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#### WHAT YOU WILL SEE AND HEAR THIS WEEK

#### **Assets**

# Three world class assets, each with significant endowment optionality

#### **Capabilities**

Our people driving relentlessly to best in class operational performance, innovation and capital discipline

#### Returns

A highly competitive business with options that provide leverage to a fundamentally attractive commodity







"World class assets and leading capabilities to deliver a world class business"

# WHAT YOU SHOULD TAKE AWAY...

~1Mtpa ~120c/lb Portfolio strength Production Future C1 unit cost (post Quellaveco) ~660kt A transformed business 2018 production guidance C1 unit cost: Lowest since 2010 with more to come... 135-140c/lb ~640ktpa **Continuing delivery** 2019 C1 unit cost Average production 2019-2021 Organic growth potential and optionality at Los Bronces **Disciplined growth** and Collahuasi

# **EXPERIENCED LEADERSHIP TEAM**



Duncan Wanblad CEO Base Metals

#### **Functions**



Ana Elisa Morgado Executive Head of HR Base Metals



Louis Irvine
Executive
Head of
Strategy &
Business
Development



Aaron Puna Executive Head of Technical & Sustainability



Alex Schmitt Executive Head of Marketing Base Metals



Domenico Pelliccia Executive Head of Projects



Trevor Dyer CFO Copper

# **Operations**



Hennie Faul CEO Copper



Patricio Chacana Head of Operations Los Bronces



Pedro Reyes General Manager El Soldado & Chagres



Jorge Gomez CEO Collahuasi

#### **Quellaveco**



Tom McCulley CEO Quellaveco



Christoff Kuhn Project Director Quellaveco



Peter White CFO Quellaveco



Diego Ortega Corporate Affairs

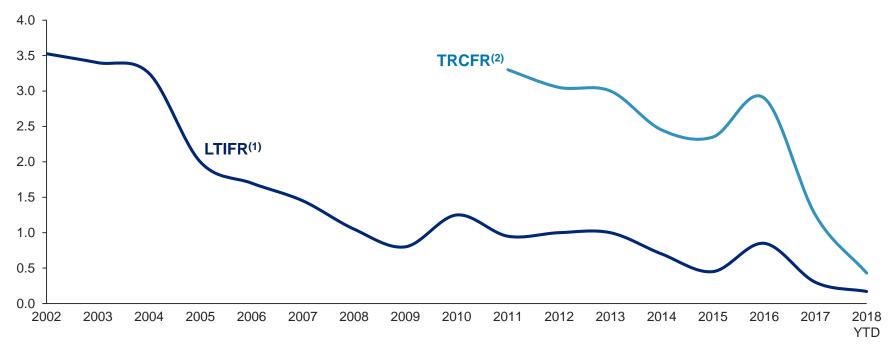
# **COPPER BUSINESS OVERVIEW**

**DUNCAN WANBLAD, CEO BASE METALS** 



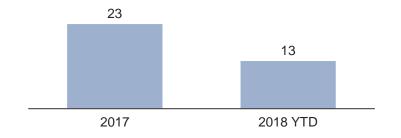
# SAFETY IS OUR NUMBER ONE PRIORITY

#### One of the best safety performances in the Chilean copper mining industry



Occupational health – new cases<sup>(3)</sup>

Significant environmental incidents(4)





#### **WORLD CLASS ASSETS**

#### **Los Bronces**

# **52**mt

Contained Copper Resources(5)

- 2018 forecast production: ~365kt
- Significant future growth optionality
- Contained copper in mineral resources is ~140x current production levels (5,6)

#### Quellaveco

# 300kt

Average first 10 years production

- Q1 on cost curve, LoM 30 years
- Strong social support and all key permits in place
- Attractive returns: IRR>15%, four year payback, ROCE>20%

#### Collahuasi

# 3rd

Largest endowment in the world

- 48mt of contained copper in Exclusive Mineral Resources and 30mt in ore reserves<sup>(5)</sup>
- 2018 forecast production: 240-245kt (our 44% share)
- Q2 on cost curve with 2019 C1 costs of ~\$1.00/lb

#### **El Soldado and Chagres**

#### El Soldado

- 2018 forecast production: ~50kt
- Technology focus to improve competitive position

#### Chagres

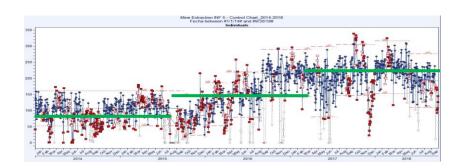
- Best in Chile and best in class smelter
- 2018 production: ~140kt

## COMBINED WITH OUR LEADING CAPABILITIES

#### Safety and sustainability

- Safety is our number one priority
- Healthy environment
- Thriving communities
- Trusted corporate leader

#### **Anglo American Operating Model**



#### Innovation, technology & digitalisation

- Concentrated Mine
- · Waterless Mine

Modern Mine

Intelligent Mine

#### Marketing

- Market intelligence
- Customer relationships
- Margin enhancement
- Operational flexibility

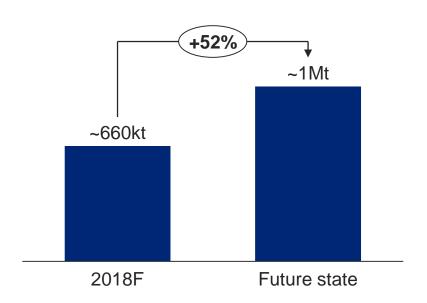
With a clear Purpose: Re-imagining mining to improve people's lives

# A WORLD CLASS COPPER BUSINESS



Production post ramp up of Quellaveco

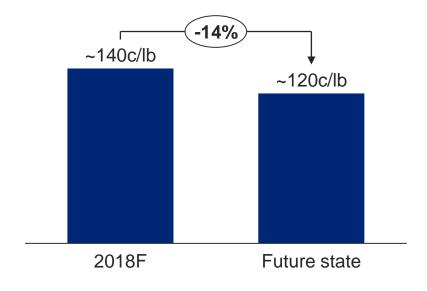
Production (kt)





Cost position

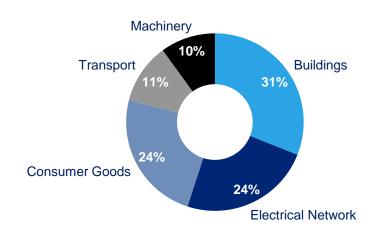
C1 unit cost (c/lb)



## LEVERAGE TO A HIGHLY ATTRACTIVE COMMODITY

# Wide range of applications make copper a key material throughout the economic development cycle

World Copper Usage Split (%)(7)



