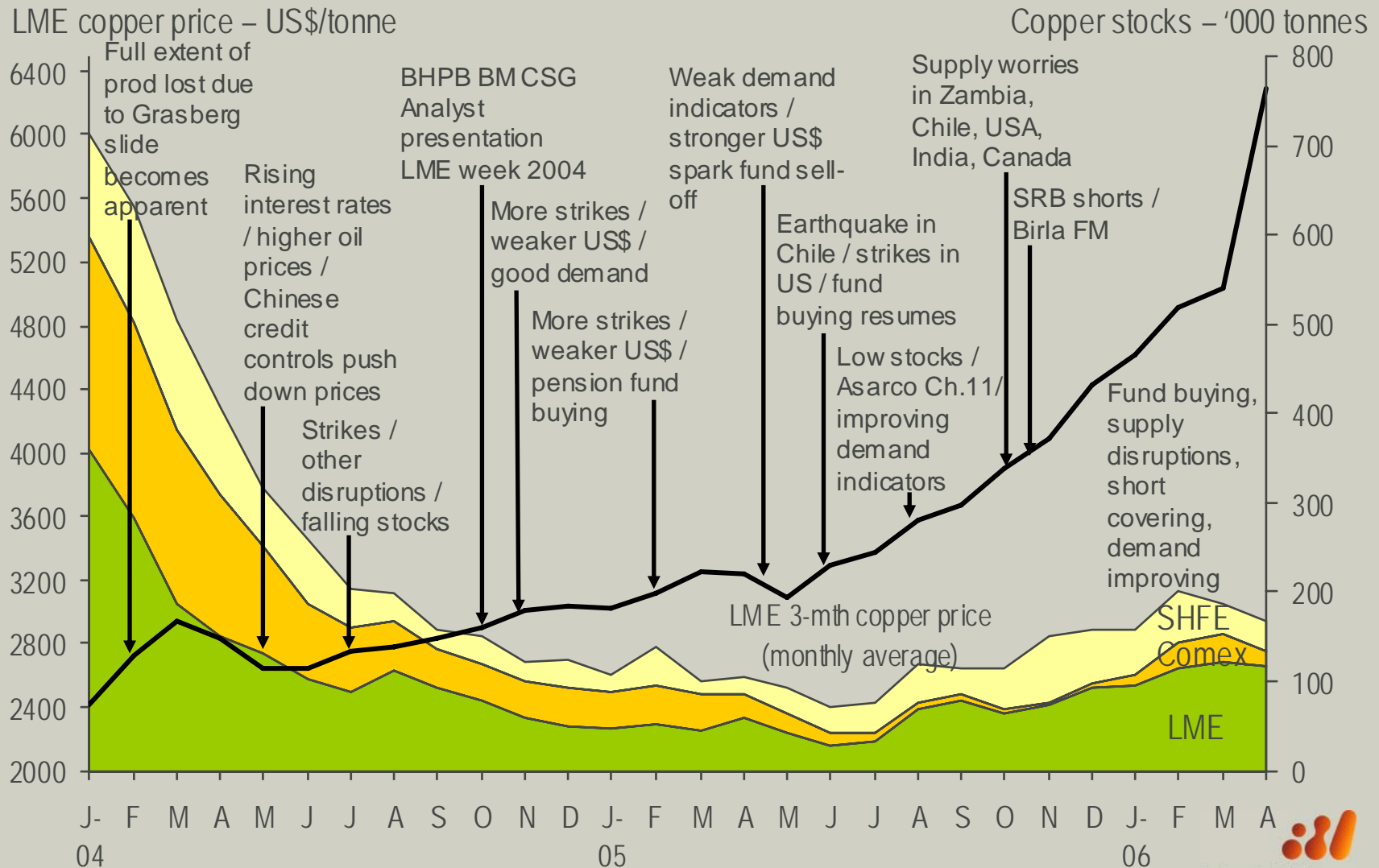
# Marketing



John Crofts



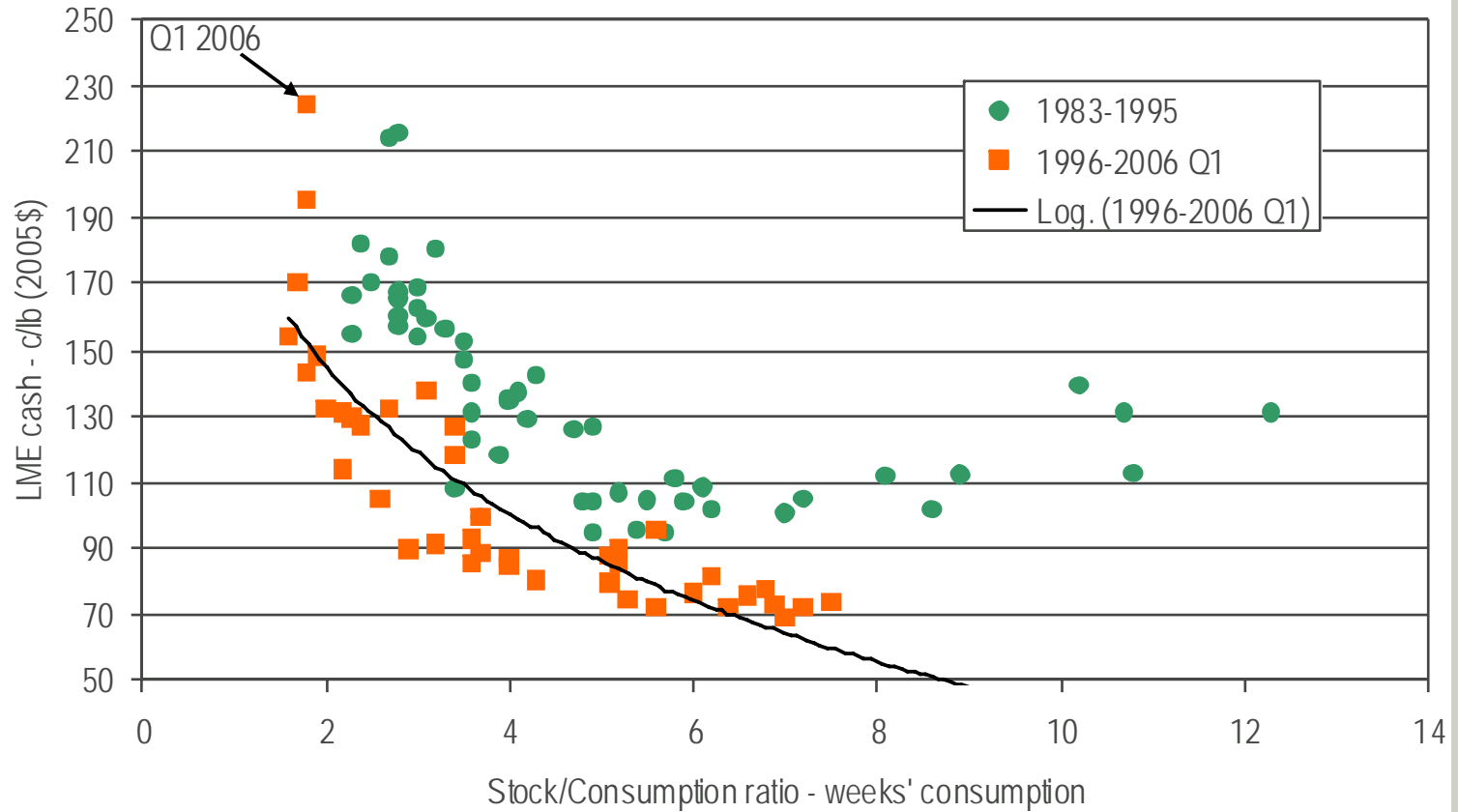
# Supply disruptions have been a constant feature of this rally



