

10 minute speech

** Check against delivery**

IRON ORE AND STEEL CONFERENCE

DIGITAL TRANSFORMATION OF RAIL AND PORTS

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Slide 1 – Title slide

Good morning everyone.

Let me start by acknowledging the Traditional Owners of this land, the Whadjuk people of the Noongar nation, and pay my respects to their elders, past, present and emerging.

It's great to be here this morning. We're only in the third month of 2018 and already the year feels like it's progressing at quite the pace.

Here's what I hope you walk away with from my speech today:

- firstly, a brief overview of the market - no crystal-ball gazing here though
- secondly, how we're positioning ourselves globally; and
- lastly, how we're using productivity, technology and innovation in the supply chain to drive our position

Slide 2 – Cautionary statements

I will now turn to some slides.

Slide 3 – Global macro indicators remain supportive

So, to understand our productivity drive, I'd first like to reflect on the market.

Global growth is solid and turning to China, we are optimistic about the medium to long-term.

However, as we flagged at our Investor Seminar in December, we could see a slowdown during this half.

In particular, construction, infrastructure and automotive demand growth may weaken.

China's Party Congress re-stated its focus on environmental performance, starting with the steel industry.

This has resulted in high premiums for our products, such as our Pilbara Blend.

Longer term, the Belt & Road Initiative will create further opportunities in the infrastructure and construction space.

But, we do see some volatility and uncertainty in the year ahead.

This is why productivity is so important.

We remain absolutely focused on driving strong performance across the business.

Slide 4 – Focused on sustaining our competitive advantage

My second key discussion point is to outline how we're positioning ourselves.

2017 saw strong steel margins, peaking well above \$100 per tonne, and they remained above that level for most of the second half of the year.

To put this in context, these margins compare with an extended period of negative profitability during 2015-2016, and remain well above the \$20-25 per tonne, which Chinese mills have typically considered attractive.

As a result, there was a preference from our customers to target productivity within their blast furnaces.

This meant strong demand for higher grade products, and a widening between the 58 per cent and 62 per cent product prices.

Our world-class Pilbara business continues to deliver strong EBITDA margins, increasing to 68 per cent this year.

In today's global environment, there are many factors dragging the economy forwards and backwards that we can only guess what the overall impact to our business may be. We think there are positive signs for our business but we can't be complacent. What we can manage are our cost inputs and product quality. Here, I think we're doing pretty well and this takes me to my next slide.

Slide 5 – Developing a flexible value over volume iron ore system

My third key topic today is to outline how our productivity agenda, technology and innovation, is essential to weathering marketplace uncertainty, and signs of inflationary pressure, in the year ahead.

We are transitioning our Western Australian operations into a globally important hub of intelligent and safe mining that will be the envy of overseas suppliers. This is something to be proud of.

As Managing Director of port, rail and core services, I am really focussed on optimising our Pilbara operations and reshaping the supply chain.

We have an integrated network of 16 iron ore mines, four shipping terminals, 1,700 kilometres of rail network and four power stations connected via an extensive transmission network. This integrated system is supported by our employees in an operations centre here in Perth, some 1,500 kilometres away from our Pilbara operations. These employees manage the real time complexity of our iron ore mines, railways and ports.

We are building sprint optionality into these world-class Pilbara assets to support our value over volume strategy. For example, our quarter 4 performance last year showed our system capability to ship 90 million tonnes in a single quarter.

Slide 6 – Rio Tinto continues to pioneer progress in mining technology

We have been innovating and automating for over ten years now. AHS trucks and software such as MAS and RTVis, which collate useful data and create visual products of the mines, have been in play for years now. I'm going to show you how else we're transforming our network. I'll touch on AutoHaul of course, which has been hitting key milestones and generally attracts a lot of attention. But I'll then introduce a range of other initiatives.

Slide 7 – Along with AutoHaul™, there are many levers to optimise rail circuit capacity and improve flexibility

In previous years, we have been constrained by rail capacity – a bottleneck we are trying to eliminate.

While 2017 maintenance work removed some of the restrictions, ongoing work is required in 2018 and beyond to improve overall asset condition and prepare for future productivity.

This work includes the increased tonnes expected from AutoHaul.

AutoHaul will help us build excess rail capacity, which in turn provides flexibility and sprint options that can be exercised in response to market conditions.

A pilot run late last year put us firmly on track to meet our goal of operating the world's first fully-autonomous heavy haul, long distance rail network. The nearly 100 kilometre pilot run was completed without a driver on board. So that day, we pioneered the first fully autonomous heavy haul train journey ever completed.

Already more than 60 per cent of all train kilometres are now completed in autonomous mode with a driver on board for supervision.

AutoHaul will unlock significant safety and productivity benefits.

Gains from AutoHaul already being realised include reduced variability and increased speed across the network, helping to reduce average cycle times. The trains will operate continuously without a shift change which improves cycle times.

Slide 8 – Automation improves rail safety

Automating our trains also improves safety, for example, through the various automated detection systems installed at each of our rail crossings. We are seeing reduced safety risks at level crossings and automated responses to asset protection devices, speed restrictions and alarms.

