



# Pampa Norte

## Unlocking the potential of our orebodies

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# Statement of Mineral Resources and Mineral Inventory Classifications

## Mineral Resources

The information in this presentation that relates to the FY2015 Mineral Resources (inclusive of Ore Reserves) was first reported by the Company in compliance with the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012' ('The JORC Code 2012 Edition') in the 2015 BHP Billiton Annual Report of September 2015.

All reports are available to view on <http://www.bhpbilliton.com>.

Mineral Resources are reported by J. Cespedes (MAusIMM, employed by BHP Billiton) for both Cerro Colorado and Spence – combined as Pampa Norte.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Persons' findings are presented have not been materially modified from the original market announcements.

The above-mentioned persons are full-time employees of BHP Billiton, unless otherwise stated, and have the required qualifications and experience to qualify as Competent Persons for Mineral Resources under the 2012 edition of the JORC Code. The compilers verify that this presentation is based on and fairly reflects the Mineral Resources information in the supporting documentation and agree with the form and context of the information presented.

Asset	Deposit	Ore Type	Measured Resource (Mt)	Indicated Resource (Mt)	Inferred Resource (Mt)	FY15 ROM production (Mt)	BHP Billiton interest (%)
	<b>Copper</b>						
Pampa Norte	Cerro Colorado	All leach ore types	79 @ 0.53% Cu	281 @ 0.58% Cu	45 @ 0.63% Cu	18	100
	Spence	All leach ore types	205 @ 0.83% Cu	108 @ 0.42% Cu	27 @ 0.24 Cu	27	
		Hypogene sulphide	514 @ 0.47% Cu, 200ppm Mo	789 @ 0.45% Cu, 130ppm Mo	996 @ 0.40% Cu, 80ppm Mo	NA	

# Key themes

- **Pampa Norte's safety performance is amongst the best in the industry**
- **Our productivity focus is delivering a step change in our cost structure**
  - 38% reduction in unit cost expected at Spence in FY17 to US\$0.87/lb<sup>1</sup>
  - 27% reduction in unit cost expected at Cerro Colorado in FY17 to US\$1.91/lb<sup>1</sup>
- **The Spence Recovery Optimisation (SRO) project will enable full utilisation of ~200 ktpa tankhouse capacity**
- **The Spence Growth Option (SGO) project has the potential to extend life of mine by >50 years at attractive returns**
- **The recent approval of the life extension of Cerro Colorado will enable its full potential to be realised**

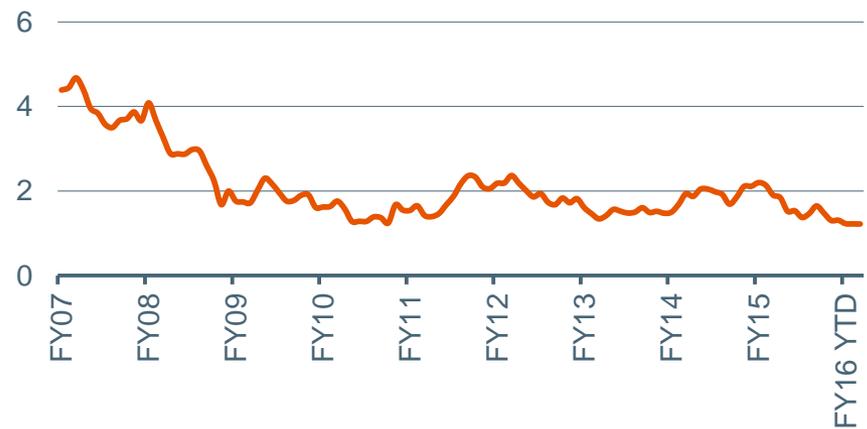
1. Relative to FY12. Unit cash costs based on exchange rates of USD/CLP 702 in FY16e and 729 in FY17e.

