Olympic Dam – Future Directions

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Statement of Mineral Resources

Mineral Resources and Ore Reserves

The information in this presentation that relates to the FY2015 Mineral Resources (inclusive of Ore Reserves) and 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 on 25 September 2015.

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

Mineral Resources are reported by S. O’Connell (MAusIMM) – Olympic Dam.

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 person is a full-time employee of BHP Billiton and has 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.

Table 1.

<table>
<thead>
<tr>
<th>Deposit</th>
<th>Measured Resource (Mt)</th>
<th>Indicated Resource (Mt)</th>
<th>Inferred Resource (Mt)</th>
<th>Total Resource (Mt)</th>
<th>BHP Billiton interest (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olympic Dam Sulphide</td>
<td>1.330 @ 0.96% Cu, 0.29kg/t U₃O₅, 0.40g/t Au, 2g/t Ag</td>
<td>4.610 @ 0.79% Cu, 0.24kg/t U₃O₅, 0.32g/t Au, 1g/t Ag</td>
<td>4.120 @ 0.71% Cu, 0.25kg/t U₃O₅, 0.24g/t Au, 1g/t Ag</td>
<td>10.100 @ 0.78% Cu, 0.25kg/t U₃O₅, 0.30g/t Au, 1g/t Ag</td>
<td>100</td>
</tr>
</tbody>
</table>
Today’s Presentation

Part 1: Operations Update
Part 2: Every Mineral Has A Story
Part 1: Olympic Dam – Operations Update

CY15, C1 cash costs, copper US$/lb

- **Segment #1**
  - Predominated by large, porphyry copper mines
  - ~100 mines
  - ~20% of total output

- **Segment #2**
  - Predominated by polymetallic mines
  - ~80 mines
  - ~55% of total output

- **Segment #3**
  - Higher-cost operations
  - ~90 mines
  - ~25% of total output

Source: C1 cost curve based on Wood Mackenzie data for peers and BHP Billiton data for own assets.
1. Unit cash costs presented net of one-off items, by-product credits, freight and TCRCs for Olympic Dam.

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Becoming a C1 cash cost producer

• Current situation
  — bottleneck = mine
  — existing processing plant not running at full capacity
  — desired bottleneck = smelter/refinery
  — minimal capital environment

• Options?
  — higher grades (more metal, same tonnes)
    o extend the mine footprint
  — more tonnes at higher grades
    o debottleneck the plant with minimal capital
  — step change in metal output
    o mine and process plant expansion
Historical Cu grades and tonnes milled
A Tier-1 Resource with selectivity options

- An attractive 10 Bt poly-metallic Resource\(^1\)
  - fifth largest copper deposit in the world
  - largest uranium deposit
  - third largest gold deposit
  - near-term expansions maintain long-term optionality
  - high-grade opportunities, can this be realised?

- Sublevel open stoping underground mine allows selective access to specific grades

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1. A breakdown by Resource classification is provided on slide 3, table 1.

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Rapidly expanding our mine footprint

- We are accessing the high-grade Southern Mine Area (SMA) which contains ~70% of the Total Resource
  - increased ore supply will move our bottleneck to the smelter and refinery by FY18

- We expect to achieve successive records in material movement in FY16, FY17 and FY18
  - ~26% increase in mine development expected by FY16\(^1\)
  - fully utilising our two ore hoisting systems with a combined nominal capacity of 10.5 Mtpa

1. Relative to FY14.
2. Northern Mining Area (NMA)
3. Underground material movement including NMA and waste material.
Substantial long-term growth optionality

• Underground expansion expected to double ore hoisting capacity
  — increase ore hoisted to ~20 Mtpa through an additional shaft
  — potential to deliver ~450 ktpa of copper production capacity from CY25
  — considering staged investment approach to optimise capital efficiency
  — progress to pre-feasibility in CY17, subject to internal approval
  — first segment costs post by-product credits\(^1\)
  — preserving longer-term optionality for open pit scenarios

• Study of material handling system commenced
  — investigating optimal solution for underground material movement to surface

• Heap leach operating in parallel with current concentrator & leach circuit
  — encouraging test results from ongoing large-scale integrated pilot plant
  — conclusive results expected in FY19
  — capital efficient

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\(^1\) ~750 ktpa on a copper equivalent basis (including gold, silver and uranium by products)
A staged approach for delivering more value

Delivering value from our installed infrastructure
Near-term copper production guidance and aspirational capacity, ktpa

1. Represents actual production for FY12-FY15 (excluding FY15 mill outage), extrapolated for FY16 and beyond (production guidance and aspirational capacity).
2. Subject to approval.

Optimised capital with high IRR

Debottleneck UG Mine

Optimisation
- Recovering stability and improving efficiency and productivity
- Accelerating material moved with underground infrastructure
- Accessing the SMA to increase contained metal supply
- Resetting our cost base

Potential to double capacity

Potential to increase capacity through minor debottlenecking investment

Longer term options
- Underground expansion
- Staged or up-front investment
- Heap leaching technology
- Preserving optionality for open pit

Very low capital

~1801

~200

~220

~235 - 255

~450

FY12-FY15 FY16e FY19e FY21e FY25+

Potential capacity by FY21

Optimised capital with high IRR
Key themes (summary of part 1)