Data: LME, Comex, SHFE

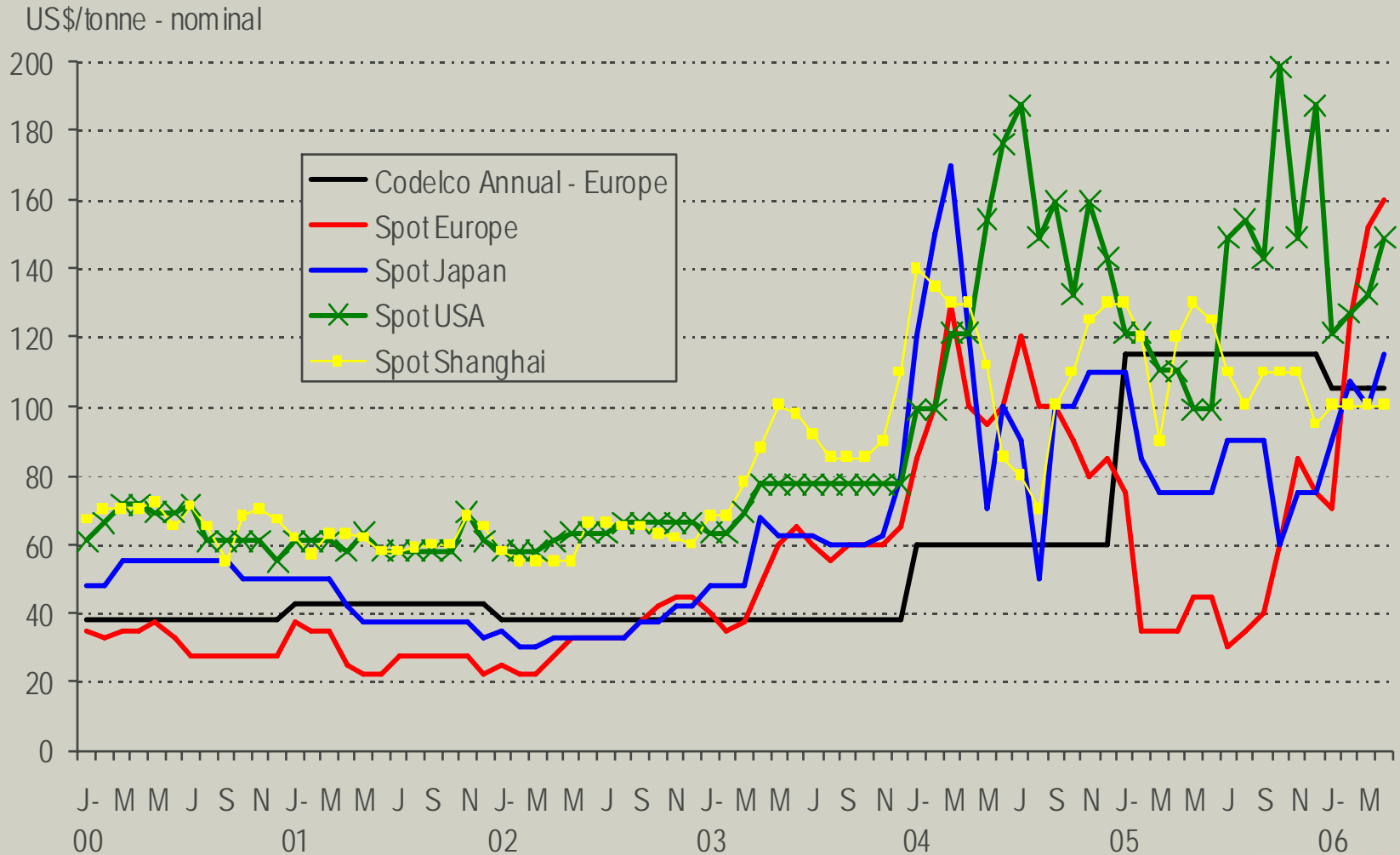


# Very low stock levels mean almost any price can be "justified"



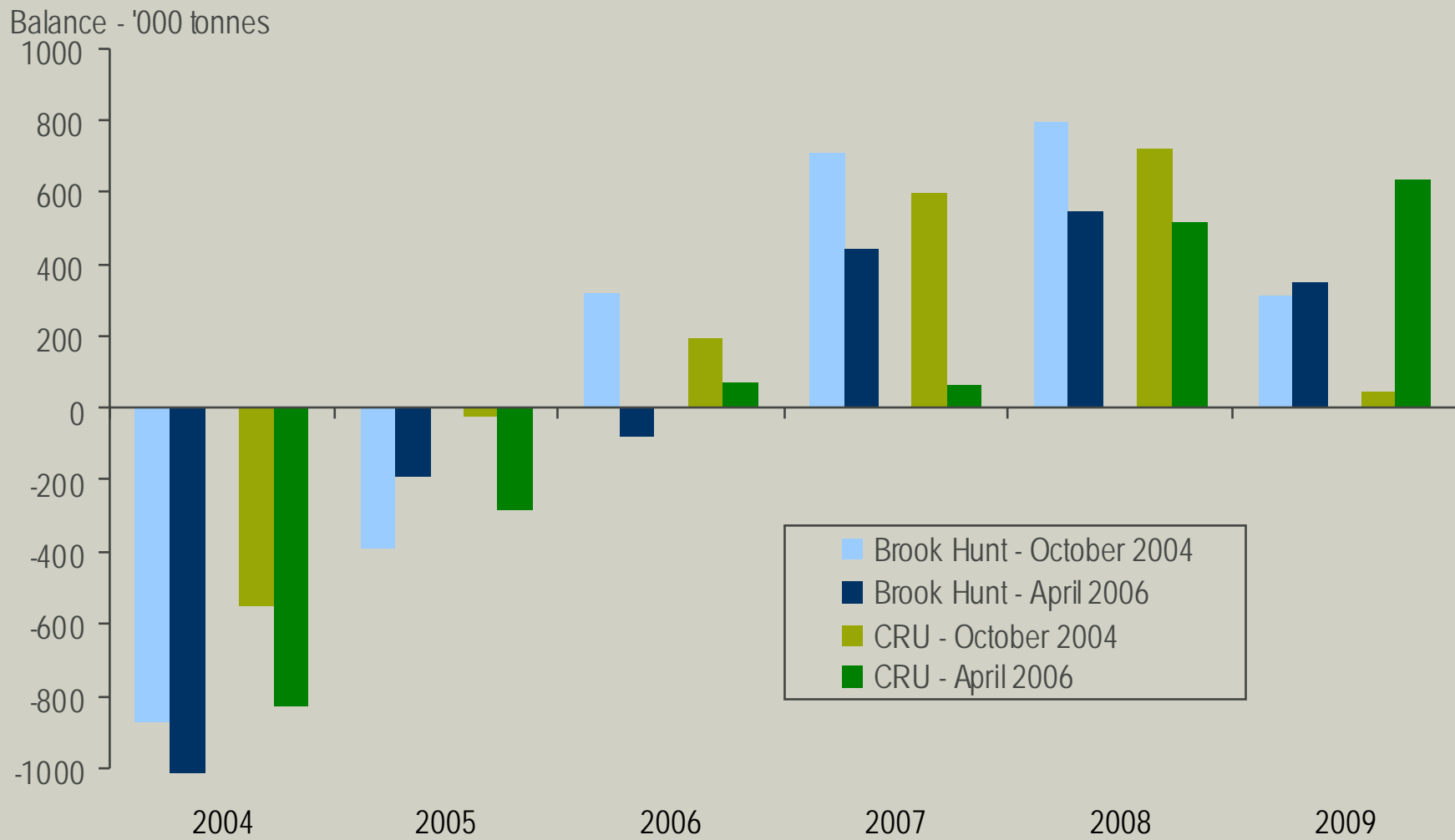
Data: CRU

# Premia levels move up as market tightens



Data: CRU, BH

# Since the last briefing in October 2004, forecast market surpluses for refined copper have been greatly reduced in near term

