J-S Jacques

Thank you Menno and good morning all.

I am absolutely delighted, together with the team, welcome you to our 2019 investor day. This morning we will: Share our views on the macro forces shaping our industry; Detail our strategy and how we will improve performance; and explain why Rio Tinto's many advantages positions us to thrive in the short, medium and long-term.

To start let's reflect on the last three years, which gives us a strong foundation for our ongoing success.

Slide 6 – Sector-leading financial performance

Since 2016, we have: outperformed the market on cash generation and shareholder returns. Delivering $53 billion of cash…including $23 billion of free cash flow…and $32 billion of cash returns to shareholders.

We have deepened our relationship with our customers and sometimes with the customers of our customers, for example, our breakthrough partnerships with Baowu and Apple.

We have strengthened our portfolio AND balance sheet. Raising over $12 billion through divestments and reducing our net debt by $9 billion.

We have improved the performance of our world-class assets. Delivering an average ROCE of 17% and average EBITDA margin of 42%. And we have invested in growth starting with exploration and embedded capital allocation discipline.

With $16 billion capital invested. This performance demonstrates: the deep partnerships with our customers, the quality of our asset portfolio; the strength of our cash flow; a capable team and… our commitment to reward shareholders,

All in all, we have delivered 135% TSR from 2016 to now.

Slide 7 – Compelling purpose and sustainability drive

The last three years have not just been about cash returns. We have also used our profits to advance our sustainability efforts, developing pioneering new value-enhancing partnerships and delivering on our commitments as a responsible company.

In 2016, we developed our purpose – as pioneers in mining and metals we produce materials essential to human progress. And in 2018 we released our refreshed ESG approach which is core to the company's strategy.

This reflects our view that in the 21st century, business must play a bigger role to build trust and stay relevant. Sustainability is, as I have said over the last three years, a 'make or break' for our industry. Key to this approach is understanding our material risks and how we are managing them. Sustainability has to start with profitability. Only a profitable business can generate benefits for all our partners starting with our communities and customers

It is all about actions. We know we will be judged by what we do, not just what we say. We have three pillars:

1. Running a safe, responsible and profitable business.

2. Delivering sustainable economic benefits

3. Pioneering materials for human progress

We are delivering in each of these areas. I will cover safety and operational performance shortly. But I would like to highlight other areas where we have made significant progress in 2019.

We are proud that Rio Tinto now ranks number two globally in the Corporate Human Rights Index – only behind Adidas.

Our Canadian Aluminium sites are all ASI certified. We were the first in the industry to issue our climate change report under the TCFD framework. The best way to tackle climate change is by working across the value chain.

Therefore, we have put in place break-through partnerships with world leaders, such as Tsinghua University, the World Bank, Apple and Baowu with more to come. Indeed, managing our partnership ecosystem very well is a key focus, not just in climate change. We are placing our customers, and an understanding of our markets, as absolutely core to decision-making, which is key to our value over volume execution and long-term success.

Sustainability is a complex area, we do not have all the answers today but we are working hard on pragmatic solutions.

Slide 8 – We are facing a New Era of complexity

So, we have a strong track record of performance and confidence we can continue to deliver. But we know to thrive in this new era we will need to do more. What can you expect from Rio? Key to our approach is an understanding of, and planning for, the forces impacting the world and our industry.

Let me share a few thoughts on these. Most of you have heard me say that I believe our industry is at a crossroads. There is absolutely no doubt in my mind, as we approach another decade, that we will face even greater complexity. This is due to three main forces at play globally: Geopolitics, Society, Technology.

Of course, these forces do not exist in isolation but we believe, in the immediate future, geopolitics will dominate and our business needs to be resilient in this environment. The ability to manage the three together will define 'success' in our industry in the medium and long-term. Let me cover each quickly.

Slide 9 – This New Era is framed by three interconnected global scenario forces

Geopolitics is important as it influences the two key drivers of the mining business - trade and GDP growth. This is not new but in a world of growing political fragmentation and nationalism, the impact of geopolitics is far, far greater. Just look at the impact of the US / China trade war on global GDP. Oxford Economics predict a figure of 2.5% GDP growth in 2020.

Society is about a world where climate change and environment, as well as inclusive growth and being a good corporate citizen, really matters. Companies can no longer be spectators on the sidelines. We must be part of the solution.

Finally we are also seeing technology, automation, data, AI, drive improved performance. Technology can disrupt and offer new solutions, which has been the case in many industries, but in some ways mining is lagging behind others. And as an industry we need to embrace a different digital operating environment.

All of these forces will impact global economic development. Vivek will talk more about this shortly. In this context to create superior value for our shareholders we need world class assets, balance sheet strength, innovative partnerships and disciplined capital allocation.

Slide 10 – Our strategy is clear and consistent

We believe the 4Ps strategy we developed in 2016, is the right framework.

Underpinning it is our value over volume approach. It is about:
- Portfolio
- Performance
- People
- Partners

The team will cover different aspects of this today but let me share some high-level thoughts.

Slide 11 – Portfolio: quality, diversified assets

Starting with portfolio. We have a portfolio of high-quality assets. Each asset class has a different strategy in line with the 4 Ps framework In iron ore, it is about optimise and flex. As I said in August we experienced operational challenges this year, and we took clear action. We have positive momentum in the mines in Q3 and the team is working hard to fully optimise our entire iron ore system. Chris will update you.

In aluminium, it's about 'protect and fix' in a challenging market environment. You will have seen last week's announcement about our NZAS smelters in New Zealand where we have started a strategic review. Alf will answer any questions you may have.

For copper, it's about unlocking growth. Arnaud and Steve will provide you with an update on Oyu Tolgoi, as well as answer questions on our Copper portfolio.

In Minerals it is about developing new opportunities. Bold is also here for questions.

We will continue to strengthen our portfolio, primarily through organic growth. As you would expect, we will maintain a watching brief for attractive M&A opportunities. But rest assured we will be absolutely disciplined in this area.

Slide 12 – Portfolio: creating options through exploration

We will also maintain our industry-leading investment in exploration. We have 69 programmes in 7 commodities across 18 countries and we will spend around $350 million in 2019. Copper remains the main focus and we have a number of exciting opportunities, including Winu in WA.

Our exploration programme is a differentiator for Rio Tinto. We believe it is essential to keep our pipeline full and option-rich.

Slide 13 – Performance: safety, operational and commercial excellence drive superior margins and returns

Looking at our performance let me start with Safety. Safety is the fundamental building block of operational excellence. In 2019 we have had no fatalities and as you can see on the slide we have reduced our process safety incidents significantly.

Our financial performance has been very strong and we are stepping up our operational performance across our entire business. External factors such as underlying cost inflation make this even more important. We will work hard to protect our margins.

Technology will play an important role in this space. Our commercial operation is a key part of this. It is helping us to strengthen our relationship with our customers to realise full value from our products in the market. Simon will explain his plans in detail.

Slide 14 – People: building capability to drive performance

Turning to People. Our people are a competitive differentiator and we are doing a lot to further develop technical and commercial capability. We have set-up centres of excellence in Open pit, Underground Mining, Processing and Energy & Climate Change.

These centres bring experts together and are a way to develop skills, share knowledge and deploy expertise to improve performance. Our investment in the commercial team is delivering additional value by providing insights and developing relationships that maximize the value of our products.

More broadly, our focus on employee engagement and values and integrity continues and the trend is positive.

Lastly, we are investing in the skills of the future. In Australia we invest around $14 million in skills development in STEM and other education programs with universities. We have started a course with WA TAFE on automation skills, the first of its kind.

In Mongolia we have a workforce of 15,000 people that is 93% Mongolian. We are very proud to have developed a generation of underground miners.

Slide 15 – Partners: working with others for future success

The last P is Partnership. This is essential for our strength and resilience. It is a core building block of our sustainability approach, as I described earlier.

We have a number of partnerships beyond our asset joint ventures, across environment and climate change, across skills development and communities, across the supply-chain. Our ability to extend our partnering philosophy to different players in the years ahead will be even more important.

