

# Aluminium CSG Worsley Analyst Visit

Graeme Hunt  
President, Aluminium  
Introduction

12 December 2006



# Welcome



## For your safety

## Welcome - Theme

### Worsley Alumina

- Aspires to be a Zero Harm operation;
- Is a material asset in a key portfolio within BHP Billiton;
- Is committed to sustainable operating practices and community engagement; and
- Strives to continuously improve and deliver value for the benefit of all of its shareholders and stakeholders

# Introduction & Agenda



**Graeme Hunt**  
**President, Aluminium**

**An overview of BHP Billiton's aluminium business**



**Julius Matthys**  
**Marketing Director, Aluminium**

**Market outlook for the aluminium industry**



**Pete Wilshaw**  
**General Manager, Worsley Alumina**

**Worsley Alumina**

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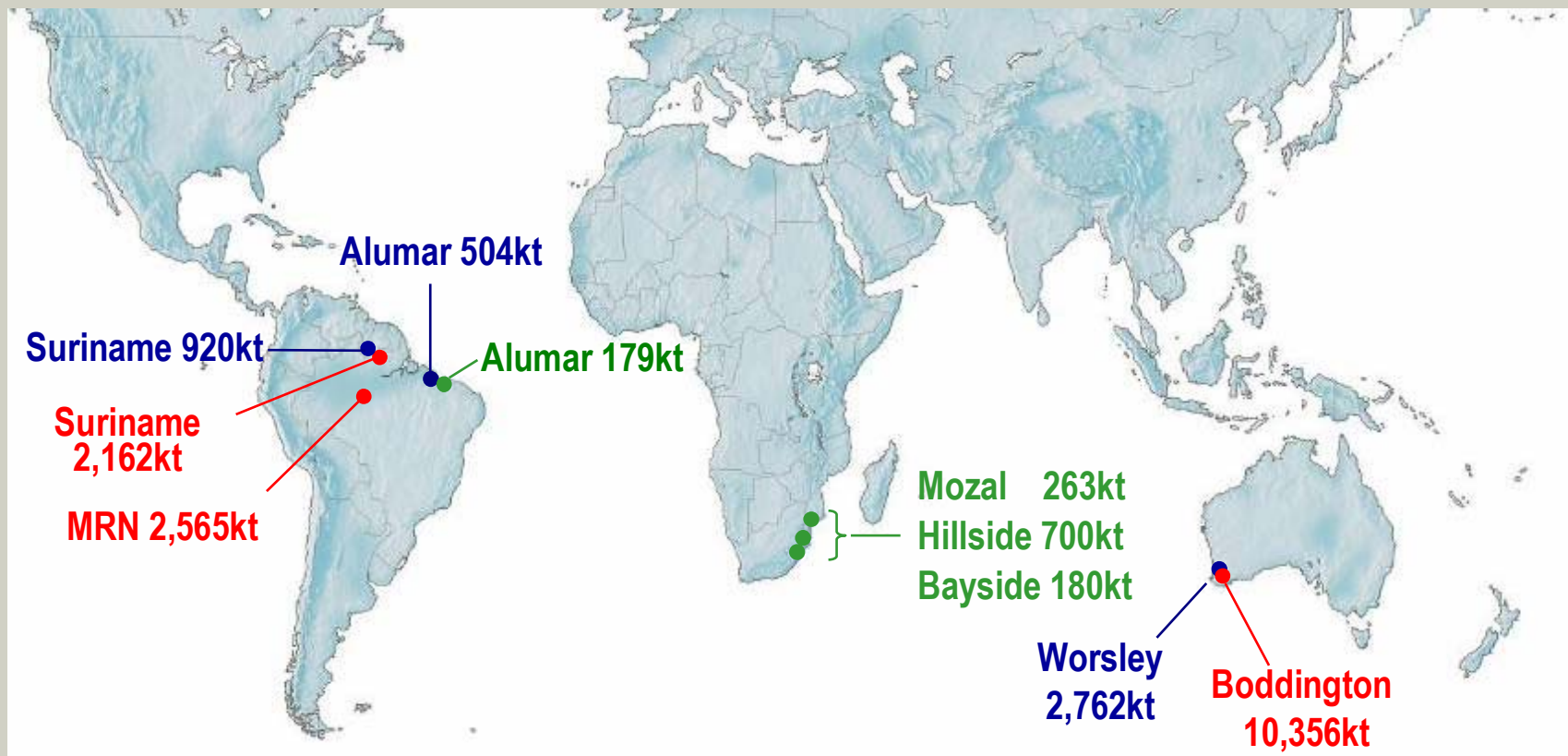
Nothing in this release should be construed as either an offer to sell or a solicitation of an offer to buy or sell shares in any jurisdiction.

## Ore Reserves and Mineral Resources

The information in this presentation that relates to Ore Reserves and Mineral Resources is based on information prepared by the relevant Competent Persons. The Competent Persons agree with the form and context of the Mineral Resources and Ore Reserves presented.

The complete tables of Ore Reserves and Mineral Resources (including the relevant Competent Persons) for Aluminium are presented in the BHP Billiton Annual Report 2006 on pages 54 and 55..

# Aluminium CSG FY06 Equity Production



**Bauxite Mines**



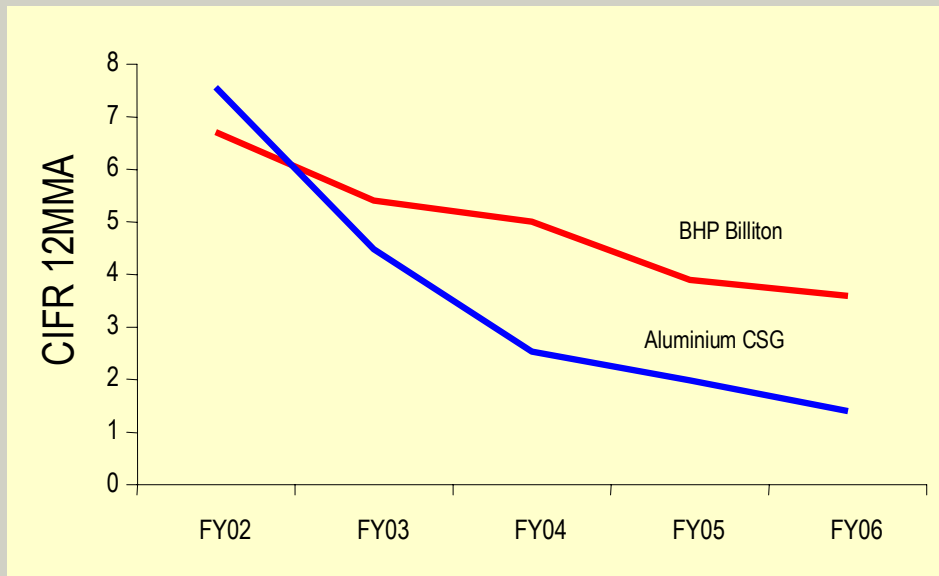
**Refineries**



**Smelters**

Our 45.5% interest in the Valesul Aluminio SA Joint Venture was sold to our JV partner (CVRD), effective the 1<sup>st</sup> July '06 (FY06 equity production was 43kt)

# Sustainability

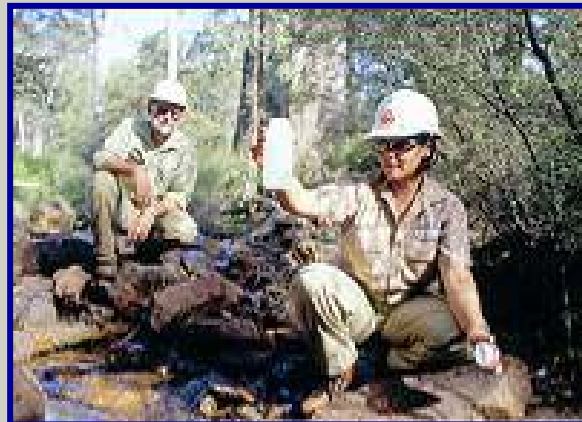


## Safety

- Felt leadership
- Behavioural Based Safety



## Health



## Environment



## Community



# Aluminium CSG – FY06 Results

Year ended June (US\$M)	2006	2005	% Change
<b>Aluminium</b>	1,191	959	+24
<ul style="list-style-type: none"> <li>• Fourth consecutive aluminium production record.</li> <li>• Worsley expansion and new ship loading berth both commissioned.</li> <li>• Alumar refinery expansion approved.</li> <li>• Worsley Efficiency &amp; Growth project delayed.</li> <li>• Sale of 45.5% interest in Valesul smelter completed in early July 2006.</li> </ul>			



- Alumina portfolio stretched but FY05 issues much improved
- Cost trajectory – a major focus
- Sustainable, predictable, continuous improvement the challenge in FY07

