

BHP

2024 Chilean copper site tour

Q&A transcript

18 November 2024

Questions and answers

PAUL MCTAGGART, CITI

Good morning. In the discussion around the fiscal regime for Chile, we talked about having confidence that, in the medium term, things are now stable, but I really want to get a sense of what that medium-term timeframe is. With potential elections next year, can things change?

RENÉ MUGA, BHP

We say that we are confident that this discussion about tax, particularly about any modification to the royalty, will not reopen because of the large majority of votes that the approval of this bill had in the Congress. Parties from the Communist Party to the far-right parties approved this change. More importantly, the royalty also established a distribution of the collection of tax to the different municipalities, so there will probably be an important amount of increase in budget for municipalities coming from the royalty. That will have a positive effect on many communities and municipalities. This also gives us confidence that people will feel that this is something that is coming much closer to them. We cannot discard that tax discussion. A more broad tax discussion could happen, but it is not really the sense that we have. We foresee more discussion about how to increase growth and bring more investment to the country. That will probably be the focus of the new election.

JULIO MONDRAGON, BMO CAPITAL MARKETS

Good morning. I have a quick question on the demand side. The results of the elections in the US just came out. We are seeing a geopolitical situation that is not stable at all. How do you see, first of all, the potential trading war between US and China, or other countries, affecting the demand side of the business? And how do you expect that to impact the demand? Also, on the royalty side, because of the investments that are coming for BHP in Escondida, do you think that there will be an option to agree on stability terms for this investment considering the current royalty terms that they are using?

LAURA WHITTON, BHP

To answer the first question, I think that it is a little bit too early to tell how the specific policies particularly affecting copper will play out from the US election. As I mentioned, we take a lot of confidence from the broad range of end uses and the broad range of regions that copper demand is coming from. We take confidence from that, even in the face of election uncertainty. The other thing that I would add is that there is broad bipartisan support for critical minerals. In the last 24 or 48 hours, copper has been added as a critical mineral in the US, which is good news. That was with bipartisan support. So, in short, it is a bit too early to tell but there are some reasons to be confident that it should be manageable.

RENÉ MUGA, BHP

In the case of tax stability, we have not seen any proposal for tax stability, since the discussion will be on how to bring more investment to Chile. While it is not on the table today, what is more important is that the tax discussion will probably not be specific on royalties anymore, but probably a broader discussion about incentives that could happen.

AMOS FLETCHER, BARCLAYS

I have a quick question for Frances. There is a chart on page 43 showing that the maintenance capex is potentially almost going to double from FY25 to FY29. Can you give us the base number for what you have shown in the chart there in FY24?

FRANCES SUMMERHAYES, BHP

We do not give out a base number there. In regards to what we are seeing for the increase, to put some more colour around that, if we look historically in the FY20 to FY24 average, that is when Spence became not only a cathodes process, but also a concentrator, so obviously considering into the future the sustaining capital and improvement capital to support the operations at Spence. I will also note that that was the period of Covid as well, so that is the history. Actually looking at the forward of potential spend, it is actually what I would probably classify as positive spend in the sense of the two categories that are increasing in maintenance capital. For the extension of the Los Colorados concentrator, that is over 30 years and we are able to give it a small birthday to keep getting more tonnes out of that, so that is quite a positive spend there.

And then, once every 30 years you do a truck and shovel or truck replacement and that is exactly where Escondida is at today. It is included as maintenance capital, but, when we did the truck and shovel replacement strategy, we are absolutely considering the deeper pits and harder ore sources that Spence has. So we've perfectly matched the ultra-class trucks – they are faster up the hill and have bigger trays – with the shovel, so that we will get some improvement, which you will see in our unit cost guidance there as we roll that out to the end of the decade, so there is some good maintenance capital.

Then, in the improvement space, when we buy those trucks they will be autonomous ready. That is a different investment case that Escondida will go through in rolling out autonomous, which we will also get benefits for, and then enablers to support the growth, so minor, power, water, camp, supporting and the growth story that Pedro will take us through. I hope that gives some colour there.

LACHLAN SHAW, UBS

I have a couple of questions for Laura. Firstly, on the copper price, back in May spot nudged \$5 a pound and then we had a buyers' strike in China. I am interested in how you guys think about prices at that level and maybe trying to sustain higher. Then, maybe stepping back, I assume that you are not going to tell us your long-term price but can you maybe give us a sense of whether, with all this work you are telling us about this week, it is possible to expand margins into the long term across the business? That could be a question for Brandon.

LAURA WHITTON, BHP

We do not tend to speculate on the short term. Copper is an interesting one because there are all sorts of exciting things that happen in the short term that do not necessarily have anything to do with long-term market fundamentals. We have seen some of that this year. We think that all of the work that we have done that feeds into our long-term price view gives us a lot of confidence. We also think in ranges when we are thinking long-term on prices. We are looking at multiple metrics and a range of price views and scenarios that drive that and feed into that analysis. We are looking for robustness in the long term and that feeds into that. At an industry level, there is opportunity for margin improvement, but it will be very project-by-project specific across the industry. The challenge of the copper supply analyst is that you really have to get project by project.

BRANDON CRAIG, BHP

There is a piece on margin, but there is also a piece on capital productivity. The way we are thinking about it is that we learned a lot about what is possible if you pursue productivity within an industry relentlessly. If you look at our iron ore business for example, from 2015 to today they went from \$35 a tonne and they are now down at \$17 or \$18 a tonne FOB. That was on the back of a very deliberate focus on how you lift the underlying productivity of that business, the quality of the leadership, the team, the approach to productivity and so on. That has significantly improved the margins of our iron ore business and made it really competitive today.