We will need to partner better with technology players. We will need to partner better with the customers of our customers. Both Steve and Simon will tell you more about this.

Slide 16: a disciplined business generating strong returns over the cycle

In closing, we have the strength and resilience to thrive in the years ahead.

In our business there will always be new challenges but we constantly assess the prevailing winds and prepare for any changes and opportunities they may bring.

Our ability to create value in the short, medium and long-term, is down to the quality of our assets, the capability of our people our operational performance, innovative partnerships and our disciplined capital allocation.

Across the Group, our EBITDA margins and ROCE have been resilient throughout the last ten years, despite the cyclical nature of our industry. Jakob will talk more on this shortly.

Slide 17 – with a focus on free cash flow generation

Our history proves we can deliver in different pricing, economic or geopolitical conditions; to remind you, in the last 3 and a half years we have returned $32 billion in cash to our shareholders.

Although current market conditions are challenging, our estimated 2019 free cash flow is $10 billion. This compares with $7 billion in 2018. And an average of $7.5 billion over the last 3 and a half years.

This strong performance and cash generation is why we are confident we will continue to deliver in the short, medium and long term.

But we are not complacent. We have the ingredients for success and we must execute with excellence and continue to allocate cash with discipline.

Now, over to the team…Vivek

Vivek Tulpule

Thanks J-S. Today, I will take you through our global outlook. The top line for the near term is that we see global growth slowing.

Rio Tinto is well placed to manage in this environment, but we are not complacent about the risks. In the longer term, each market in which we operate faces different structural features, which I'll address in this presentation.

Slide 19 – Near-term uncertainties but policy is supportive

Following several years of unprecedented economic stimulus, global trade, investment and manufacturing have now entered a long expected cyclical trough. This situation has been exacerbated by trade tensions and other geopolitical concerns leading to elevated global risk aversion.

In this context, economic activity has weakened with global GDP growth expected to average just 2.5% this year in market exchange rates. Meanwhile, Chinese growth has fallen to 6 % and the slowing trend is expected to continue as that economy approaches high income status. In recognition of these conditions, policy makers around the world have started to stimulate their economies.

The consensus is that such efforts such will lead to a stabilisation of growth in 2020.

We nevertheless remain alive to the risk of headwinds facing our sector.

Slide 20 – Long-term trends support further growth in commodity demand

Now, looking beyond these near-term uncertainties to the medium and long run, global commodity demand will continue to be driven mainly by the mega trend of income growth in emerging markets.

India and ASEAN will become important actors in this story. They have large, growing populations that are expected to move at increasing rates into towns and cities. With commodity utilisation rates several times below those of industrialised economies, commodity demand in these regions will increase rapidly. For instance we expect steel demand in India and ASEAN to grow in high single digits over the next decade.

By contrast, China is entering a new era of economic development as outlined by President Xi at the 19th Party Congress. This shift will see an increasingly wealthy and urbanised population working in more value adding jobs and expecting a cleaner environment.

Use of steel for new buildings and infrastructure is expected to slow but additional demand will come increasingly from a large and growing manufacturing sector and the need to replace buildings that have reached the end of their useful lives. This means that China will continue to provide a sustained base load of demand for the commodities that Rio produces.

Slide 21 – Demand for iron ore well supported

An important idea within Iron Ore is what we call the contestable market. This is the market in which our products compete. It’s made up of a number of geographies including Europe, Japan, Korea, Taiwan and ASEAN. There are two others – of course China, which is the biggest, and India, which could become an important future market.

Demand for iron units is expected to grow by 1-2 % in line with global steel demand. For contestable iron ore, however, access to this underlying growth potential is limited by two things; increasing use of scrap in China and whether India will be able to meet its own demands through its own resources.

China will certainly produce more scrap in the coming decade. The key question is how much of that will it use? The answer will depend on a number of factors including collection costs. For example a significant proportion of scrap in China will come from demolished buildings. But it is expensive to recover because much of it is embedded in concrete.

Publicly available Forecasts for Indian iron ore imports are up to a quarter of its overall demand. This is a potential upside for the Contestable Market.

Slide 22 – Iron ore will remain attractive for incumbents

As the Iron ore market transitions from the exceptional growth of the last decade, it will nevertheless continue to provide strong, sustainable returns for producers with low costs.

There are two connected parts to this conclusion. First, prices will be supported by high Chinese operating costs. These are expected to increase as more of their production shifts to underground mining. Second, given substantial reserve depletion over the next decade, significant investment will be required just to meet demand.

We believe these two factors will be enduring sources of support for returns in this industry for incumbents.

Slide 23 – Aluminium market challenged by flat cost curve

Turning to aluminium, demand growth will be led by the car industry as auto makers seek to reduce the weight of their vehicles to improve fuel efficiency. Estimates for our main target market of North America are healthy, ranging from between one and two per cent.

Of course, as with other metals, scrap will play an increasingly important role in meeting demand growth as substantial quantities of products containing aluminium reach end of life.

The profitability of the aluminium industry continues to be challenged by the quick and cheap expansion of supply to meet growth in demand. This underlines the value of our position in Canada with operating costs in the bottom decile of the cost curve supported by hydro power which will become increasingly important in a carbon-constrained world.

Slide 24 – Electrification: exploring opportunities and markets

We see potential in the demand for electric vehicles over the coming decade. First in China, then in Europe and ultimately in the United States.

Battery costs have fallen almost exponentially in recent years and as a result EVs are becoming increasingly competitive against fossil fuel alternatives, EVEN as subsidies roll off. This will drive rapid growth in demand for battery minerals, including Lithium, Nickel and Cobalt and it will be positive for copper.

Li-ion batteries are expected to dominate the market with nickel rich, higher energy density chemistries increasing their market share.

In terms of copper, demand for primary metal is expected to grow by 1.5 to 2.5 per cent per year supported by the EV trend as well as increased uptake of renewables for power generation. With growing demand and depletion at existing assets, the copper market will require 6-9Mt of additional supply by 2030.

To conclude, global growth is slowing but obviously of a much much bigger base than the past and therefore the long-term structural trends will continue to support demand for our products.

Thanks and now over to Simon.

Simon Trott

Thanks Vivek. Good morning and great to be here.

Against this market context, I'll talk today about how commercial is working to improve the way we market our products, work with our customers and purchase the materials and equipment we need in our operations. Let me take you through it.

Slide 26 – We ensure our business is optimising value

Commercial puts the company's value over volume approach into practice

We link our customers and markets with our operations, informing production and future investment decisions, to ensure both the amount and the types of products we produce, meet customer needs and manage the trade-off between volumes, quality, cost and capex

Our strategy is built on four key pillars

1. Firstly, deepening our understanding of the value chain. Improving how we collect, organize and monetize information. It is about solving our customer challenges so we generate value for them and for us

2. Secondly, building commercial excellence. We are taking what we do today and doing it better. We aim to sell every tonne we produce to the customer that values it the most, and rigorously measure and improve our performance

3. Thirdly, expanding our commercial activities into new areas. Moving from simple risk avoidance, to an approach where we better identify, quantify, and manage our risks.

4. And finally achieving full value requires an integrated system, responding dynamically to changes in the market and our operations. Commercial is ensuring that the needs of the market inform decision-making in real-time

Slide 27 – Close to our global customers and suppliers

So how are we organised? Rio Tinto Commercial brings together our global sales and marketing, procurement, and marine and logistics teams. Across these overlapping areas there is one unifying goal - to maximize the value of our physical flows.

The commercial team is now strategically located close to our key customers and suppliers, in Asia Pacific and North America. Our hub is in Singapore, with key offices in China, Japan and South Korea and Chicago.

We have a vast network of customers & suppliers - around 2,000 customers across 96 countries, and 37,000 suppliers. This platform gives us tremendous insight and perspective on key markets.

Our focus is on turning these insights into value – improving our business and those of our customers

Slide 28 – Our Pilbara Blend is the single largest, most liquid and consistent product

I'll now cover some of our products, starting with the Pilbara Blend. Our Pilbara blend product is the single largest, most liquid and consistent product in the market. We have positioned PB grade around steel mills' average requirements.