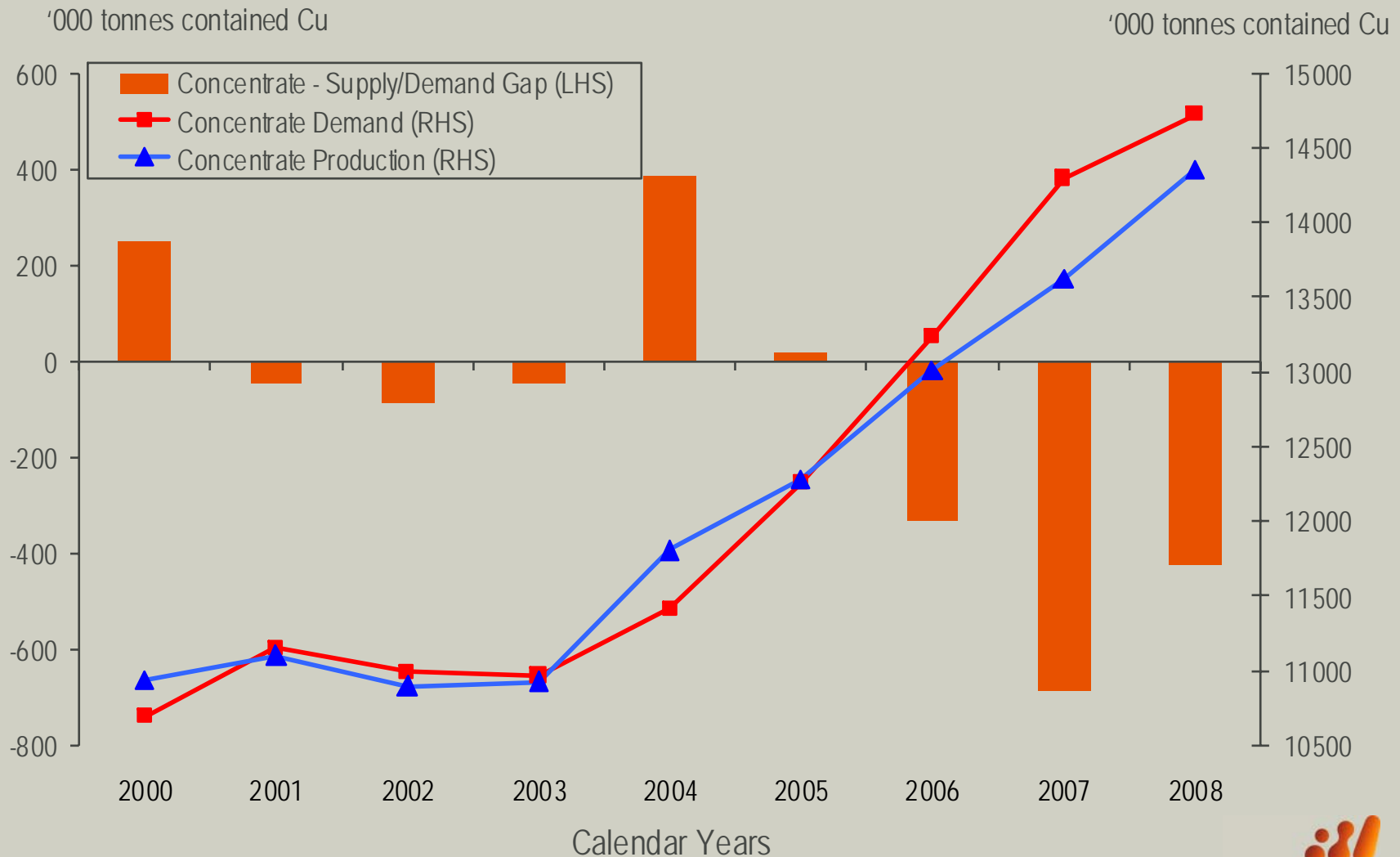


Data: CRU, BH

## Refined Copper market - Summary

- Market remained in deficit in 2005 due to extraordinary levels of disruption
- Disruptions continue to be high and look set to remain so:
  - Labour negotiations
  - More supply from remoter and more challenging regions
  - Equipment and personnel availability very tight
- From such low levels it will take some time to rebuild stock to normal levels, once the market returns to surplus
- Short term indicators and our current view of cathode and concentrate markets remain very positive
- The large net inflows of fund money have also added to price rises but it is difficult to predict when this will end

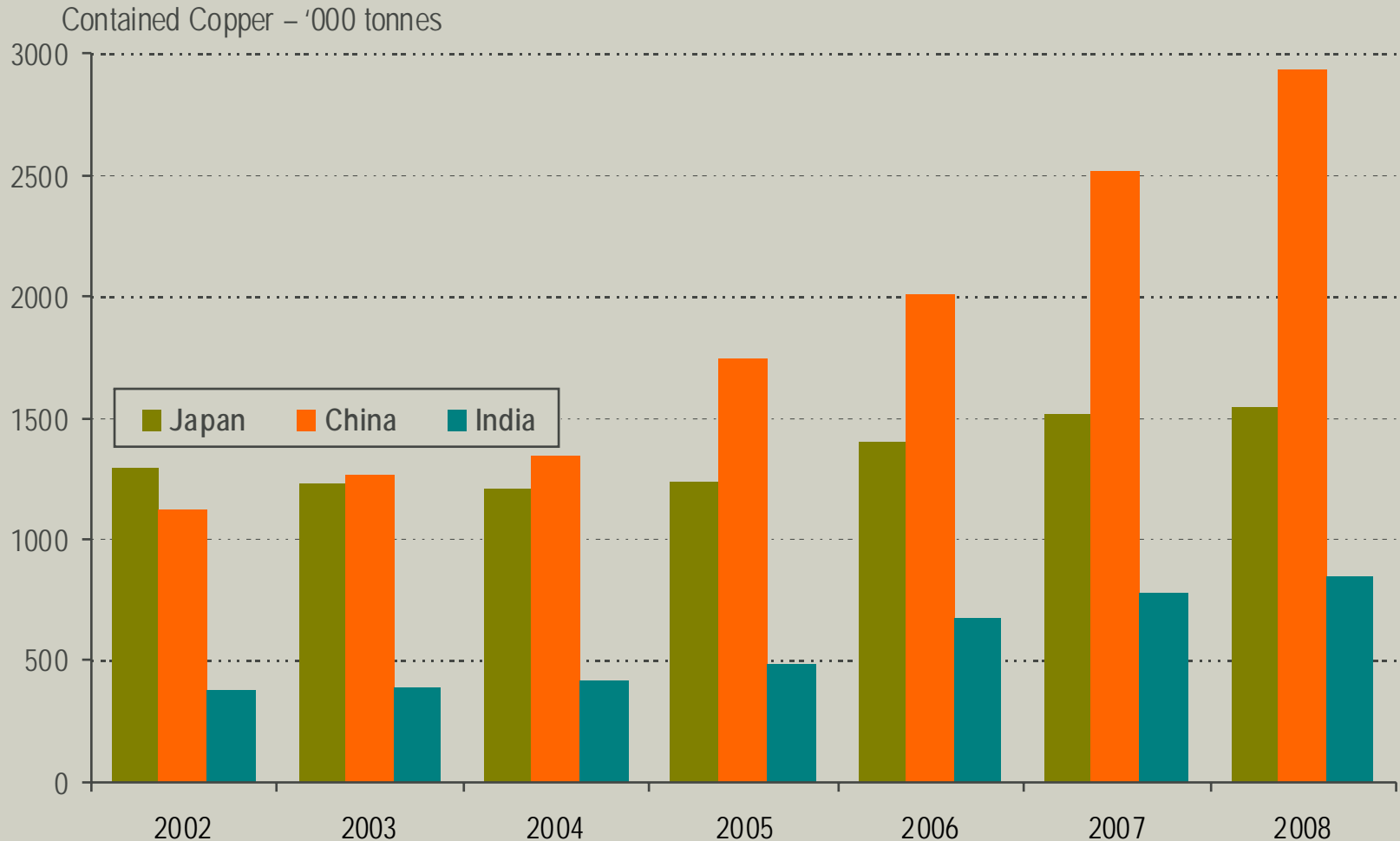
# Copper concentrate market forecasts show large gaps between supply and demand from CY2006



Source: BHP Billiton

Note: Forecast shows the unadjusted gap between supply and demand of concentrates.

# Rapid growth of smelter output from concentrates in China and India

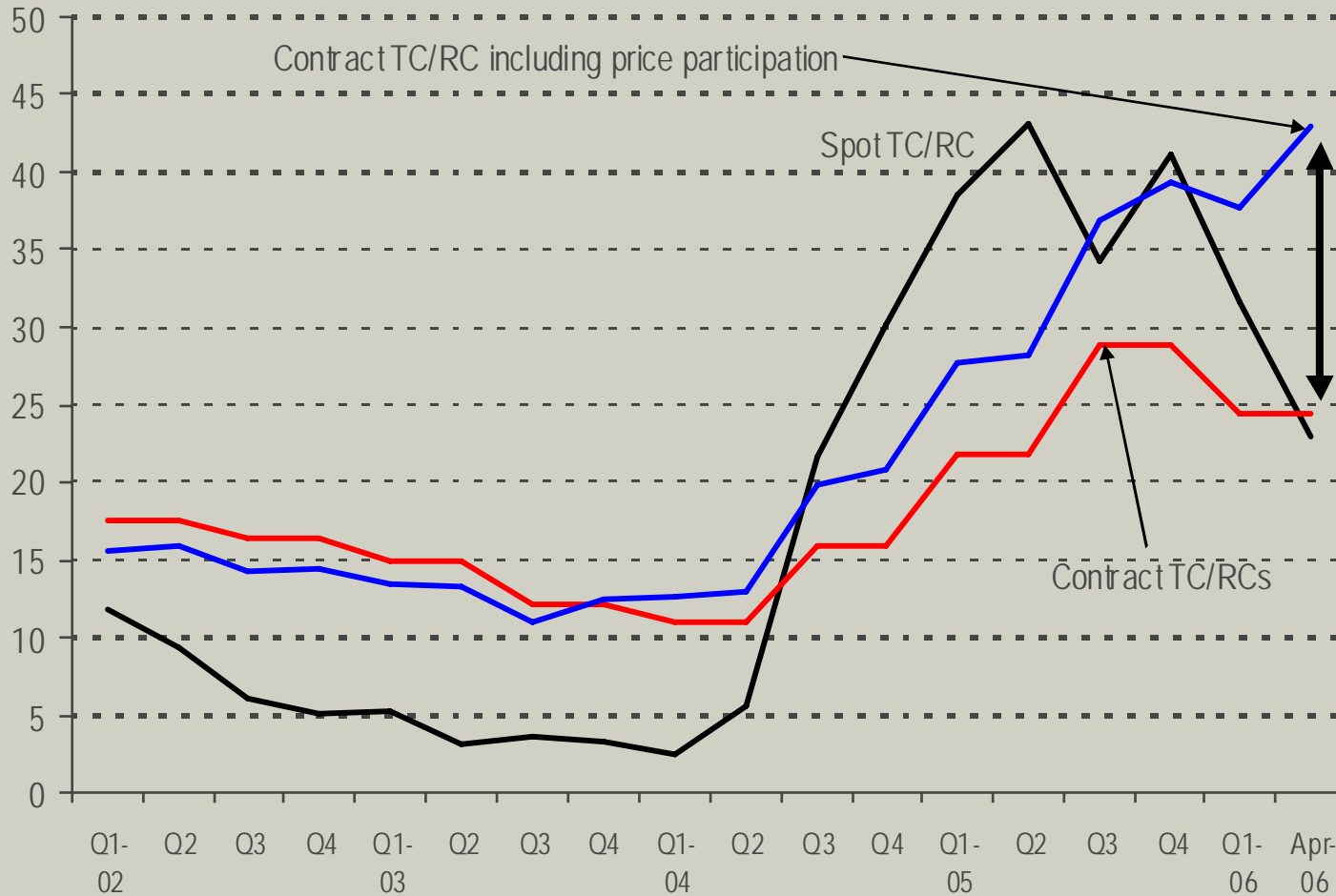


Data: Brook Hunt

Note: Smelter production from concentrates, does not include secondaries

# Treatment and refining charges

TC/RC – Nominal Cents/lb



Price participation has raised processing charges for long term contracts, just as spot market is tightening

Note: Contract terms show annual and mid-year settlement.