# Global development and diversity of applications expected to support future demand growth

Coper demand to come from a number of different sectors

Urbanisation

Renewables

Electric vehicles

Other transport

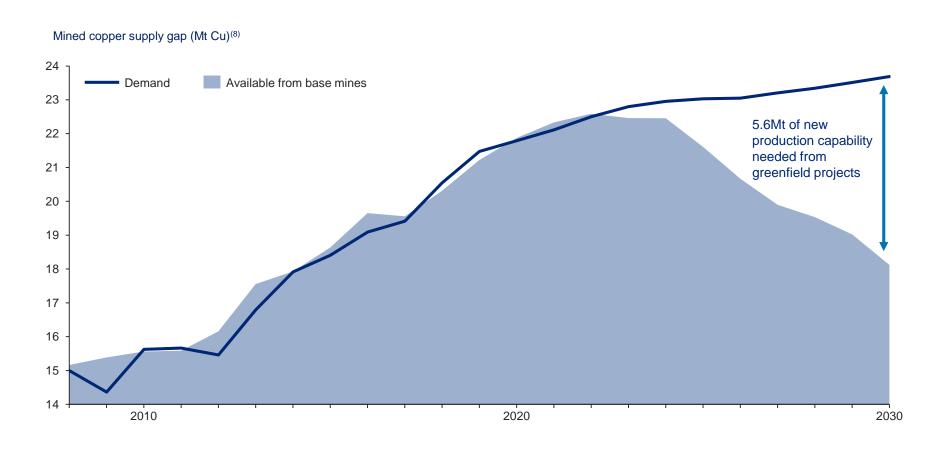
**Appliances** 



+4.3Mt
By 2030<sup>(8)</sup>

# **COPPER MINING IS INCREASINGLY CHALLENGING**

#### Ore grades are declining and copper mine supply is stagnating



#### INDUSTRY SUPPLY CHALLENGES ARE INCREASING

#### Supply side challenges...

# 1

#### **Limited new supply options**

- Few new porphyry deposits
- · Capital intensity and capital constraints
- Environmental issues and water scarcity
- Permitting
- Technical challenges

# 2

#### **Geopolitical risk**

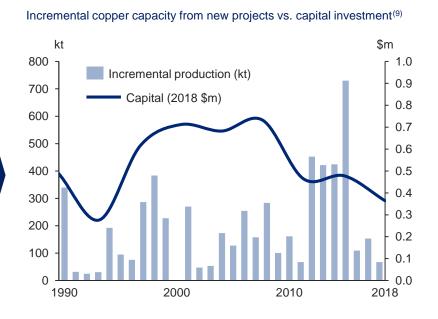
- Resource nationalism
- · Country risk / economic instability

# **3**

#### Stakeholder management

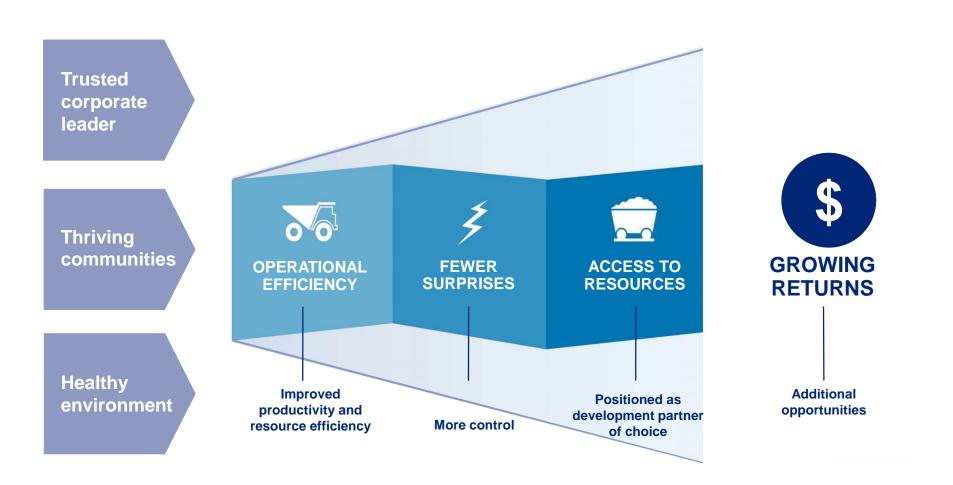
- Government
- Local communities
- Labour

#### ...driving reduction in investment in new capacity



A fresh approach is needed to address rapidly changing societal expectations

# SUSTAINABILITY AT THE HEART OF OUR BUSINESS



# **AMBITIOUS PLANS TO MAKE A REAL DIFFERENCE**

Reducing our carbon footprint...



## WATER MANAGEMENT IS CRITICAL IN MINING

#### Increasing competition and business risk

- Water scarcity exacerbated by climate change
- Greater competition for supply
- Increasing stakeholder engagement required
- Increase in permit complexity and timing e.g. ~10 years for water permits in Peru
- Water requirements are increasing
- Strong water management is critical to reducing and managing business risk

#### **Our strategy**

- Risk-based water management
- Transparent reporting
- Engagement with local and national stakeholders
- Responsible stewardship
- Water security for all our operations and communities









## A MULTIFACETED APPROACH TO WATER SUSTAINABILITY

**Recycling more** 

**Consuming less** 

**Technology & Innovation** 

**75%** 

Water reuse by 2020, increasing to 100% by 2030

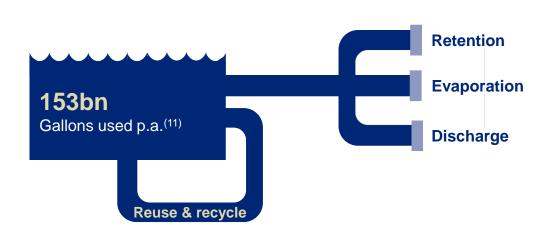


Fresh water abstraction by 2030<sup>(11)</sup>

**Coarse particle recovery** 

**Dry tailings** 

Tailings dam underdrainage





But recognising the need to selectively invest in a long-term solution

## IMPROVING LIVES OF THOSE IN OUR LOCAL COMMUNITIES

#### **Enterprise**



SME support
 Provides training, advisory and funding ~75,000 entrepreneurs benefited since 2006

#### **Employment**



- Increase job prospects with local companies, 1,300 people benefited to date
- Collaboration with local governments Improve their local employment offices
- Quellaveco
   Commitment to hire unskilled 80% of workforce from local community