There is a lot of work underway at the moment within our business to replicate a lot of what we learned in the iron ore business in this business. We really want to go hard after the underlying productivity and performance of the business, because, as I mentioned in my session earlier, that really does translate to very significant value. Getting that right first is really important. But, critically, you do not want all the cash that is generated to be consumed by the capital profile of the business, so there is that rigorous review of every dollar we spend on capital, if we are going to invest capital or sustaining capital into the business, to make sure that there is always a productivity angle to it. Every dollar we invest must make us more productive. When we get that combination right, we can liberate significant value from this business. If we couple the growth on the back of that, we believe that we can build a very high-quality business here in the region.

BOB BRACKETT, BERNSTEIN

This is a question for Laura on the scrap forecast. You all have 52-ish million tonnes a year of demand sitting out in 2050. Half of that, or 26-ish million, is scrap. That is effectively where we are today on mined copper, so we are going to build a scrap industry of this scale from a [inaudible]. As a copper bull, can I probe that and challenge you to make that lower?

LAURA WHITTON, BHP

We are also scrap bulls, I guess. There have definitely been policy movements across the globe on strategic scrap. We see that in the EU and China. We have a scrap cost curve that we use to inform that, so definitely we see these demand signals really pulling on scrap. There will be a question though about at what price that scrap cost curve will cap out, because a lot of the easy scrap, what we would call clean scrap, so offcuts from manufacturing, is already back in the system and we are now working through the harder-to-recover stuff, which if you imagine a landfill or air conditioners. This is stuff that is only going to come out of potentially low labour cost jurisdictions. China is a big part of that. It has this 20-year life cycle of scrap coming out, so that underpins some of our assumptions. I am very happy to be challenged on that, but we think that there will be quite a strong response.

BRANDON CRAIG, BHP

There will probably be a level of scrap nationalism and other forces that get established that impact the free flow of scrap and so on, so it is a very difficult area to actually forecast and predict.

CHRIS LAFEMINA, JEFFERIES

Brandon, I wanted to think about the path forward in Escondida versus the history. Fran described to us the historical outperformance for Escondida, but now we are entering a period of high capex. You have declining grades in your leaching. You have more clay in the ore. You are not benefiting from big gold byproducts like some other copper mines are. It is a very impressive track record but in 10 years' time do you expect Escondida to continue to outperform versus other assets in the industry? I am including in that all the capex you have to spend just to maintain volumes where they are today over the next decade. Does Escondida shift up the cost curve in terms of all-in costs including the capex?

BRANDON CRAIG, BHP

If we stood still on productivity, that would be possible. The key is how effective we can be at improving the underlying productivity on the business, in addition to the work we need to do on capital investment. You will see shortly that what Pedro and Adam present will give you a good indication of the underlying efficiency of the capital projects we have and what they will add. Our absolute intention is to drive productivity incredibly hard in parallel with that to prevent exactly what you are describing. We have absolutely no intention of marching up the cost curve. We absolutely want to peg ourselves as a highly competitive producer for the foreseeable future and we have what I would describe as rigorous plans to achieve that outcome.

PAUL YOUNG, GOLDMAN SACHS

It is good to be back in Chile I think 10 years since we last visited. A lot has gone on since then. If you look back then, Brandon, back in 2015 the team outlined that growth at Escondida or certainly Los Colorados demolition could be pushed back to 2030, so we sort of knew all that back then, but we did not expect a dip in 2027 and 2028. The focus was very different back in 2015 to 2020 with cost out etc. We have seen, you know, three or four leaders of copper Chile since then. You have come in now from iron ore after you have delivered a lot of replacement projects and now you have a lot ahead of you. We are going to hear later on about the projects, but there is a lot going on from a project perspective. Also, you potentially have Filo de Sol coming into the project team as well.

We will look at the projects. We will hear more details but, at a high level, can the team actually deliver on all this growth? What is your confidence in the project team – because it feels like a little bit of paralysis by analysis at the moment – and can you accelerate these projects? The reality is that the view, I think, is that BHP is going a little slow. Do you think you are going slow? Can you accelerate? You have been here nine months. How do you get this ship moving in the right direction quickly?

BRANDON CRAIG, BHP

We looked at a lot of options but, considering the scale of the portfolio, that is probably warranted. In a perfect world, would we have preferred to be ahead of where we are now? The answer is yes. There are a lot of good reasons for why that is the case though when you look at where we have come from. We did SGO in 2017. Then we went through Covid. Then there was the political disruption or the social unrest that we had in Chile. Then there was a negotiation around the potential royalty arrangements and so on that came into place. All of those factors conspire to interrupt the study programme and the investment programme that we have had in Chile. We are pretty confident that all that is behind us now.

The team has done a huge job on accelerating and focusing in on the go-forward plans that we have wanted. If you think back to that funnel chart we presented, we had a lot of options but we worked really quickly to focus in on the most attractive options we want to pursue. The timing that I think you are going to see from Pedro and Adam shortly has really been extremely carefully thought through to maximise the value of when we do which project and how. There are a lot of competing forces that that act on the programme, as you would have seen with René's presentation, such as permitting, how you do permitting, how you make that efficient and how you get an outcome when you have multiple projects all needing permits, and there are specific requirements for how you sequence permits in Chile that are very important to understand and so on. We are going to take you through all of that in the coming presentations so that you can understand why the pipeline is timed as it is and why we are confident that that is the value maximising case for us in terms of how we bring these investments forward here in Chile.