# Copper concentrates market - Summary

- Deficit market looks set to persist
- China is taking over from Japan as the largest market
- Treatment and refining charges look set to move lower
- Smelter consolidation / rationalisation?
- Overall processing charges including price participation ought to reflect supply / demand balance for concentrates NOT refined copper

# Operations

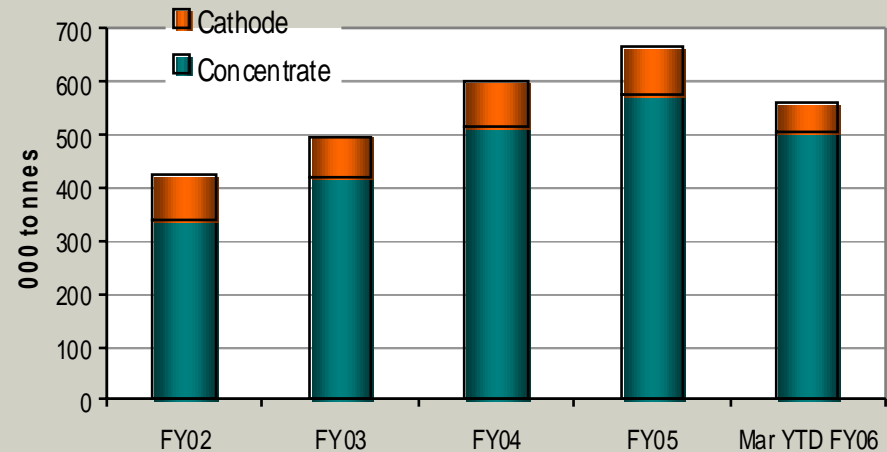


Diego Hernandez and Roger Higgins

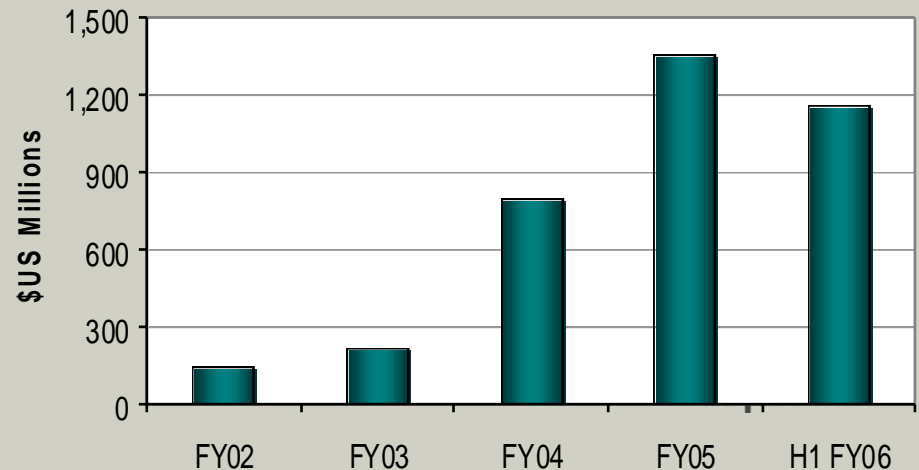
# Escondida (BHP Billiton 57.5%) – Running at Full Steam

- Remains the largest single copper mine in the world
- EBIT in H1 FY2006 of US\$1.157B (BHP Billiton Share) based on an average LME price of US\$1.84/lb
- Unmatched flexibility
  - Total of 1 million tonnes per day moved
  - Two pits feeding two concentrators approximately 240ktpd of ore
  - With commissioning of the Sulphide Leach project in June, two leaching operations; oxide heap leach and bacterial assisted sulphide dump leach pads
- Tailings issues resolved following the commissioning of the Laguna Seca Plant
- Commissioning of a desalination plant as part of the Sulphide leach project to deliver 500 l/s of desalinated sea water

Escondida Copper Production (BHP Billiton Share)



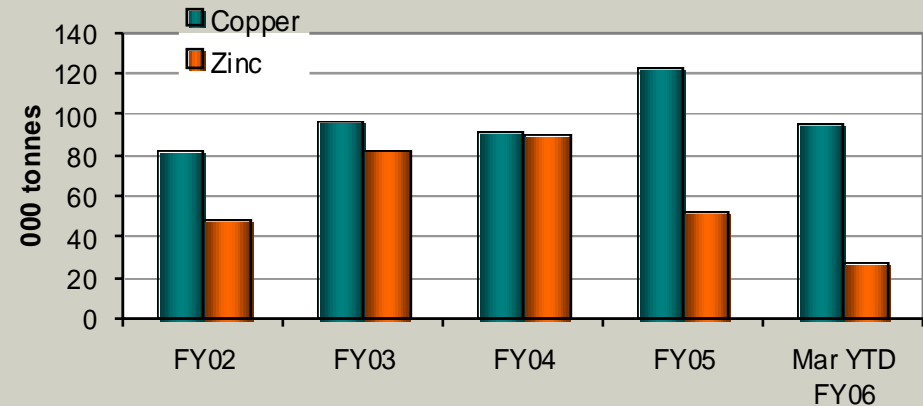
Escondida Underlying EBIT (BHP Billiton Share)



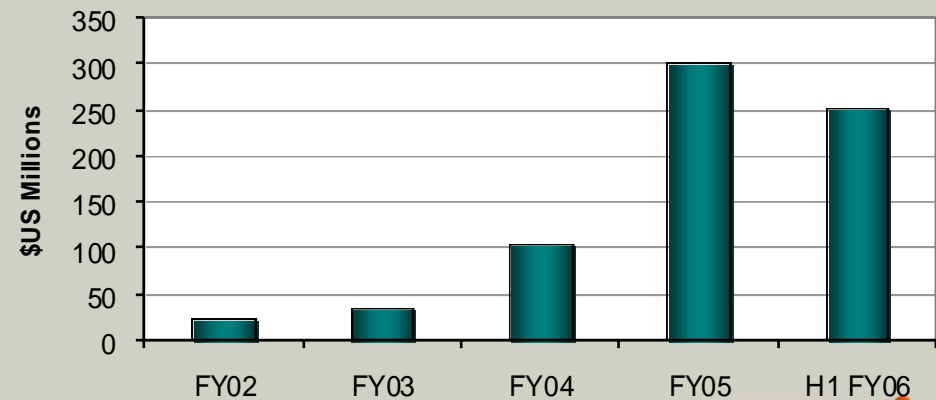
# Antamina (BHP Billiton 33.75%) – A Case of Continuous Improvement

- Completed Molybdenum plant upgrade, Moly recovery has improved from 45% range to 65% range. Mo production has improved from 7.9 Mlbs CY 2004 to 14.8 Mlbs CY 2005
- Revenue from Molybdenum has improved from \$56.5m CY 2004 to \$409.5M in CY 2005. (100%)
- Copper recovery improvement from; 87.3% '04 to 90.3% '05
- Zinc recovery improvement from Cu-Zn ores from 73.8% '04 to 82.7% '05

Antamina Production



Antamina Underlying EBIT (BHP Billiton share)

