# **BHP** Billiton Base Metals



CSG Briefing 13 October 2004



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#### Agenda

Introduction and Strategy

**Financial Overview** 

**Market Overview** 

**Operations** 

Growth

#### **Question and Answer**

**Diego Hernandez, President** 

Glenn Kellow, VP & CFO

John Crofts, Marketing Director

Diego Hernandez, President Ian Ashby, VP & Chief Operating Officer

**Diego Hernandez**, President



#### Purpose of Today's Briefing

- An update on the CSG's performance
- To discuss some of the key issues facing the CSG and the industry
- To demonstrate our continuous optimisation of the existing asset base
- To highlight our value enhancing organic growth projects, helping to meet increased global demand for our commodities

#### **BHP Billiton Base Metals**



#### Strategic focus

Base Metals' mission is to <u>create value</u> for BHP Billiton shareholders through its exposure to the base metals value chain. The clear strategy is to create a demand-focused, <u>low cost</u> production base with a <u>bias</u> towards <u>efficient open cut mining and direct leaching technologies</u>.



## HSEC

- Base Metals is committed to Zero Harm
- Environment our license to operate.
- Community BHP Billiton Base Metals aims to be valued as a good corporate citizen in each of the communities in which we operate





### Production (BHP Billiton Share - payable)



#### Copper Production



#### Silver Production









## BHP Billiton's ranking in base metals mine production

#### Top Copper Miners - 2003



Top Silver Miners – 2003



Top Lead Miners- 2003



Top Zinc Miners - 2003



Data: CRU Calendar Years



## Competitive Position Unit Costs - 2004 (all Data from and copyright Brook Hunt)



## Key Issues

- Market
  - Demand China is the key growth market
  - Supply Reactivation of shuttered capacity and new mine development
  - Base metals' prices, TC/RC's and freight
- Royalties
  - Escondida the largest single first category tax payer in Chile over US\$2B paid in first 14 years of operations
  - Peru
- Chile gas and power status







Glenn Kellow



### Base Metals CSG

#### EBIT Summary by Asset (pre-exceptionals)

	FY 2004	FY2003	Variance	
			\$US m	%
EBIT (\$US millions)				
Escondida	808	217	591	272%
Tintaya	75	(30)	105	
Cerro Colorado	82	28	54	193%
Antamina	103	34	69	203%
Alumbrera	0	40	(40)	
Cannington	171	92	79	86%
Highland Valley Copper	7	(3)	10	
Other Businesses	(90)	(92)	2	
Total CSG (pre-exceptionals)	1,156	286	870	304%



#### EBIT Variances – FY03 to FY04

#### **EBIT Variances**





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# EBIT Sensitivity (FY05)

EBIT Sensitivities				
Commodity Prices	<u>\$US millions</u>			
1 cent change in Copper Price	22			
10 cent change in Silver Price	4			
1 c change in Zinc Price	2			
Exchange Rates				
1 cent change in \$A rate	2			
10 peso movement in CHP rate	6			

Copper Price and Chilean Peso Comparison					
	<u>FY02</u>	<u>FY03</u>	<u>FY04</u>		
Realised Copper Price (\$US/lb.) Average Chilean Peso Exchange Rate	0.69 672	0.73 719	1.14 634		



#### EBIT Comparison – Base Metals CSG

#### **EBIT and Copper Price**

**Revenue by Commodity** 



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### Investing in Profitable Future Growth





### Southwest Copper

During FY04, a charge was taken against profit of \$425 million, in order to provide for:

- higher capital closure costs
- expected ongoing costs (overheads and water management) which were previously expensed





# Marketing



#### John Crofts



# World refined copper production and BHP Billiton managed sales by region

World refined copper production by type (Total production in CY04 = 16 Mt)



BHP Billiton attributable copper production (Total output in FY04 = 0.95 Mt )



#### BHP Billiton Cu Concs sales by region



Includes all Cu Concs marketed for Escondida, Tintaya, Antamina agency, BMAG

#### BHP Billiton copper cathode sales by region



#### Copper's intensity of use has recovered from the shocks of the 1970s



...The growth of China's economy, and expansion in other emerging markets are responsible. Despite unpredictable major global economic shocks, copper intensity of GDP shows a strong, persistent upward trend

Note: A steeper slope represents a stronger rise in use of copper in relation to economic activity – a gentle slope indicates lower 'intensity of use'