To your question in terms of whether we can construct all of this and get it done, I will leave some of that to Pedro to answer shortly, because he is the one putting in place the plans for how we are going to do that. But it is important to draw attention to our track record in the major capital space. If you have a look at our recent projects, SGO delivered on time. If you have a look at South Flank recently in iron ore, it was commissioned on time. If you look at Jansen, it is well ahead of schedule. We work really hard on getting the rigour we put into our capital investment process and our projects right. That avoids the cost blowouts you often see in industry. That helps us deliver on time. This is a big portfolio. We are not pretending that it is not a big portfolio of work, but it is carefully staged and sequenced. We have the right partners and we are confident we can do it, but Pedro will come to that shortly.

OLIVIA MARKHAM, BLACKROCK

Firstly, thank you for all the work, because I know that this takes a huge amount of time. You guys have outlined a whole range of EBITDA numbers. They are really good, but I would love to know a bit more the actual cash generation of this business, because EBITDA is not a real number. On top of that, and maybe we will deal with this more at the end, you have a very heavy capex programme here. You have Argentina capex. You have South Australia copper capex. You have Samarco payments. You have a dividend. At the end of the day, firstly, as a standalone copper business, could you fund this? Then, how should we think about Escondida competing for capital versus other priorities and project teams etc across the group?

BRANDON CRAIG, BHP

There is a lot in what you are describing and I think I would describe it as dependent on our level of ambition. One of the benefits of being part of a larger organisation like BHP and not a standalone copper business is that we can actually rely on the cash flow delivery of the entire group to support where, as a group, we ultimately want to invest. If you have a look at the programme we put in place, if you have a look at the expansions just in Chile, the way I look at it is that the cash generation of Escondida is more than likely strong enough to pay for the programme. But if you want to do a major greenfield for Filo and Josemaria, for example, the timing of when and how you thought about that would be very important. If you tried to do the growth programme we are going to share with you today in parallel with Josemaria, that may be more difficult.

The way we tend to resolve those types of underlying conflicts is that the way we think about the business is that we build a large organic growth programme. It is very important that we have ambition in that programme. You take the resource base and then you understand all the organic growth projects we can put together. We then expect the same for every other asset in the portfolio; iron ore, coal, Copper South Australia and so on. Our job is to put together a programme that we can present to the group overall. Then the group needs to assess the cash generation collectively and decide which the most attractive options we want to invest in are and what the impacts of that are going to do to the overall financial health of the BHP business. That ultimately determines how much investment, at what pace, at what sequence and at what speed we can ultimately invest in.

When you look at this region – and I think Fran had a few numbers on this – the underlying cash generation is very strong. I think that we are also going to see as a region that we will start to generate quite significant cash flows from potash when that comes on stream as well. In two years' time, our potash business starts. Our projections of the margins from that business are quite strong and we will follow that with Jansen 2. So you are going to see the cash generation of the entire region, both North and South America, start to lift towards the end of this decade and part of that is going to contribute to this equation as well.

FRANCES SUMMERHAYES, BHP

In terms of the free cash flows, Escondida is a strong free cash flow business. Looking ahead though into the future, we look at a variety of financial metrics, including payback period of when we get those funds back. In regards to Spence, when I look historically as well, we approved that to go in 2017, we started ramping up in 2021, and that is starting to really show strong returns there in Spence, particularly after the investment in the Spence tailings facility, which we disclosed. Spence is the one laser-like focus on free cash flow, but Escondida contributes well to the group from cash flow perspectives.

BRANDON CRAIG, BHP

I just want to add one final piece to that, Fran. If you have a look at this pipeline of projects that we have through to the end of this decade and into what we would probably describe as the second horizon, that 2030s to 2040 period, the cash flow potential of this business on the back of the pipeline we are putting forward is extremely significant. What it is going to do to the underlying BHP financial performance is very significant. We recognise that there is a period of capital investment we need to work through as part of that, but, when you look at what it does to the ultimate financial health and free cash flow generation potential of BHP, we think that it is really promising.

LIAM FITZPATRICK, DEUTSCHE BANK

Good morning. I have some questions on the permitting side. Could you elaborate on these reform bills and how we should think about the timing and when they come into law and why you do not think we will get 30% and what sort of saving we could get? Later in the pack, there is a lot of detail on the permitting. Does that assume any improvements or is that based on the system as we see it today?

RENÉ MUGA, BHP

In terms of both bills, they touch the problems that we are facing, but of course in the parliamentary discussion you would always like to see more progress than is currently there. When we say that we will probably fall short of the 30%, it is that there are a lot of things to be changed and improved in the system. We probably will see progress, particularly in the sectoral permit system, more than in the environment. That probably requires a longer discussion. The government is really keen to approve both projects during the next year as something to show that they made a contribution. That is why we think that discussion will probably go on in terms of looking for more opportunities to streamline the process.

BRANDON CRAIG, BHP

Adam and Pedro will share a little bit more with you, but our plans do not incorporate these improvements at the moment. We are big believers that you have to create your own destiny in this space. The way we engage government stakeholders, the quality of the work we do to prepare for our permit applications and how we foreshadow that these are coming and make sure we engage effectively to get a smooth flow is critical. If you mismanage the upfront process, you can get disruptions later on. René is running that programme for us, but we have a very carefully constructed programme of engagement to ensure we can track our way through the permitting requirements very efficiently. At the same time, if there are improvements in the timing, that is fantastic. We have not assumed that any of that is baked into our plans.