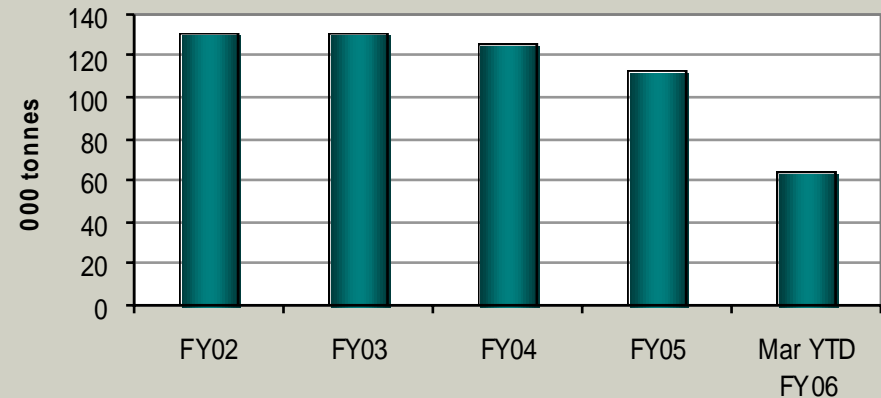


# Cerro Colorado – Recovery from the Earthquake

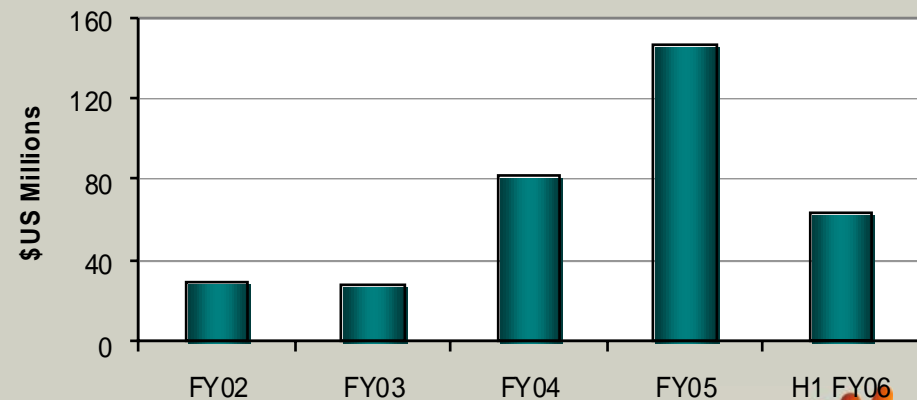
- Production returned to pre-earthquake levels during January 2006, as projected, 10,000 t/month.
- Ore crushing and stacking operating at record levels, exceeding design and plan previous 60 days.
- Work continues evaluating the extent of a large hypogene resource at Cerro Colorado.
  - Drilling and geological evaluation
  - Metallurgical testwork
  - Development options



Cerro Colorado Copper Production



Cerro Colorado EBIT

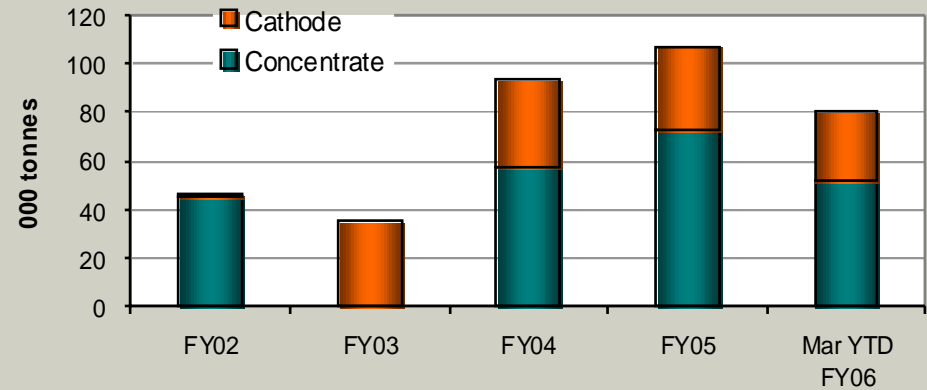


# Tintaya

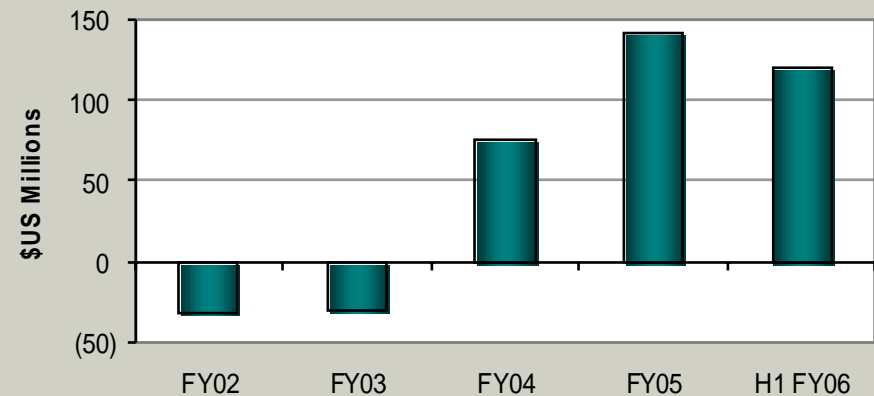
- Currently negotiating with interested parties for the potential sale of Tintaya thus no detailed discussion other than to point out



Tintaya Copper Production



Tintaya EBIT



# Base Metals Australia

Roger Higgins



# Base Metals Australia

Base Metals Australia was established following the acquisition of Olympic Dam

- Regional Office located in Adelaide replacing activities in WMC Melbourne and Adelaide offices. Sharing the same building as BHP Billiton Shared Services and enjoying synergies
- Responsible for :
  - Olympic Dam Operations
  - Cannington
  - Olympic Dam Expansion

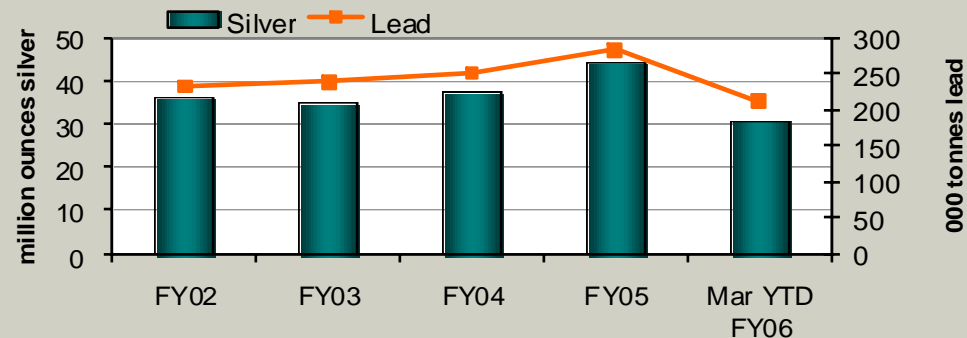
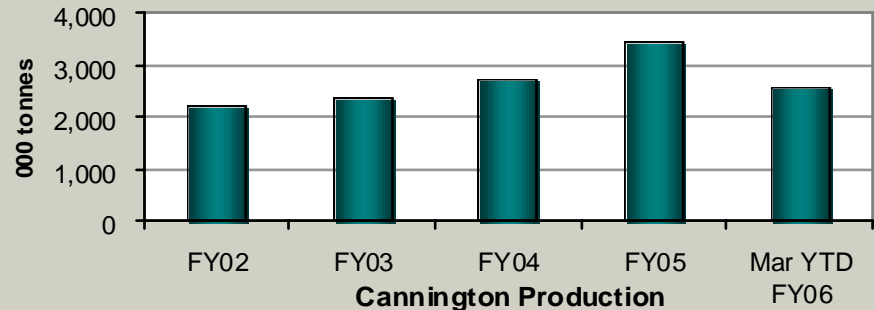
Integration of Olympic Dam into BHP Billiton has been completed

- New site management team
- Site fully integrated within BHP Billiton systems and networks

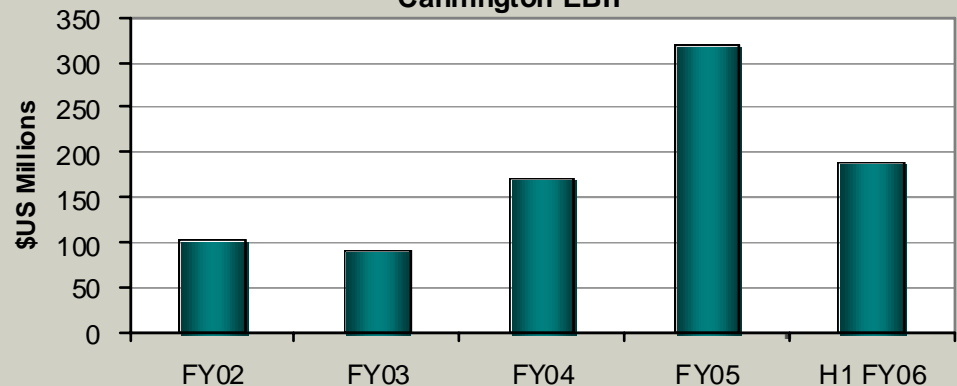
# Cannington

- FY 2005 was a production record in terms of tonnes mined.
- FY2006 YTD at similar level of mine production
- Record EBIT in H1 FY2006 of US\$190m based on a then year to date silver price of US\$7.56/oz
- Production will be impacted over the remainder of FY2006 and H1 2007 due to accelerated ground support program
- The mine will be better positioned to maintain production over 3 Mtpa and thus assist to offset natural grade decline