#### **Education**

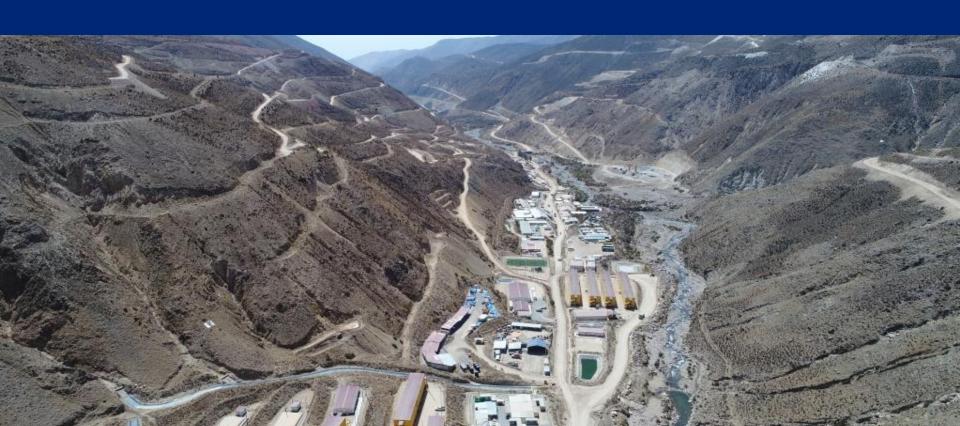


- Ambassadors programme
   Over 950 employees / 330 projects supporting community organisations
- Soy Técnico ('I'm a technician')
  Transforming vocational education,
  1,500 students benefited to date
- Collahuasi Educational Foundation

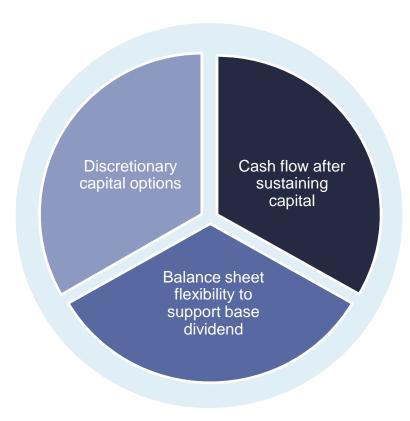
Focuses on developing the skills required to sustain our business in the long term

# VALUE ACCRETIVE GROWTH OPTIONALITY

**DUNCAN WANBLAD, CEO BASE METALS** 



## A BALANCED APPROACH TO CAPITAL ALLOCATION



Portfolio upgrade

Future project optionality

Additional shareholder returns

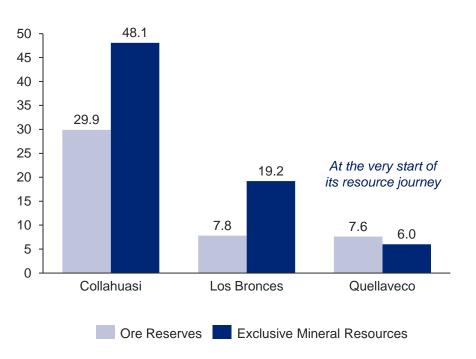
- Potential for growth is there but under the <u>right</u> circumstances and always based on value
- Maximising returns on existing capital base is the first priority
- Growth opportunities are focused on organic options
- A balanced portfolio that offers near-term, medium-term and long-term optionality in high quality jurisdictions

## SCALE AND ORGANIC GROWTH OPTIONALITY

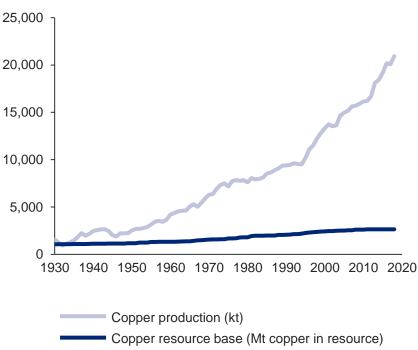
Three of the largest endowments worldwide with an average reserve life of 40 years

Growth options from existing reserves and huge upside potential from Quellaveco

Reserves and Exclusive Mineral Resources (Mt)(5)



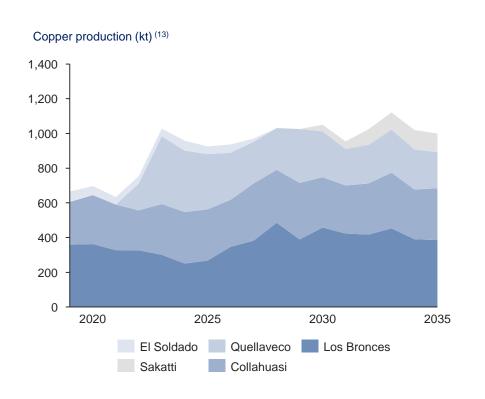
Mined copper production vs. resource base<sup>(12)</sup>



# A UNIQUELY POSITIONED COPPER BUSINESS

# A step change in volumes...

#### ...an improved cost position



#### C1 unit costs (c/lb)



## QUELLAVECO – A WORLD CLASS COPPER PROJECT

**Attractive returns** 

Focus on execution

Successfully syndicated

Low cost with significant potential

Strong local support and all key permits in place

Extending a long-standing relationship, confirms asset's value

**IRR** 

> 15%

Real, post-tax

**Payback** 

4 years

From first production (2022)

Consideration

\$600m

\$500m upfront, \$100m contingent

**ROCE** 

> 20%

Average over first 10 years

**Job creation** 

~9,000

In construction phase ~2,500 jobs in normal operation

Implied NPV

\$2.74bn

For 100% of the project

# LOS BRONCES – SIGNIFICANT GROWTH OPTIONALITY

**Current state** 

#### **Growth options**

**Future state** 

**Production** (2018F)

~365 ktpa

Los Bronces Underground

- · Abundant high grade ore
- Mine life extension to 2065
- Permit submission in Q1 2019

Production 400-500ktpa

**C1 Cost** (2018F)

~\$1.50 / lb

3<sup>rd</sup> quartile

Synergies with Andina

- · Reduced mine interference
- Increased extraction
- Mine life extension beyond 2040

C1 Cost ~\$1.30 / lb

2<sup>nd</sup> / 3<sup>rd</sup> quartile

Reserve life (2017)
23 years

Coarse Particle Recovery

 Utilising technology to increase throughput from existing infrastructure reducing costs and water consumption

Mine life ~40 years

#### **COLLAHUASI – PLANT EXPANSION OPTIONS**

#### Number of expansion options available

# 170ktpd

Existing licence allows throughput of up to 170ktpd, from existing levels of 155-160ktpd prior to 2020