While steel producers take into account a wide range of factors, from phosphorous to particle size, our PB product is baseload for many China mills.

PB quality and its consistency offer our customers significant flexibility, helping them more efficiently run their business, including managing inventory, price risk and working capital

For these reasons, as you can see on the right hand chart, our PB products trade at a consistent premium and maintaining product quality maximizes value to both our customers and ourselves

Slide 29 – Our diversified portfolio of products optimises end-to-end value

PB is a core part of our mix, designed to maximize the value of our resource and meet the baseload needs of the Chinese Steel industry. But PB is only one part of our portfolio. We also have a number of other key products.

Within the high grade segment we produce IOC concentrate and pellet products together with PB lump which is increasingly valued by mills as a direct charge.

Our niche products target mills who have tailored their operations to extract the greatest value. HIY Fines produce a high iron sinter, with low alumina and phosphorus. With an iron content of 58%, our Yandi fines achieve a price similar to our 62% PB Fines.

In 2014, we introduced our SP10 product. We are targeting the segment of smaller mills, particularly in North China, who are less sensitive to phosphorous levels and more sensitive to input costs. SP10 has an iron content above 60% and modest silica plus alumina. It is better than many competitor products and has performed well, particularly in times of compressed product differentials.

Our Robe products are lower in phosphorous and we target the customer segment that produces higher quality steels. By combining our understanding of our products, our competitors' products and their value to specific mills, we can TAILOR our offering to customers who value them the most.

This allows for short-term value optimization and also shapes investment decisions to align with our customer requirements. The added benefit of this work is that it helps us to build stronger, long term relationships with our Customers. So let me now talk about how customers are at the centre of our commercial activities.

Slide 30 - Customers are at the centre of our commercial activities

We have a number of customer partnerships, such as efforts to lower carbon emissions throughout the value chain, and working jointly to improve the handling and screening of our products through their system.

As JS mentioned, we signed an agreement with our customer Baowu, China's largest steel producer. We are also looking to maximize the value of our physical flows by extending our supply chain and building further optionality.

By building a presence in Chinese ports, we are better placed to work with a broader customer base of mills, responding quickly to changing market conditions as we move closer to customers.

As an example of potential options, through portside trading we are now trialing a blend of SP10 and IOC concentrate to meet customer needs in new ways and open additional optionality for our business.

Newer technologies also have great potential to improve how we engage with our markets. For example, our China portside customers will be able to order via a mobile app, you'll be able to have a go during the coffee break…. You can order a few tonnes of ore, in the same way you'd place an order on Amazon. Earlier this year we also piloted the first fully integrated, blockchain, paperless transaction in the industry.

Slide 31 - Maximising value from our aluminium product portfolio

Turning to aluminium. In bauxite, we have combined the strong technical skills developed in our refineries, together with our deep customer relationships, to build a market for our bauxite within China. We are now taking those insights to further expand our customer base

In alumina, we require over 6mt for use in our own business, and have built a traded book of 11mt using 3rd party purchases, swaps and our own production to balance our requirements between the Pacific and Atlantic, and improve returns.

In aluminium, we are focused on optimizing our portfolio of products by arbitraging across three dimensions: the type of product, the most attractive end-markets & customers, and the right geography. For example, 'value added products' are around half of our portfolio, providing incremental premiums of around $240/t above standard remelt.

As societal expectations evolve, our customers are becoming MORE concerned about how their products are produced. We are working with others in the industry on the Aluminium stewardship initiative, leveraging the low CO2 emissions of our Canadian assets to deliver a product that is valued by our customers, including the auto industry.

With increased volatility, we have improved our ability to take advantage of relative differences in regions and re-route production to where it BEST satisfies customer demand

Slide 32 - Tailoring assets and product suite to market dynamics in TiO_2 and copper

In titanium dioxide, we are the market leader. A diversified product suite and product development enables us to meet the needs of customers and optimize our resource base, such as monetizing previous waste streams with new products such as monazite.

By making better use of our data with more sophisticated tools we are improving the way we respond to market conditions – tailoring the amount we produce to meet customer needs.

Our copper supply is uniquely positioned to take advantage of the two key demand regions of the US and China. KUC is one of only three copper smelters in a region long on concentrate but short smelter capacity. We are leveraging this position to maximize returns through the smelter with use of third party material, also improving our ability to exploit various arbitrage opportunities.

At OT we have a long concentrate position located next to the world's largest market. As we move to the next phase of OT's development, we will provide Chinese smelters with a high quality source of concentrate, against a trend of generally declining grade

Slide 33 - We are maximising the value of our physical flows

In summary, the commercial teams are better harnessing the skills, knowledge and insights we generate from everything we buy, sell and move around the world

We are centred around our customers and suppliers, bringing better market insights into our Operational, investment and production decisions

Ultimately, our success as Commercial will be determined by two factors, data and people. Securing value at every opportunity means having the right people with the right skills and of the right mindset. The more we do, the more we see opportunities to further improve our business and those of our customers

Thank you and over to you Chris.

Chris Salisbury
Slide 35 - World-class system delivering outstanding returns

Just to remind you of what our iron ore business is made up of. We have a fully integrated system of 16 mines, 1,700 km of rail, 4 ports, and supporting infrastructure.

Value over volume drives our business.

Our strategy is built on FOUR pillars which distinguish us in the industry:

· Our portfolio of world class assets, including a resource base of over 23 billion tonnes and multiple, low cost development options.
· A highly valued product suite.
Our flagship Pilbara Blend is supported by a suite of other products which we place with customers who value them the most.
· Our, fully integrated system. Which gives us great flexibility to deploy capacity in a way that is consistent with market conditions, and is responsive to customer needs.
· People and partners who all play a role in delivering shareholder value.
The strength of our business is reflected in its financial results.

Between January 2016 and June 2019, we have delivered:

- around $24 billion in free cash flow;
- an average ROCE of 43%
- and an average FOB EBITDA margin of 68%.

Whilst operating costs are important… and we will continue to manage these… our focus is on maximising margin. On an EBITDA per tonne basis, our performance is very strong when compared to our competitors.

This is outstanding, consistent financial performance by any measure, equivalent to that of a Blue Chip company. However, I know what really counts is not what we've done, but what we will deliver into the future.

As we look ahead I am confident that we can continue to deliver outstanding financial performance. We are not complacent and have more to do. Our key areas of focus for the next five years ARE:

· optimising our product strategy to meet customer needs, with Pilbara Blend continuing to be our flagship product;
· sustaining operational excellence;
· renewal of the existing mine network and assets right ACROSS the supply chain;
· driving productivity, with an emphasis on leveraging technology;
· and progressing project commissioning and study work on mine sustaining projects to deliver value into the future.

As part of this, we are also exploring renewable energy solutions. I will speak to each of these areas in more detail.

Slide 36 - Solid mine performance

Let's start with our mines. We are focused on operational excellence after our challenges earlier this year. In Q3, we produced 87.3 Mt, with a quarterly average run rate of 347 million tonnes per annum. This is a significant step up from the first half. We ran the mines at an annualised rate of 360 million tonnes or more for 5 weeks during the quarter.

I should note, in this quarter there was lower plant scheduled downtime, and we tend to have good weather in the Pilbara in Q3. As you will recall, when faced with weather and operational challenges in the first half, we took immediate action to address the issues, and chose to protect Pilbara Blend quality. And we have.

Product quality has remained consistently high throughout 2019. We have increased contractors and introduced additional fleet. And these steps are working. We are tracking well against our estimate of about $80 million spend on recovery actions. And we had record total material movement in Q3. We will continue to focus on mine development and operational excellence into 2020 and beyond.

There has been much talk about our decision to produce SP10. As Simon explained, this is a valuable alternate product which contributes to our strong margin, and, I should note, we have sold it periodically since 2014. Producing SP10 supports the high consistency of Pilbara Blend. It also increases resource recovery and improves mine productivity. SP10 is also lower cost than Pilbara Blend on average.