RAHUL ANAND, MORGAN STANLEY

I have two questions. The first one is perhaps for you, Laura. There was a slide that you put out, which was on page 24, which talks about the copper deficit in future periods. If we go back to about, let us say, 10 years of this slide specifically provided by BHP, we have always had this impending deficit coming in the next five years, yet that deficit has never come about. I wanted to understand what has changed or what is different and what typically happens. Is it usually the demand side that is overestimated, or is it the supply that is underestimated? Even if you compare the IRRs, for instance, they have not improved either over this period. What is exactly driving that? To add to that question, is René's forecast of an increased 70% investment in Chile already part of that chart?

LAURA WHITTON, BHP

Maybe I will take the second one first. The answer is yes: underpinning Chile and us would be looking at the same data about investment flowing in, so that will be included in the supply figures. It is a fair statement and definitely one that we have heard before. There are a couple of things to take into account. One has been the response of scrap in that previous period. It has definitely responded in the past decade to meet some of that growing demand, which is one of the reasons why we have taken a hard look at the opportunity from recycled copper and certainly increased our forecasts. The other thing here is that we are seeing now into the market the results of the previous cycle. Some of the very big greenfield investments are now in the market. That has potentially dampened some of the forward look there.

The challenge is now that, when we look ahead, we went looking for projects that could be accelerated to fill this gap when we did this work. We instead found, particularly in that greenfield space, this long list of projects that had this history of delay. We found it difficult outside of Africa to find projects that could be accelerated. Africa is the other part of that story as well. That 90% increase out of Africa has been the other component of supply that has filled that. We are in a different situation now. The economically developable copper projects in the supply stack today are materially different to what they were 10 years ago.

RAHUL ANAND, MORGAN STANLEY

Thank you. This is a quick one for Fran. You talked about automation. You had productivity gains of circa 7% so far in terms of truck automation. If you tie that in with what René said about how many people you guys employ in Chile – and you very regularly have strikes as well – how do you incorporate some of that automation risk and dealing with your workforce? Are some of these workforce agreements already incorporating the level of automation that you are thinking about?

FRANCES SUMMERHAYES, BHP

Yes, that is an important point you make and that is what we see in our enterprise agreements. It is not just about the one-off bonus payment and the increase in salaries. It is far more a sort of win-win with our employees at looking at our strategic workforce ahead, particularly around autonomous. Spence is fully autonomous now in its trucks and had no disruption for the workforce. The reason is that we have union negotiations probably about every 36 months and are sitting around the table. We are looking at the demographic of our workforce. We will see that maybe the younger ones or mid-careers are looking. We train them up and develop them in aspects other than autonomy. They become maintainers or controllers, for example. Then we look at the ageing workforce and negotiate around retirement benefits and support them retiring back into the workforce. That is what we just recently did in August with Union No. 1 in regards to the productivity initiatives that we have there. It is cultural and career development as well.

BRANDON CRAIG, BHP

I was just going to expand on that very briefly. A very simple way to think about it is that, pre-autonomy, if you have 100 people, post-autonomy, you will have 60. Of those 60 people, the quality of the jobs are significantly better and you often get location advantages to those jobs as well. The thing we have struggled with in the mining industry is to find a way to improve productivity. If you look at the last 20 years of productivity in the mining industry, we have not been moving fast enough. Automation is definitely something that gives us that, but it really is a win-win outcome because the quality of jobs go up and the productivity with automation goes up. There are benefits for the labour side of the equation as well as the business. Provided we manage that carefully, engage the workforce and do that responsibly, it does not translate to strikes. You automatically assume that automation equals more industrial disputation, but not necessarily. If you do not manage it well and people do not understand what you are doing, yes. If you manage it well, as we have seen both at Spence and at Escondida, we can execute automation across the business very responsibly without disruption.

MAXIME KOGGE, ODDO

Do you see a compelling case for more smelting and refining to be done in Chile? Do you see political pressure building up in that area? Would you be ready, a bit like you do in Australia, to participate in that stage?

BRANDON CRAIG, BHP

That is a really interesting question. It is something that we think about. Ultimately, as part of our business, we are always looking to understand both the diversification of supply and the diversification of our end markets. Some of our competitors are actively thinking about this as well. I think that that will be a subject of longer-dated future conversations.

MAXIME KOGGE, ODDO

This is just a quick one. Are the difference in unit costs between Spence and Escondida just a matter of scale, or is there some inefficiency at Spence that you will be able to overcome in the longer term to bring it closer to Escondida?

FRANCES SUMMERHAYES, BHP

Yes, a large part is fixed cost dilution. You are absolutely right. They share practices in regard to productivity across there, so there are no real inefficiencies. They have the cathodes process and the concentrator, but obviously Escondida has the three concentrators and the two different leaching pads, so it really gets the economies of scale.

ANDREW BYRNE, WELLINGTON MANAGEMENT

This is going to be super quick. What do you say is the evolution of the ninth decile of the cost curve in 10 years? Does it look like what we have had for the last 10 years, where it has been gradual, or are BHP calling for a step change in the cost curve, like we saw from 2000 to 2010?

LAURA WHITTON, BHP

That is a very good question. I do not think that we see a step change in the cost curve. The short answer is that it is more incrementalism.

TRISTAN LOVEGROVE, BHP

We do not call our copper price forecast anyway.

NICK HERBERT, HESTA

Pedro, your comment around furious competition for contractors and suppliers very much sounds like what we have seen in Western Australia in the last few years. There are a huge range of projects competing against one another, and we are seeing delays and capex blowouts. I appreciate you are locking in your engineering partners, but presumably they are not on fixed-price contracts. I am interested in how you are thinking about that capex number or numbers that you have put together. How confident are you that we are not going to see major escalation in those estimates?