# 210ktpd

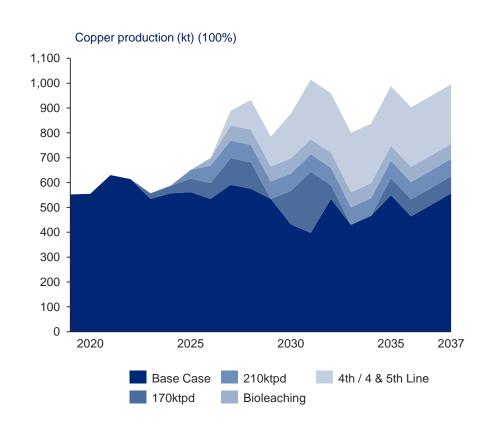
Investigating options to expand concentrator throughput capacity up to 210ktpd post 2020, ~\$1.2-1.5bn capex

# Bioleaching

As a part of the next EIA, optionality will also be sought to develop new leach pads that will enable us to implement a bioleaching process using the existing cathodes plant, ~\$0.9-1.1bn capex

## 4<sup>th</sup> / 5<sup>th</sup> line

Optionality exists for a long-term major growth project to add additional extra lines. Combined with the above would take copper production to ~900-1,000ktpa



## LONGER-TERM GROWTH OPTIONS

#### Sakatti

- Located in Finnish Lapland, in an established mining district, close to infrastructure
- Smaller high grade ore body
- Pre-feasibility studies in progress

#### **West Wall**

- Located in strategic centre of Chile
- Close to port infrastructure, 150km from the project

#### **Los Bronces District**

- · Located adjacent to proven production assets
- · Synergies with existing infrastructure
- · Attractive mineralisation

#### **Discovery**

- Targeting deposits that can deliver high cash flows and strong returns
- Los Bronces and Quellaveco near-asset projects
- Exciting prospective districts in diversified geographies, including Brazil, Zambia, Australia and Ecuador

# DISCOVERY & GEOSCIENCES TRANSFORMATIVE VALUE THROUGH DISCOVERY

DAVID FINCHAM, EXPLORATION VICE PRESIDENT, AMERICAS



## **DISCOVERY: SUPERIOR VALUE AND RISK DIVERSIFICATION**

#### Value focused

Deposits that can deliver high cash flows and optionality

Projects that can be built in capital efficient ways



#### Geographies

**Diversification of risk** 

New search spaces - Frontier & undercover

District-scale positions (1,000 to >10,000km²)



#### **Agility**

Operating Model adapted to Discovery

First-mover advantage



#### **Innovation**

Future Smart™ can unlock value in Discovery

Rapid implementation of innovative discovery concepts and tools



#### PROSPECTIVE DISTRICTS IN DIVERSIFIED GEOGRAPHIES

# Brazil Cu-Au

Prime position secured, >40,000km² under application

# Southern Africa cu-co

Zambezi W, >10,000km<sup>2</sup> secured

# Australia cu

Mt Isa South, >7,000km<sup>2</sup> under application

# Ecuador cu-Au

Prime position secured >650km<sup>2</sup>

Several additional ongoing programmes globally including Peru and Chile



**High-Priority Near Asset Discovery Projects** 

Los Bronces District: Cu-Mo

**Quellaveco District: Cu-Mo** 

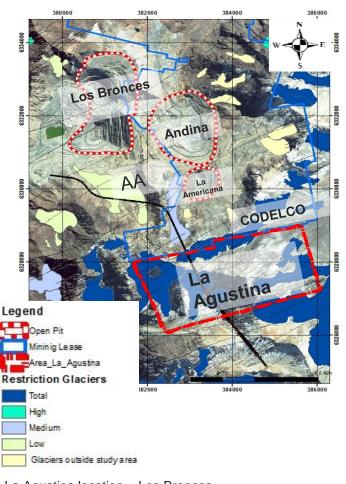
Mogalakwena/Northern Limb: PGE-Ni-Cu

## LOS BRONCES AND QUELLAVECO NEAR ASSET PROJECTS

- Airborne geophysics flown over both districts to identify high concentrations of sulphide minerals
- Structural interpretations key to understanding potential location of economic mineralisation
- Geochemistry and geology to refine targets
- Focused and rapid drilling to test most prospective targets



Drill core with hydrothermal breccia mineralization - La Agustina prospect, Los Bronces



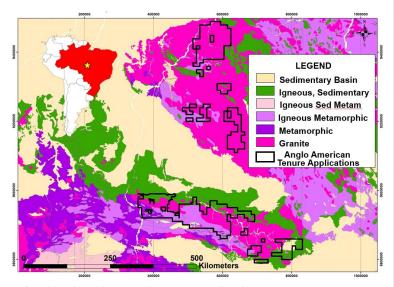
La Agustina location – Los Bronces

## BRAZIL GREENFIELDS CU – AN EMERGING FRONTIER

- Emerging Frontier Cu-Au district with over 40,000 km² under application in Mato Grosso and Pará states
- Our largest greenfield land package; a first-mover advantage
- New discovery concept: >1 billion year old large-tonnage porphyry Cu-Au
- Drilling at Uñiao has confirmed an extensive porphyry copper system; drilling ongoing to establish if economic
- Geological mapping and geophysics aim to locate further Uñiao style targets in the very large land holding



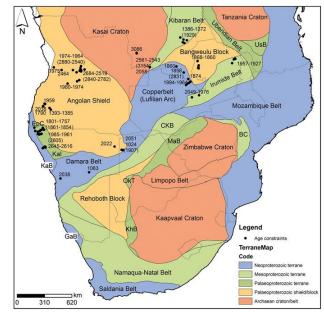
Drill rig at Uñiao



Regional geology and tenure applications

# **SOUTHERN AFRICA – EXPLORING BASE-METAL FRONTIERS**

- Large land holding (>10,000km²) located in Zambezi
   West, Zambia, in the western extension under cover of the world class Central African Copper Belt
- Prospective for large tonnage Cu-Co deposits
- 20 to 300m of "Kalahari" sand cover
- The right rocks are now confirmed under cover, with signs of fertility; drilling ongoing