It provides us with a greater ability to optimise products for our customers, the overall Pilbara system and the entire Rio Tinto iron ore portfolio. Importantly, we can turn it on or off depending on market conditions.

For these reasons, if, in addition to producing Pilbara Blend, we can extract high margin over operating costs from alternate products, we will pursue those opportunities.

Slide 37 - Productivity focus to maximise financial results from assets

Regardless of the product we are producing, we know we need to drive performance from our mines to ensure optionality and resilience. This means driving productivity in an environment where some of our costs ARE increasing. With ageing brownfield mines we face higher work indexes.

Our overall 2020 mine work index will increase by 12% over 2019. We also expect our proportion of below water table mining to increase from around 26% to 33% over the next five years.

I will talk more about sustaining our low cost position shortly. But first, let me highlight recent progress on productivity across our mines. As you can see, the effective utilisation of our manned and automated haul trucks continues to improve.

The use of our autonomous trucks is delivering significant productivity and cost benefits. By the end of this year, 50% of our truck fleet will be autonomous and we have a pathway that will see the large majority automated by the end of 2022. Higher utilisation means that 20 autonomous trucks now do the work of 23 manned trucks, at 15% lower cost.

The reliability of our excavators is also increasing. A key part of the mines, is the performance of our fixed plant. We can, and are, making progress with continuous improvement in overall equipment effectiveness – as you can see from the reduction in unscheduled loss from failure in conveyors.

Slide 38 - Rail improvements to drive capacity and flexibility

Turning now to rail – which also had a strong quarter. Our average run rate, excluding the period of the recent major rail shut, was 345Mtpa. We hit an annualised capacity rate of 360 Mt… or more… for 7 weeks during the quarter.

So far, we've unlocked capacity and de-risked our rail network through our productivity and maintenance programs. We are achieving much higher utilisation of our installed track than our peers. This means we are making good use of the significant capital cost of this asset.

However, with increased utilisation comes increased wear on the network. So… we have transformed maintenance tactics, redesigned our rail maintenance organisation, and purchased specialist equipment. The major rail shut noted at our half year results was safely completed in early October. It involved rail assets across an area of 50 kilometres, and we mobilised more than 800 contractors.

Having been on site during the shut, I saw first-hand what a major logistical exercise it was. And the efforts of our team have paid off, with a reduction of 20 minutes in cycle time coming from this shut alone. We will continue to focus on rail maintenance in 2020 and beyond. How we do this – for example whether we undertake further “super shuts” – will be determined on a whole of system basis.

This is one of the advantages of our fully integrated system. The other lever for unlocking rail capacity is productivity. We have increased consist numbers and train payloads, and we are focusing on initiatives to reduce cycle time and increase utilisation.

AutoHaul has played a significant role in unlocking capacity and reducing rail cycle times. To date, AutoHaul has increased capacity by 10 Mt and we expect this to increase with further optimisation. It has also reduced cycle times by around 72 minutes.

A key measure of rail asset health is the impact of temporary speed restrictions (or TSRs).

These are applied to areas of track needing repair and require trains to slow to pre-determined speed levels. This impacts cycle time. Since the first quarter the average TSR impact on cycle time has reduced by 32%.

Slide 39 - Data Analytics - taking productivity to the next level

Rio Tinto collects an increasing amount of data as a result of the implementation of AutoHaul and other technology across our rail network. You might be surprised to hear, we collect some 90 gigabytes of data each day.

A multi-disciplinary team has been put together to help us apply that rail data.
The team uses artificial intelligence and a technique known as “Random Forests”, to prioritise rail maintenance. The results are impressive.

We are currently predicting the optimum removal of existing defects to greater than 90 percent accuracy. Even more impressive, is the ability to predict the location of future defects, before they manifest, to greater than 80 percent accuracy. This work enables us to adopt a preventative approach to maintenance. It unlocks value by proactively repairing track, and prioritising our resources for maximum impact.

Slide 40 - Sustain low cost through productivity and technology

Productivity improvements, including the use of data, will be key in an environment of increasing cost pressures in 2020.

Let me cover them:

There is a significant project pipeline in Western Australia, which is leading to a market tightening for some specialist contractor and technical skills. And our ongoing maintenance requirements for assets are increasing. The longer haul distances, below water table mining and further development of brownfield pits are pushing up the mine work index.

There will also be additional costs needed for the exploration, evaluation and approvals work required, to support major renewals, which I will come to later.
On the other hand, we are seeing considerable cost benefits from our productivity improvements – some of which I have covered.

We will extend our automation programme and have a strong pipeline of numerous productivity initiatives, including the ever increasing use of data. Given our cost base is highly geared to the Australian dollar, we are also experiencing relief through foreign exchange.

Of course, we will work hard on cost performance regardless of the headwinds. Our primary focus is, as I've said, on margin and value.

Slide 41 - Long-term asset with strong replacement pipeline

In addition to driving the productivity of our assets, future developments are critical to maintaining our production rate and providing options for future capacity.

We have a number of projects in execution: Koodaideri Phase 1 will have an annual capacity of 43 Mt. The mine will make an important contribution to the Pilbara Blend, and subject to market conditions, will increase the lump to fines ratio of the entire portfolio from the current average of 35 percent, to around 38 percent.

It is expected to deliver an internal rate of return of 20 percent, at around a capital intensity of $60 per tonne of annual capacity. This is highly competitive for a new mine with additional infrastructure such as a rail spur, airport, and camp. Koodaideri is progressing to plan with first ore expected in late 2021.

Our Robe River sustaining projects… West Angelas and Robe Valley… are also on track for first ore in 2021. West Angelas, and Mesa B and C have now received all approvals and construction has started. Mesa H has some environmental approval delays. Sensitivities around water draw down mean that it is, appropriately, receiving careful consideration by regulators.

As Robe Valley is developed as a hub, there are mitigation options. Mesa H is a good example of the increasing complexity of approvals in the Pilbara. More projects are developed close to environmentally sensitive areas. More development is below water

table. And the cumulative impacts of multiple projects require consideration.
We are working closely with all regulatory agencies. We have a large amount of renewal ahead.

We have 6 major projects in the Conceptual or Order of Magnitude phase, and a further 8 in the Pre-Feasibility and Feasibility stage. This is on par with the number we had during 2010. We have a number of brownfield developments at or below a capital intensity of $30 per tonne.

These multiple developments make use of our operating hubs – leveraging existing infrastructure, reducing capital AND creating optionality. In addition to a large number of projects in study, we also have great flexibility within potential projects.

For example, we have multiple project scopes currently under study for Koodaideri Phase Two. There is the potential to increase capacity for the Koodaideri hub to 70 million tonnes and beyond. It has various plant options – for example wet, dry or concentrator processing.

These options will, of course, have varying capital intensities, and will be designed to maximise overall value. We are also looking at how we can reduce emissions including options for renewable energy. Year to date we have also undertaken around 650 km of drilling to assist in maintaining our 8-10 years of reserve cover. We have resources to continue to underpin production of Pilbara Blend for decades.

Slide 42 - System outlook and guidance

Looking ahead, let me now turn to system outlook and guidance. First and foremost, our objective is to optimise the entire system end-to-end.

As mentioned earlier, on a short-term basis we are capable of running both our mines and rail at rates consistent with our port nameplate capacity of 360 Mt.
However, to achieve this on a consistent basis across the system, taking into account weather, maintenance cycles and materials handling variability, greater capacity and resilience in the system is needed.

A step change in capacity will come with Koodaideri Phase One. With its high output mine, dry processing plant, rail arrangement and proximity to the port, Koodaideri will provide 360 Mtpa system capacity once fully commissioned.

As I mentioned earlier, we have various deployable capacity options under study for Koodaideri Phase 2. Ultimately, the capacity of the Koodaideri hub could be 70 million tonnes. Of course, volumes will always be set by balancing various factors including market demand, quality, production cost and capex. Any decision will be made with value over volume in mind. Our ultimate aim is always to meet customer needs and optimise EBITDA margin and cash flow.