## Overview – Consistent Results Achieved

### Aluminium CSG Performance Summary

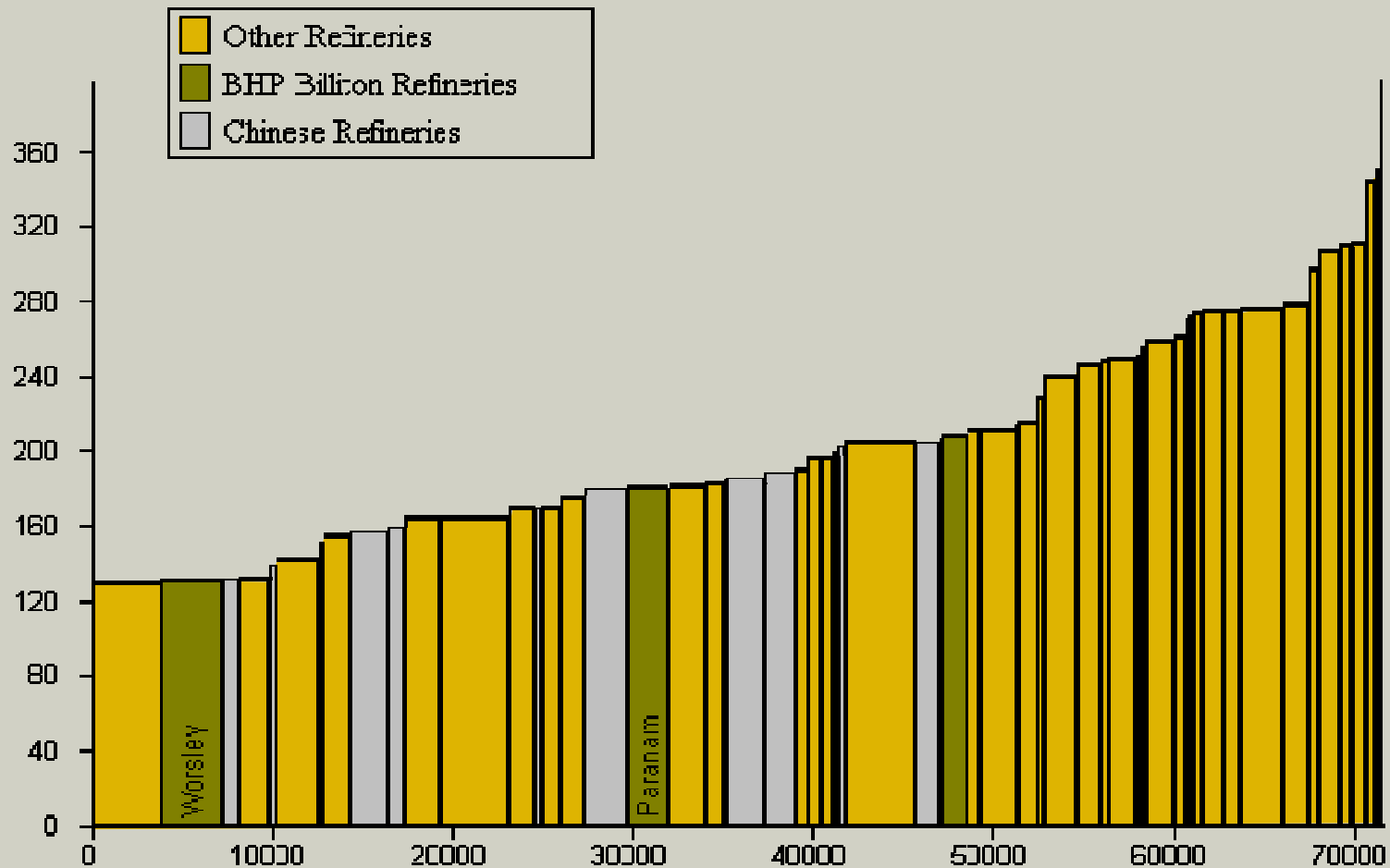
Description	UOM	FY02	FY03	FY04	FY05	FY06
EBIT ROC	%	10%	11%	14%	17%	20%
EBIT Margin	%	25%	27%	29%	27%	28%
EBIT	US\$bn	0.5	0.6	0.8	0.9	1.1

### Key Focus areas for FY07

- Sustainability
- Value growth
- Business improvement

# Refinery Cash Cost Curve - 2006

Refinery 2006 Cash Costs – US\$/tonne, Brook Hunt Estimates



# Guinea – potential opportunities for BHP Billiton



**Bauxite:**

Boffa/Santou/Global

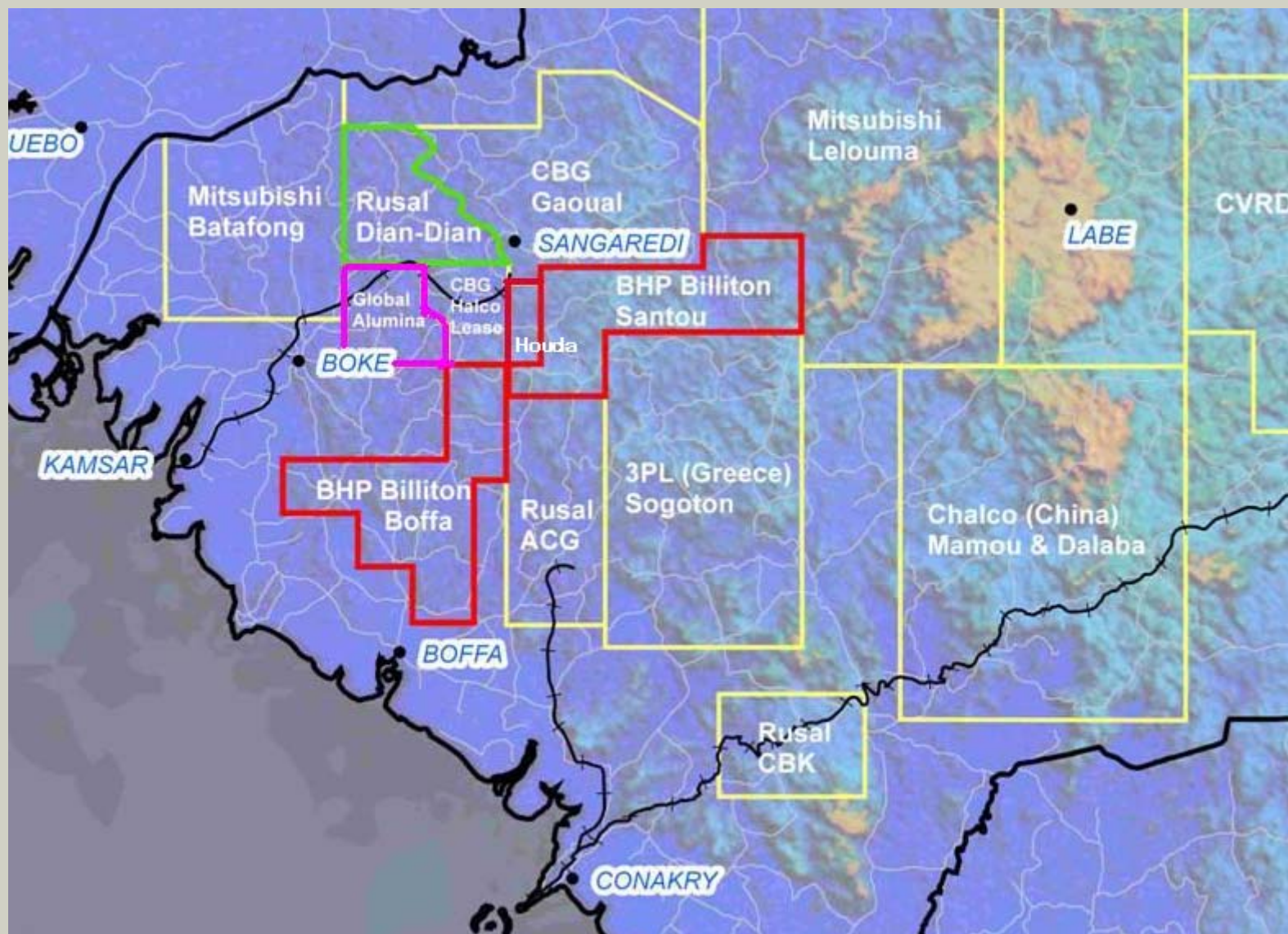
**Iron Ore:**

EuroNimba JV

Faranah/Kourossa



## Global Alumina's Sangaredi project is close to rail and port infrastructure and BHP Billiton leases



## Global Alumina's Sangredi project – an overview

- Global Alumina's Sangredi project
  - Basic Agreement signed with Republic of Guinea in October 2004
  - Grants right to build & operate an alumina refinery and to use existing road, rail & port infrastructure
  - Mining concession for the bauxite
- The project consists of a 3.0 Mtpa alumina refinery, plus:
  - Mine: 8Mtpa bauxite mine (>100 years of bauxite)
  - Port: additional terminal & jetty required at port of Kamsar
  - Rail: spurs at port and refinery are required
  - Township: For 1000 employees & dependents

