

**Danny Malchuk, BHP Billiton President Copper**  
**Copper site tour**  
**Chile, 1 December 2015**

Welcome to my home country and the BHP Billiton Copper Site Tour. We are delighted to have you here and are looking forward to providing a detailed overview of our world-class copper business.

Before we proceed, please read the disclaimers carefully.

**Samarco**

As you are well aware, Sustainability is our foremost value and a fundamental part of our business performance, which is why we are so devastated by the tragedy at Samarco. As Andrew stated just over a week ago we will fully play our part in helping Samarco assist affected families and communities as part of the response effort. We will continue to work with Samarco, local authorities and Vale to support these efforts.

As an immediate step, and together with Vale and several local authorities, we have pledged to support Samarco in an Emergency Fund for rebuilding works.

Together with Vale we have also agreed to commission an external investigation into the collapse of the tailings dam. It will be some time before this investigation concludes, but when it does, we will publicly release the findings. We will also share the results with other resource companies. We have also brought forward the next review of all tailings dams in which BHP Billiton has an interest – operated and non-operated tailings dams.

A dedicated team has been created within BHP Billiton to support Samarco as they respond to the ongoing human, environmental and operational effects of this tragic event. We are determined to bring together all of the necessary experience and expertise this ongoing effort will require and we will learn the lessons to improve all our operations.

**Experienced and diverse leadership team**

Please also feel welcomed here by the Copper Executive Committee (ExCo), a team with a deep level of experience and diversity.

**Key themes**

In today's presentation – and over the coming days – we will discuss how BHP Billiton Copper is uniquely positioned to deliver strong results throughout the cycle, thanks to a deliberate and well executed strategy.

This morning I will provide a broad overview of the Copper business and the industry in which we operate. This will be followed by a series of more detailed presentations and of course the site visits ahead.

You will appreciate that some parts of this presentation will have more of a focus on Chilean assets given our location, however we will have specific sessions on Olympic Dam and Antamina.

We are fortunate to operate in an industry that has a bright long-term outlook and we are blessed with an outstanding portfolio.

We are well placed to differentiate ourselves from the rest of the industry through:

1. The fundamental quality of our assets and resource endowment
2. The security of our long term water and power solutions in Chile which are a significant differentiator and enable our future plans
3. A safe and sustainable approach to productivity which will springboard us to become a world class operator
4. The ability in the short term to release latent capacity across our assets at exceptionally low capital intensity; and
5. An optimised medium and long term growth pipeline, with attractive returns.

I will touch on each of these elements as we move forward in the presentation.

### **Keeping our people and operations safe**

Let's start, as we always do, with Safety. Operating in a safe manner is what matters most and it is a precondition to everything we do. Safety is a never ending journey.

Despite our goal to achieve zero fatalities, BHP Billiton tragically suffered five fatalities last fiscal year, including two of our colleagues in the Copper Business. In February we suffered the loss of Brian Partington at Olympic Dam in an underground incident; and in June we lost a young driver's assistant on a bus carrying project contractors 1,000 kilometres South of Escondida.

In May we initiated a company-wide intervention to understand the underlying drivers of our disappointing safety performance, and how we can make our workplace safer. In particular, in Copper we defined clear actions which include a much sharper focus on road safety with specific attention to the road between Antofagasta and Escondida. We are also increasing verification of the critical controls that prevent fatalities. As a result, events with significant potential safety impact have substantially reduced as you can observe in the lower chart. In addition, we are taking a much more deliberate approach to ensure that we conduct more rigorous incident investigations, which are the main source of learnings that can prevent serious injuries or fatalities.

We have maintained a very low TRIF of 2.6 across our Business – at our Chilean operations our TRIF is low when compared to the rest of the industry, even more so given the large number of projects recently in execution. We are very proud of this performance. But, as I have emphasised, this is not enough as we aim to eliminate fatalities and serious injuries from the workplace. That is why the safety intervention actions we recently undertook are so important.