#### China accounts for more than 20% of world refined copper demand



Source: CRU. Data is for apparent consumption of refined copper



#### Continued stock withdrawals from Exchanges' stocks have kept prices high



#### Industrialising countries have followed two distinctive "intensity" paths

![](_page_23_Figure_1.jpeg)

# Independent forecasts all predict deficits in world refined copper market in 2004 and 2005

![](_page_24_Figure_1.jpeg)

# Treatment and refining charges have risen rapidly but from a very low base

![](_page_25_Figure_1.jpeg)

Q4 04 BHPB estimate

![](_page_25_Picture_3.jpeg)

# Operations

![](_page_26_Picture_1.jpeg)

Diego Hernandez and Ian Ashby

![](_page_26_Picture_3.jpeg)

#### Escondida – A Remarkable Monetisation of a Mineral Resource

- Discovered in 1981
- Commissioned in 1991
- Currently completing its 7<sup>th</sup> growth project in 13 years of operation
- Became the largest copper mine in the world in its 5<sup>th</sup> year of operation
- Currently:
  - +1 Million t of material mined per day
  - +220,000 t of ore processed per day
  - Ramping up to 300,000 tonnes per day placed on leach dumps
  - Once Sulphide Leach and Norte completed, a fleet of over 100 (250 to 380t) trucks will move ore from two pits to two concentrators and and two leach dump / sx-ew facilities

![](_page_27_Picture_10.jpeg)

![](_page_27_Figure_11.jpeg)

## Escondida – Achieving its Full Potential

![](_page_28_Figure_1.jpeg)

![](_page_28_Figure_2.jpeg)

#### Escondida EBIT (BHP Billiton Share)

Escondida Tonnes Processed per Day (7 day average)

![](_page_28_Figure_5.jpeg)

![](_page_28_Figure_6.jpeg)

Sept 02 Dec 02 Mar 03 Jun 03 Sept 03 Dec 03 Mar 04 Jun 04 Sept 04

![](_page_28_Picture_8.jpeg)

#### Cannington – A World Class Asset Continues to Over-Achieve

- Achieving record mill throughput > 2.7 Mtpa
- Cannington North Block successfully completed on budget and ahead of schedule
- Business improvement targeting potential increase in throughput to offset declining head grades
- Current mine life 2015
- Exploration program targeting reserve extension

![](_page_29_Figure_6.jpeg)

![](_page_29_Picture_7.jpeg)

![](_page_29_Picture_8.jpeg)

#### Antamina – Exceeding Design Capacity

- Lake sediments mined successfully by May 2004 opening up new ore faces in higher grades and increasing mine flexibility
- Plant exceeding design throughput on all ore types by 25% and copper ores by up to 40%.
- FY05 copper production 120,000t+
- Improving operational stability creating opportunities for revenue and cost improvement
- 17 year mine life
- Exploration program targeting reserve extension and better predictability

![](_page_30_Figure_7.jpeg)

![](_page_30_Figure_8.jpeg)

![](_page_30_Figure_9.jpeg)

## Tintaya

- Successful restart of sulphide operation after 20 month shut. Modern fleet of 240 ton haul trucks relocated from Robinson operation in Nevada
- Reached full capacity on schedule in November 2003
- Outstanding safety performance
- Recognised for community programs
- Oxide production will exceed plan
- Slight shortfall in sulphide production (80,000t+ Cu in conc) for FY2005 due to skarn complexity in the current quarter
- Brownfields development and exploration drilling currently underway (Antapaccay, Coroccohuayco and regional targets)

![](_page_31_Figure_8.jpeg)

## Cerro Colorado

- Combined oxide-sulphide leach
  operation
- Mine plan sees production through 2013
- Mature operation using Six Sigma business improvement methodologies to offset the challenges of declining grades and changing clay characteristics
- FY05 production ~ 110,000 t of cathode
- Potential regional exploration opportunities

![](_page_32_Figure_6.jpeg)

Cerro Colorado EBIT

![](_page_32_Figure_8.jpeg)

![](_page_33_Picture_0.jpeg)

![](_page_33_Picture_1.jpeg)

Diego Hernandez

![](_page_33_Picture_3.jpeg)

#### Escondida Ore Delivery Systems (Norte and East 3 Conveyor)

- •Two integrated projects -
  - Development of new pit at Escondida Norte, and associated crushing and conveying of ore to existing plants
  - relocation of existing dual conveyors from Escondida pit to the East 3 bench

•Conveyor (E3) relocation in Escondida pit on schedule for completion in 4<sup>th</sup> Quarter calendar 2004.