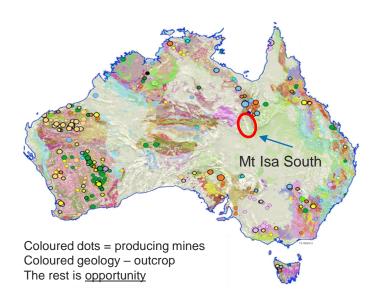


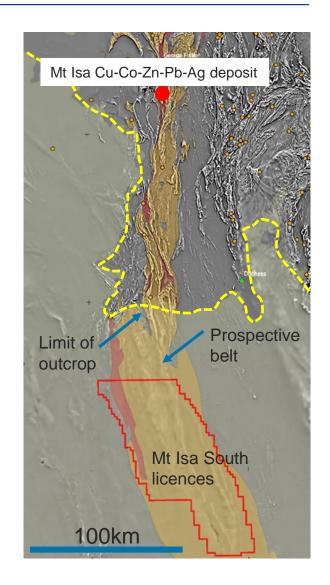
Southern Africa - geology



## MT ISA SOUTH – A NEW GENERATION UNDERCOVER PLAY

- Currently > 7,000 km<sup>2</sup> of tenure under application
- Exploring for superior-grade copper deposits undercover; e.g. a repeat of Mt Isa Cu (300Mt @ 3% Cu) is one of the most attractive high grade targets on the planet, even at 1km depth
- No significant previous exploration
- Discovery will leverage innovative concepts and tools



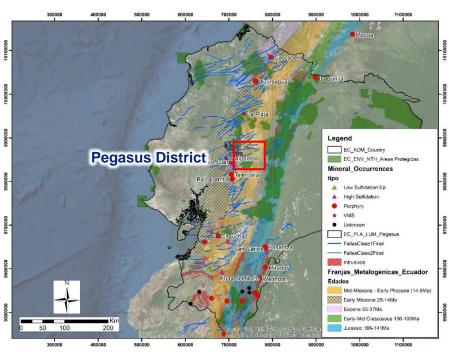


# ECUADOR – RAPIDLY EMERGING SUPERIOR VALUE PORPHYRY BELT

- Emerging Porphyry Cu-Au (Mo) province
- Cascabel (SolGold) and Llurimagua (ENAMI/CODELCO) indicates potential for high-grade Cu-Au (Mo) systems
- Earn-in agreement completed with Luminex for the Pegasus project
- Pegasus is a >650km<sup>2</sup> district with outcropping porphyrystyle mineralisation
- Geological fieldwork and geophysics planned for 2019 to establish drill targets for 2020
- Country wide targeting work is ongoing



Porphyry-style alteration and mineralisation – Pegasus project



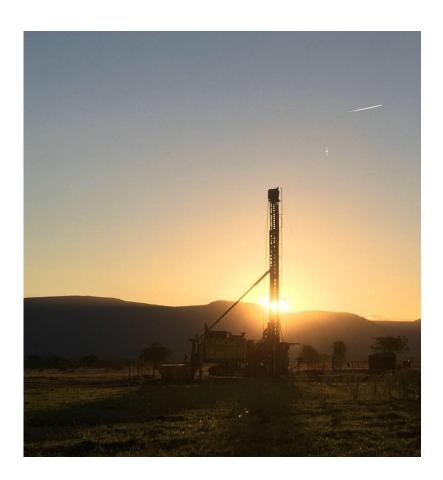
Ecuador geology and Pegasus project location

## **SUMMARY**

 Value-focused, agile exploration in diverse geographies underpinned by innovation

 Applying new approaches and concepts in our near-asset and greenfields portfolios

 Robust greenfields project pipeline with district-scale positions focused on highly prospective provinces



# OPERATIONAL PERFORMANCE: A TRANSFORMED BUSINESS

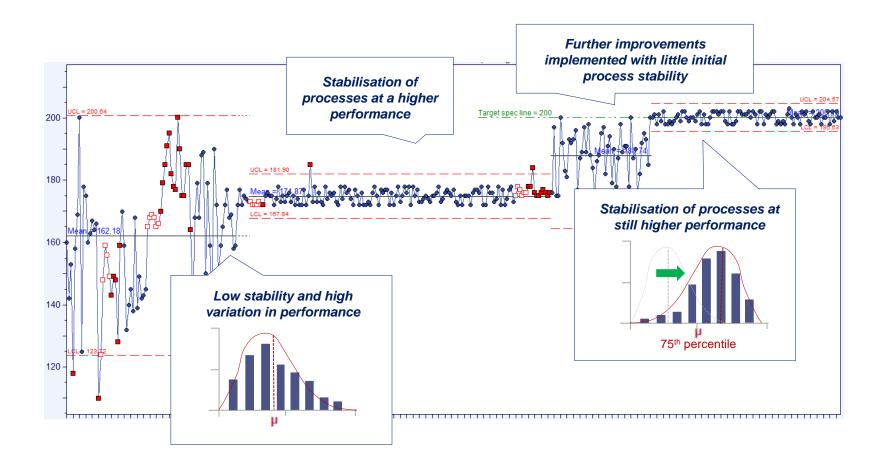
**DUNCAN WANBLAD, CEO BASE METALS** 



# ANGLO AMERICAN OPERATING MODEL: A DIFFERENTIATED APPROACH

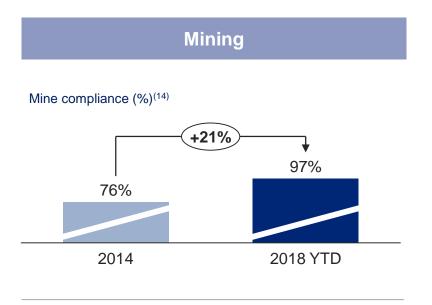
Apply a manufacturing approach to mining, through organised and efficient planning and execution of work

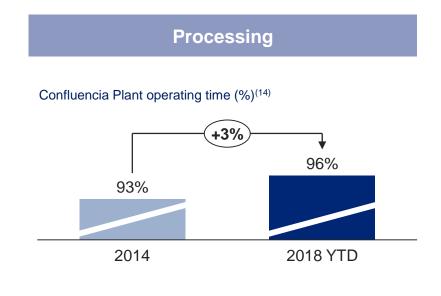
Work that is planned, scheduled and properly resourced is safer and delivers consistently and at a lower cost



#### A RELENTLESS FOCUS ON EFFICIENCY

#### **Los Bronces performance metrics**





+19%
Shovel performance(14)

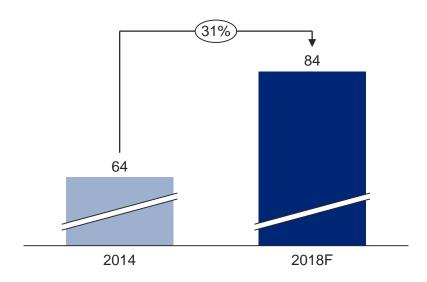
+19%
Molybdenum production(14)