PEDRO CORREA, BHP

We are confident in what we have built in terms of our studies and our capex estimation, in the class they have and with the maturity of our projects. We are absolutely confident of that. What actually gives us the confidence that we can deliver the projects that you have mentioned with that ferocious competition that we will have in the region is the fact that we have a strategy that we have actually outlined in advance, knowing what was going to be happening around the region.

Just for context, between Chile, Peru, and Argentina there are going to be around 14 projects of different companies, but only a handful of them actually have the maturity or the probability of going into execution. Ours are the ones that have that clarity in order to move forward. Thirdly, it is important to say that when I talk about locking in engineering resources, we are not only locking in engineering resources here; we are also locking in engineering centres of excellence in India through Bechtel and Fluor. We are also locking in A-teams that will go from studies all the way to execution, because we have shifted to an end-to-end approach. We are trying to diminish the interface between phases in our projects.

Lastly, more importantly, we are locking in construction companies' resources to actually build our projects. As opposed to what happens in many other jurisdictions, in Chile, engineering companies do not necessarily have the ability to self-perform. Basically, they are the integrators of packages. We have identified quite a good value proposition to segregate small packages so that we can enable construction with these companies that we are locking in today. That is because we have a quite significant pipeline of projects that we are already executing and we will continue executing. Basically, we will ramp up the workforce going to these major projects that we are discussing. Overall, we feel confident.

ROB STEIN, MACQUARIE

I have a question on the production gap associated with the Los Colorados replacement. If you had that new concentrator available today, how long would it take you to start accessing that ore in the PL2 push back? To the same extent, what is preventing you from getting environmental approval or DIA immediately and going with a less perfect option but something that will address that gap?

ADAM FAVERO, BHP

Regarding the production gap, 2029 is our base case for taking down Los Colorados. To your question around how long it gets to the ore, you have to work through the demolition of the concentrator of Los Colorados and then the stripping down to the ore in PL2. That takes about four years to do, which is why, considering the time of the project, 2029 is what we deem the sweet spot and the value-maximising case.

Regarding the second question on permitting, the work that has gone into preparing for the permits is: shaping the projects; running the baseline surveys; and the preparatory works. We are looking to submit the first of those DIAs in the first half of next calendar year for the Laguna Seca expansion. We are cautiously optimistic that, based on our preparatory work, that is achievable via a DIA. Beyond that, the intent is to submit a DIA for the new concentrator. We are not able to do that in parallel, which is probably tied to the heart of your question. That will come afterwards, but the idea is to do those permits back to back.

PEDRO CORREA, BHP

If you allow me to complement something that you said, Adam, it is important to realise that many companies present permitting into the system but it is not well developed and not well studied, and therefore they fail. If you see the benchmark in terms of how they behave in terms of length, it is actually because of that. We have been extremely disciplined in order to fill in permitting when we have confidence that the permit should roll out as quickly as possible without many interactions going back and forward.

ROB STEIN, BHP

Just to follow up in terms of pricing sensitivity, you have run all your IRRs on a \$4.50 price deck, but how would it change your development pathway if you were to take a lower price deck or a higher price deck? How resilient is your development pathway under a \$5.00-5.50 versus a \$3.50-4.00 price deck, and what different decisions would you make under each?.

ADAM FAVERO, BHP

First of all, we have put together the sequencing and the portfolio based on the value maximising case, also considering key constraints such as permitting, ore access, mineralogy, etc. We have run the programme through the range of our price deck, and it is resilient across that range from the low to the high. The sequencing of the projects would not materially change.

GLYN LAWCOCK, BARRENJOEY

Just going back to the permitting in the timeframe, you have gone with the DIA but you said the government can ultimately make a decision on whether it will be an EIA. So, are the timelines you are presenting today based on a best-case DIA, and if the government then decides you are going to an EIA process does everything then slip to the right? Or have you allowed for that?

ADAM FAVERO, BHP

The short answer is the timelines we are presenting today are a DIA and a DIA: a DIA for the Laguna Seca expansion, and then a DIA for the new concentrator. You are right; that is at the government's discretion, but that is why we put the preparatory work into the studies, the definition of the studies and the preparatory work for the permits to maximise the chances of those DIAs. If a DIA becomes an EIA, by the order of magnitude it is about an extra year. That would mean it would shift by one year if an EIA were required, particularly for the new concentrator.

GLYN LAWCOCK, BARRENJOEY

Do you know before you submit whether it is going to be a DIA or an EIA, or will it happen halfway through the process once you have submitted?

ADAM FAVERO, BHP

You do not know definitively, but, based on the work that you do, you make an assessment of whether you believe the project has a significant impact. The work that we have done to date points towards that we believe that they do not. You then firm up the definition as you submit. We also engage with the stakeholders and the relevant agencies regarding what we are doing, so you have a general sense. In the event that you decide that you are confident that it is a DIA, that is what you submit. The first signal you will get is within 30 days regarding whether you have met the criteria, but you then ultimately work through the process. You do have an idea before you submit, but it is not definitive.

TOM HAYES, TYNDALL

Is the definition of 'significant impact' changing in Chile?

ADAM FAVERO, BHP

No, it is defined under the law. It is basically an article in the law that has a list of different types of impacts that they signify as significant impact, and that is what we test against when we are putting together the applications and determining whether we believe that we meet the criteria. It is basically articulated in the law.