### **Committed to sustainable development**

But of course, sustainability goes beyond safety. Our stewardship of the environment and the communities where we operate fundamentally affects our decision making and the way we operate.

We seek to prevent, minimise or mitigate any environmental impact from our activities. To do this, we set targets that ensure efficient and sustainable resource management. As an example, in Chile we are adopting industry-leading infrastructure in gas power and water desalination, as well as making investments to protect local ecosystems.

For many years the Chilean northern power grid was dominated by coal-fired power plants. In October 2013, we made a deliberate decision to introduce lower-emission, gas-based power capacity through the construction of Kelar, which I will soon cover in more detail.

A decade ago we were also the first mining company in Chile to meaningfully act on the industry's over-reliance on local groundwater usage. We built our first desalination plant in 2005 and today you will see ongoing construction of our second plant, which will, by FY17, increase our desalination capacity from 500 litres per second to 3,000 litres per second. While the broader industry starts to address this matter, our power and water projects position us to operate and grow sustainably for decades.

Our sustainability approach extends beyond our operations. We also seek to directly conserve our shared environment. A great example is our US\$20 million investment in the long-term conservation of 500 square kilometres of the Valdivian Coastal Reserve, 700 kilometres South of Santiago.

As you know well, we allocate one per cent of our pre-tax profits, to support community development and social investment projects. The business rationale is to sustainably transform people's quality of life and strengthen their social capital for the long term. We aim to enable good governance and build capacity while we create value.

In this context, Minera Escondida was a founding member of the Creo Antofagasta Plan. This is an initiative to enhance quality of life in the city, bringing together the regional authorities and the private sector, with support from the OECD. As you can see from all these activities, sustainable development means ensuring that our business remains viable while, at the same time, contributing lasting benefits to society and the environment.

Now let's move on to talk about how Copper fits in the BHP Billiton portfolio.

### **Copper – a key pillar of BHP Billiton**

The Copper business has been, and continues to be, a key contributor to BHP Billiton's performance. Our consistently strong results reflect our relentless focus on productivity along with disciplined investment through the cycle in both infrastructure and production capacity.

Over the past three years, Copper contributed approximately one quarter of BHP Billiton's production at an average EBIT margin of 37 per cent. Over this same period, we invested more than US\$11 billion dollars in the Copper business and achieved an average return on net operating assets of 20 per cent.

Looking ahead, Copper has compelling organic growth opportunities that are well placed to create value in a market which has a very attractive outlook. Therefore we anticipate that Copper will remain a strong focus for future investment and long term shareholder value creation within BHP Billiton.

### **Industry fundamentals are attractive**

Over the next few slides I would like to provide some context on the broader industry in which we operate.

First of all let me state that we are very confident in the long term attractiveness of the copper industry. This view is driven by a combination of: one, the attractive demand side characteristics, given that copper is a mid-to-late cycle commodity benefiting from multiple demand levers; and two, the specific structural challenges that we see on the supply side. Vicky and Andrew will elaborate further on this during their presentations, but let me walk you through the key points.

China is rebalancing from investment to consumption. As a result, we expect to see moderate demand growth in the short term, which in light of the significant new production coming online will lead to a modest surplus for the next few years.

Long term, our expectation is that demand for primary copper will continue to grow strongly, and most importantly, in the next decade, the existing copper supply will become insufficient to meet such demand. This supply shortage is largely driven by two main factors: most importantly, grade decline; and supply restrictions or delays in key regions due to socio-political issues. Furthermore, we expect that potential discoveries are unlikely to bridge this supply deficit, and the rate and depth of new technology adoption will be insufficient to fully offset the supply deficit. This phenomenon is expected to rebalance the market and provide a good platform for prices to increase, as new projects would need to be induced. Finally, unlike other commodities, the industry wide challenges we are facing – and which we will discuss in more detail shortly - are expected to maintain the shape of the cost curve in the long run, further supporting prices.