Cannington Tonnes Mined



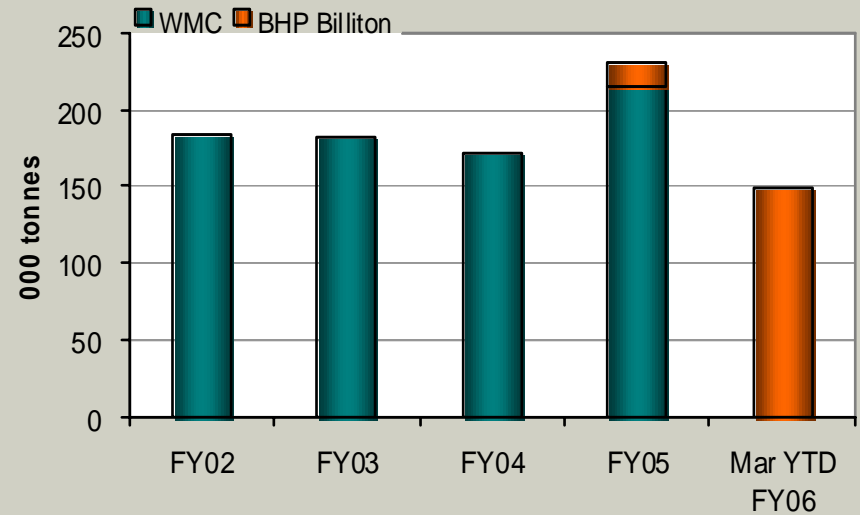
Cannington EBIT



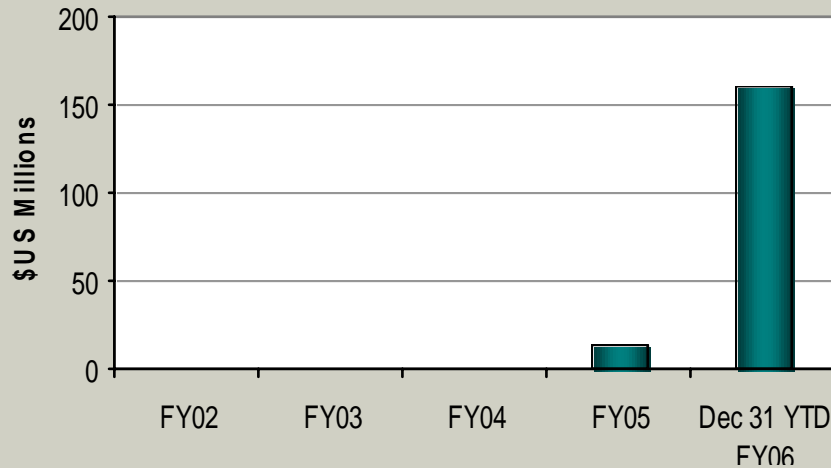
# Olympic Dam



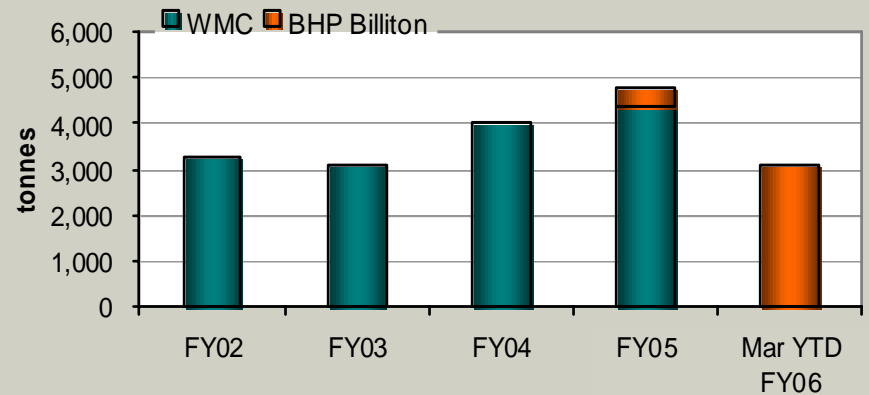
### Olympic Dam Copper Production



### Olympic Dam EBIT (BHP Billiton)



### Olympic Dam UOC Production



# Olympic Dam

- Mine Production

- The mine is the critical path constraining production before a major expansion
- Developed and Drilled stocks were run down in late 2004 and the first half of calendar 2005
- Constraints include development of production areas and avoiding ore better mined via open cut
- Sufficient equipment in place, issue remains one of coordination and scheduling
- Six sigma project discipline introduced to optimise resources and steadily increase capacity
- Aiming for 9.75 Mt in FY2007

# Olympic Dam

- Processing plant
  - Key challenge is the uranium leaching circuit – equipment, maintenance availability, silica and chlorite in ore impacting recoveries:
    - Ongoing rebuild of leach tanks using more appropriate materials
    - Re-assaying for chlorite levels to predict/blend ore types
    - Utilising process capability by treating stockpiled material
- Smelter running well
  - Excess capacity - treating 3rd party concentrates on an opportunistic basis
  - 16-day maintenance shut scheduled for September 2006
- Township
  - Housing – commenced development of 170 land and house units and 160 new camp rooms
- WMC fixed price below US\$20/lb for majority of uranium production through FY2010

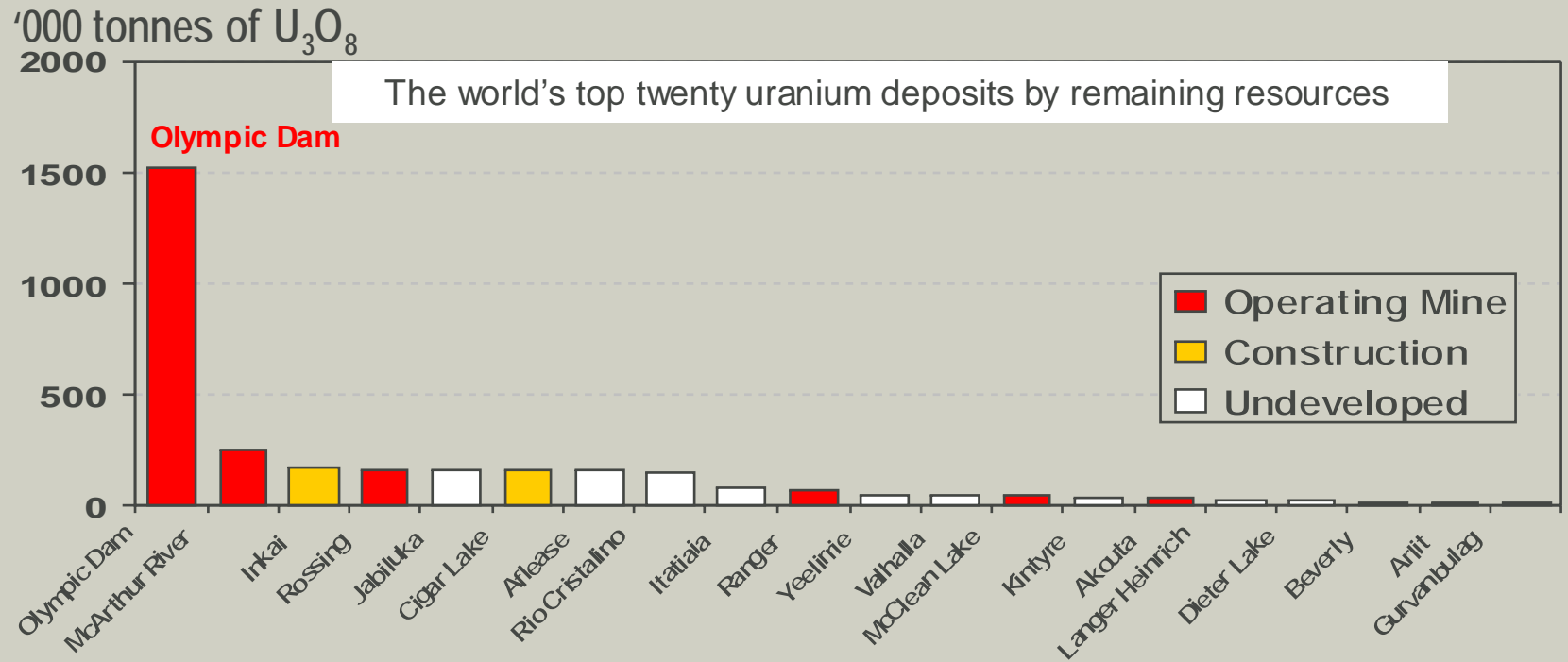
# Major Projects

Roger Higgins and Diego Hernandez



# Olympic Dam Expansion Project

- Olympic Dam is a world-class copper-uranium-gold-silver mineral resource.
- This potential was recognised in the 2005 BHP Billiton acquisition of WMC.
- A future large-scale open pit mine appears technically feasible, would be operationally flexible and could be scaled to meet market demand



# Project Scale and Timeline

The Olympic Dam Expansion Pre-feasibility is the largest of its type in the mining industry

- US\$130million spent on surface and underground drilling over the next 2 years
  - still open in areas to the south, north west and at depth.
  - 5 x 2.5km deep holes will be drilled to understand depth extension
- \$25m for new underground tunnel into Southern Ore body for bulk sampling and for detailed resource drilling / technical evaluation
- Need to understand ore variability due to dedicated smelter on site