•Escondida Norte ore will be delivered to the plants from 2<sup>nd</sup> Quarter calendar 2005

•Reserves of 538Mt at 1.14% Cu @ 0.7% cut-off will produce 7.2Mt of copper production (Escondida 100%) through 2040

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![](_page_34_Picture_9.jpeg)

## Escondida Sulphide Leach

- Marginal and mixed ores from both Escondida and Escondida Norte pits will be bio-leached in Run-of-Mine (ROM) heaps, with conventional SXEW extraction of copper.
- Reserve exceeds 1.5 billion tonnes of ore at grades between 0.3% and 0.7% total Cu
- A new tankhouse with a cathode capacity of 180,000 tpa will be constructed.
- Engineering design is well advanced and preliminary field construction activities are underway.
- First cathode is expected to be produced in 2nd Quarter 2006, with ramp-up to full production during 2006 and 2007.
- Project scope includes 500 litres per second desalination plant near Antofagasta, with pumping to minesite.
- Forecast to add 3.9Mt of copper production (Escondida 100%) through 2040

![](_page_35_Picture_8.jpeg)

![](_page_35_Figure_9.jpeg)

#### Spence

- Greenfields mine development at Sierra Gorda in northern Chile, 45 kilometres from Calama.
- 50,000 tpd of oxide and sulphide ores will be leached to produce an average of 200,000 tpa of copper cathodes.
- Reserve is 370 million tonnes at an average 1.06% total copper.
- Project has completed Feasibility Study and approval to proceed is expected in 4th Quarter 2004.
- First cathode is anticipated in 4th Quarter 2006.
- Mine life 19 years. Capex approx \$1 billion

![](_page_36_Picture_7.jpeg)

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![](_page_36_Picture_9.jpeg)

## Delivering Value Adding Growth

- Since the merger Base Metals have delivered:
  - Tintaya Oxide Leach
  - Escondida Phase 4

on time and under budget.

- Over the next 3 years the current pipeline of growth projects will be managed to the same standards:
  - Escondida Norte
  - Escondida Sulphide Leach
  - Spence

![](_page_37_Figure_9.jpeg)

Note: This projection is based on our current plans and schedules and market demand. It could change for a variety of reasons including project schedules, operating performance and commodity prices

![](_page_37_Picture_11.jpeg)

# Additional Growth Options

#### **Coarse Particle Recovery**

- Process optimization project in both Los Colorados and Laguna Seca concentrators.
- Objective is to improve total copper recovery by 4-5%, targeting coarse fraction of rougher tailings which contain 2/3 of non-recovered copper.
- Project is in Feasibility Study
- Study and review to be completed in 2<sup>nd</sup> Quarter 2005.

### Alliance Copper (ACL)

- 50/50 JV with Codelco
- Prototype plant was commissioned in Sep.2003
- BioCOP<sup>™</sup> technology applied to complex concentrates
- 13,500 tonnes of copper contained in PLS have been shipped to Codelco's SXEW facilities in Chuquicamata since start up
- Currently treating Mansa Mina concentrates and flue dust coming from the Chuqui smelter
- Engineering concept study being conducted by Hatch on an industrial size plant to process Mansa Mina concentrates
- Shareholders will make a decision during the first half of CY05 Page No 39 about the future of the project

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![](_page_38_Picture_15.jpeg)

## Additional Growth Options (continued)

#### Technology

 Base Metals spends over US\$10m each year on R&D. The majority of this is focused on improving leach performance of primary sulphides. If successful this has the potential to significantly improve the financial returns of the Escondida Sulphide Leach Project

#### Exploration

- Brown fields exploration potential at all sites.
- BHP Billiton is spending ~ US\$20m on base metals green fields exploration each year – (includes JV exploration)
- Resolution advanced exploration project under pre-feasibility study

![](_page_39_Picture_7.jpeg)

# Location of Main Projects

Geographic Distribution of Exploration Spend FY 05

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### Conclusion

- CSG's performance
- Key issues facing the CSG and the industry
- Continuous optimisation of the existing asset base
- Our value enhancing organic growth projects, helping to meet increased global demand for our commodities