All these fundamental conditions make this industry attractive in the long term.

### **Supply challenges support long-run prices**

The structural supply-side challenges I have identified are placing significant pressure on margins today. A large proportion of mines, including many open pit copper porphyries, are approaching maturity. As a result, the industry is expecting an average grade decline of 17 per cent over the next decade. In addition, as mines age, the depth of ore increases, as do cycle times. This means that increasing effort and cost is required to deliver the same production.

In addition to these industry-wide resource related challenges, here in Chile we have some particular issues in regard to strategic resources. As I mentioned, the over-reliance on groundwater sources is a major issue for the industry in Chile. There will be a growing need for desalinated water to process the higher volumes of lower-grade ore. Sea water use in Chile is now 16 per cent of the total use, which is a 7-fold increase over 5 years, while fresh water usage has remained flat. It is our expectation that this trend will continue, such that in CY25 sea water will represent 50 per cent of total use, as desalinated water will be required for future capacity expansions or replenishment of expired water permits

Another contributing factor is the decline of labour productivity, both in Chile and Australia. These dynamics will inevitably result in higher costs. Hence it will be low-cost producers like BHP Billiton with sustainable power and water supply, and capital efficient growth options that will create the most value for their shareholders. We are confident that our proactive approach in addressing these challenges will prove to be a differentiator for us.

Graham will share more details on our cost structure later today.

### **A simple portfolio of large, long-life assets**

But let's step back to where it all begins – the quality of our assets. Our copper portfolio is absolutely aligned with our Group Strategy; we have some of the largest ore bodies in the world, which support the third largest production in the industry; we have the leading copper resource base, with potential mine-lives that extend for decades; our simple footprint of just four assets in Australia, Chile and Peru allows us to systematically improve our productivity – sustainably pushing our operations to the low-end of the cost curve; and we have a competitive pipeline of organic growth opportunities, which we continue to build upon.

We will also continue to evaluate our portfolio in the face of changing market conditions, however potential acquisitions would need to rival the quality of our organic growth projects, and we will not compromise on asset quality. So let me reinforce once again, the importance of having a simple portfolio of large, long-life, high quality assets that will underpin our competitive advantage for many years to come.

In the near term, our cost position will also be differentiated by sustainable productivity initiatives, and the ability to release latent capacity.

### **Strong margins with significant upside**

I now want to spend a little bit of time talking about the Copper cost curve, and how it differs from the standard quartile discussion.

Bear with me for a moment as I explain to you the particular way we look at the curve. As you know, Copper is a highly fragmented industry with more than 250 mines. When we look at the cost curve, we distinguish three clear segments.

The first segment, which accounts for approximately 20 per cent of primary production, is comprised of poly-metallic mines which for the most part have relatively small, un-scalable Copper production, but relatively high by-products. There are obviously some exceptions to scale here, such as Norilsk, and Antamina, and we are fortunate to have one of these.

The second segment is typically dominated by large world-class copper porphyry ore bodies, where about 30 per cent of the mines produce 55 per cent of the output. Here, the assets have a balance of good copper grade and also materially large ore volumes, giving them the potential to generate meaningful cash from their Copper stream.

The last segment is relatively steep, typically representing older operations and small-scale underground mines, with high cost and low volumes, and limited ability to move down the curve.

The majority of the BHP Billiton Copper portfolio is competitively positioned in the first two segments where we can ensure that we will enjoy healthy margins throughout the cycle. This is supported by the steepening shape of the last segment of the cost curve. All the industry wide challenges that we have discussed so far, create a 'conveyor belt' effect on the cost curve. As operations get older, their grade declines, and in the absence of sufficient mitigation the cost is driven up and they move to the right along the curve. This effect, alone, highlights the crucial importance of continuously improving our productivity and our relative competitiveness.

BHP Billiton Copper is differentiated by sustainable solutions which will offset this impact and actually improve our overall position on the cost curve. Let me explain each asset's position on the curve as you can see in the chart.