## Indicative Earliest Timeline

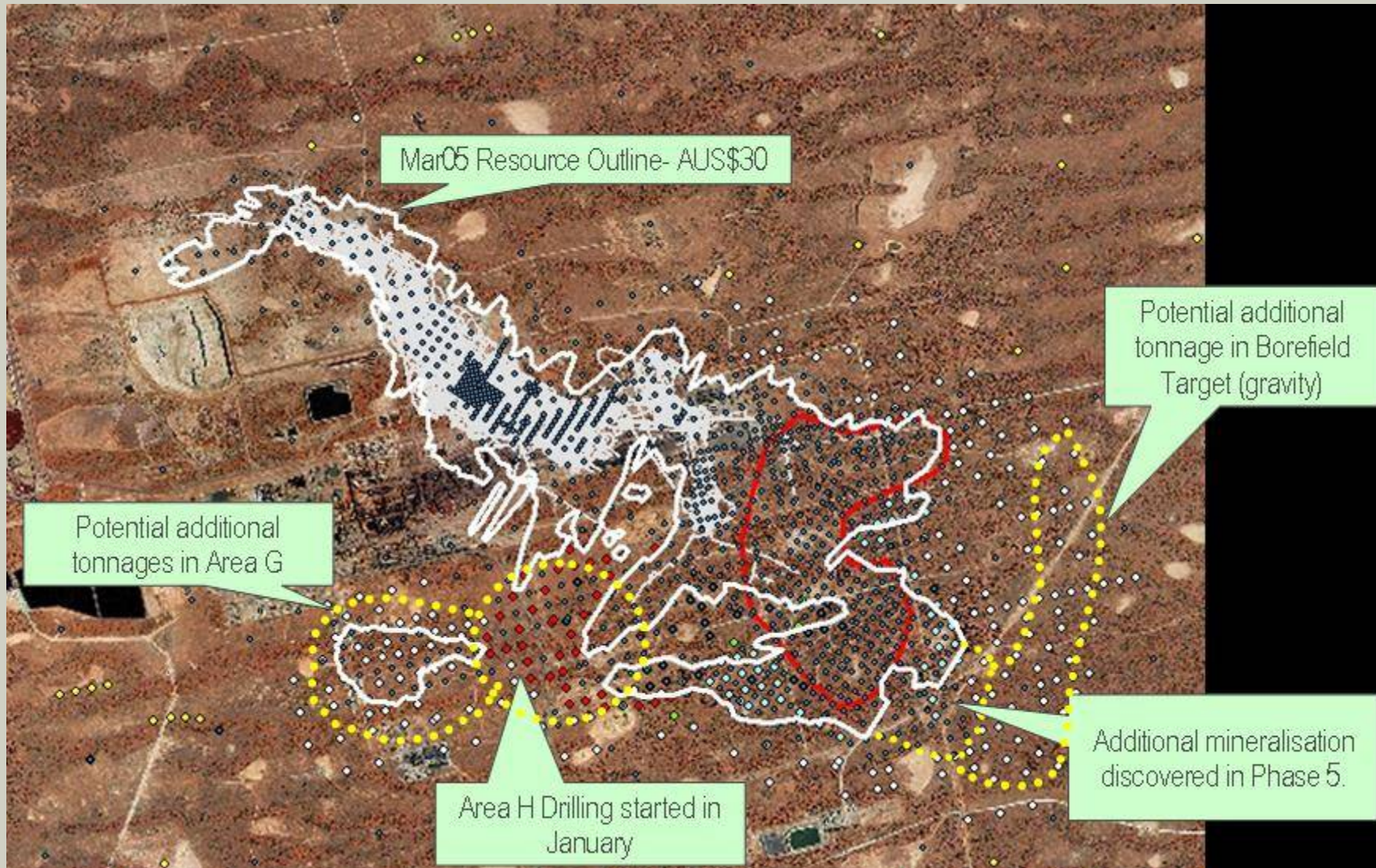
- 2005 - 07 Pre-Feasibility Study (PFS)
- 2005 - 08 Government Approvals (EIS)
- 2007 - 08 Feasibility Study (FS)
- 2009 - 12 Pre-strip Mining & Construction
- 2013 - 14 Ramp up to full production

# Computer Animation



**bhpbilliton**

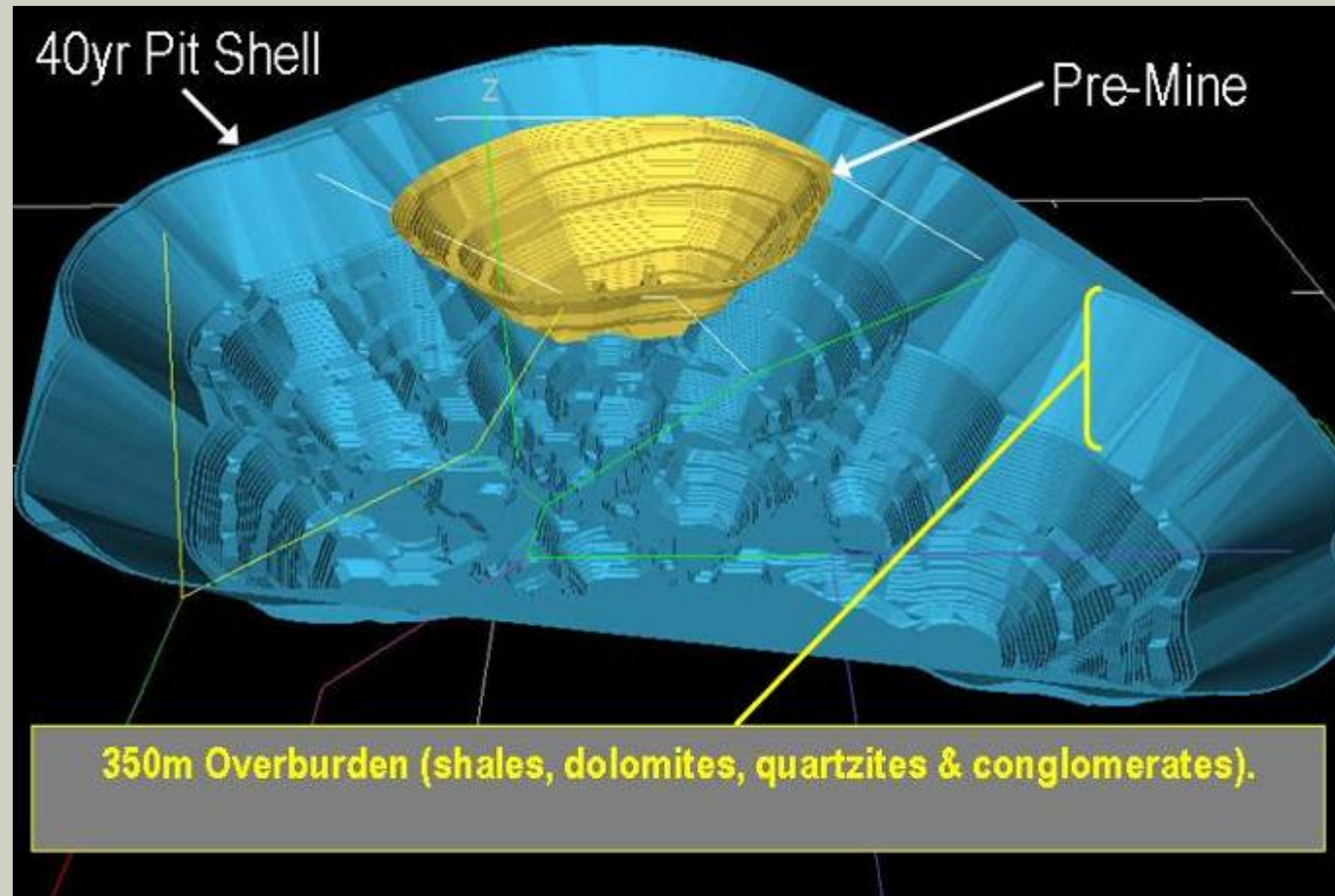
# Mineral Resource Discovery Potential



# Open Pit Scale

## Indicative Mine Parameters

- Mining Rate
  - ~350 Mtpa
- Pre-Mine
  - ~0.8 Bt
  - + 4 yrs
- Initial Ore Production Rate
  - ~110 ktpd
- Major Equipment
  - Trucks (110 x 360 t)
  - Shovels (10 x 73yd<sup>3</sup>)



# Projects in the Americas



**bhpbilliton**

# Escondida Norte Project (Project Completed)

## Resources:

- Total mineral resources are 538Mt @1.41% Cu, including 200Mt @2% Cu.
- Cut-off grade of 0.7% Cu.
- Estimated contribution of copper in concentrate is 300ktpa.

## Process:

- Pre-stripping - 22 months to extract 250Mt of waste material.
- Estimated strip ratio is 1.39:1 (waste: ore)
- Pit-rim crusher and an overland conveyor to deliver the ore to either of two concentrators
- Ore delivered: 85ktpd (2005-2007), 100ktpd (2008-2017)

## Investment:

- Approved Budget = US\$400M.
- Estimated completion date 30 September 2005 was achieved.