#### MORE PRODUCTIVE AND COST EFFICIENT

#### **Copper business unit**

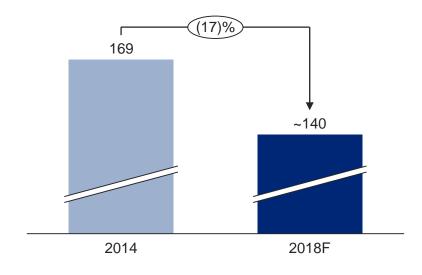
#### **Productivity**

Copper production per person<sup>(15)</sup>



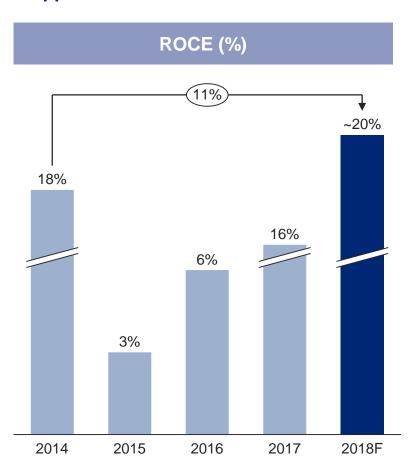
#### **Unit costs**

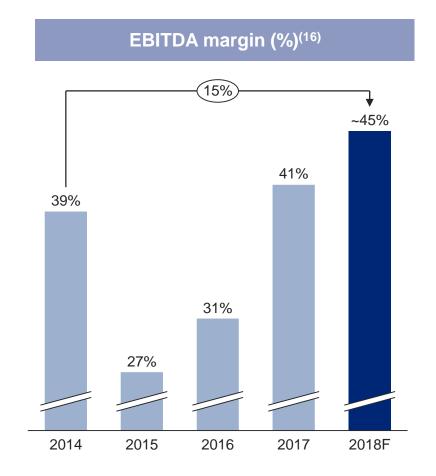
C1 unit cost (c/lb)