Despite grade decline and increasing key input costs, Escondida's use of three concentrators will leverage latent capacity to sustain its cost position as grades continue to decline and cycle times increase. At Spence, the Spence Growth Option project is expected to deliver an improved cost structure over a much longer life. Olympic Dam's development of the Southern Mine Area is expected to significantly reduce unit costs, moving it to a much more competitive position in the first segment. This is happening as we speak, and I will elaborate further during the OD presentation. Finally, increased labour productivity and higher throughput is improving Cerro Colorado's cost position. We expect that these efforts will reduce the FY17 unit cash cost at our operated assets to US\$1.08 per pound, equivalent to a 34 per cent reduction against FY12, and there is more to come.

### **Our differentiated water and power solutions**

I'd like now to talk specifically to our water and power solutions, a key differentiator for us in Chile. I have already mentioned the growing need for water in Chile. We are addressing this issue from both the supply and demand sides. In terms of cost, it is clear that pumping desalinated water uphill from the port to the

mine is a more expensive activity than aquifer water sourcing. But in reality, more expensive water is better than no water at all. We see the use of seawater becoming the accepted standard in Chile and this is a major issue for the industry to confront. Hence, we elected to develop a major desalination plant that will enable us to use purified sea water for more than 40 per cent of our needs by FY18. We are also addressing water demand, via a number of initiatives to reduce consumption through more efficient concentrator process management.

In relation to power – our decision to proceed with Kelar as a gas-fired plant will; ensure long-term security of supply, attract new entrants to the local power market in order to increase competitiveness, and introduce low carbon emissions power to the grid.

We have deliberately taken a proactive, industry-leading approach to investment in sustainable water and power solutions in Chile. This decision ensures supply, and enables our projects to be executed with confidence. We anticipate that this will become a competitive advantage throughout the cycle

### **Our differentiated approach to productivity**

We take a long term view of the industry, but we also have a keen focus on achieving outstanding performance here and now.

Productivity is not a buzz-word for us, it is key for value generation, and it is an integral part of the way we work – particularly in relation to our focus on safety. Productivity and safety go hand-in-hand – they share the same building blocks: transparency; operating discipline; repeatability; and a clear understanding of what drives value and how to achieve it in a sustainable and efficient way.

It is this approach to driving safe productivity which is transforming our culture and will serve as the catalyst for a step change in our operating performance.

At the core of BHP Billiton is a common operating model of standardised systems, processes and structures that we have built over many years. They provide the foundation to our systematic approach to achieving a step-change in performance and from there replicating best practices across the portfolio.

We first identify “what is important” through constraints (or bottleneck) analysis. This highlights our key value and cost drivers and presents a clear view of how our operating activities affect financial performance. We then define “what’s possible” by benchmarking important metrics, which allows us to set bold targets. Ultimately, we close the gaps through specific actions that are embedded into our KPIs. This well-structured and disciplined approach ensures that the gains made are sustainable and that costs don’t return.

As you can see in the lower right chart, these productivity efforts have clearly delivered outstanding value to our shareholders. We have embedded US\$3.2 billion of annualised productivity gains since FY12 and we continue to see additional opportunities for improvement.

Other presentations will discuss in more detail the various initiatives that continue to support these gains. Now, I’d like to illustrate some productivity examples across our assets

### **Step change in productivity across all assets**

At Escondida we have enjoyed nothing short of extraordinary productivity results. As you can see in the chart at the top right: We are moving 65 per cent more material per FTE, and the overall mine costs have reduced by approximately 40 per cent since FY14. You will hear more from Hilmar on how we have achieved these results.

What I invite you to consider is that Escondida is almost 25 years old, having processed more than 2 billion tonnes of ore. As is typical of a copper porphyry, we are experiencing grade decline and expect a 29 per cent reduction in FY16. On a grade adjusted basis, we see a remarkable result - that the productivity initiatives have reduced unit costs by 14 per cent. It is expected that Escondida's continuing efforts will further reduce costs, and effectively offset grade decline.