LACHLAN SHAW, UBS

Firstly, in terms of the government regulatory capacity to assess, you have all these projects coming through. How confident are you that the regulator will have the capacity and not get logjammed?

ADAM FAVERO, BHP

That is a pertinent question. It depends on the region and it depends on the agency. Going to the presentation that René made, one of the objectives in the future is to particularly declutter the sector permits to support the capacity, but that is more in the future. In the shorter term, when we are permitting our projects we seek to mitigate that by being open and having a strong engagement with the relevant agencies regarding what we are doing so that they can actually see our demand. At the moment they have actually been encouraging some of the other companies in the industry to do that, but that is the main tool we have to mitigate that. Based on the analysis to date and our pipeline we are confident that there should not be major logjams, but once they are submitted it is always a risk.

LACHLAN SHAW, UBS

In terms of Los Colorados being demolished, you talked to FY29 as ideal timing, but you have mentioned that it could potentially be FY31. Is that the scenario where DIAs convert to EIAs that means you have factored in that time?

ADAM FAVERO, BHP

No. In the case that the new concentrator was an EIA and it adds about a year to the timeline, 2029 is still the value-maximising case. We presented 2031 purely to show that we have that optionality in the event that certain conditions warrant it, but it is not because of an EIA.

CHRIS LAFEMINA, JEFFERIES

You talked about run-of-mine sulphide leaching recoveries getting to 60-70%, which is almost twice as high as they are today. Can you give us a breakdown of what the operating costs are today for run-of-mine sulphide leaching, oxide leaching and copper concentrate, and then how you expect those costs to change over the next five or 10 years as you develop your project pipeline?

ADAM FAVERO, BHP

Run-of-mine sulphide leaching operating costs are of the order of \$3 to \$5. Regarding the potential new technologies – I mentioned Jeti, our BHP Leach – it does not materially change that. It is probably at the upper end of the range compared to the lower end of the range of \$3 to \$5. The big uptick that you will get regarding sulphide leaching technologies is if you move to some of the newer technologies that require crushing and agglomeration. That will put the operating cost closer to what you would see with a concentrator of the order of about \$10, or similar to what you'd see with oxide leaching that also requires crushing and agglomeration out in the industry.

AMOS FLETCHER, BARCLAYS

I just wanted to ask about the IRR numbers you presented. I presume those are unleveraged. I also wanted to ask if there are any options that you have within the company to do what some of your peers are doing, i.e. selling off water infrastructure or other assets to juice those returns upwards. Thinking about a leveraged IRR, can you talk about the state of Escondida's balance sheet, where it is now and where it could go so that we could generate some more attractive IRRs on some of these projects?

FRANCES SUMMERHAYES, BHP

In regard to options like infrastructure, we are obviously lucky that with these growth options we do not need a lot of extra power or water because it is actually a replacement concentrator, which would be more efficient. But we are always looking at opportunities to maximise returns in regards to the infrastructure options.

In regards to Escondida's balance sheet, it has its own financing framework and credit rating out there, which is BBB+. In regards to where it sits, you can get debt levels from the financial statements, but \$2.5 billion sits on Escondida's balance sheet. In regards to the financing framework, we have had that since 2015. It has really shown over the test of time that it helps Escondida maintain that credit rating as well as a strong balance sheet.

In collaboration with our owners we have done a decade lookahead as to whether that financing framework will continue to be there and support us through Escondida's growth recapitalisation phase. Yes, it does show that on various different scenarios we will maintain that credit rating and the unleveraged internal rate of returns at a flat \$4.50, which is the derived consensus price. The high and the low is off the capital estimates, but in reality we would use high-low prices and other key value drivers such as recoveries, ramp-ups, head grades, etc. That what we have provided today.

FRANK BEAUDRY, CAPITAL WORLD

Pedro, can I ask your opinion of Laura's estimates on the cost to replace 10 million tonnes of copper? She tells us it is about \$250 billion, which is \$25,000 a tonne. You are presenting projects where you tell us the average is \$27,000, and if I take the high end it is roughly \$28,500. And these are good projects near a good mine. You are telling us that brownfield from competitors averages \$33,000 a tonne, so that would be \$330 billion to get to 10 million tonnes, not \$250 billion. Do you think your projects are average? Do you think they are really good? Do you think they are worse than average? If they are much better than average, the \$250 billion needed for 10 million tonnes turns into \$400 billion or \$500 billion. What is your sense of the commodities research when you look at the real projects?

PEDRO CORREA, BHP

Let me start, and then I will hand over to Fran. We are pretty confident that our project pipeline is extremely robust. As pointed out before, the capital intensity ranges are from \$19,000 per tonne all the way to \$27,000. We are averaging \$23,000. Additionally, the latent capacity that we have in Escondida in terms of infrastructure means we do not need water or electricity. There are a lot of things that we will be leveraging from that. So, the economics of our projects are extremely robust. That is why we feel pretty confident when you heard my colleagues talking about projects competing inside of BHP and also externally for that capital.

FRANCES SUMMERHAYES, BHP

I will add a quick one and then I will hand over to Laura. In regards to the existing technologies, it is also what we have seen in leaching. You would see that we are currently in Full SaL execution at Escondida. As the ore body changed – and no longer with the oxide leaches – we are able to use the OLAP facility, so the existing infrastructure, and do not have to reinvest in that, and we are able to apply that technology. You will also see that in Spence as well. As their ore transitions they can go into Full SaL2 and use the existing stacker reclaimers and infrastructure that is there, which gets those capital intensities down. So it will depend.