# Health and safety is our first priority

- Strong and sustainable safety track record
  - significant reduction in TRIF<sup>1</sup> over the last decade
- We are intensifying our efforts to eliminate serious incidents
  - reinforcing that safety always comes first
  - improving in-field verification of material and fatal risks
  - increasing the rigour of our investigations
  - sharing and applying learnings more broadly
  - enabling more focused field time by simplifying our work

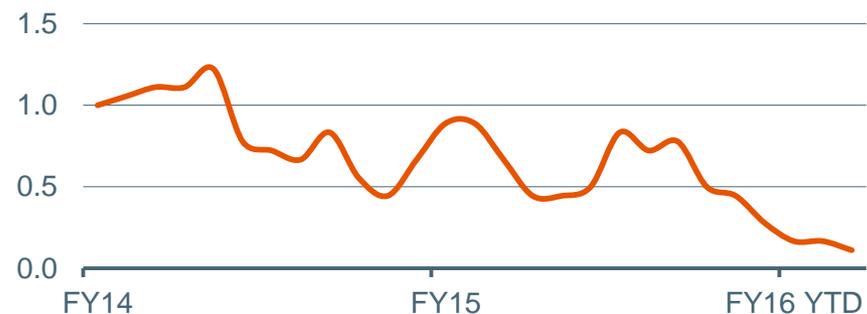
## Safety performance

12 month rolling average TRIF<sup>1</sup> per million hours worked



## Incidents with potential significant impact<sup>2</sup>

Index, July 2013=1.0 number of incidents, 3 month rolling average



1. Total Recordable Injury Frequency (TRIF).

2. Incidents with uncontrolled release of energy.

# Growing together with our communities

- Building on our successful track record of community engagement
  - community investment of ~US\$16 million since FY14
- Extensive indigenous community consultation process conducted by Cerro Colorado during recent environmental approval extension
  - successfully concluded in September 2015
  - approval of all participating communities formally provides social license to operate until CY23
  - opportunity agreements reached with long-term funds for development of communities
- Early community engagement at Sierra Gorda and Mejillones to establish key stakeholder support ahead of SGO project



Cerro Colorado agreement



SGO community engagement

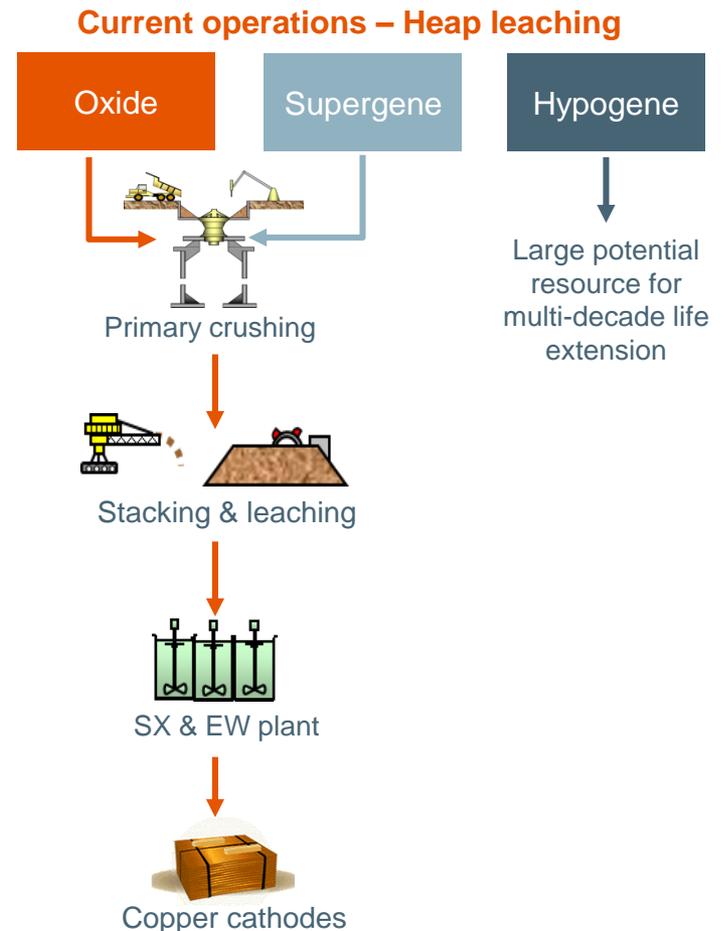
# Pampa Norte – Spence and Cerro Colorado