# Aluminium CSG

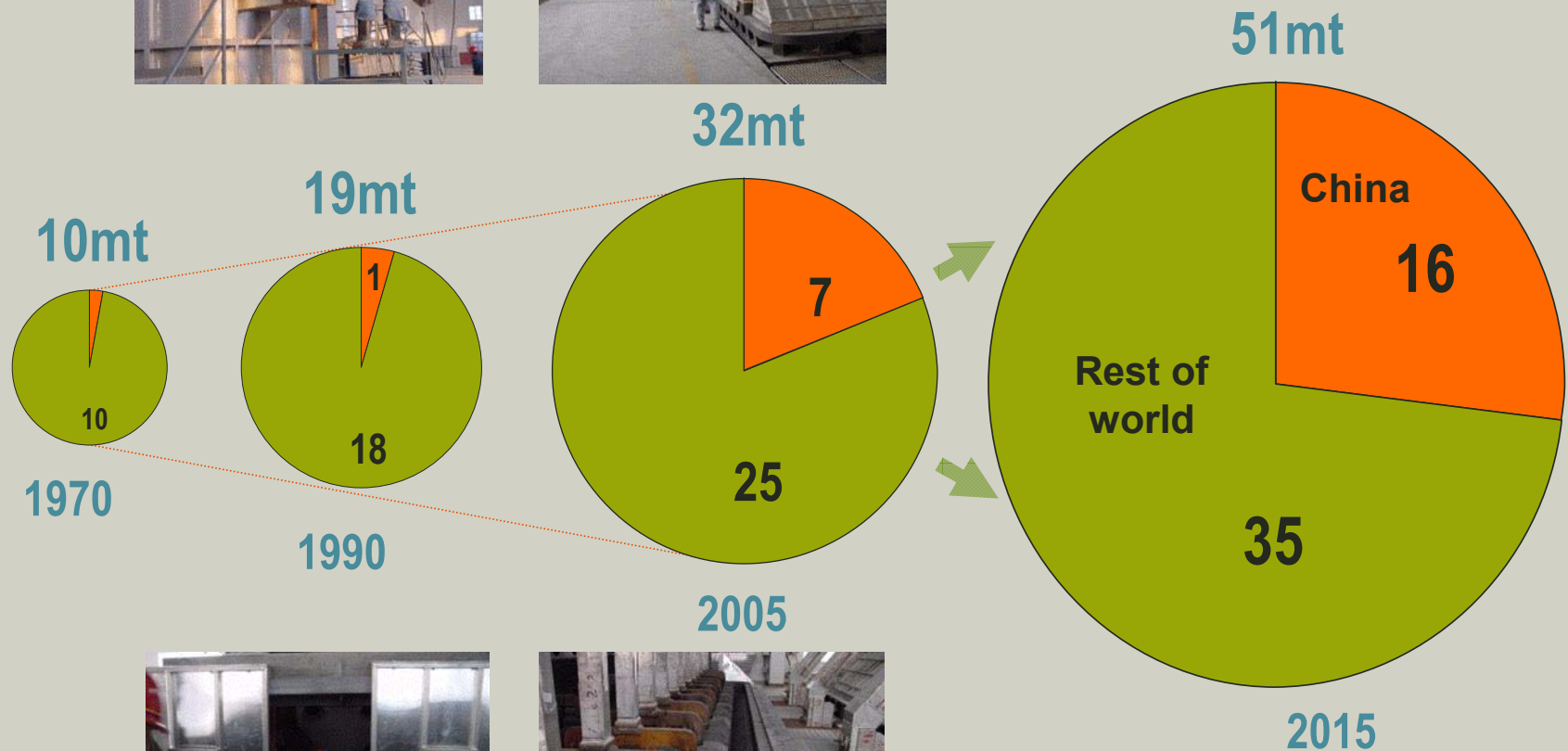
Julius Matthys  
Marketing Director  
Market Review  
12 December 2006



# The China-Driven Demand Opportunity



Global primary aluminium consumption

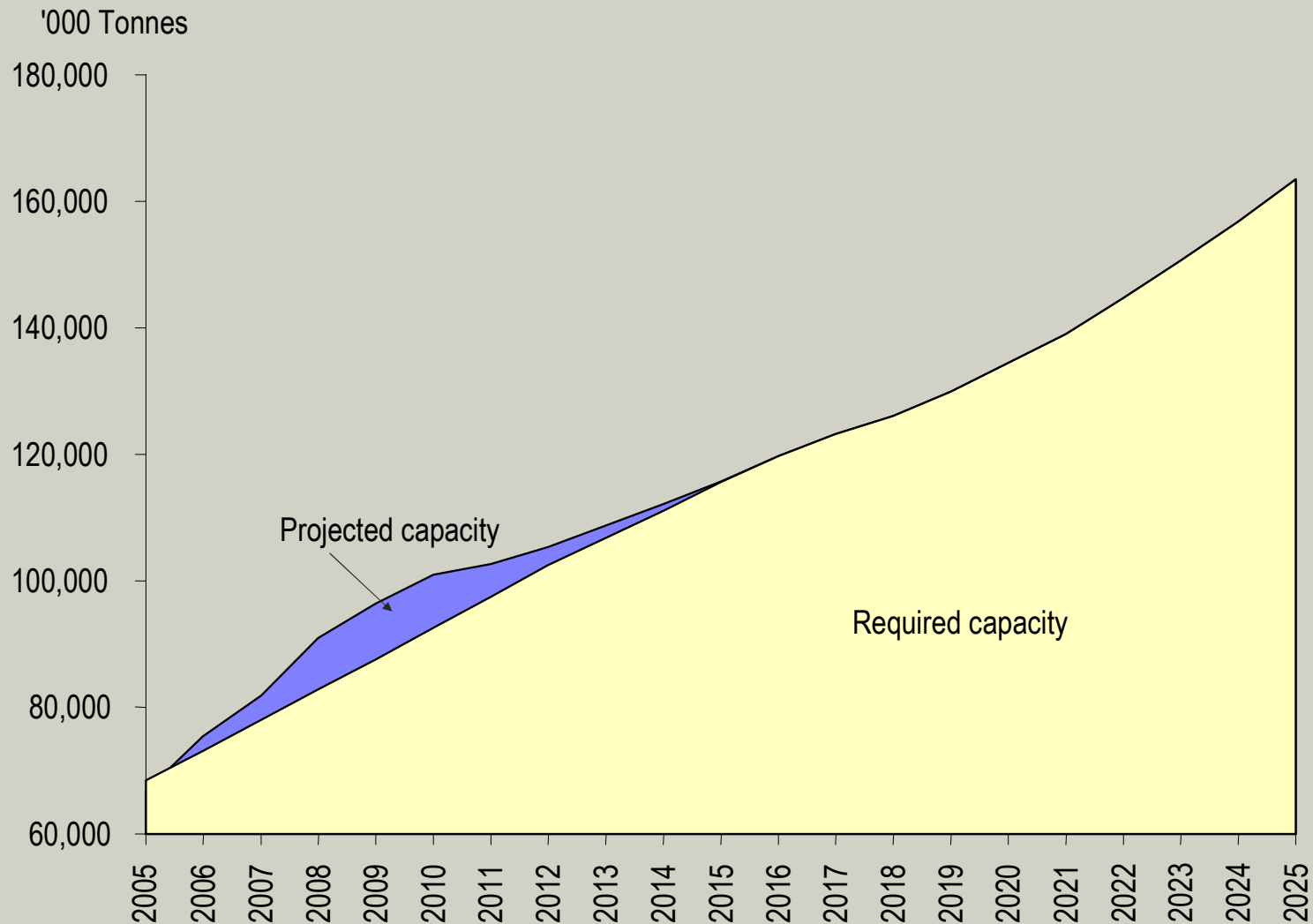




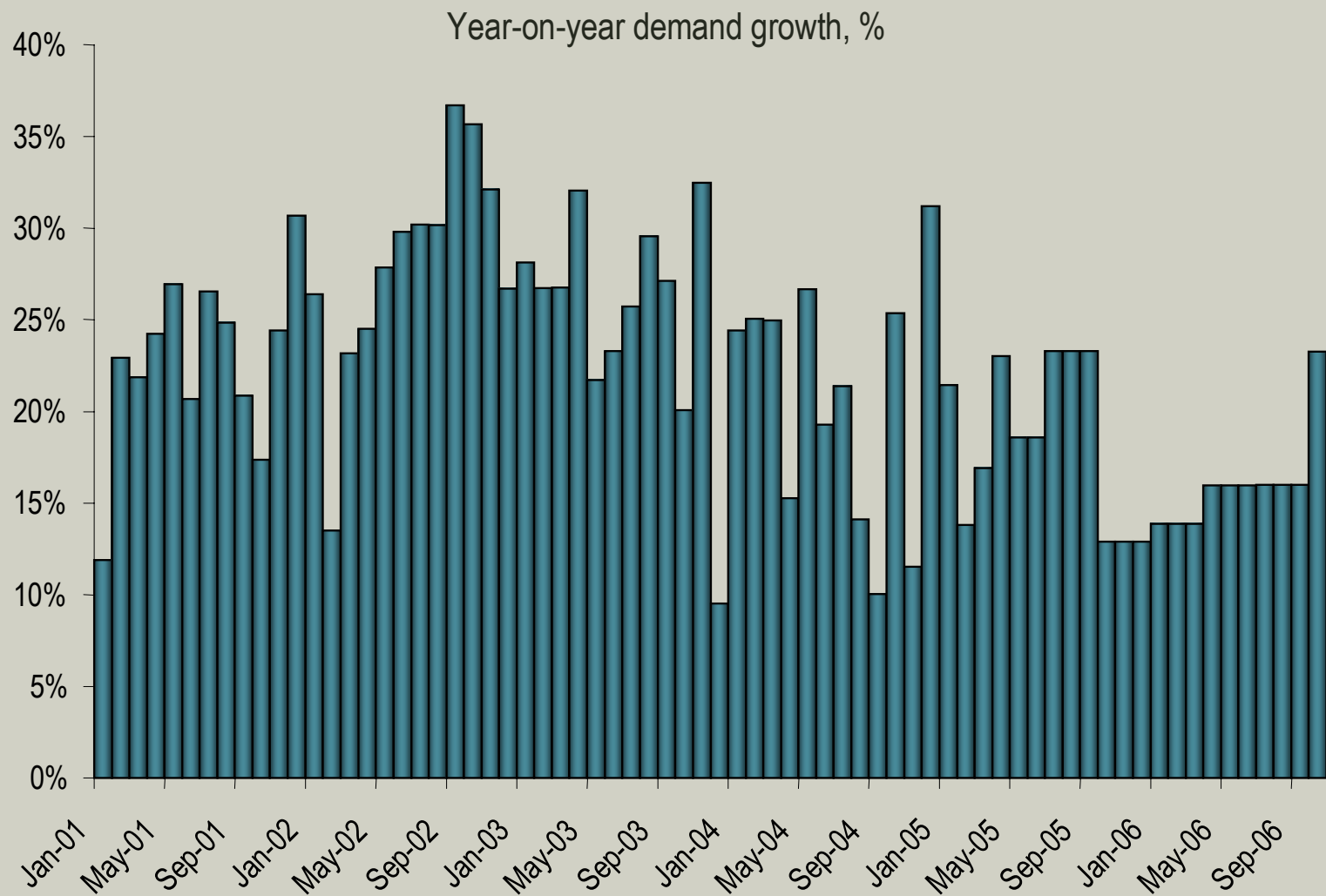
## Marketing observations

- The recent prolonged period of strong alumina prices has accelerated the commissioning of new refining capacity in China
- Alumina demand and fundamentals remain strong
- Potential smelter restarts in the US and increased production from idle capacity in China
- Strong premium levels reflect healthy metal market