## Progress & Status

- Overall Progress = 100% on schedule. Safety - CIFR = 2.2 per million man-hours
- Actual Development Cost = US\$390M Before Foreign Exchange Variation. US\$437m post FX

# Sulphide Leach Project

## Production & Resources:

- Copper Production of 180 ktpa cathode.
- Resources: 1,500 Mt @ 0.3% - 0.7%Cu, Low grade sulphide material.

## Process:

- Run-Of-Mine, Leaching using Bacteria, Solvent Extraction and Electrowinning.
- Pad area: 5 x 2 km, final height of 126m. (7 of 18m high lifts)

## Investment:

- Approved Budget = US\$868M.

## Progress & Status

- Overall Progress = 95% complete. Safety - CIFR = 3.2 per million man-hours
- ROM heaps under irrigation.
- First cathode production June 2006.

## Upside

- Recovery – currently assumes 36% total copper recovery. Modelling shows potential to increase this to over 50% - results known in FY08

# Spence Project

## Resources:

- New open pit deposit to exploit oxide/sulphide ores, nominal 200ktpa of Grade A cathode.
- Total heap leach ore reserves 310.9Mt @1.14% TCu, including 79.2 Mt Oxide ore @1.18% TCu, and 231.7 Mt Sulphide @1.13% TCu. Cut-off grade is 0.3% TCu.

## Process:

- Pre-Stripping – 78 Mt in the first 15 months.
- First ore to crusher on September 2006.
- Run-Of-Mine, Oxide/Sulphide Leaching, SX & EW.
- Rated capacity 200ktpa cathode but this is heavily front loaded. Initial years after ramp up expected to be in excess of 220ktpa

## Investment:

- Approved Budget = US\$990M.
- 22 months to complete the Execution phase to acquire and built several fixed and mobile assets (Mine equipment, Process Plant, Infrastructure and Utilities).

## Progress & Status

- Overall Progress = 78% complete. Safety - CIFR = 2.2 per million man hours
- First cathode in December 2006 and full capacity by September 2007.

## Upside

- Underlying low-grade hypogene resources. Potential to process as plant capacity becomes available

# Resolution Project – Superior Arizona

**Joint Venture:** Rio Tinto 55% / BHP Billiton 45%

## **Resource:**

- Very large, high grade copper – molybdenum deposit.
- 1.0 Bt @ 1.5% Cu, 0.04% Mo inferred resource.

**Project:** Pre-Feasibility Study Stage.

- Concept is large scale block cave mine producing ~600K tpa copper
- Pre-Feasibility and Feasibility Study until 2010.

## **Upside:**

- Further exploration potential

# Other Brown Fields Optionality

## Escondida

- Commenced brown fields exploration program – US\$8m and 65 km of drilling per year
- Pinto Verde oxide resource - + 200Mt @ 0.58%. Currently in prefeasibility study as potential our source for the oxide leach plant

## Cerro Colorado

- Over 600Mt @ 0.4% (above a 0.3% cutoff) of hypogene mineralisation at Cerro Colorado that is currently being tested. Would utilise existing site plant and infrastructure
- A decision to move to prefeasibility would be made in FY07

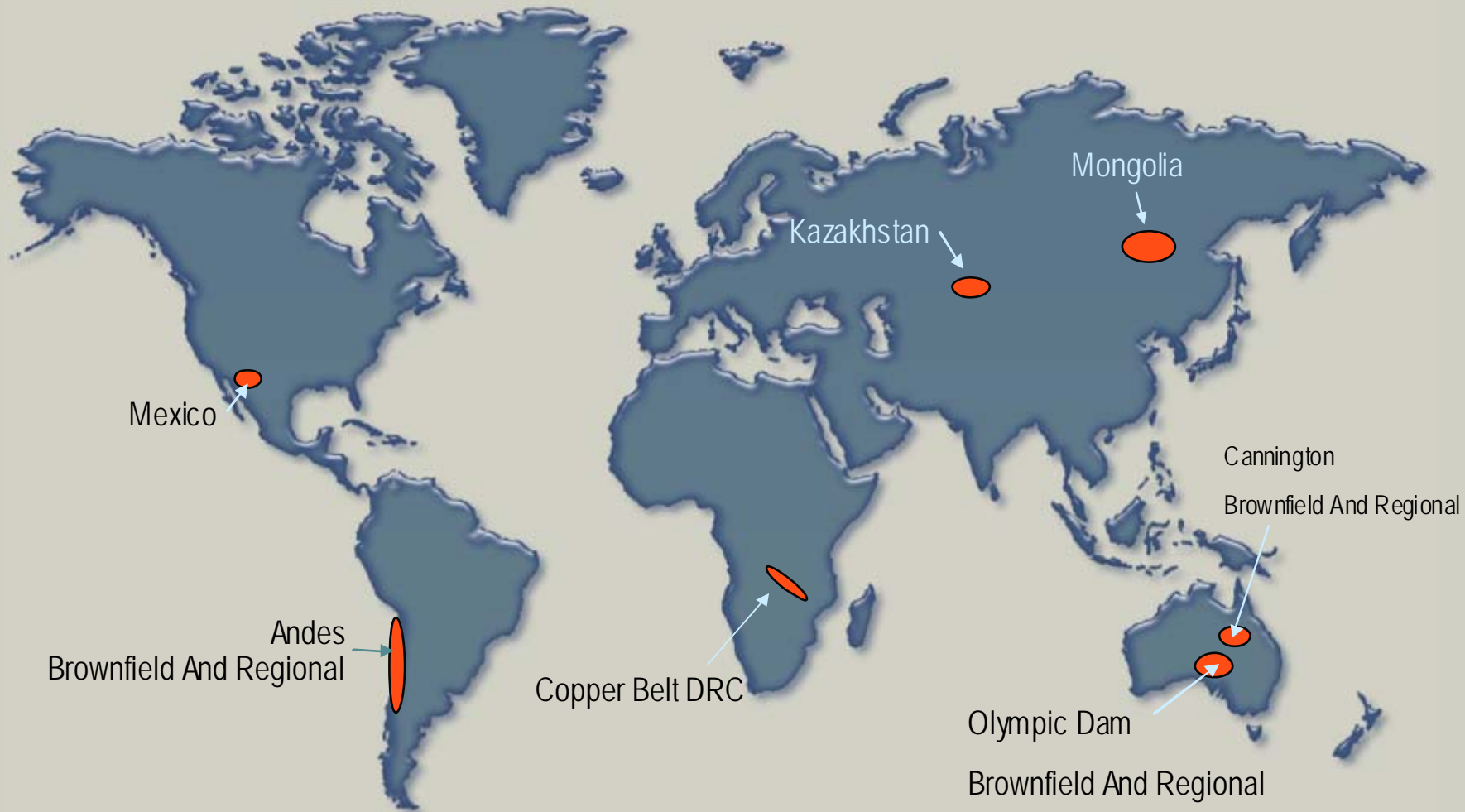
## Olympic Dam

- Falcon gravity survey being undertaken on exploration leases
- 2 targets identified by WMC to be drilled over the next 12 months

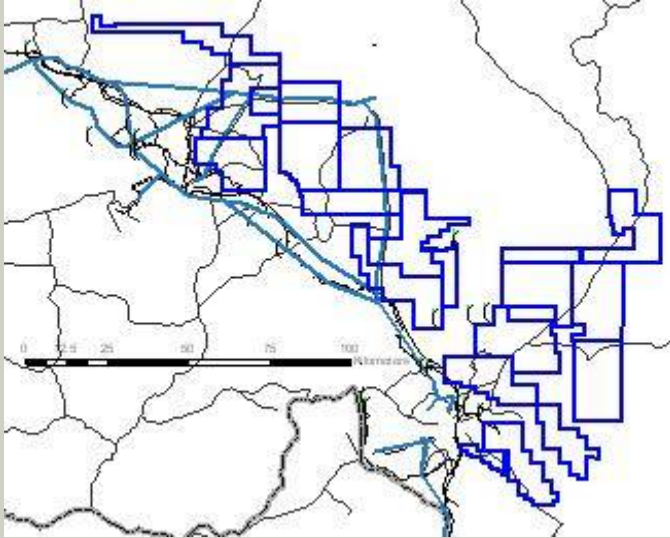
## Cannington

- Ongoing brown fields exploration

# Global Base Metal Exploration – Focused Main Initiatives



# Exploration in the Democratic Republic of Congo



- Large Land Position (9,932 sq km) overlying highly prospective geology.
- Proximity to infrastructure.
- Proximity to known mineralisation.
- Exploration to date consisted of mapping, geochemistry, drilling and the establishment of a regional office in Lubumbashi.

# Conclusion

- Delivered production growth at the right time
- The only major copper company bringing on major new copper capacity in 2006
- Continue to develop long term growth options
- A portfolio that can perform in a lower price environment as well as delivering exceptional returns in a high price environment



**bhpbilliton**