- Pampa Norte combined the Spence and Cerro Colorado operations into a single asset in CY10
  - complementary oxide and secondary sulphide leach operations
  - allows sharing of best practices and critical skills
- Contributed 36% of cathode production for the Copper business in FY15
- Copper production capacity
  - ~200 ktpa at Spence
  - ~80 ktpa at Cerro Colorado
- The Copper simplification process will see the Iquique office closed in FY16
  - further simplifies our business and supports sharing of functional resources with other assets



# Our current operations have further upside

- Spence and Cerro Colorado are comprised of open pit mines, sulphide and oxide leaching processes and SX-EW<sup>1</sup> plants
  - ~580 ktpd total material movement
  - 82 trucks operating at a benchmark performance of ~6,000 hours annually<sup>1</sup>
  - dynamic leach pads at both operations
  - total nominal capacity of 280 ktpa
  - water and power supply secured until end of life for current leaching operations
- Current reserves at Spence will support production into the next decade
  - 2.3 Bt hypogene resource can extend mining operations by >50 years
- Recently granted environmental approval extension at Cerro Colorado provides license to operate until CY23
  - potential hypogene mineralisation can also support a possible multi-decade life extension



1. Solvent extraction and electrowinning.  
2. FY15 year to date as of October 2015.

# Resetting the cost base

## Spence

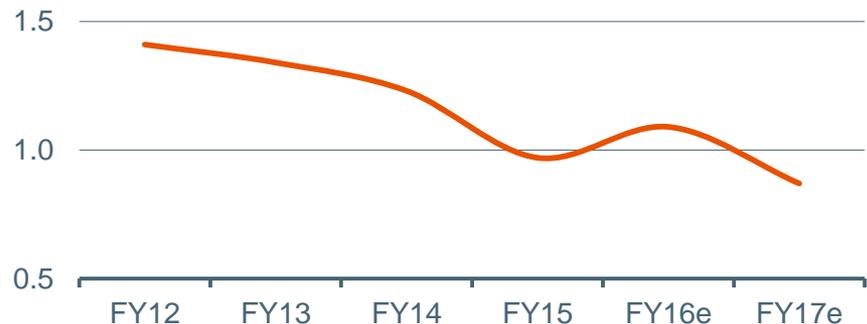
- Unit cost expected to decline 38% to US\$0.87/lb in FY17<sup>1</sup>
- Focused on reducing our key cost drivers
  - productivity efficiencies in fuel and power
  - mechanised pad irrigation lines
  - ~US\$16 million reduction in contractor spend expected in FY16
- We have improved people productivity by 17% since FY14
  - 15% reduction in total work force to ~2,250<sup>2</sup>
  - additional people productivity gains of US\$156 million expected by FY20<sup>3</sup>

1. Reduction relative to FY12. Unit cash costs based on exchange rates of USD/CLP 702 in FY16e and 729 in FY17e.

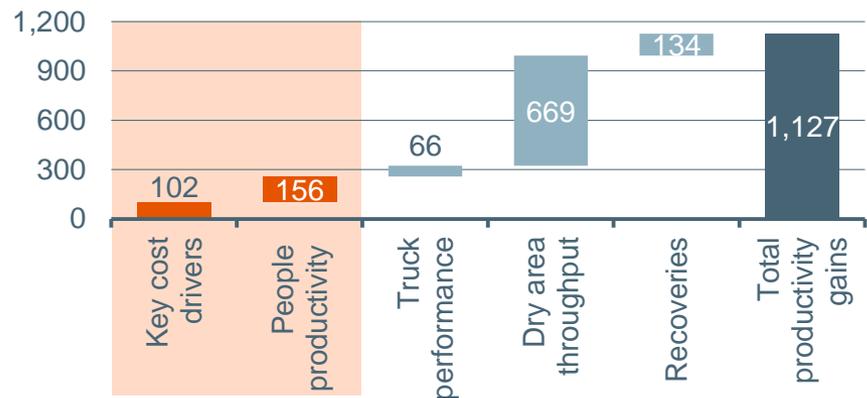
2. Reduction in full-time equivalent.