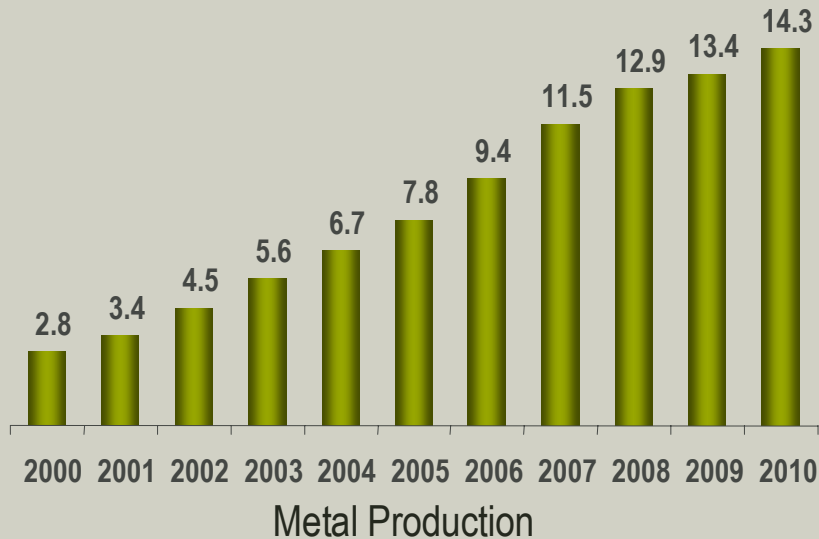
## Alumina supply response evident for the market balance....



# High alumina demand growth in China

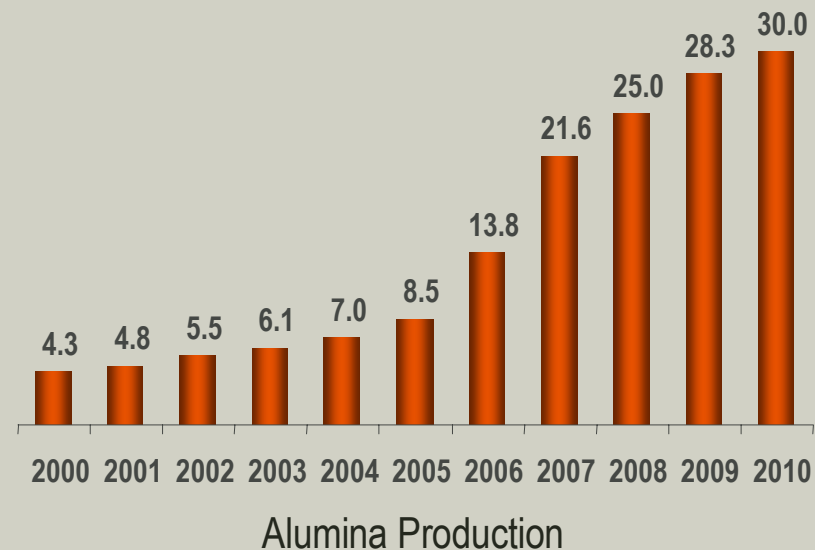


# Alumina & aluminium supply growth in China

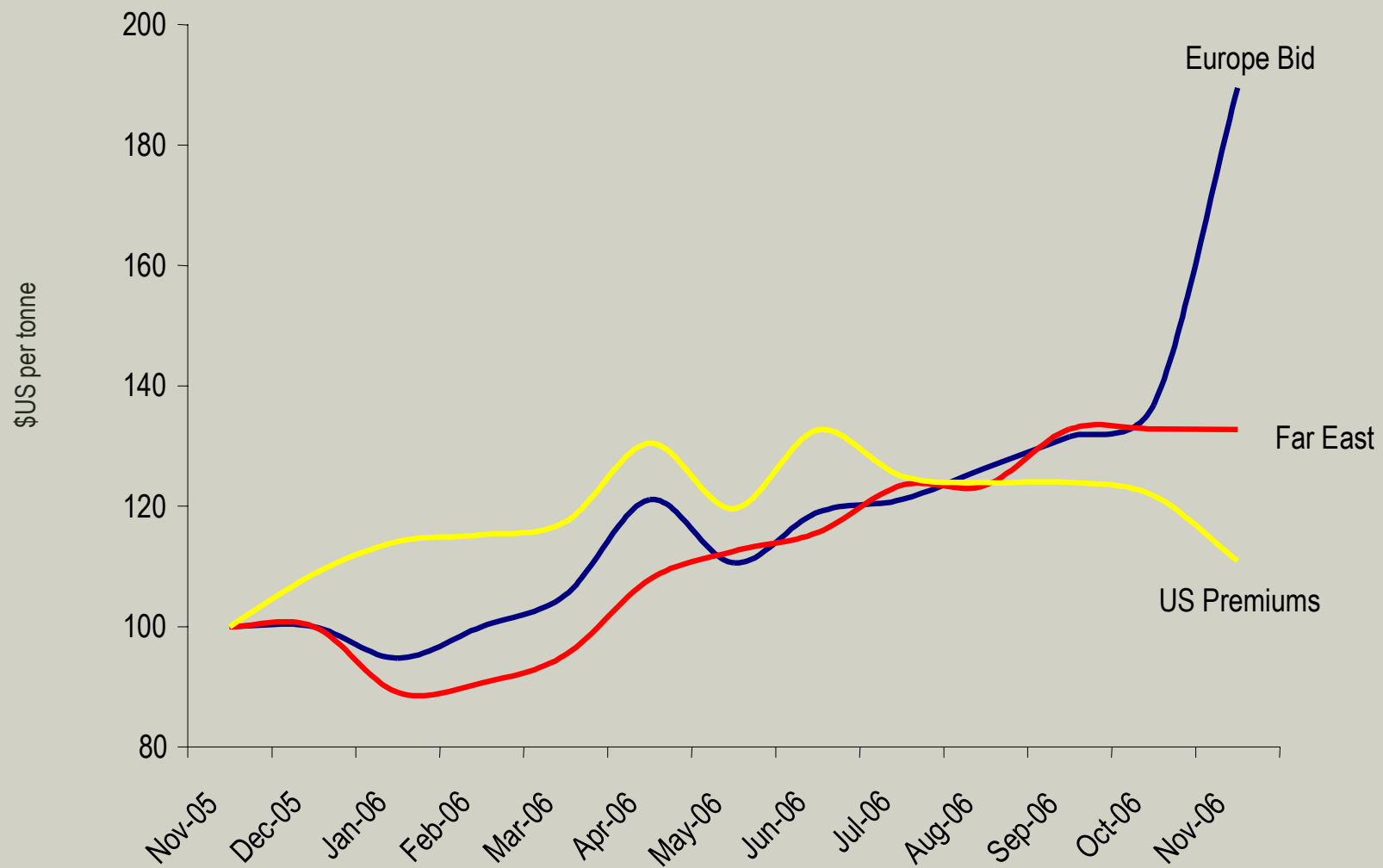


- Rent shift from alumina to metal
- Decreasing alumina import dependency
- Rising bauxite dependency?