BRANDON CRAIG, BHP

Some of the numbers in the slides point to what is projected versus what actually happens. You can see some of the actual inflationary effects come through, when people's projects escalate in cost and come in late and so on. It is very difficult to speculate on what that is going to be, but the history in the industry suggests that sometimes these projects do cost more and take longer than most people expect.

LAURA WHITTON, BHP

To round that conversation out, the other part of that equation, the lower end of the average cost, is the supply coming out of Africa. They have had lower capital intensities on average, so that is what is pulling that number down. That \$250 billion is built bottom up, so it is really the forward look of all of those projects. We think it is robust but there is definitely some potential risk in the number if we see increased intensities going up across the industry.

BOB BRACKETT, BERNSTEIN

Some of the capital options like demolishing the concentrator expire, and some might not expire. If I am thinking about the Escondida new concentrator, it comes to bat in 2027 and it is competing with projects within the portfolio. It might lose in year 1 but it can come back to bat in 2028. How often can some of these larger options continue to come back year after year and compete for capital?

ADAM FAVERO, BHP

I will take it from the project point of view. For the Escondida new concentrator we are targeting the timeline we have presented. There is a level of flexibility in terms of when it could come online, if it is delayed a year for the permit or if there is an additional delay for whatever reason. It is important to say that the permit is one key thing that could change it. If it were delayed because it is competing for capital then there is some flexibility there about when it could actually be brought in.

BRANDON CRAIG, BHP

There is a couple of big steps in the programme. The first is the Laguna Seca expansion. It is an important decision, because we have to decide which permit to pursue first. We looked at that really closely. The Laguna Seca expansion is clearly what we think is the right step. When you start to approach the demolition date for Los Colorados you are locked into this programme; the ability to change your mind or not do it means we really have to see this as a programme as opposed to individual projects, because they are all so interconnected in terms of how we deliver value from the full set. Once we get into the program more fully it is not going to be a case of changing your mind and so on. We have to commit and go.

FRANCES SUMMERHAYES, BHP

Cerro Colorado is probably the one that has that time limit because we have our permit for care and maintenance, which we were lucky to get last year, but you have three years and then an extra two. You can then work with the government to get us in, but technically you legally then have to go into permanent closure and you will lose that option.

RAHUL ANAND, MORGAN STANLEY

I have a couple of questions. The first one was just to get an idea around the thinking for the new concentrator. If you think about the size of the concentrator it seems to be smaller than OGP1. Is the asset now becoming mining constrained and that is what is driving this decision? Why not go for a bigger concentrator, or even something that is more in line with OGP1?

ADAM FAVERO, BHP

It is a good question. As Brandon mentioned, this has been put together as a programme, so the size of the concentrator goes together with the size of the Laguna Seca expansion. Regarding whether it is possible to go bigger, there are three main things to think about. The first one, as you mentioned, is ore supply. As per the slide I presented, we are already increasing the mining rate to provide the ore supply to the Laguna Seca expansion and the new concentrator. Putting a bigger concentrator or even trying to do another one would require even more mine movement, and you would be constrained because of the grades you are providing to the new concentrator, which will affect the economics.

Secondly, there is the capital intensity. When going bigger there is a point at which you do start to reach the limits of some of the infrastructure, particularly water, which would add to the capital intensity. The third factor to consider is also the permit. The bigger you go the closer you push the limit of pushing it into an EIA and pushing the boundary of how you define a significant impact. Those three factors together have been taken into account, and, from a programme point of view, the Laguna Seca expansion and the concentrator that were put forward.

PEDRO CORREA, BHP

Just to complement that, it is a replacement of Los Colorados. What you see is a difference of 15 million tonnes. 10 million tonnes of that is hardness and the other 5 million are additional tonnes.

RAHUL ANAND, MORGAN STANLEY

I understand. For my second question I just wanted to talk around leaching a little bit. You mentioned in your presentation that there was latent capacity in leaching available in the current assets. If we look at production from leaching, in FY16 you did 350,000 tonnes of copper from leaching. You are down to 200,000 or even lower as we sit today. Part of that is probably related to grades. But you have had that latent capacity; why have not you been able to utilise it? Going forward, as you build new leaching technologies and capacities, how do you ensure that that number that you are quoting today has a long mine life – it is not really a mine life – but it stays constant and you do not have decline in another five years?

ADAM FAVERO, BHP

Regarding the latent capacity, we are looking to fill that in the short, medium and long term. In the short term we have the Full SaL project at Escondida, which will go into the oxide leaching infrastructure that will come online very soon. In the medium term we are looking to fill the latent capacity, particularly in the sulphide leach area by boosting recoveries. I have talked about Jeti, which is a more near-term solution and, subject to the demonstration results, potentially implementing BHP Leach that would, on the ripios area, certainly come close to filling the tank house capacity.

Further in time, there is the potential in the longer term with BHP Leach application to the active area, or potentially the implementation of new technology such as Nuton, especially on the oxide leaching infrastructure post Full SaL. With the sequence of those we would certainly be looking to fill the tank-house capacity and the spare capacity that we have there, to the point that if they all worked it would certainly be full.

In terms of why it has taken to this point, the first step of that process, Escondida Full SaL, has basically been waiting for the capacity on the oxide leach infrastructure. The sulphide leach really depends on finding technologies to improve the recovery, and we are taking action on that.

PAUL MCTAGGART, CITI

Adam, did you say that Escondida sulphide grade would be at 0.6% around 2030? Did I hear that correctly? I cannot make the maths work in my head, because that is 40% below current rates and you are not expanding your throughput anywhere near 40%. Did I mishear that?