#### **HIGHER RETURNS AND IMPROVED MARGINS**

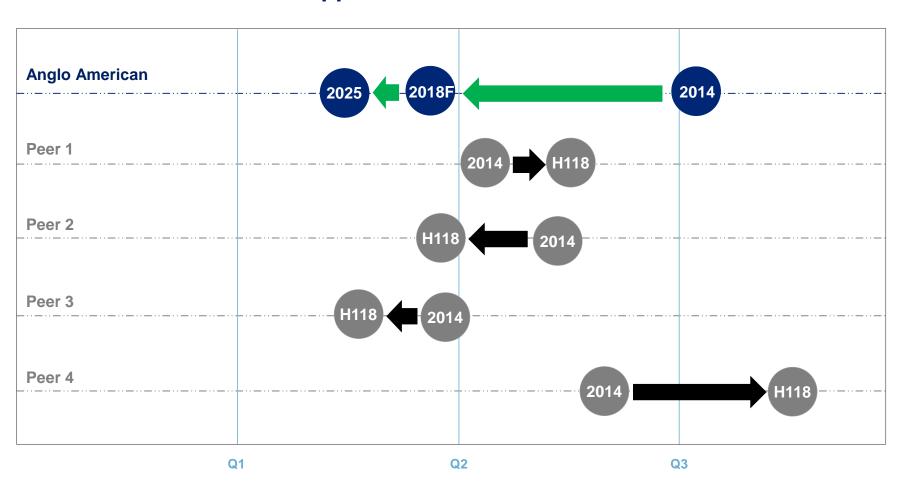
#### **Copper business unit**



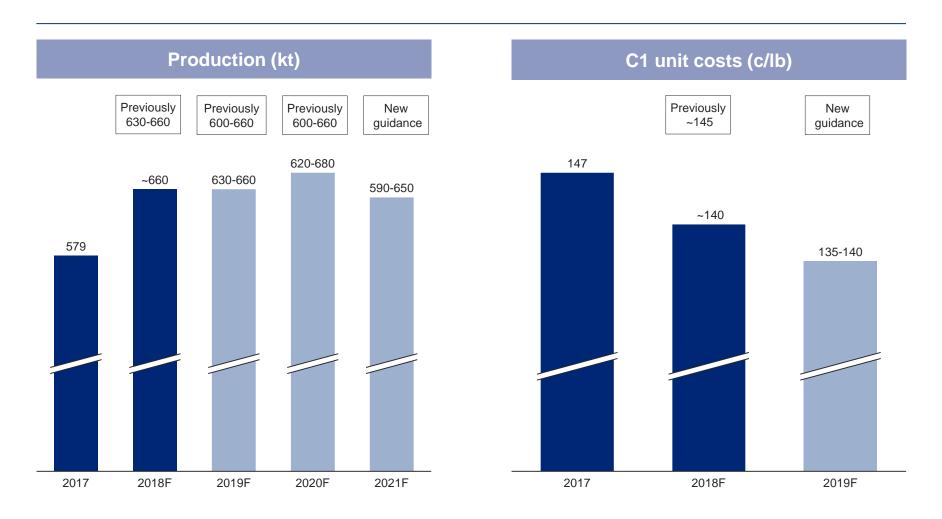


#### AND A SIGNIFICANTLY IMPROVED COMPETITIVE POSITION

#### Lowest copper unit costs for over a decade



#### TO DELIVER ENHANCED SHAREHOLDER RETURNS

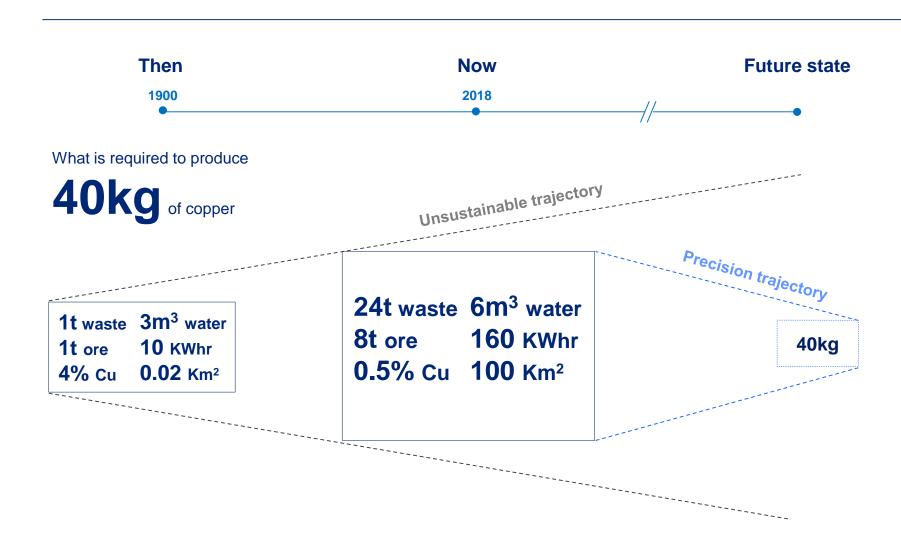


# REDEFINING MINING THROUGH INNOVATION

**AARON PUNA, EXECUTIVE HEAD OF TECHNICAL & SUSTAINABILITY** 



#### INNOVATION IS NEEDED TO ENSURE SUSTAINABILITY



#### WE ARE TAKING A TWO PHASED APPROACH

Achieving & redefining 'best in class' performance

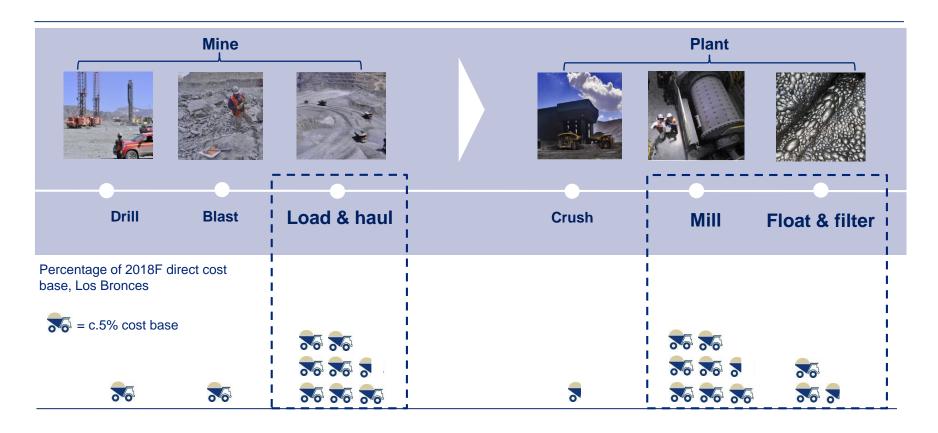


Innovation, technology and digitalisation



A more productive, more efficient, sustainable business

#### **FOCUSED ON THE KEY VALUE DRIVERS**



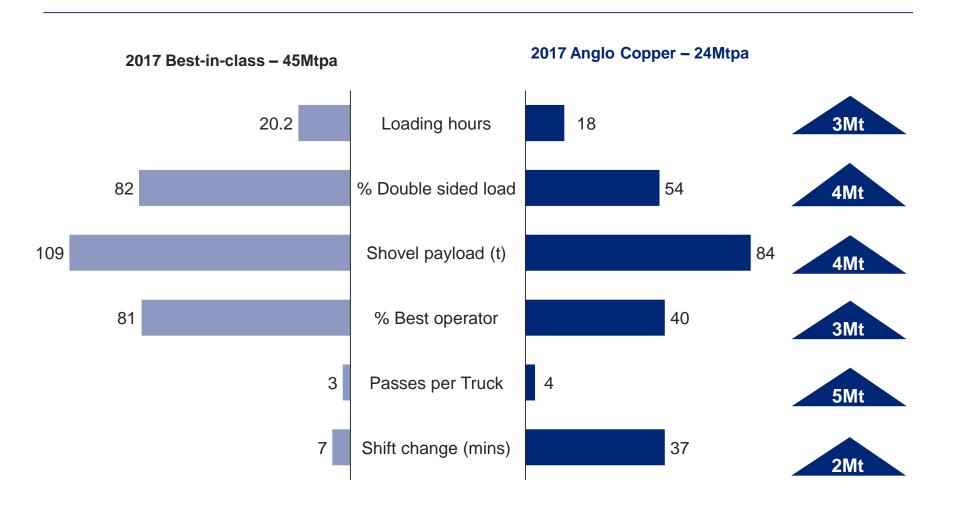
>45Mtpa
Shovel
performance

+10%
Throughput increase

> 94%
Operating time

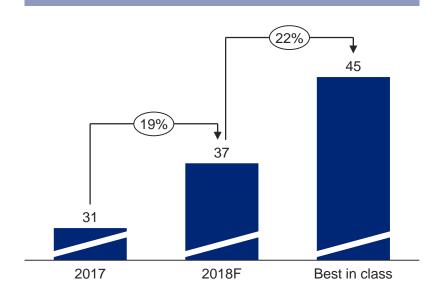
> 89%
Recoveries

#### CASE STUDY: ELECTRIC ROPE SHOVEL PERFORMANCE



#### CASE STUDY: ELECTRIC ROPE SHOVEL PERFORMANCE

#### **Collahuasi Shovel 12**



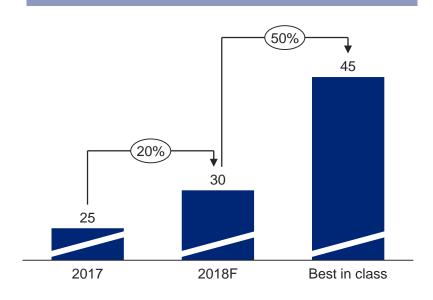
#### 2018

- Double side loading increased to 80%
- Best operator 80%

#### **2019 Focus**

- Shovel payload
- Time management

#### **Los Bronces Shovel 10**



#### 2018

- Double side loading increased to 80%
- Best operator 80%
- Shovel passes per truck 3.5

#### **2019 Focus**

- Shovel payload
- Time management

#### A NUMBER OF GAME CHANGING TECHNOLOGIES





#### COARSE PARTICLE RECOVERY: IMPROVED RECOVERIES



**Technology** 

- Flotation process changed to allow for larger diameter material
- Ore is liberated and recovered at a higher grade

**Benefits** 

- Significant increase in throughput
- Solidified disposal material

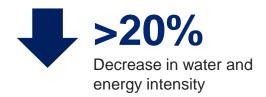
**Applicability** 

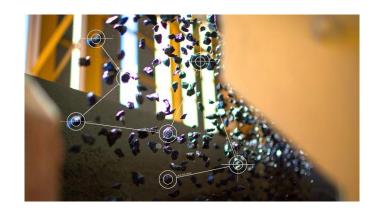
- All Copper assets
- Platinum Group Metals

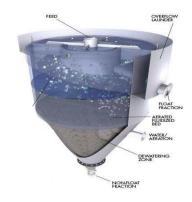
#### **COARSE PARTICLE RECOVERY: IN COPPER**