3. Relative to FY15.

## Substantial reduction in unit cash costs US\$/lb



## >US\$1 billion of productivity gains expected by FY20<sup>3</sup> US\$ million



# Maximising throughput and recoveries

## Spence

- We are optimising the use of our current infrastructure and equipment
  - truck utilisation expected to increase >12% to 6,300 hours annually by FY17<sup>1</sup>
  - dry plant throughput expected to increase 20% to 56 ktpd by FY16<sup>1</sup>
  - US\$735 million productivity gains associated with increased truck and dry plant utilisation over the next five years<sup>1</sup>
- Significant volume-led productivity gains supported by SRO project
  - 17%<sup>2</sup> improvement in sulphide ore recoveries to 82% expected by FY16<sup>1</sup>
  - US\$134 million in benefits associated with improved recoveries over the next five years<sup>1</sup>

1. Relative to FY15.

2. Increase in sulphide ore recoveries from 70% to 82%.

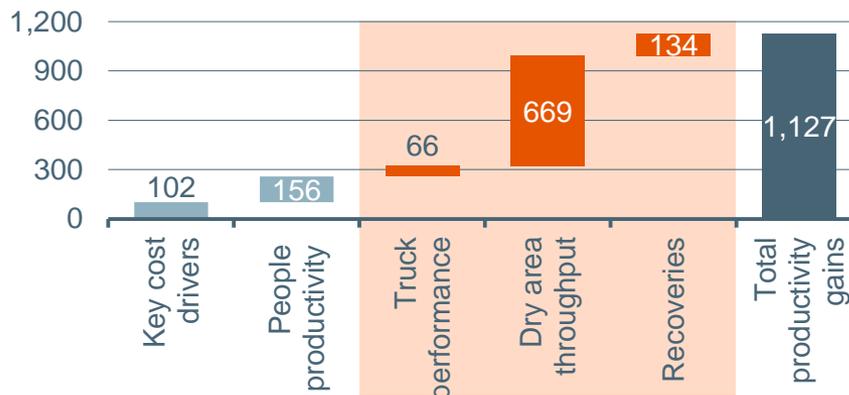
## Improving dry plant performance

ktpd



## >US\$1 billion of productivity gains expected by FY20<sup>1</sup>

US\$ million

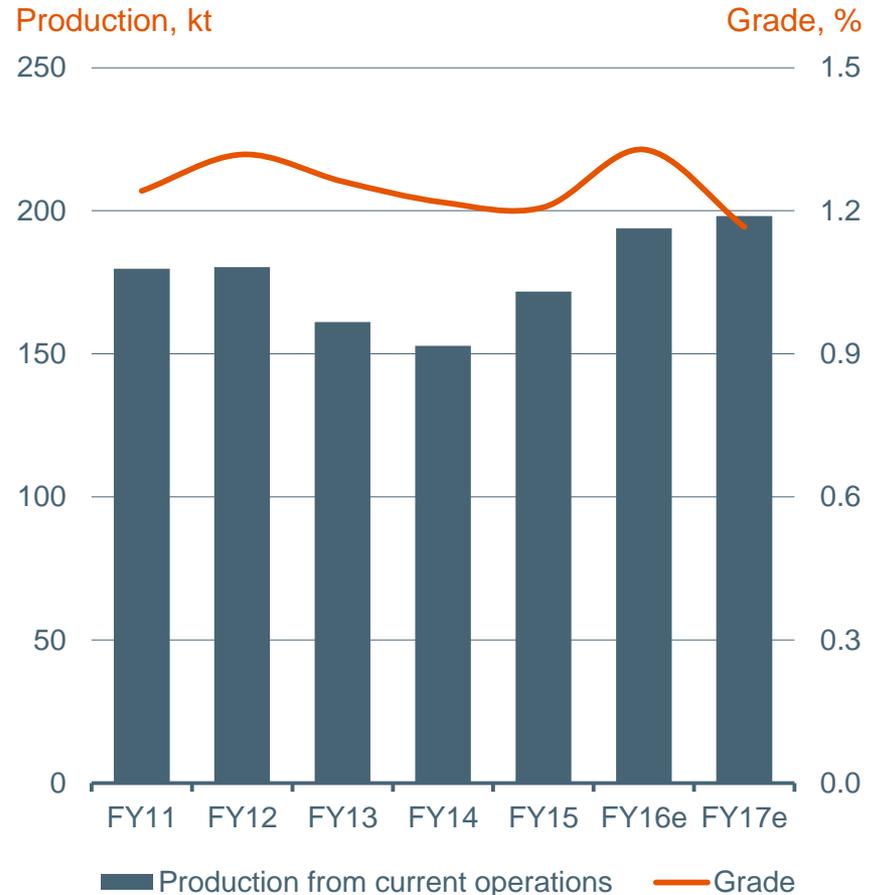


# SRO will fully utilise tankhouse capacity

## Spence Recovery Optimisation (SRO)

- SRO project expected to offset grade decline and support full utilisation of tankhouse capacity