ADAM FAVERO, BHP

The current feed grade for sulphide ore is slightly above 0.9%. It does touch 0.6% around 2030 – that is the dip – before you then start to increase that as you access the higher-grade ore in PL2 afterwards, in our timeline around 2033.

PAUL MCTAGGART, CITI

Okay, and so in 2030 to 2040 period you are clearly back at a higher average grade of something like –

ADAM FAVERO, BHP

As it picks up we are accessing the higher grade ore from PL2. That is the improvement after the dip, where we are looking at an average grade of 0.6-1% depending on where you are in the ore body. That is the point you get at the peak of the curve before you start to deplete PL2 and it starts to go down again at the back end of the 2030s.

TRISTAN LOVEGROVE, BHP

You also have the extra mine movement thrown in.

JULIO MONDRAGON, BMO CAPITAL MARKETS

I have a couple of questions on the cost side. On the capex side you are really confident with the numbers, but at a high-level view, how many of these projects are at feasibility study and potentially detailed engineering? That will be on the capex side. On the opex side, how do you expect these projects to impact your C1 cash costs in the long term? We already have a mid-term target, but when will you implement this?

TRISTAN LOVEGROVE, BHP

We obviously do not provide guidance on C1; it is FOB.

PEDRO CORREA, BHP

When you see the sequence of this project, LSE is running first in terms of maturity. We are also assessing how to accelerate this project through earth movement, pre-commitment, etc. It then goes to ENC. What you will see in these projects in the study phase is that we should see capital efficiency and capital effectiveness – work that we are doing in terms of optimising quantities and design – coming through. That is why we are talking about ranges. As I pointed out in last year's results, we optimised our portfolio by 18%, equating to \$1.4 billion last year. We will see that coming through in these projects going forward.

FRANCES SUMMERHAYES, BHP

In terms of the cost of how this impacts our C1, the Los Colorados concentrator is 30 years old. It is high maintenance and its availability is not as great. Bringing in a replacement concentrator, which is far more new technology in terms of efficiency, with our water, power and the way that it is run means we will get some upside there in regards to that.

In regards to the leaching technology, it depends. We had a question before. For example, BHP Leach is still run of mine, and that is exactly the same with what we have today with the bio-leach. As Adam said, it is probably to the high end of \$5 a tonne of leaching, and then using the OLAP facilities as that depletes, whether you use Pinta Verde or not, but we already have that in place. Brandon, you mentioned the Western Australia Iron Ore approach in regards to having a look at maintaining our position on the cost curve. What we do for every process within Escondida is we look at where we are today and what a perfect day would look like to have that process and at what unit cost. We look at the gap that we have today in going for the short-term productivity efficiencies and mid-term investments, and then the long-term, blue sky thinking to maintain that cost position. A lot of that is in regards to knowing that we have the deeper pits and the harder ore sources and some of the investments that we are making on some of that increase in improvement projects there. The truck and shovels will support our unit cost in regards to bringing up in the mine, then autonomy, and then the rollout of trolley assist. It is very well thought out in regards to our capital programme and what we invest in today.

TRISTAN LOVEGROVE, BHP

Alejandro will probably take you through the new ultra class trucks that we have, how much quicker they go, autonomy, etc.

KAAN PEKER, RBC

My first question is on the permitting. I just wanted to understand if I got this correctly, but is it sequential? Do you need to get the DIA for Laguna Seca to then get the DIA for the new concentrator at Escondida?

ADAM FAVERO, BHP

Yes, that is right. It is because both projects have a common area of influence, which is particularly related to the tailings area. Either you put them together in one big permit, which is materially more complicated, or you can put them into DIAs, but if you put them into DIAs they need to be sequential. Laguna Seca comes first – it is directionally simpler – and then the new concentrator DIA would be back to back with that.

KAAN PEKER, RBC

If there is an EIA process for both then we are arguably talking about a two-year difference between the timelines.

ADAM FAVERO, BHP

By order of magnitude, yes, an EIA is about two years compared to a DIA, which is typically 12 months. Maybe just to add to the point, we are preparing EIAs in parallel in the event that that is required, so that we have them ready to go if required.

KAAN PEKER, RBC

The second one is around the recoveries for the new concentrator. I think both Pedro and Adam mentioned flotation; despite grade decline you are forecasting high recoveries. How confident are you to get those recoveries, and can you apply it to existing concentrators within the complex?

PEDRO CORREA, BHP

I can start with the technologies that we are adding and then you can get into the details of the recovery on the plan. As pointed out, we studied more than 100 different technologies in order to improve recovery, both in the Laguna Seca expansion and the new concentrator. We have decided to add CPF, coarse particle flotation, in the back end of the process in the Laguna Seca extension and in the new concentrator, apart from also adding the Jameson Cells that will add recovery. This has not been tested with the amount of processing that we have in Escondida; the other projects that they have used it on are smaller scale, but because it is in the end portion of the process we can manage that risk quite properly. That is going to be bolstering the recoveries that we have in both plans.

ADAM FAVERO, BHP

Regarding the confidence we have, we have done substantial testing, particularly on the CPF technology, for both the Laguna Seca expansion and the new concentrator. It is about applying it to the existing concentrators that we have, as well as the new concentrator. There is continued confirmatory testing underway, but we do have a high level of confidence. Regarding the other technology, the Jameson Cells that Pedro mentioned, it is in testing. It is a slightly earlier level of testing, but that is not cooked into our base numbers and it is considered an upside.