We are on track to have AutoHaul fully operational by the end of this year, pending regulatory approval.

Slide 9 – Rail digital transformation

This project supplements our place as a world leader in autonomous systems: we are already the global frontrunner as the largest owner and operator of autonomous haulage system trucks. You may have heard in January that these haul trucks fitted with Autonomous Haulage System technology have now moved more than one billion tonnes of both ore and waste material across five sites in the Pilbara.

But, AutoHaul is only one piece of the puzzle. I'd now like to highlight some other improvements to our rail system.

Firstly, we are automating tag classification and subsequently, Brake Test Certificate automation. The existing process for Brake Test Certificates requires us to print duplicate copies to ascertain the percentage of effective brakes. The process has been standardised and digitised, which reduces variability. These are examples of taking a manual process and automating resulting in 15-20 mins saving per train.

Another process being automated is the Automated Roll-by Station, or ARB. This work is currently in progress but the opportunities with utilising ARB data are very exciting. At the moment we manually inspect the wagons to detect issues that the existing wayside systems may not capture, such as missing retainer bolts and hanging retainer plates. The ARB station takes high-speed photos of the wagons as they pass by – both underneath and from the side. These photos enable an automated review of asset parts such as the condition of bolts, retainer plates and any wheel damage. This slide photo shows a summary of the faults identified on one of our wagons.

The results of these pictures are then compared to other existing data for that asset such as maintenance history, planned maintenance and severity of the fault detected. The system then automatically schedules the required maintenance approach.

RFID, or radio-frequency identification, is also being tested on our rail system to provide near-real time information on the location and orientation of all vehicles within the yard. This reduces interface delays on planning the use of assets, particularly remarshalling locomotives and attaching brake cars. We have never had this granularity of asset location in a digital form. There are many possibilities for the use of this data, mostly to do with asset tracking and planning.

We are also automating the scheduling of trains through the yards at Cape Lambert. There are many combinations of train paths and dumper locations for each train. We are building mathematical models of the yards and automated scheduling of the train paths based on

the optimal route. Yard optimisation is assisted by RFID, automated Brake Test Certificates and tag classifications as well as ARB – this technology all fits together to reduce cycle time.

Lastly, to enhance rail mobility, we are providing mobile tablets in the cab of the Train Examiners' vehicles to facilitate better planning and task allocation. Devices in the field remove the need for manual report generation, printing and worksheet assignment. Shift logs and work order updates are therefore simplified through electronic capture, minimising supervisor effort and daily reconciliation. Because of the stringent safety requirements, the tablets are not used in vehicles with the engine running.

Slide 10 – Port automation

We haven't forgotten about the ports either. At Cape Lambert and Dampier, we are leveraging technology to gain efficiencies.

For example, we have established the world's largest fully automated iron ore port laboratory, enabling us to increase accuracy and precision when analysing the chemistry, size and moisture of our loaded products. This gives our customers comfort that the products on the ship match their needs. The consistency and quality of our Pilbara Blend product is what makes it attractive to our customers.

Since 2015 we have also reduced the cycle time of some car dumpers by up to 14%. This achievement comes from real-time asset health monitoring and proactive system adjustments that optimise throughputs of differing ore types.

Slide 11 – Partnerships

I'd like to finish with a few words on partnerships. It's not enough that we are one of the nation's largest tax payers – we recognise that. Real partnerships with the community, Traditional Owners, local business and government are essential to our ongoing success. Technology is transforming our working lives, but it can't replace human interaction.

In the community last year, we spent over \$20m across 166 community programs in Western Australia.

We also developed a new local procurement program to make it easier for WA businesses to compete for contracts with Rio Tinto iron ore.

Currently, we engage more than 1200 WA suppliers. Under this new program, a dedicated team is available to better link the company's procurement opportunities and spending with WA suppliers via a new web portal.

Lastly, given the automation theme of this presentation it is fitting to touch on the changing job landscape and training.

We invest in apprenticeships and science, technology, engineering and maths (or STEM) to ensure that the Western Australian population is adequately skilled for the emerging jobs these innovations are creating.

In October last year, we announced that we're contributing two million dollars towards the Vocational Education and Training (VET) initiative, partnering up with the Western Australian Government and South Metropolitan TAFE to pioneer a new curriculum required for the mining industry's jobs of the future.

This landmark partnership will ensure Western Australians are skilled to take up the jobs that automation and future advances in technology will create.

We hope the curriculum will be delivered through a range of new industry traineeships and post-secondary courses envisaged to commence by 2019.

The impacts from these changes to the industry aren't lost on us and we're looking to take current and future workers on this journey with us.

Slide 12 - Conclusion

To close, we all have a vested interest in the advancement of Western Australia.

Operating in a global environment means that if we don't embrace progress and innovation, we fall behind. It might seem scary to some when it's a large company rather than a nimble start-up, but innovation isn't reserved to the Silicon Valley. We're making it our competitive edge too – just like it has been for other industrial-scale pioneers over history. I'm confident that we're ready for the challenge.

Slide 13 – End

Thank you.

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