  - acceleration of heap leach kinetics and increased utilisation of leach pads
  - will enable full utilisation of ~200 ktpa tankhouse capacity until FY19
  - supergene grades expected to average ~0.7% until resource exhausted in mid 2020s
- Currently in execution with completion expected by end of FY16
  - low-cost, capital efficient investment within our sustaining capital budget
  - coupled with parallel increase in crushing and stacking efficiency
  - bottleneck moves to the tankhouse

## Fully utilising the tankhouse with SRO

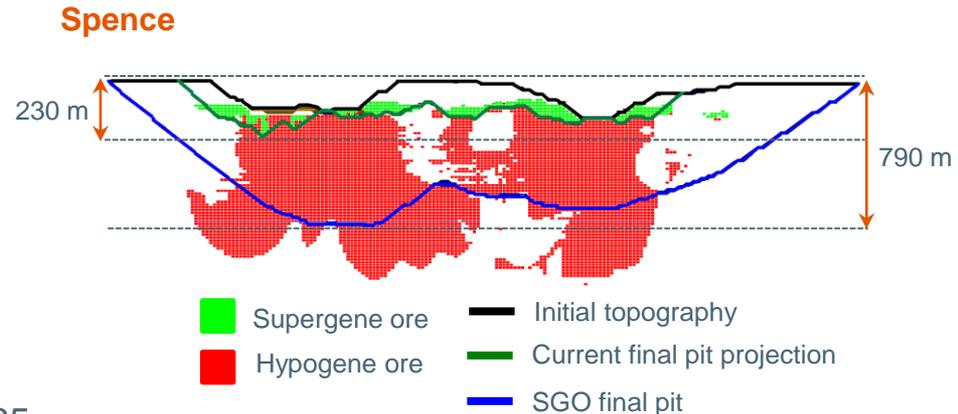


# SGO expected to extend mining operations by >50 years

## Spence Growth Option (SGO)

- Development of the 2.3 Bt hypogene resource beneath the current mine footprint
- Competitive capital cost estimate of <US\$2.2 billion will support attractive returns<sup>1</sup>
  - construction of a 95 ktpd concentrator with potential outsourcing of a desalination plant
- Supergene leaching continues in parallel until ~FY25
  - supplemented by low-grade hypogene leaching from early 2020s
- Potential to deliver incremental copper capacity of ~200 ktpa in the first 10 years
- Attractive copper and molybdenum grades will support solid second segment C1 cost position
- The project has advanced to feasibility with final Board review expected within 18 months
  - potential to start production in FY20