Our 2019 production guidance remains 320 – 330 Mt, and our cost guidance $14-$15 per tonne. In terms of shipments for next year, we believe that we can achieve an increase of up to 5% on 2019 guidance. We will come back to you in mid-January with specific production ranges and cost guidance for 2020. Our 2020 – 2022 guidance for sustaining capital is between $1 billion and 1.5 billion (as compared to existing guidance of around $1 billion per year).

The need for increased sustaining capital is due to:

· Continued automation of equipment;
· Expanding our HME fleet to manage increased workload (as well as replacement of equipment installed as part of the original investment);
· Ongoing maintenance and replacement of assets across the integrated system – for example the stackers at East Intercourse Island, and our Tom Price concentrator structural upgrade, as well as accommodation.

And finally, IS&T upgrades integral to supporting our ongoing digital transformation to drive productivity

Slide 43 - Strategy to deliver returns through the cycle

Our Iron Ore business is well positioned to continue to deliver superior value to our shareholders. As you've heard, we are taking a number of steps to further optimise and improve.

For us, continued delivery of outstanding margin and ROCE is key. Our focus on operational excellence in the mines is delivering results. And I promise you, the entire team is very focused on strong operational performance across the entire system.

We will always work hard to ensure that our assets deliver their full potential but not at the expense of asset health. Our focus on productivity is delivering good results, and this will continue in an environment of increasing cost headwinds. This will include further leveraging technology, especially the use of data.

We have an extensive resource portfolio and a strong project pipeline of replacement mines. This will enable us to underpin the production of Pilbara Blend well into the future. It also gives us greater flexibility in our development sequence. Also, our brownfield options are focussed around operating hubs which means we can use existing infrastructure and reduce capital. And, a step change in system capacity will come with Koodaideri.

We know that value comes from a system that is flexible to respond to external conditions – delivering the right product to the right customer, at the right time. And, by continuing to seek to generate, and prioritise, value in all that we do, we are laying the foundations for ongoing success throughout the cycle.

Thank you.

Steve McIntosh

Rio Tinto may have one of the oldest heritages in the mining industry but it is our ambition to lead the sector in adopting new technologies to deliver the most efficient and productive operations.

As an industry, we tackle some of the greatest engineering challenges on the planet. Rio Tinto has a long and proud history of meeting those challenges head on. Our ongoing success will depend on us embracing technology and data to find new and more efficient ways of mining at lower cost.

We began this technology journey over 2 decades ago – with automation, where we now lead the industry. Today, our strategy and our aspirations stretch far beyond automation through value chain optimisation and the emerging areas of data science and artificial intelligence.

At the core of that strategy is the view that technology is a potential disrupter as well as an opportunity in areas such as digital and energy transitions, to name but two. And… to be clear… we plan to lead

Slide 45 – Technology at our core

So how are we developing our technology to give real competitive advantage? We actively scan many industries looking for insights and opportunities to replicate or adapt.

We have a long-term commitment to the development of proprietary technologies and spend more than $200m each year on very early stage R&D. We then spend far more each year on the scaling and deployment of new tech into our business.

We have a strong innovation culture, world-class technical talent and an extensive partner ecosystem that we engage with. We have established Centres of Excellence in areas including Surface and Underground Mining, Processing, Automation, Ore Body Knowledge, and Climate Change & Energy.

These centres provide centralised technical assurance, service and support to our operations and are a pathway to nurture and grow our technical talent. In exploration we have taken an advanced approach to data and technology to improve our targeting, enabling us to uncover opportunities in areas that have been well explored by others.

In studies and construction, innovation and digital design is helping us to achieve improvements in safety and cost as seen at Amrun. We're also looking at more agile ways to build new mines, starting smaller, building quickly and safely, with embedded optionality for growth.

Technology also has an important role to play in helping us tackle critical industry challenges, such as tailings, energy and carbon reduction initiatives. Technology and innovation achievements can at times provide easy headlines, but being successful in the execution and integration of new tech at scale is difficult. And that's where our industry- leading track record sets us apart.

Slide 46 - Leading mining industry innovation

We've been using automation at scale in the Pilbara for over a decade. By the end of this year we will have 183 autonomous trucks and 26 autonomous drills in service globally. Our autonomous drill fleet is the largest in the world and set to grow further.

As Chris said…our automated trucks operate at 15 per cent lower cost than an equivalent manned one. And our drills have unlocked a 25 per cent increase in productivity and a 40 per cent improvement in equipment utilisation.

Today, our flagship remote operations centre in Perth is the central nervous system of our Pilbara business. As well as using technology for better performance, we have been working on new ways to reduce our carbon footprint. For decades we have been pioneers in technology development in the aluminium sector.

Our wholly owned AP technologies have the lowest emission levels in the industry. The AP60 platform, delivers 40 per cent more metal per pot at a lower cost than any previous smelting technology. And we are not resting on our laurels.

We are actively pursuing Green House Gas free aluminium, through our ElysisTM partnership with Alcoa, Apple and the Governments of Canada and Quebec.

Rio Tinto has always been a bit nerdy, and proudly so! Before data science was the buzzword it is today, we had already moved beyond traditional programming into this area. We started in early 2014 when we deployed our first machine learning based tool called PreDicta, which optimises predictive maintenance on critical assets.

We've now invested in a world-class data science function and I'll run you through some examples on what has been delivered so far a bit later. Another component of our digital play is our Open Data Environment, which allows us to expand our use of modern analytics technologies.

This fit for purpose platform gives us the ability to bring the best minds in the market to our doorstep – it will drive improvements in terms of both scale and time to market for new digital deployments. But all of this is only the beginning of what can be achieved, and a small insight into our technology strategy and aspirations.

Slide 47 - Beyond automation

Digital transformation will be a game changer for the industry and we are very well positioned. There is enormous value to be had in moving beyond automation to digitise and then integrate across the entire value chain.

To do this, we need to redefine what a future mining operation could look like when every step of the value chain is connected and optimised in real-time. And we are very nearly there, thanks to the technology foundations we laid in the mid 2000s, when we began working on a system called MAS – the Mine Automation System.

MAS captures our mining and technical domain knowledge and combines it with a broad array of operational and ore body data to provide us with insights to improve our business. The intelligence we get from MAS includes Real time operational insights. We now track nearly everything across our mines down to the content of every bucket of material, to stockpile models, to blend parameters and so this allows us real-time ore body optimisation at scale.

We are also digitising our business and putting tools into the hands of our people and our customers. Let me give you a few examples:

· TrueView – a mobile app which provides frontline operators with real time decision support
· Paperless maintainer – an efficient digital workflow to ensure our teams are spending more time on the tools
· Pioneer Portal – a new collaboration platform that helps us leverage the best minds to help solve critical challenges
· And Edison – our own Google that helps us navigate our vast internal knowledge base
· Open Data Environment was mentioned earlier; and
· Portside trading – which Simon has already discussed

Slide 48 - Data analytics and AI lowers cost and drives productivity

We are taking productivity to the next level through the application of data analytics and artificial intelligence.

At Kennecott, we are using a predictive model to increase copper recoveries.

Normally, operators rely on a daily view of ore quality coming into the concentrator and set their reagent dosing strategy accordingly.

The problem with this is when the ore feed differs from the daily plan, the strategy does not match and we miss either yield or throughput.

Through the development of a machine-learning model, we can now accurately set the optimal dosing strategy in real-time using over 4 million data points.

We are also using data science to improve materials handling and identify ore that is difficult to process before it gets to the crusher.

This information is fed in real time to operators enabling them to design blending tactics to reduce downtime in the plant and at the port.

We have seen a 40 per cent reduction in material handling problems in the processing plant at our pilot site in the Pilbara.

The final example is from our Port Alfred operation in the Saguenay where we are deploying an analytical model to better predict ship arrival times.

We expect this to reduce demurrage costs by 20 per cent.

All three examples have the potential for replication across our global business.

Slide 49 - Industry-leading exploration technology delivering results

Exploration is a competitive advantage for us and differentiates us from our peers.