- Growth in alumina capacity

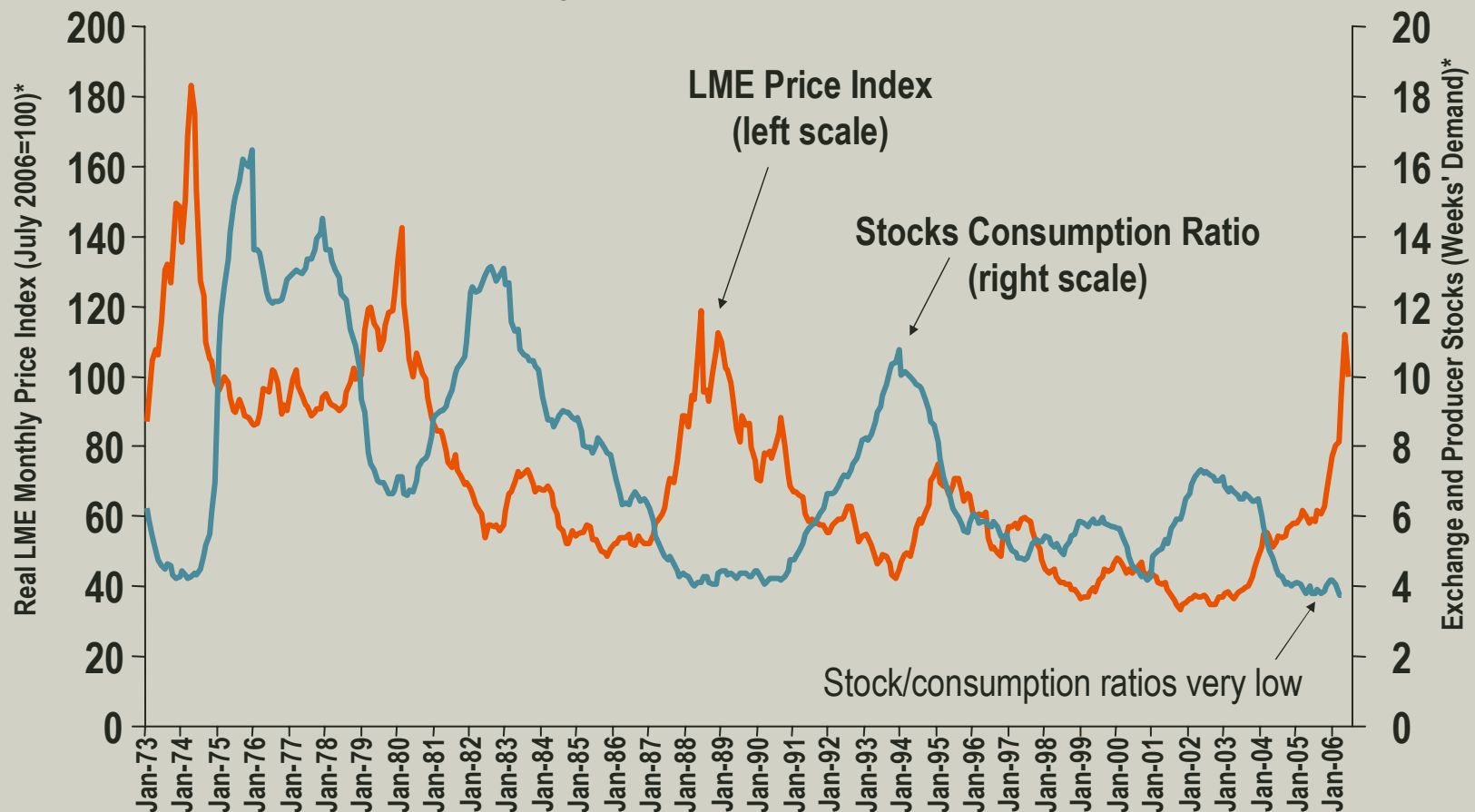


## Metal Premiums index indicates strong European market



Inventory levels at historic lows  
Real LME prices at similar levels to late 1980s boom

### Monthly LME Metal Prices and Stocks



Source: Macquarie, BHP Billiton. \* LME prices and stocks of Al, Cu, Zn, Pb, Ni

## Summary

- Strong demand is a consistent theme for the alumina industry
- Demand growth next year is expected, however, to trail capacity growth as new units realise their nameplate capacities (high cost 'swing' capacity will continue to be idled as a result)
- Improved alumina availability and higher metal prices will lead to metal capacity restarts
- 
- Strong metal fundamentals are reflected in rising metal premiums and historically low stock levels

# Worsley Alumina

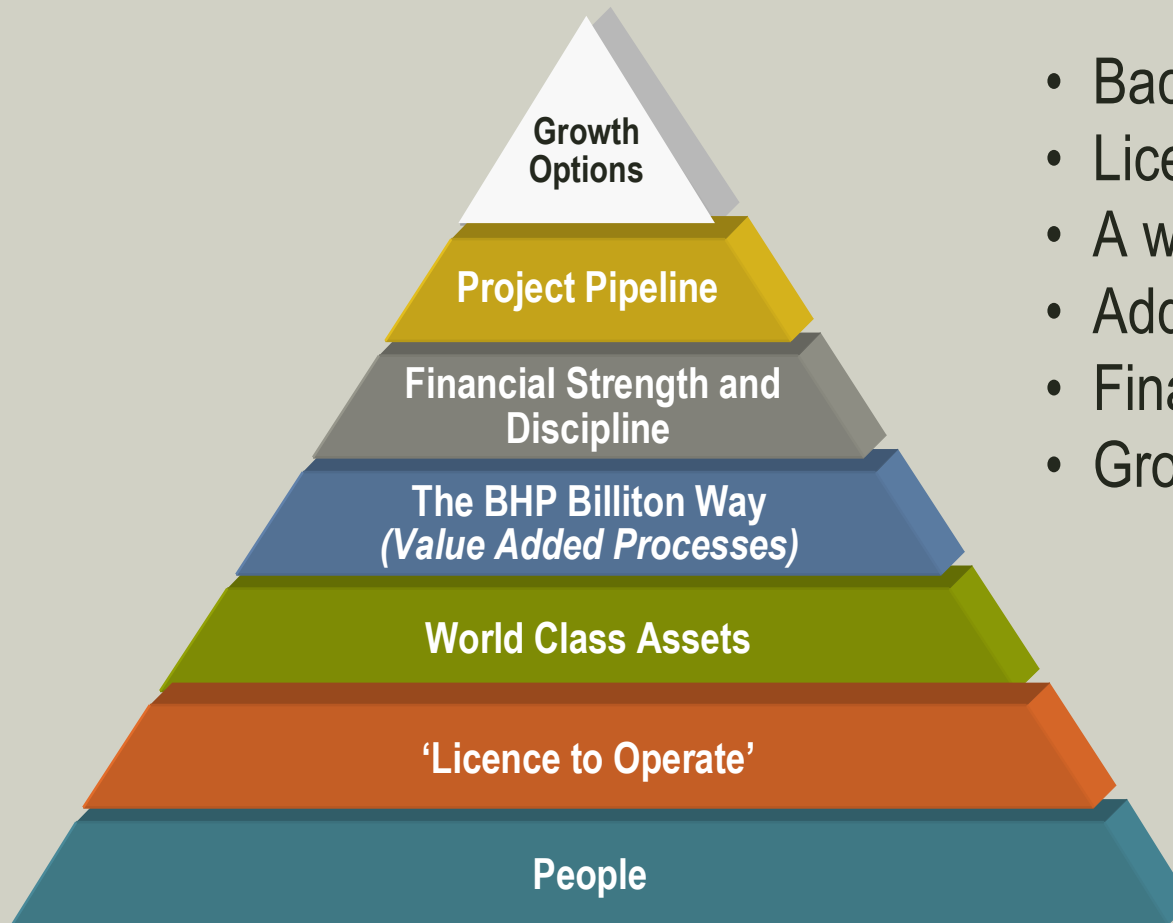
Pete Wilshaw  
General Manager  
Operations

12 December 2006





# Presenting Worsley Alumina



- Background
- Licence to operate
- A world class asset
- Adding value
- Financial discipline
- Growth opportunities