1. Excludes desalination plant.



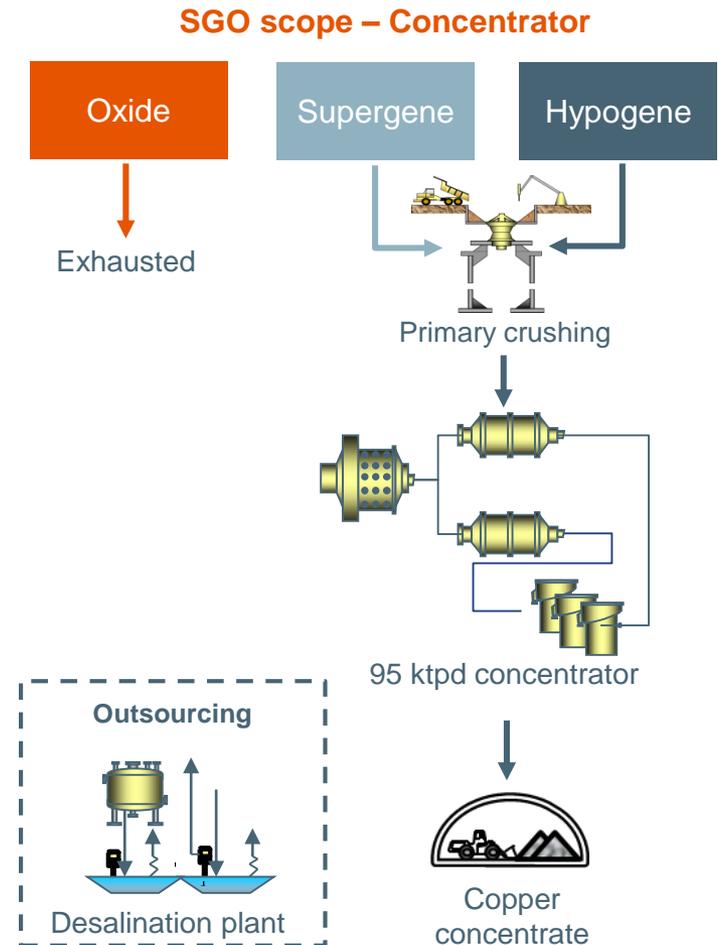
### Spence Growth Option

<b>Mineral resources</b>	2.3 billion tonnes (hypogene)
<b>Mining operations</b>	Potential to extend >50 years beyond FY25
<b>10-year average grade</b>	0.59% copper; 213 ppm molybdenum
<b>10-year average recovery</b>	88% copper; 60% molybdenum
<b>10-year average production</b>	Additional 200 ktpa copper and 5 ktpa molybdenum
<b>Cash cost</b>	Second segment of C1 cost curve

# Optimising the capital efficiency of SGO

## Spence Growth Option (SGO)

- We have reduced the capital estimate by ~US\$500 million during pre-feasibility studies
  - use of larger haul trucks in mining fleet
  - staged flotation reactors reduce footprint and lower power consumption by ~50%
- Further capital intensity and value optimisation being targeted
  - currently assessing option to outsource the desalination water plant
  - enhanced feed grades and increased plant throughput
  - execution in low point of the cycle provides opportunities to further optimise investment
- Evaluating complementary new technologies
  - introduction of innovative low-grade hypogene leaching in CY22