We have invested significantly in our people and in R&D, developing a range of proprietary tools to accelerate discovery.

We take a sophisticated approach to data – combining public and proprietary data with advances in assessment techniques to improve our targeting.

Our copper-gold discovery at Winu in Western Australia proves this capability.

It is an area that has been extensively explored by others, but Winu was hidden under 60 to 100 metres of cover.

This is one of those rare and exhilarating stories where the very first drill hole was the discovery hole. There is still much to be done to understand exactly what we have at Winu, but we are encouraged by the results to date.

And as I mentioned earlier, at Winu we're taking a different approach to development and assessing a smaller starter case as an option, to improve our agility in executing growth.

At our FalCon project in Saskatchewan, we're working with Star Diamonds to re-evaluate a known cluster of kimberlites using a custom built, modified Bauer trench cutter.

Previous drilling methods caused breakage of larger stones and likely undersampled diamonds.

This is a great example of adapting existing technology for a novel use.

This is no small drill rig.

Given the importance of recovering the large high quality diamonds intact, we had to go for something that could deliver very large samples to a depth of around 250 metres.

We have made good progress with trenching and are now assembling the bulk sampling plant, which we will operate during the Canadian winter.

This is still early stage exploration and we will continue work through 2020.

Slide 50 - World-class execution function

The pioneering spirit is strong at Rio Tinto and our people excel in applying innovation across all parts of our business, including our new projects.

The modular construction of the 1km long Chith export facility at Amrun using 13 prefabricated pieces was the first of its type in the world.

It was constructed safer and faster than by traditional construction methods and delivered improved capital intensity.

In recognition of this innovation, the Chith wharf has won multiple awards including the internationally recognised Brunel Award here in the UK.

Even more importantly, this construction method eliminated more than 300,000 high-risk work hours and we recorded only a single injury during construction.

Slide 51 - Making mining fleets more productive

To innovate, you need the right people to constantly challenge conventional practices… nothing is sacred!

One project we have in development is seeking to decouple the activities of dig units and haul trucks. The Fully Mobile Surge Loader is being piloted at Kennecott. This unit breaks the dependency between diggers and haul trucks by putting a surge bin with a conveyor in-between. Instead of diggers waiting for haul trucks to get in place for the next bucket of material, the dig unit can continuously load the surge-bin and trucks can drive by and be loaded autonomously by the conveyor. In addition to the safety benefits of separating trucks and diggers, we expect a 50 per cent increase in digger productivity and truck payload accuracy of 98 per cent.

Slide 52 - Optimising orebodies and adding new revenue streams

Our US Borax business in California has been at the forefront of innovation since it was founded. It produces about one third of the world's supply of refined borate products used in glass manufacturing, ceramics and agriculture.

I will talk to two examples of the latest innovations at US Borax. First, our team is trialing an approach where they are combining recovered tailings with mined ore to deliver a blended feed into the processing plant.

To date this trial has shown a 7 per cent increase in overall recoveries. Second, as we announced last week, we are also working to further develop a pilot to generate battery-grade Lithium carbonate from existing waste rock at US Borax.

The ore type the team has been testing is challenging to process, so we are very pleased the initial small-scale trial has delivered positive results. We are now running a pilot plant, focused on further trials to optimize the process.

Slide 53 - Using technology to tackle critical industry challenges

We have seen a structural shift in our industry, with much greater expectations from society in a new sustainability age. We have an opportunity to use technology for more than safe, productive and environmentally efficient operations – we can use it to tackle critical industry challenges.

The Brumadinho dam failure in Brazil was a human and environmental tragedy and a stark reminder that all industry players must have a well-structured approach to managing major hazard risks.

At Rio Tinto, we introduced a global tailings standard in 2015 and today this is supported by a team of leading technical experts in our Surface Mining Centre of Excellence. We are actively seeking new and better ways to minimise waste from operations and to improve our management of tailings.

One possibility we are always looking for is the potential to reuse material, by reprocessing tailings to recover by-products as we saw in the US Borax example.

We also are looking at limiting water in tailings. At our Vaudreuil alumina refinery, we are investing $188 million in filter press technology. This will remove the water from the tailings to produce a safer and more stable waste product.

Water use and recycling is another area where we have made great progress. We use water to process ore, to manage dust, for drinking and in some cases to generate hydroelectric power. We have a set of water targets for the business that focus on improving performance and we use technology to help minimise our consumption and maximise recycling.

At Oyu Tolgoi in Mongolia we have invested in innovative recycling and conservation practices. We currently recycle more than 80 per cent of the water we use at OT which is more than double the global average of similar copper mines.

We are also committed to de-carbonising our business and so reduce our scope 1 emissions. At our Diavik mine in Canada about 15% of the power comes from wind and we use solar power at our Weipa and Amrun operations in Australia. In Canada, we exclusively use hydro power for our aluminium business.

We're also working with our OEM suppliers to identify opportunities for hybrid and electric equipment. And finally, since 2018 we have been working with our partners Alcoa, Apple and the governments of Canada and Quebec on Elysis.

Slide 54 - Leading the next frontier in mining

So, I've shared how we are using technology and data to improve our business today, and our ambition to continue to pioneer for tomorrow.

With Koodaideri in development, our goal of a more digital future is almost a reality – an intelligent mine that goes beyond automation to enable an agile, integrated and optimised value chain.

We are focused on evolving our business to master the challenges and opportunities ahead. We are very well positioned to continue to lead the next frontier in mining.

Arnaud Soirat
Slide 56 – Oyu Tolgoi, a key investment for Rio Tinto

Thank you Steve. And good morning everyone, it is great to be with you today to talk about Oyu Tolgoi, our copper business in Mongolia. I will give you an overview of the strengths, performance and future challenges of the business and then Steve will talk about the underground project.

Let's start by considering OT's many strengths. OT is a world-class ore body, a high grade copper and gold deposit supporting a multi-decade life of mine.

The operation is well situated to come into full production just as copper demand is predicted to reach a high over the decade, driven by Electric Vehicles and related infrastructure. The operation is close to a key customer market in China. The underground development will unlock 80 per cent of the value of the project and we are seeing solid current performance from the open pit with outstanding safety and production.

In the third quarter of 2019, Oyu Tolgoi achieved an All Injury Frequency Rate (AIFR) of 0.18 per 200,000 hours worked. This is the lowest rate across all of our Copper and Diamonds operations and is industry-leading in many respects. Safety is our top priority and critical to our continued success. A safe operation is a well-run operation.

We have delivered free cash of US$1 billion since 2013 from our open pit operations. We are on track to meet our 2019 guidance for copper with increased gold production.

My team is very focused on continuing to improve productivity and further optimising our performance. Our relentless focus on safety and production means we have also been able to significantly contribute to Mongolia's economic and social development over the 10 years since the Investment Agreement was signed in 2009.

To date, OT has directly contributed more than US$9.5 billion to the Mongolian economy which includes approximately 15,000 nationals in employment, over $2.5 billion in taxes and royalties to government and $3bn in payments to suppliers. Indeed, it is worth noting that our OT underground project has committed $2.8 billion, or 75 per cent of the direct project contract and procurement packages, to domestic Mongolian companies.

Slide 57 – Operating in an evolving landscape

So, OT has a number of strengths and is already significantly contributing to Mongolia's economy. But like every other huge copper project in the world there are challenges. This is not unusual for a project of this scale, size and complexity, and we are working hard to mitigate and manage all risks. This requires regular engagements with key local stakeholders, including from the highest level of the management team.

Let me take you through some of the complexities. It is important to understand the context and operating environment which is often fluid and unpredictable. Mongolia is a young democracy with a high degree of political uncertainty. Over the last few years there have been a number of new governments and so we have been working hard to develop relationships as key stakeholders change, as well as manage our own leadership continuity in a country that had low mining experience when we began construction in 2010.

Oyu Tolgoi is a major contributor to the Mongolian economy and the underground development will account for almost a third of Mongolia's GDP in the future. I have also shared some of the economic contributions the business has made earlier.I have no doubt that we will continue to play a strong role in the economic and social development of the country in the decades ahead.