#### **BULK SORTING: LESS WASTE TO CONCENTRATOR**



#### **Technology**

- Uses sensors to determine ore content prior to processing
- Gangue is removed using natural heterogeneity of ore bodies

#### **Benefits**

- Provides immediate grade assays
- Unlocks production capacity by rejecting waste early
- Allows for lower cut off grades (LOM extension)
- Reduces bench cost and complexity

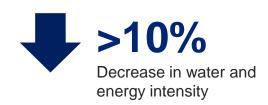
#### **Applicability**

- All Copper assets
- Platinum Group Metals and Iron Ore

#### **BULK SORTING: IN COPPER**













#### WHAT DOES THIS MEAN FOR COPPER?

**Energy** 

Water

Costs

Contributing to Group energy targets

In line with Group target and one step closer to a waterless mine

Lower operating costs and reduction in mine equipment SIB capex







# COPPER MARKETING: LEVERAGING A WORLD CLASS PRODUCTION PLATFORM

ALEX SCHMITT, EXECUTIVE HEAD OF MARKETING (BASE METALS)



# LEADING CAPABILITIES AND GLOBAL FOOTPRINT TO IDENTIFY MARKET OPPORTUNITIES

#### Leading capabilities

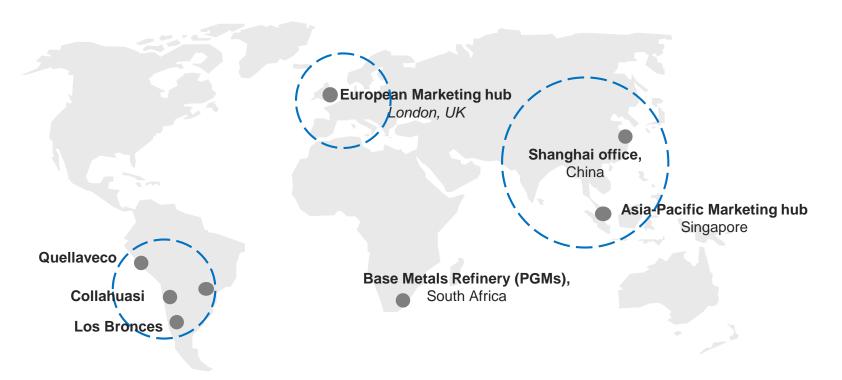
Governance

Compliance

- Freight desk
- Risk management
- · Futures trading
- Performance management

- Credit markets
- Logistics and sales operations platform

#### **Global footprint**



# MARKET FOCUS: CONNECTING COPPER SOURCES TO END CUSTOMERS



# SHAREHOLDER FOCUS: DELIVERING VALUE THROUGH MARKET INTELLIGENCE

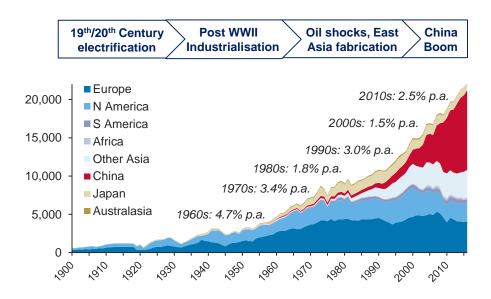


#### A VITAL INDUSTRIAL METAL...

#### World Copper Usage Split 2017 (%)<sup>(7)</sup>

# Transport Transport 10% Buildings 31% Consumer Goods Electrical Network

#### World Geographic Split (kt)<sup>(7)</sup>



#### AND NOW A VITAL LIFESTYLE METAL FOR THE FUTURE

Increasing urbanisation improves living standards

A sustainable greener world

Generational shift to emission free transportation options

60%

More electricity required, with "middle class" increasing from 2bn to 5bn people by 2030

4x to 12x

More copper used for renewable energy than conventional power systems

**4x** 

More copper usage in electric vehicles than conventional engines (20-80 kg/vehicle)

Potentially significant upside

#### LEVERAGING A WORLD CLASS PRODUCTION PLATFORM



#### Going beyond 'dig and deliver' to add value through:

Deep market intelligence guiding marketing, production and investment decisions

Third party sourcing facilitating blending and arbitrage opportunities

Broadening the offering to customers and providing a USP

End-to-end value chain oversight optimises working capital

## CONCLUSION

**DUNCAN WANBLAD, CEO BASE METALS** 



#### **BUILDING A WORLD CLASS COPPER BUSINESS**

- Step-change performance delivered
- Further improvements committed
- Investment to unlock full asset potential
- Deliver value-enhancing growth at an improved cost position
- Providing leverage to a highly attractive commodity



### **APPENDIX**

#### **FOOTNOTES**

- (1) Managed operations, total Lost Time Injury Frequency Rate per 1,000,000 hours
- (2) Managed operations, Total Recordable Cases Frequency Rate per 1,000,000 hours
- (3) New cases of occupational disease. Basis of data changed in 2017 hence no comparable data available for prior years
- (4) Level 4-5 environmental incidents. Environmental incidents are classified in terms of a five level severity rating, incidents with high and major impacts, as defined by standard internal definitions, are reported as level 4-5 incidents
- (5) Ore Reserves and Mineral Resources are based on published 2017 Reserves and Resources report. Estimates as at 31 December 2017. Please refer to the AA plc Ore Reserves and Mineral Resources Report 2017 for the tonnes, grades and a breakdown of the classification categories. Los Bronces District figures include Los Bronces Mine as well as Los Bronces Sur and Underground Inferred Resources
- (6) Production based on 2018 forecast
- (7) Source for copper usage split: Wood Mackenzie (Q3 Copper LTO, 2016)
- (8) Source: Wood Mackenzie (Global copper mine supply summary, 2018). 4.3Mt represents forecast incremental consumption from 2018 to 2030. 5.6Mt represents the forecast incremental supply required from greenfield copper mines in order to meet forecast demand
- (9) Source: Wood Mackenzie (Global copper mine supply summary, 2018)
- (10) Reductions by 2030 vs. 2016
- (11) Managed operations. Water use, efficiency and consumption baseline is 2017
- (12) Sources: USGS, SNL, Wood Mackenzie, Corporate reports, Bernstein analysis & estimates
- (13) All figures stated on 100% basis except Collahuasi which is on a 44% basis
- (14) YTD September 2018 vs. 2014. Shovel performance is for 73yd3Mt. Moly production based on September YTD production annualised vs 2014 full year
- (15) Copper production from existing operations divided by full time own employees and permanent contractors. 2018 production based on latest forecast. Collahuasi production and headcount at 100%
- (16) Excludes the impact of third party sales