# The Business

Bunbury  
port  
facility

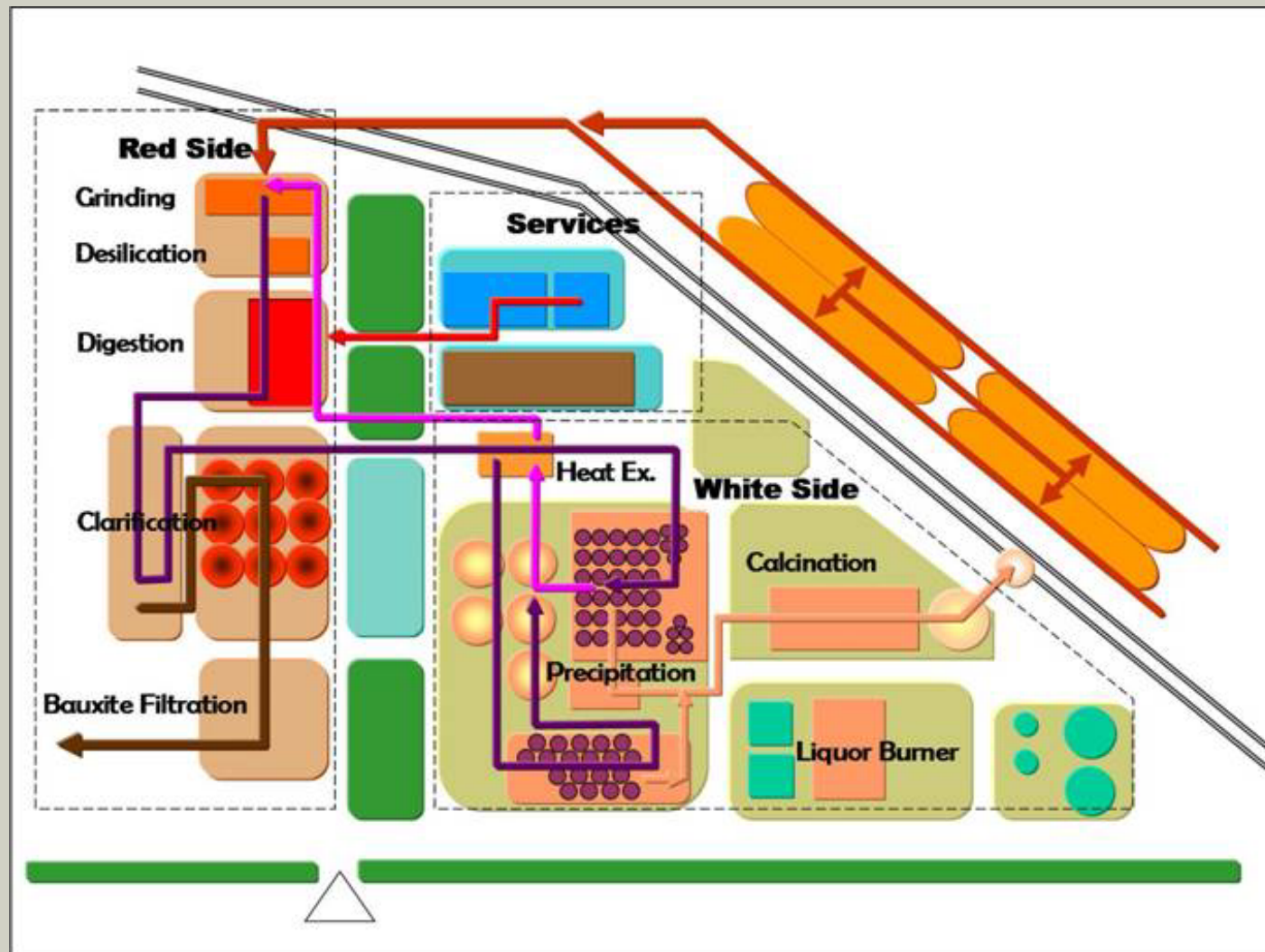


Boddington  
bauxite mine



Worsley refinery

# The Bayer Process



# Background

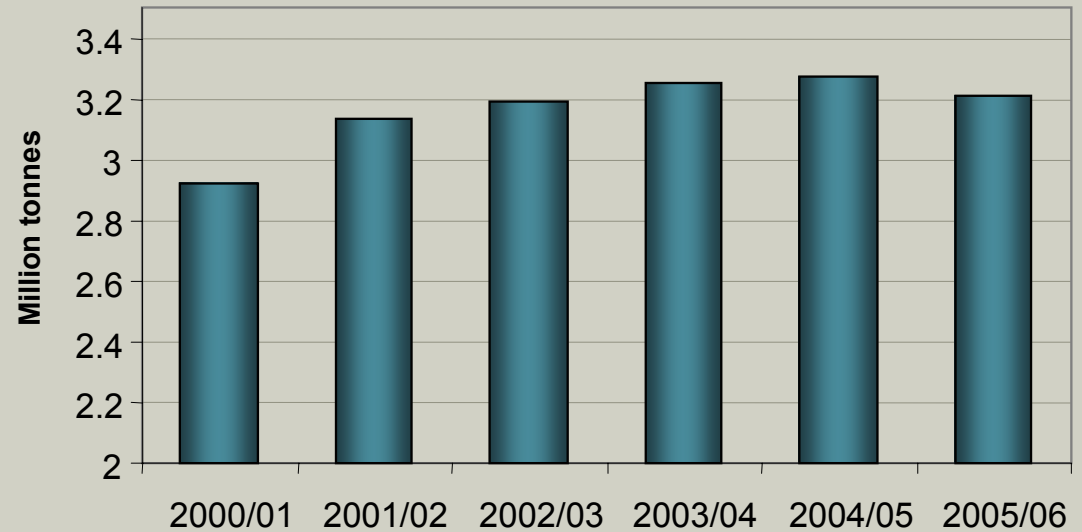
## Ownership structure

BHP Billiton (86%)

Japan Alumina Associates (10 %)

Sojitz Alumina (4%)

**Production performance  
2000/01 to 2005/06**



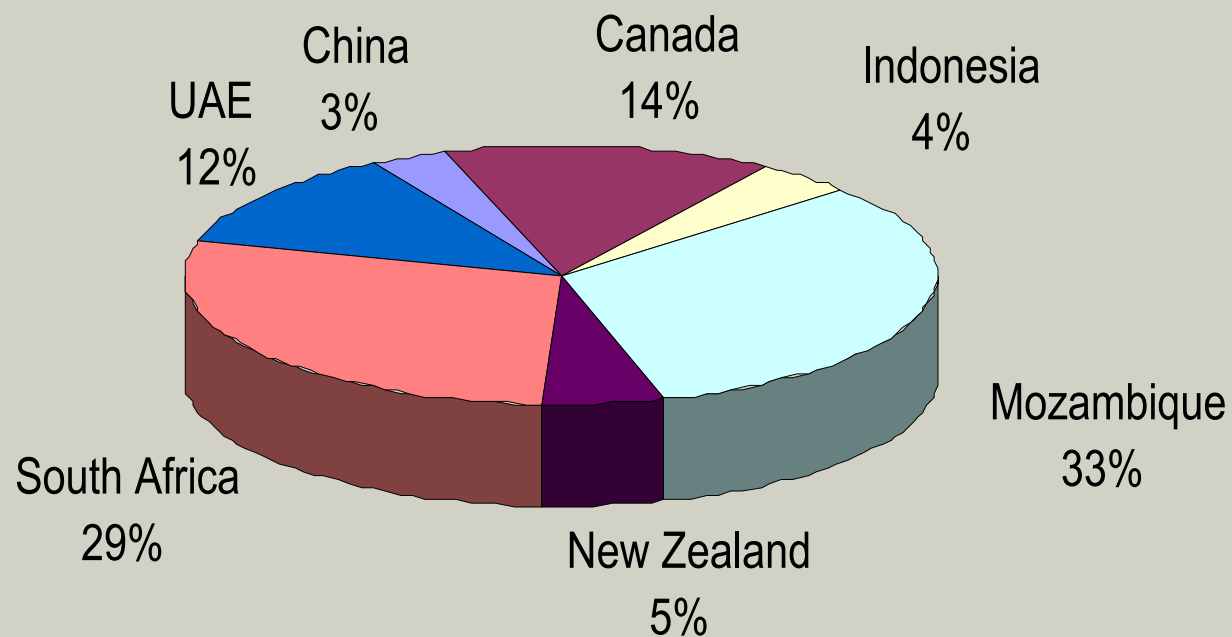
## REFINERY CAPACITY

1984	Worsley commenced - 1 million tonnes
1995	1.7 million tonnes
2001/02	3.1 million tonnes
2004/05	3.27 million tonnes
2006/07	3.5 million tonnes



## Background

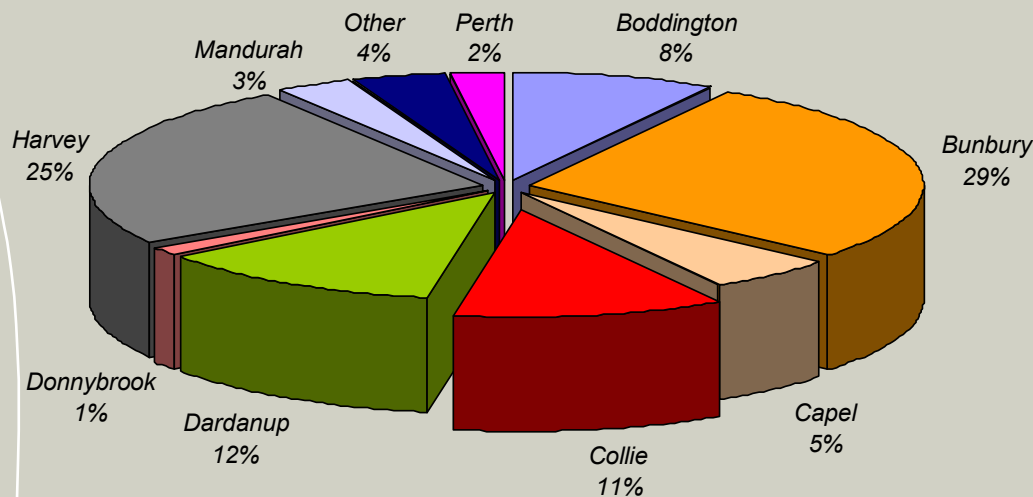
Worsley's product destination



# Our People

Worsley is the biggest single employer in the South West region

The company has a stable, highly skilled, workforce living in communities close to the refinery, mine and port



Where our employees live

## Employees

1243 at the refinery, 236 at the mine - 58 apprentices and 85 trainees

## Royalties and taxes

\$US12.8m in royalties

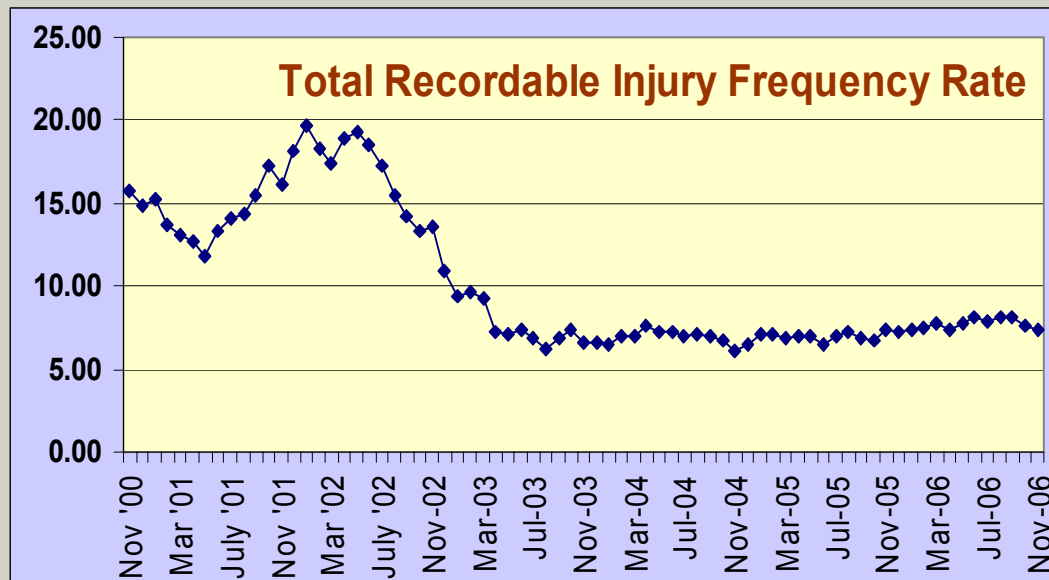
\$US5.5m in State taxes and charges

# Licence to Operate

## Health and Safety

The introduction of a behaviour-based approach to safety will achieve a step change in safety performance.

Workforce has been well trained in the techniques.