### **Step change in productivity across all assets**

The results at Pampa Norte and at Olympic Dam should also be highlighted. In tomorrow's presentation, Kevin will discuss how we have achieved stability at Spence, and I'd like to share a keynote example of this. We expect to achieve a 20 per cent increase in dry plant throughput by the end of this fiscal year. This is a direct result of a 28 per cent improvement in bucket wheel utilisation, which means that we can stack and remove more tonnes from the leach pads. This will directly translate into lower unit costs in FY16.

At Cerro Colorado we have largely reset the cost base by focusing on contractor and labour productivity. During the current fiscal year we have reduced headcount by 11 per cent. We have also increased throughput in the dry area. This will support an anticipated ~10 per cent reduction in FY16 unit costs.

Olympic Dam is reducing unit costs<sup>1</sup> by 48 per cent in FY17 compared to FY15, and we expect to achieve unit costs of US\$1.00 per pound by FY17. While foreign exchange has contributed to the reduction, the primary driver is the streamlining of the workforce, and working constructively with key suppliers to reset our cost base.

So, we have achieved outstanding cost reductions and this is just the beginning. However, we are not only reducing absolute costs, we are also realising significant efficiencies of scale through the release of low-cost latent capacity across our portfolio.

### **Releasing latent capacity at low cost (Escondida)**

In spite of the significant grade decline as seen in the chart, we expect to maintain an average Copper production capacity at Escondida of approximately 1.2 million tonnes per annum from FY16. This will primarily be achieved by the full utilization of the three concentrators. Specifically, the new OGP1 concentrator will reach full production during the first half of calendar year 2016, the Laguna Seca concentrator will continue to operate and, the plan is, that once EWS is commissioned, the refurbished Los Colorados concentrator will be brought back online in calendar year 2017.

The utilization of three concentrators will enable us to offset grade decline and maintain strong production for a decade without the requirement for further major investment. The Los Colorados life extension underpins our ability to run 3 concentrators. As you know, we have revised the mine plan to enable the life extension of the Los Colorados concentrator while ensuring we still have access to the majority of the high-grade ore that lies adjacent to it. It is this type of capital efficient project that will see us grow our volumes without the need for major capital investment after completion of EWS – as seen in the lower right hand chart.

### **Releasing latent capacity at low cost (Olympic Dam and Spence)**

I acknowledge that the past performance of Olympic Dam has not been where we would have hoped. But after a prolonged period of major operational instability, we are now starting to achieve consistent results – and there is significant upside to come.

We have an opportunity to further enhance performance through the release of latent capacity over the next 2-3 years. The key mechanism to do this will be accessing the Southern Mine Area. The associated grade uplift is expected to allow us to achieve an average of 220ktpa over the next decade which will fully utilise the smelter – our designed bottleneck.

This will shift OD to a highly competitive cost position within the first segment of the cost curve. Later I will discuss the plans to continue to grow Olympic Dam beyond that point.

Let's come back to Chile now, to a deposit that is located just 140 kilometres from where we are now. The Spence Recovery Optimisation project is currently in execution. This is a very low capital intensity, innovative approach to accelerate and enhance the heap leach kinetics of the supergene ore. We aim to increase recovery by 12 percentage points, which will allow us to reach and sustain nameplate capacity of 200ktpa despite expected lower grades.

### **Releasing latent capacity at low cost (Overview)**

So what does this all mean for the Copper Portfolio? Our efforts to release latent capacity, coupled with the significant productivity gains we are targeting will support an expected increase in total production to 1.7 million tonnes with an expected unit cash cost of US\$1.08 per pound by FY17. This sustainable uplift in volumes and cost reduction provide the platform for continued long term outperformance.

Now let's turn our thoughts to the longer-term, and discuss the plans we have to continue to move this portfolio forward to remain the best in the industry

### **A compelling long-term growth pipeline**

We have compelling organic growth opportunities that are well placed to create value in a market which has a very attractive outlook.