Rio Tinto fully supports the diversification of the Mongolian economy and OT has been playing its part in developing small and medium businesses and encouraging other industrial and economic activity. As you know the Government of Mongolia is a 34% equity partner in OT and so therefore is contractually committed as a shareholder of the business. Since the agreement was signed in 2009, there have been questions about the value sharing model and the distribution of wealth.

Again, this is not unusual in resource development and we have been open to discussing value sharing with the Government and people of Mongolia, at the same time as doing more to communicate and share the contribution the business is currently making.

In 2018 the Parliament decided to form a working group to review the contribution of Oyu Tolgoi to Mongolia and the investment agreements. The report of this group was presented at the Economic Standing committee in early May 2019. Following this, a new working group was formed consisting of nine members of Parliament to finalise the report and present a Resolution of recommendations to the Cabinet of Mongolia.

This work is not complete and the conclusions have not yet been published. We have been very clear that OT's foundational agreements must be honoured as they underpin the current and future investment in Oyu Tolgoi, including the $4.4 billion invested by 20 financial institutions in the underground development project. We continue to work with the Government of Mongolia and TRQ to find ways for all shareholders to receive greater benefits within our existing agreements.

Steve will now provide an update on our underground development project.

Slide 58 – Construction progress

Thanks Arnaud. The progress we've made at OT in the last few months has been better than expected. I'm going to talk you through what we have been doing, the impact it has on our productivity and then explain where we are regarding updating the mine design for the next phase.

The most significant change since August is that we have completed construction of Shaft 2 and are now in the final stages of commissioning. The Shaft itself is a significant piece of engineering. It is just over 1.3 kilometres deep and some 10 metres in diameter. Above ground there is a 98 metre high tower housing two of the world's largest friction hoists.

So, why is shaft 2 important? It helps overall productivity, as those two hoists enable us to move more material, equipment and people between the surface and underground. We have already moved more than 1,000 tonnes of material to surface with the production hoist as we work through its commissioning.

And I'm pleased to tell that today we received our permit for the service hoist from the Mongolian authorities. This allows us to transport 300 people at a time compared with the previous maximum of 60 people through shaft 1.

We have completed several major components this year, including Shaft 5 and the surface discharge conveyor. The shaft 2 jaw crusher, ore bin and transfer station are now also complete.

We have also finished extensions to the central heating plant that set us up well to work safely through the winter. We have completed the 50 metre high Primary Crusher 1 excavation and construction of the supporting infrastructure is underway.

Now, I'll talk to productivity.

In many ways, we are building something akin to an underground city with approximately 200 kilometres of tunnels and supporting infrastructure to deliver Hugo North Lift 1. To put this in local terms, we have more tunnels than London underground. Also, our tunnels are much deeper. The deepest London underground station is Hampstead – which is 55m deep. The base of shaft 2 at 1,300m depth – is around 25 times deeper.

In September we achieved record productivity of 1,385 equivalent metres of lateral development. Our best month yet. Our teams now understand how to best develop through the ground conditions they are facing.

Before I move on to mine design, I want to show you a short animation which brings to life how the mine works and give you a better sense of its scale.

Slide 60 – Construction progress (continued)

As you know, we are working on reviewing our mine design to cater for the geotechnical conditions that we have found.

We are still evaluating a number of mine design options and the decisions we take need to deliver over decades to come. This work includes reviewing the location of access drives, the ore handling system and options for panel sequencing. And of course, we cannot give you full estimates until that work is done.

Slide 61 – Looking forward

So, let me sum up the above ground infrastructure is substantially complete. This includes ventilation systems, the mine control centre, quarry and batch plant and a 5,500 person camp. Shaft 2 is complete and is well into commissioning and was by far the most complex element within the project's construction scope.

The below ground supporting infrastructure is well underway. We are now moving our focus to key packages such as Primary Crusher 1, Convey to surface and to Shafts 3 and 4. We are working relentlessly on improving lateral development rates, both on and off the footprint.

We have the world's best underground mining experts working on delivering the mine design in the first half of 2020. Once the design has been finalised, we can progress the definitive estimate. We have made very good progress in the past few months and are building on this momentum.

Jakob Stausholm
Slide 62 – Our investment proposition

Thank you Arnaud and thank you Steve. Good morning, ladies and gentlemen.
You have this morning heard from JS about Rio Tinto's strategy and direction.
A number of my colleagues have also provided a detailed update on our opportunities and challenges, and how we are addressing these. I will now from a CFO perspective describe the key attributes and fundamentals of Rio Tinto and how we generate value. In short, our investment proposition.

Slide 63 – "Why invest in Rio Tinto?"

Ultimately, it is of course, all about performance. Performance today and performance tomorrow; and consistent performance over decades.

Let me now take a step back and share with you the elements that underpin our strong financial performance. We believe that these elements will continue to lead to superior performance and value creation. This give us confidence about the future.

We have a portfolio of very high quality assets that are:

1) long life,
2) competitive,
3) expandable, and
4) sustainable

And, in addition to our physical assets, our very strong balance sheet is also a key asset. It gives us resilience and de-risks the overall enterprise.

Moving to our Approach, the way we run our business, it is based on:

1) Sustainability, and above all safety, in everything we do,
2) Operational excellence, driven by the right capabilities and people
3) Our 'Value over Volume' philosophy
4) Our disciplined capital allocation framework
5) And our ability to act counter-cyclically

The combination of these strengths, has led to strong financial performance.
JS showed this earlier, and let me reinforce.

Firstly, our return on capital employed during the period, expressed as underlying earnings after tax over capital employed, was industry leading with an average of 18 per cent.

Secondly, and even more importantly, we have effectively converted earnings into cash.

Our underlying free cash flow of 23 billion dollars over the last three years is equivalent to a return of 17 per cent.

Thirdly, we have demonstrated that we are not shy of returning cash to our shareholders, paying out 32 billion of dividends and share buy-backs. This is equivalent to 18 per cent return on capital.

Finally, over that same period we have actually strengthened our balance sheet significantly.

So we have a strong track record, which is a good indicator of future success but we are not complacent. We do believe that our unique strengths will support strong performance in the future and offer resilience cash flow and returns.

Slide 64 – "Why invest in Rio Tinto?"

Let's now turn to our assets.

Slide 65 – Long life: large resource base and modest depletion

We are blessed with very long life assets and vast resources.

If you look at our capital you see that approximately 40 per cent is deployed in our processing assets. These assets require maintenance but do not deplete and generally you are able to creep production.

The remaining 60 per cent of capital is in mining assets. These assets deplete, but at a very modest rate, certainly when I compare it to Oil & Gas, the industry where I have spent most of my career.

On the slide you can see the numbers for bulk commodities and in our annual report there are eleven pages of extensive disclosures. We have reserve life for decades for most of our products. And our resource base is multiple times our reserves, so we have ample opportunities to mature resources in order to also maintain a long reserve life in the future.

Of course, having long life assets is only the starting point.

Slide 66 – Outstanding competitive position

In order, to be truly resilient against volatility, our assets need to be positioned on the lower half of the cost curve. The good news is that over 80 percent of our assets are there.

Our iron ore, titanium slag and borates assets, are on the left side of the cost curve. Even better, those businesses have a leading position in well-structured markets.

Other assets, like our copper assets benefit from attractive industry supply fundamentals.

Our portfolio of assets provides diversification. The key point, though, is that the competitiveness and market position of our assets will allow us to consistently generate attractive margins and cash flows.

Slide 67 – Expandable: our technical knowledge combined with our asset base creates opportunities throughout the pipeline

Good assets need to be continuously maintained, renewed and supplemented in order to have a portfolio that performs and remains relevant to the market demands of today and tomorrow. Rio Tinto is in a unique position to do that. We are creating opportunities by consistently applying our technical skills and experience to our world-class assets.

We have been disciplined, but we have kept investing and have spent 15.5 billion dollars in the last three years throughout the pipeline. Importantly, we are one of the only majors that has continued to invest in exploration, spending 700 million over the last three years.