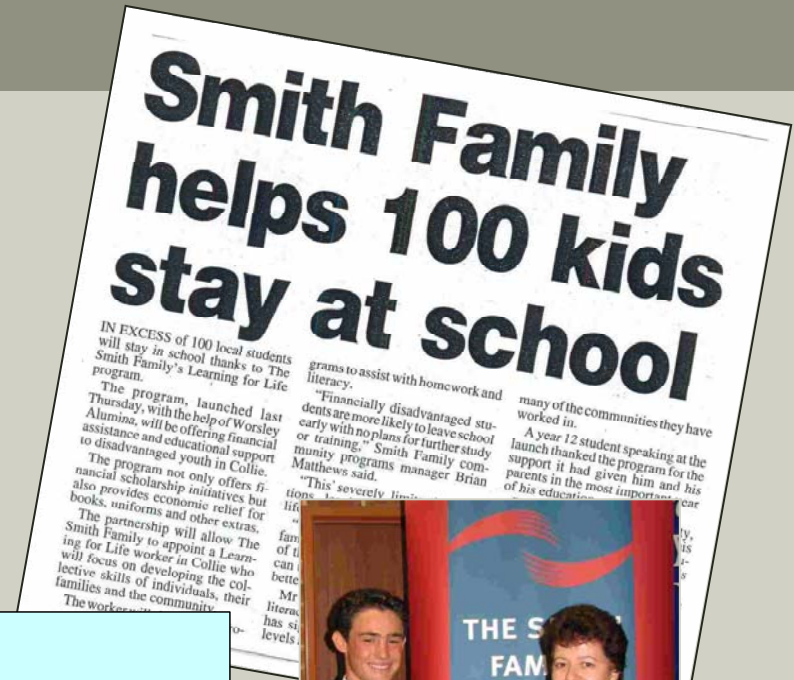
## Fit for Work, Fit for Life

1. Drug & alcohol program
2. Fatigue management
3. Regular medicals
4. Ergonomic analysis
5. Occupational rehabilitation
6. Health promotion
7. Travel health
8. Employee assistance programs

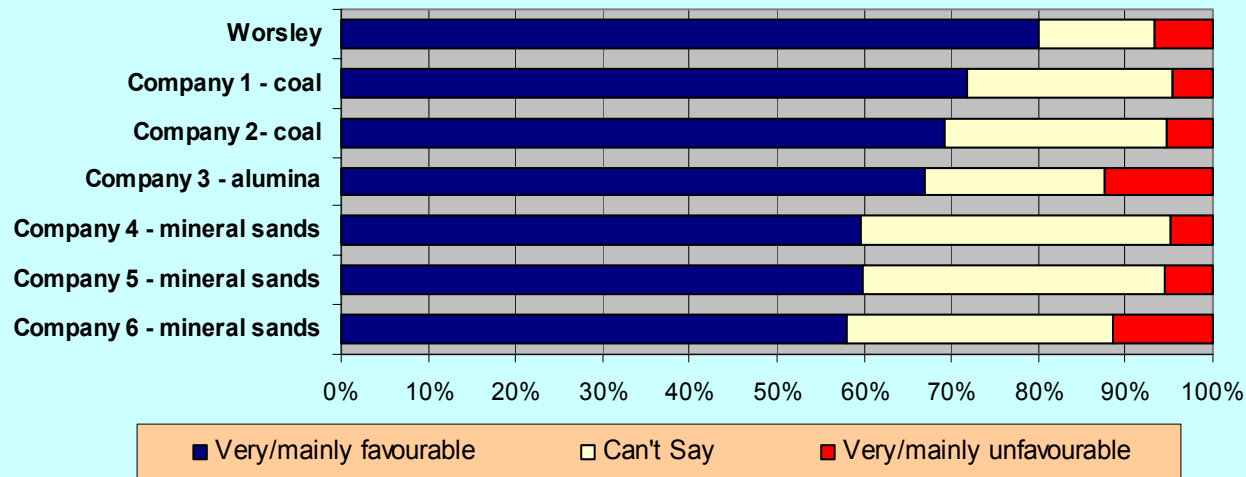
# Licence to Operate

## Community

- Established community liaison committees operating at the mine and the refinery
- Annual public reporting of HSEC performance
- Strong support for local business, employment



## Community reputation



2005 Community Survey



# Licence to Operate

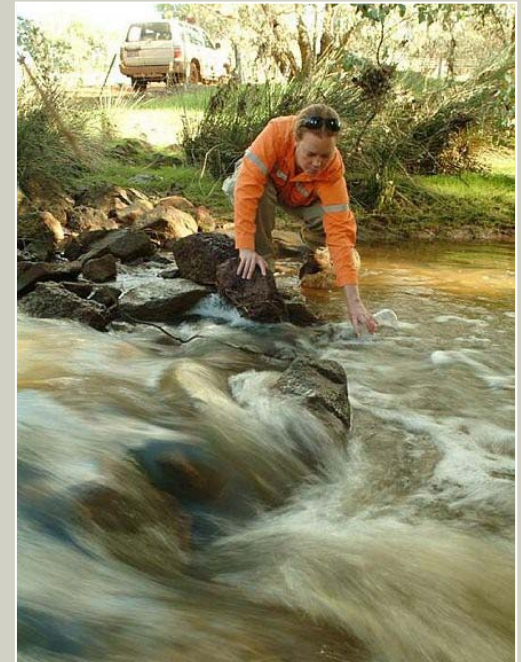
## Environment

Worsley's Environmental Management System has been certified with the International Quality Standard ISO 14001.

Audits were conducted with good results during 2005-2006.

### **Water resource management**

- Refinery situated at the head of the Augustus River catchment
- Water comes from underground bores and surface run-off capture
- Significant recycling of water at the refinery
- Focus on water efficiency and water substitution
- High-low rainfall operating strategies have been developed



# Licence to Operate

## Air quality

### Air Emissions Impact Assessment Process

- A panel of employees and consultants with high-level expertise
- A comprehensive program of sampling and analysis, modelling, health risk assessment, community and employee consultation and improvement plans
- Work overseen by independent peer review panel
- Considered industry best practice

## Greenhouse gas strategy

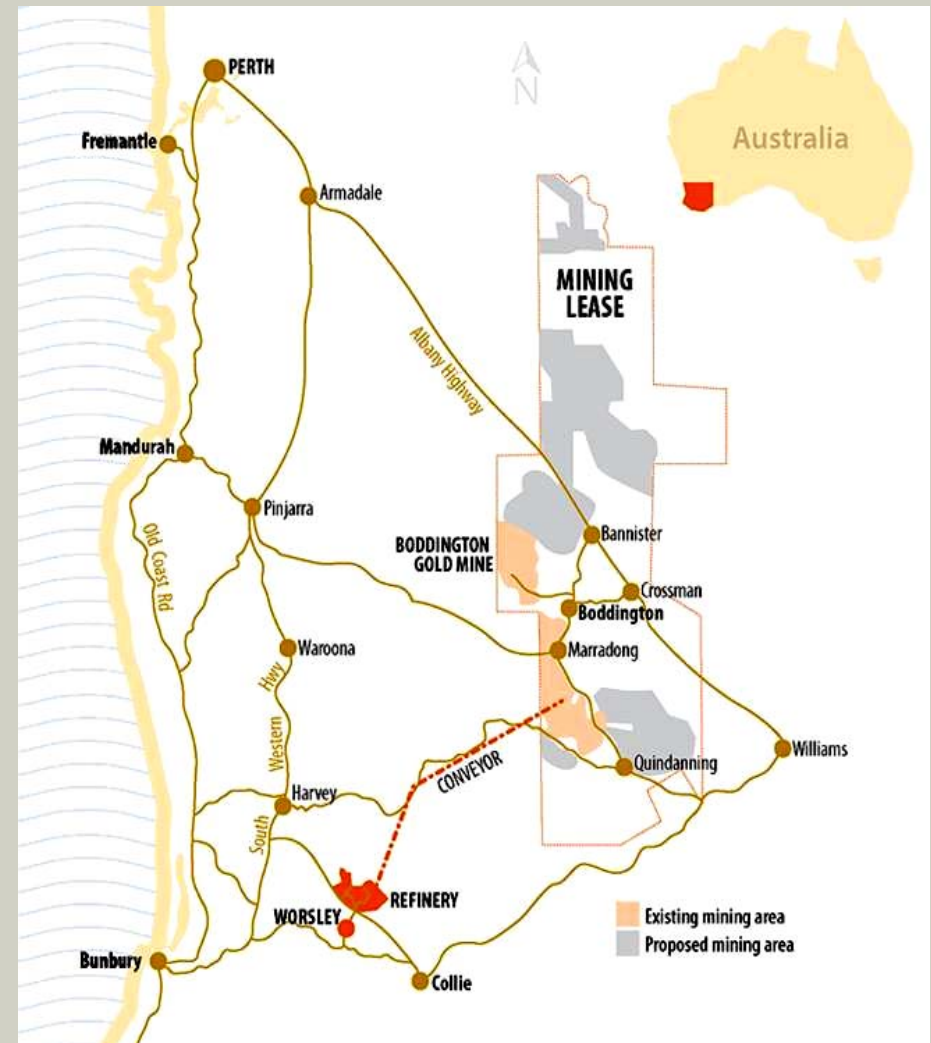
- Greenhouse Gas Project pipeline initiated – e.g.
  - Digestion Heater Body refurbishments
  - Decommissioning of Facility 034
- Renewable energy assessment
- DuPont energy audit



# World Class Asset

## Long life resources and reserves

- Original lease covered 11,300 sq km of State forest and agricultural land to the east of the Darling Ranges. About 70% has been relinquished for conservation and forest management.
- 682 Mt of Mineral Resources, which is inclusive of 306 Mt remaining Ore Reserves (June 2006)
- 24-year mine life at 3.50mtpa refinery capacity (based on Ore Reserves)