I would like to emphasise three points:

1. These options are well timed to leverage the attractive long-term fundamental outlook
2. Every option that deserves capital is attracting capital
3. And most importantly, with much of the key infrastructure now in place, and significant improvements in our overall capital efficiency, we don't require the same level of investment to grow as we have in the past.

I'd like to share with you two of our organic growth opportunities that embody these three points, the Spence Growth Option, and our long term plans for Olympic Dam.

At Spence we are in the final stages of studying the development of the 2 billion tonne plus hypogene resource that has the potential to increase mine life by more than 50 years. We seek to deliver value through the Spence Growth Option project (or SGO) by accessing primary ore beneath the current mine footprint through the continued development of the existing pit; constructing a 95 kilo tonnes per day concentrator; continuing to use the current heap leach infrastructure; ensuring that the project is executed at benchmark capital efficiency; and outsourcing the desalination plant to simplify the project. SGO will ensure Spence's position within the 2<sup>nd</sup> segment of the C1 cost curve for decades to come.

With a capital cost estimate of US\$2.2 billion, which represents a reduction of approximately 30 per cent from preliminary estimates, this project is well placed to deliver attractive returns. Board review for final approval is expected within the next 18 months with the potential to deliver first production in FY20.



## **A compelling long-term growth pipeline**

At Olympic Dam, we remain confident in our long term growth plan to double capacity. The early design is for an underground mine expansion and the introduction of a new heap leach stream, operating in parallel with the current plant. The value proposition lies in using a staged, capital-efficient development path that generates significant value from the installed infrastructure and minimises risk. This gives us the potential to deliver over 450 kilo tonnes per annum (ktpa) of copper from CY25. With these levels of production, we expect that Olympic Dam will be positioned in the first segment of the C1 cost curve for decades to come. Importantly, we will still preserve optionality for a longer-term open pit development. Like the SGO project, technology will be a key enabler of improved capital efficiency. While we progress the technology trials required for the large expansion, we continue to consider intermediate steps in the optimisation of the current plant and infrastructure. This may allow us to achieve output beyond 220ktpa at relatively low capital expenditure.

## **Working to expand our long-term options**

In addition to high quality organic growth options, that are underpinned by an outstanding resource endowment, we have a uniquely targeted Exploration program.

This is exclusively focused on delivering long term Tier 1 growth opportunities that are consistent with the quality of the existing portfolio and can compete with our organic growth options. To support this and ensure that both the momentum and discipline are maintained, we plan to keep a relatively stable exploration budget commitment over the coming years. Exploration will continue to focus on the Central Andes in Chile and Peru, and the US, however, we don't rule out the possibility of exploring in other jurisdictions. We are conscious of the challenges that our high quality standards present. It is our perseverance, discipline and stability that are the key to ensuring success.

Last but not least, we actually do have an undeveloped Copper resource in our portfolio, and it happens to be one of the world's best. Resolution is one of the world's largest and highest grade undeveloped copper deposits. It represents a significant long term growth option that could potentially become the largest copper producer in North America. As you know, we own 45 per cent, and Rio Tinto, our operating partner, owns the balance. The current focus is on strong collaboration with our joint venture partner. The JV continues to progress the studies, and start of production is not expected until the next decade.

## **Key messages**

So, let me recap. In summary, our story is simple and exciting. Our Copper Business will benefit from the attractive long term market outlook and we are uniquely placed to create significant value for our owners.

We have world class assets and unparalleled resource endowment. We have security of water and power for our Chilean operations. We have a systematic approach to productivity that is supporting us to become world class operators. In the short term, the release of latent capacity across Escondida, Spence and Olympic Dam is expected to deliver incremental volume at very low cost. Longer- term, our growth pipeline at Spence and Olympic Dam will deliver attractive returns. In short, we are in a unique place to deliver results through the cycle.