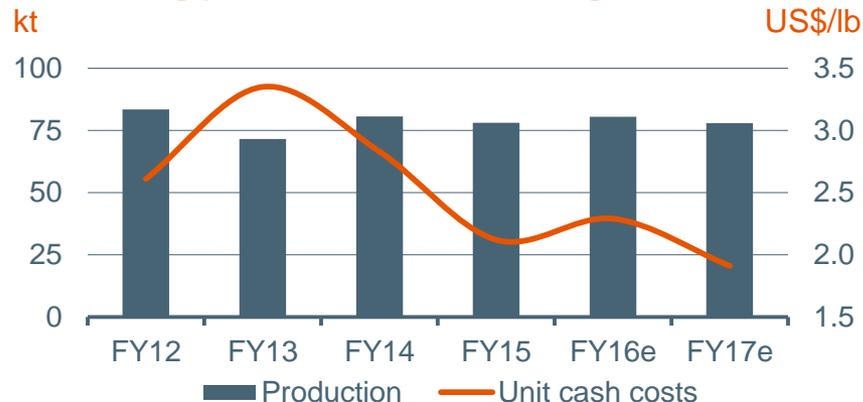


# A lean operation ready to move forward

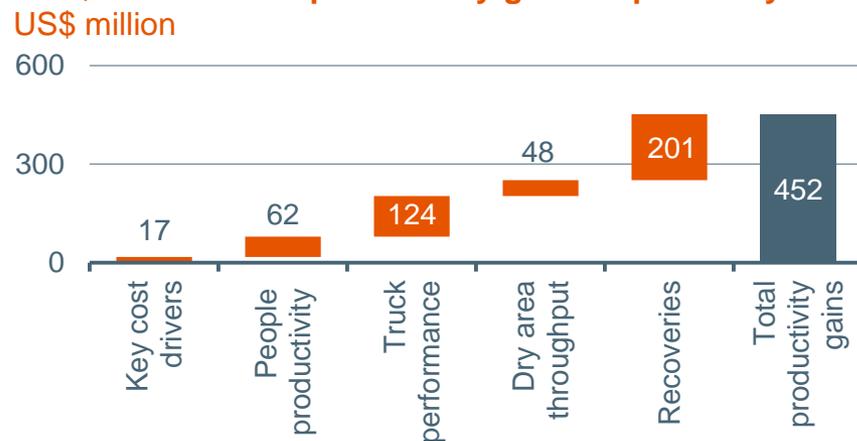
## Cerro Colorado

- Environmental permit extension supports near-term momentum and long-term optionality
- We have a clear path towards sustainable free cash flow generation at current copper prices
  - 60% reduction in sustaining capital since FY13
  - 27% reduction in unit cost expected by FY17 to US\$1.91/lb<sup>1</sup>
  - ~80 ktpa production expected until the end of life of mine
- Additional productivity gains expected by FY20<sup>1</sup>
  - more efficient use of key consumables (acid, explosives, energy)
  - reduction of ~550 full-time equivalent headcount (70% achieved to date)

## Maintaining production while reducing costs



## >US\$450 million of productivity gains expected by FY20<sup>1</sup>



1. Relative to FY12. Unit cash costs on a nominal basis, based on exchange rates of USD/CLP 702 in FY16e and 729 in FY17e.

# Retaining attractive optionality

## Cerro Colorado

- Significant growth optionality through additional supergene and potential hypogene mineralisation
  - potential hypogene mineralisation could extend the life of the mine beyond FY90
- Considering modular, low-capital intensity development options for hypogene
  - accessible with no pre-stripping as mineralisation is beneath current footprint
  - potentially supported by innovative low-grade, low-cost leaching

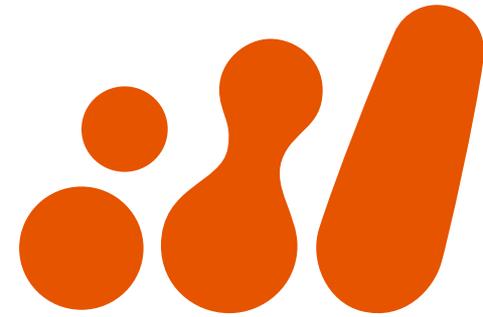
Cerro Colorado



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