# World Class Asset



- Increased production capacity and plant stability following completion of DCP construction program

- Increase in capacity from 3.25 mtpa to 3.5 mtpa
- Commissioning has gone well
- Plant capability to achieve design rate of 3.5 mtpa is confirmed
- Continuing to focus on plant optimisation and stability





# World Class Asset

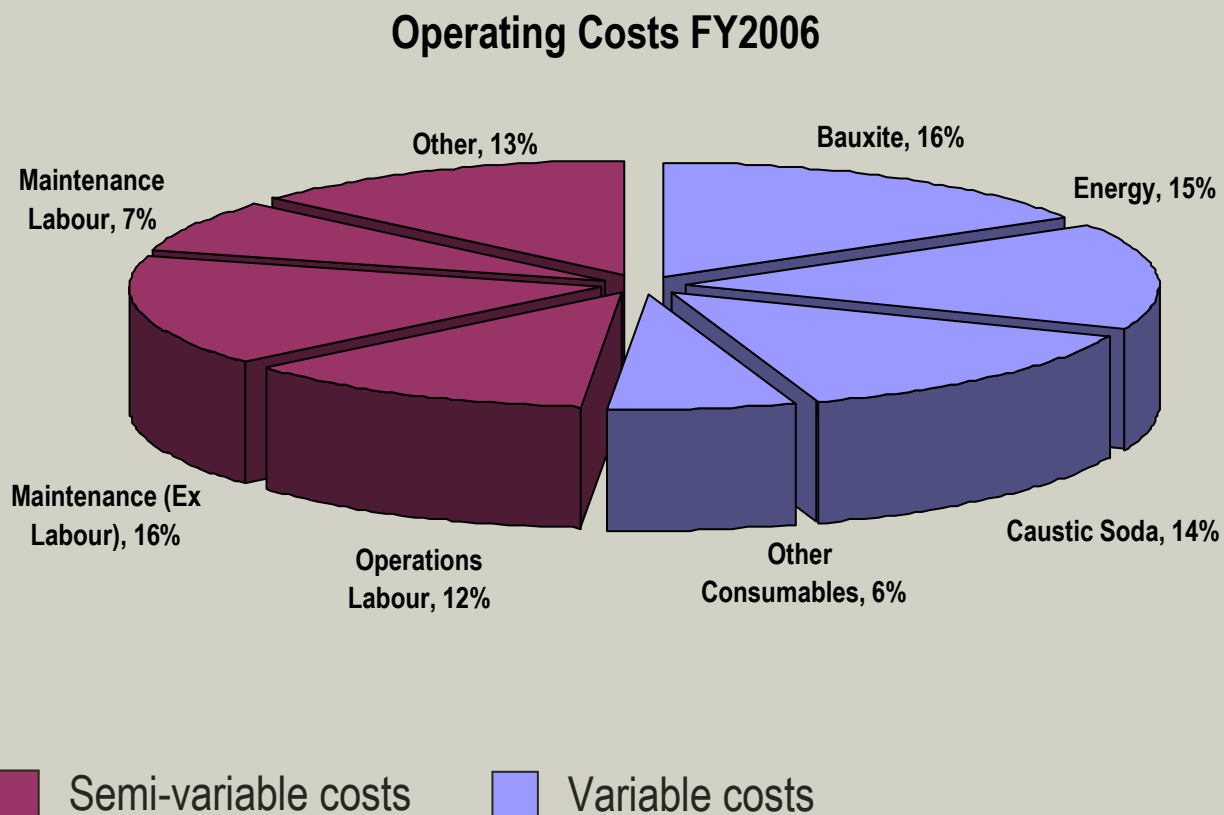
- Successful commissioning of ship loading facility at Bunbury Port
- Capacity to load alumina and unload caustic at 3000 tonnes per hour
- Capable of handling future growth



- New central control room is the first of its type in Australia. Leading edge technology for optimisation of process control
- Will facilitate rapid responses to plant stability issues and outages
- Latest in ergonomic features for shift operators

# Financial Strength and Discipline

## Worsley Alumina: Cost breakdown

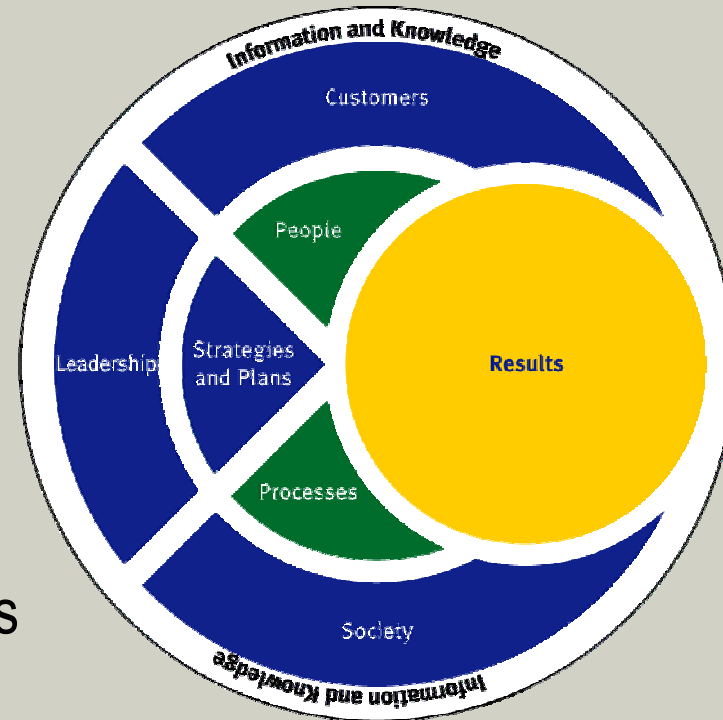


## Value Adding

**Business Excellence (PNQ) – key input for improvement planning**

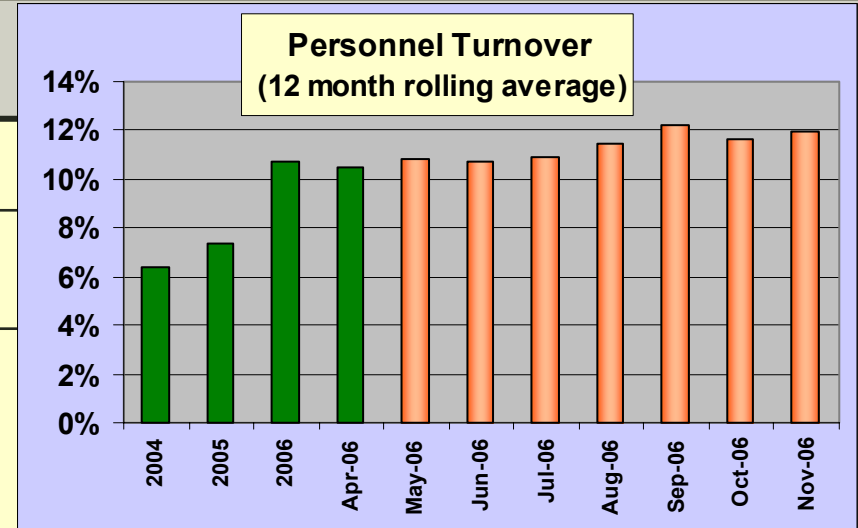
**Significant opportunity to leverage identified leading practices across the organisation and accelerate business improvement**

- Evaluation completed September 06
- First site to be evaluated against the customized framework.
- 12 potential leading practices identified



# Value Adding - Pipeline

Challenges	Opportunities
<b>Raw material costs</b>	<ul style="list-style-type: none"> <li>• Long term contracts</li> <li>• Usage strategies</li> </ul>
<b>Operating costs</b>	<ul style="list-style-type: none"> <li>• Long term contracts</li> <li>• Optimising energy efficiency</li> <li>• Cost control/waste minimization</li> <li>• Technology improvements</li> </ul>
<b>Labour supply</b>	<ul style="list-style-type: none"> <li>• Talent identification and development</li> <li>• Remuneration strategy review</li> <li>• Incentive Plan introduced</li> <li>• Aggressive apprenticeship and trainee program</li> </ul>
<b>Water resources</b>	<ul style="list-style-type: none"> <li>• Development of on-site storage capacity</li> <li>• Focus on water efficiency programs</li> </ul>
<b>Energy efficiency</b>	<ul style="list-style-type: none"> <li>• Focus on operational efficiencies</li> <li>• Continued development of project pipeline</li> <li>• Development of complementary technologies and energy sources</li> </ul>





# Growth

## Efficiency and Growth Project

Worsley has received WA Government environmental approval to expand mining and production to 4.4 mtpa

Project schedule affected by:

- Heated labor market
- Competition for equipment and materials
- Competing priorities for capital investment

The project remains in feasibility stage. Project team is:

- Investigating improved technologies and process
- Reviewing operating costs
- Optimising capital cost



# Summary



Worsley is a world class Tier 1 asset with a relentless focus on:

- Health and safety
- Cost control
- Research and development
- Business Excellence

Growth opportunities remain strong

# Aluminium CSG

Graeme Hunt  
President, Aluminium  
Wrap-up  
12 December 2006



## Summary

- **The Aluminium CSG remains a key part of the BHP Billiton portfolio and is one of the top aluminium companies in the world; Worsley is a key part of this**
- **Record** full year results
- **Margins** continue to expand
- **Benchmark** safety performance in the minerals portfolio and committed to sustainability and zero harm
- The China factor continues to be a major influence
- BHP Billiton Aluminium objectives for FY07
  - Zero Harm
  - To deliver another record year
  - To increase the focus on cost containment and predictable operations
  - To search for value growth opportunities