- Creating safe and stable operations with a focus on material risk management
- We are releasing latent capacity through low-risk, capital-efficient underground expansions
  - accessing the Southern Mining Area will enable full utilisation of smelter and refinery
  - ~200 ktpa of copper production expected from FY16 to FY18
  - ~220 ktpa of copper production capacity from FY19
  - ~20% lift in copper grade >2.2% from FY21\(^1\)
  - ~18% improvement in Cu:S ratio from FY21\(^1\)
  - near-term optimisations/expansions maintain long-term optionality
- We are resetting our cost base through higher volumes and greater efficiencies
  - total cost reduction of >US$400 million expected by FY17\(^1\)
- Our world-class ore body provides substantial growth optionality for decades
  - ~450 ktpa total copper production capacity from CY25 through potential heap leach technology

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Every Mineral Has A Story

Nigel Cook (2014, personal communication)

The Olympic Dam IOCG-U deposit contains > 100 minerals
ODBC: Granite- to Hematite-Rich Breccias

~3% Fe

~60% Fe
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ODBC: Other Components

- GRV felsic volcanics
- Mafic/UM dykes
- Mudstones/sandstones
- Chl mudstones/sandstones
- Volcanic clast cgl
- Qtz-rich ss breccias
Intense Brecciation/Texturally Destructive Hem-alteration of RDG and Other Lithologies

Complex Textures, yet Simple Mineralogy
Falcon Residual Gravity

Geological Map (2015)

Olympic Dam Breccia Complex

-350 mRL

Roxby Downs Granite

Fe ~5%

altered, weakly brecciated RDG

biotite 'out'
OD Deposit Setting: DATA Driven Change in Ideas

early 1980s

Roxby Management Services (1980s)

1990s

Oreskes and Einaudi (1990)

modified Haynes et al. (1995)

2010s

McPhie et al. (2011)
Geological and Mineralogical Documentation

Documentation consists of:

- Geological mapping of +450 km of underground development
- Geological logging of ~2 M metres of diamond drill core
- All diamond core is photographed
- All diamond core is assayed for +26 elements
- Density and magnetic susceptibility on all assayed samples
- Abundances of 15 minerals predicted on every sample
- Quantitative mineralogy (MLA and QXRD) on ~12,000 samples
- Expanded suite of elements measured on all mineralogy samples
- Extensive mineral composition database (LA-ICPMS and EPMA)
- Ongoing geological internal and external research projects

Olympic Dam Resource Model

- ~ 20 million blocks
- 5x10x5m up to 30x30x15m
- ~1.7 million assayed samples
- models for 12 minerals and SG
- models for Cu, U, Au, Ag, Cu:S, plus 18 other elements
Cu-Sulphide Mineral Distribution (-400mRL)
Quantitative Hematite-Orthoclase-Sericite (-400mRL)
Quantitative Siderite-Fluorite-Barite (-400mRL)
Quantitative Mo-Pb-Zn-U3O8 (-400mRL)
Olympic Dam STYLES of Mineralisation

**Sulphide Mineralisation** (ave grain size ~50μm):
- IOA to IOCG (py-cp-bn-cc)
- Polymetallic Zn-Pb-Ag
- Granite-related Mo-Sn-W

**Uranium Mineralisation** (ave grain size ~20μm):
- Uraninite, coffinite, brannerite
- Hematite (4th most abundant U-bearing mineral)

**Gold Mineralisation** (ave grain size <5μm):
- Two general occurrences; with or without sulphides
- Electrum, tellurides, Au-Cu alloys

**Classic disseminated sulphides and U-minerals**
- Cu and U mineralisation typically occurs as disseminated grains in hematite breccia matrix
  - no classic supergene sulphide textures
  - multiple generations of U-precipitation
- Vein-style sulphide mineralisation does occur
- High grade U = microveinlets and aggregates
- Epithermal style quartz veins in altered granite
Uraninite and Fe-oxide U-Pb dating

The evolution of Olympic Dam is more complex than previously believed!

- LIP event (GRV&Hiltaba)
- Karanar Orogeny ~1450Ma
- Erosion & sedimentation
- Columbia assembly & break up
- Musgravian Orogeny 1200-1160Ma
- Rodinia assembly
-雪球地球

- LIP event (Gairdner dykes)
- ~750-650Ma Erosion & Adelaidean Sedimentation
- Rodinia break up

- Delamerian Orogeny
- Gondwana assembly

- 1.8 1.7 1.6 1.4 1.1 0.8 0.5 1.6 1.4

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Fe-oxides (IOA-IOCG)
- OD - Olympic Dam
- WW - Wirrda Well
- AC - Acropolis
- SG - Snake Gully
- BL - Bill’s Lookout
- ID - Island Dam
- TD - Todd Dam

IO host rocks?
Non-IO mineralisation?
Part 2: Key messages and conclusions

Geoscientists have continually documented Olympic Dam geology / mineralogy for +40 years.

- Geological/mineralogical documentation…. without it, the mine/processing plant would be operating blind
- Significant addition of new data → ‘New’ ideas regarding ore controls and ore genesis
  - structural controls on mineralisation across the breccia complex
  - deposit wide sulphide zonation pattern (py→cp→bn→cc→Cu°)
  - polymetallic Zn-Pb-Ag and granite-related Mo-Sn-W
  - impact of mafic/ultramafic dykes and sediments on ore genesis
  - RDG: merely a host, or significant contributor, to mineralisation?
  - have major tectonic events over 1.6 Ga of time really not helped shape the deposit we exploit today?

Significance to in-mine, near-mine, and greenfield exploration on the Stuart Shelf?
- Helps define what might be possible…. 