You have just heard both JS and Steve express their optimism about our exploration pipeline, in particular about the Winu opportunity, and I am equally excited. We are also spending on evaluation projects, such as the Resolution project in Arizona where earlier this year, a further $302 million was approved to fund additional drilling and ore body studies.

We have spent $7.3 billion on development capital over the last three years, which includes expenditure on replacement projects such as Amrun and Koodaideri and growth options such as Oyu Tolgoi Underground.

I have said that the health of our assets is a priority and investing in sustaining them is always our first use of cash. Over the three-year period, we have invested $6.7 billion in sustaining capital. In addition, to having long life and competitive assets, many with strong growth opportunities, our portfolio is well placed for a transition to a low carbon future.

Slide 68 – Sustainable: assets are well placed in a carbon-constrained world

Indeed, we are the only major miner not involved in the extraction of fossil fuels and we have reduced our own emissions by 18 per cent in the last five years.

The materials that we produce, from recyclable aluminium, copper used in electrification and our higher grade iron ore products all play a part in the transition to a low carbon future. Over 71 per cent of our electricity usage is already generated from renewable sources. We will communicate new targets for our emissions in the first quarter of 2020.

Slide 69 – Our strong balance sheet creates resilience and optionality

Our world class assets, combined with a very strong balance sheet, supports the ability to provide superior cash returns to our shareholders. It also enables us to better manage the business through cycles – enabling us to act counter-cyclically and provides us with optionality.

So, in summary we have great assets. They are long life, they have an outstanding competitive position, they provide us with opportunities and they are well positioned for a low carbon world. And our balance street strength provides resilience.

Slide 70 – "Why invest in Rio Tinto?"

Now, let's move on to talk about our approach – how we run our business.

Slide 71 – Well-established sustainability (ESG) approach

Let's start with, sustainability. You heard JS cover the topic, let me elaborate a bit further. Understanding and Managing risks are central to our ability to generate value to our shareholders, which places sustainability at the heart of doing business.

Our sustainability work is core to our strategy and strategic processes.
Our climate change strategy is led by our strategy team and is central to how we look at our portfolio now and in the future; we also consider sustainability matters in all of our decision-making processes including the investment committee.

Transparency is crucial to create trust. We were one of the first companies to publish a Taxes Paid report back in 2010 and have continued to expand our disclosure in this area in line with increasing government and community expectations.

This year, we published our first climate change report under the recommendations of the Taskforce for Climate Related Financial Disclosures.

Slide 72 – Operational excellence: productivity is a key lever

A signature of Rio Tinto has always been our operational excellence and now we are also building our commercial excellence and deepening our relationships with our customers.

When we face operational challenges, like we did in iron ore in Q2, we take it very seriously. We are transparent about the problems, you notice it and we DO address the issues immediately.

Chris has explained our actions in iron ore and we remain focused on excellence in our operations across all parts of the business, starting with safety.

We are continuing to pursue productivity opportunities relentlessly. They are our first lever to offset inflation, protect margins and deliver superior returns from our assets.

We believe this is well reflected in our unit costs, margins and cash flow metrics. This is how we want to discuss progress on productivity in the future and so we will stop reporting mine to market results. Nonetheless, we are still targeting $1 to $1.5 billion of additional free cash flow each year from 2021.

Slide 73 – Value over volume

Moving to value over volume. As you have heard from Simon, our ‘Value over Volume’ philosophy drives our daily commercial decisions. And our investment decisions are not driven by volume ambitions but firmly based on value creation.

We are a company which is growing and we have exciting growth opportunities from our development pipeline and productivity opportunities. However, whether we will grow our production volumes at 2 per cent will always be subject to value over volume

Slide 74 - Disciplined allocation of capital

Our capital allocation framework, which you well know, is here to stay. We will continue to invest in safely managing our assets and improving their performance. This means that sufficiently spending on sustaining capex is always a priority.

The next priority for allocating capital is to our shareholders through our ordinary dividend. Then we carefully consider allocating to growth opportunities, balance sheet strength, and further returns to our shareholders.

Our investment decisions are carried out with incredible rigour, using the most diligent process I have experienced in my career. I believe that this is the best assurance for our shareholders - that we will only invest in opportunities that create value.

Now let's turn to our investment plans.

Slide 75 – Controlled ramp-up of investments

Overall, our capital ramp-up and total investment guidance has been very consistent. Since the half year presentation in August, the only change we have made is a slight phasing of spend from 2019 into 2020.

Furthermore, we are now giving guidance for 2022 of $6.5 billion, $2.5 billion of which is sustaining capital. As Chris discussed, we will increase our sustaining capital expenditure in the Pilbara as we move away from the initial expansion and as our asset base requires more maintenance and replacement of major equipment. Of course, we also continue to automate our fleet. Our key growth project, Oyu Tolgoi underground is also ramping up, and Steve and Arnaud have discussed this in detail.

Slide 76 - Counter-cyclical: divested assets while disciplined on capital spend

With Rio Tinto's long-term focus and strong balance sheet, we have the means to act counter cyclically.

Our actions over the last three years, I would argue, demonstrate that we have done just this – we have sold assets for good value in strong markets while maintaining discipline in our capital spending. Since the start of 2016, we have divested 18 assets and generated $12.3 billion of additional pre-tax cash flow, which we have returned to shareholders.

We keep a watching brief on M&A but as you have already heard, the focus is to organically grow our business. It is clear that buying assets needs to be done for value at the right time in the cycle.

Slide 77 – Why invest in Rio Tinto?

We've now covered the 10 elements which support continued strong performance. Let's now turn to the performance measures.

Slide 78 – Our performance: industry-leading profitability…

The return on capital employed of our assets of 22 per cent in the first half of 2019, continues to outperform our key mining peers. And, this is not a short-term trend.

Over the last ten years our return on capital employed has on average been around 16 per cent. Going back another decade shows an impressive average return of 22 per cent. Mining is cyclical, we are exposed to volatile commodity prices but the evidence suggests that our diversification and performance has created stable high profitability over decades. In fact, I also checked, in the nineties and here, our average profitability was 14 per cent.

Another way of looking at our resilience, is that during the last two decades, we have only experienced one year with single digit returns.

Slide 79 –that drive strong cash flows

Since we implemented our disciplined capital allocation framework, we have demonstrated an ability to turn the strong cash generation from our assets into a strong free cash flow.

The charts here even excludes the cash flow from our divestments. And the cash flow should continue. On the graph, the cash flow for 2019 is included. This is not a target but simply a calculation based upon today's spot prices and consensus estimates for 2019 volumes.

Slide 80 – based on a well defined pay-out policy

In 2016, we implemented a new dividend policy. Since then we have paid out $26 billion of dividends and share buybacks.

The policy commits to a total cash return to shareholders of 40 to 60 per cent of underlying earnings. We have though since its inception consistently paid out well above the range in each year – 70 per cent, 83 per cent and 72 per cent.

We have also returned the proceeds from divestments. So in total, we have returned in some years, in excess of the total underlying earnings of the company to our shareholders.

Given our strong balance sheet and our resilient assets, we are well positioned into the future to provide superior cash returns to our shareholders.

Slide 81 – Why Invest in Rio Tinto

In closing, our high quality portfolio of long life, competitive assets consistently performs strongly and has generated superior returns and cash flow over decades.

We know, though this is not enough.

We need to run our assets with excellence and we believe our approach to do this is the right one. You can expect from us, the same disciplined allocation of capital, a commitment to value over volume and sustainability.

We are, as the management team of Rio Tinto along with our 45,000 employees committed to continuing to deliver superior value to shareholders in the short, medium and long term.

Thank you and before JS closes out today, we will have the final Q&A session.
So let me hand over to you, Menno

Slide 82 – J-S Jacques

You've heard from the team, we have clear plans and a strong track record but we are not complacent. We are focused on operational excellence, starting with safety, and we have good momentum.

I promise you this will be a focus for 2020 and beyond. Our portfolio and our financial performance gives us strength and resilience. For Rio it is all about delivering value day in day out.

END