Petroleum Briefing Q&A Transcript

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Questions and answers

PAUL YOUNG, GOLDMAN SACHS: Thanks for the presentation. Two questions on your big unsanctioned growth projects, one being Trion and the other Trinidad and Tobago gas. On Trion, lots of exploration upside there but the questions around the base case scope, are we looking at a fixed platform here, potentially tie-back?

Then several on Trinidad and Tobago gas, the first question, you did actually mention the spare capacity at Atlantic LNG, which is about a 15 million tonne per annum facility, but when does material ullage your capacity open up that facility? Also, do you actually have enough resource at this point in time to push ahead with us, or is it contingent on further exploration?

I know this is - I'm going to throw in a third one there, there's a lot going on at this project, but the last one is, BP owns 30% of T&T North, they own 50% off of Atlantic LNG and they're the operator. So you do mention we have potential sell downs of large equity holdings, is this an example of potentially that? Thanks.

Geraldine Slattery: Thank you, Paul. On Trion, we're in the early stages of development planning where we're pre FEED and of course that's the point in the development planning where most value is generated through getting the engineering right. A couple of concepts being considered that take into account the specifics of both the reservoir and the oceanic conditions.

Trion will be one of the deepest facilities in the world at 8000 feet, and the nature of the reservoir is such that it is somewhat compartmentalised, so you will have a high number of wells. With those things in mind, a semi-submersible coupled with a floating storage facility is likely the most appropriate development concept. The reason for that, beyond what I've just said there, it's proven technology, it's well-understood, whereas an FPSO is a little bit outside of the proving technology range, so that is what we're tending towards at the moment.

The T&T LNG, so again, quite early in the stages. In terms of the resource question there is sufficient resource in what we have discovered today and booked in our contingent resource. What I would say is there is upside beyond that, from one of our most recent wells, which isn't actually captured in that, and there's further appraisal that we need to do. But for the contingent resource that we have reported, that does support a development.

In terms of the access to the LNG facility, we tend to access both the domestic market and the LNG market. The domestic market is a strong market, ammonia and methanol, and we see increasing demand there. In terms of the LNG facility, there is ullage available. Certainly as we look out towards the potential first gas timeline, there are few reported, that we understand, material gas resources that would compete for that ullage.

Of course, at the outset we did rather purposefully and strategically partner with BP given that they are involved in the mid-stream. I think you're allowed another question. A question there on the sell down.

Part of our access strategy, whether it's exploration or acquisition, is we seek to have operatorship and a high equity interest so that we can optimise our development. Ultimately we're focused on value here, so whether it is a sell down or operatorship or the many other levers, that's what this front end of the development cycle is focused on. So more to come on that but it's certainly a lever.

GLYN LAWCOCK, UBS: Geraldine, I think you and your team today have already said you favour oil and you still find gas attractive when it is advantaged. I was wondering if you could elaborate on that a little bit in the context of the North West Shelf and Scarborough.

Obviously you just became 50% bigger overnight it feels like, well down to Woodside, but you're going to pay twice the tolling fee to go through a new plant versus a plant that sits there with ullage. Could you explain why is that in the best interests of BHP shareholders? Thanks.

Geraldine Slattery: Let me start and Michiel may answer the LNG question. I think with particular reference to our resources in Western Australia, the Scarborough gas field and our equity interest in the Karratha LNG facility.

The optimum case for us is to commercialise the Scarborough field, the highest possible value, and to secure utilisation and a revenue stream from the North West Shelf facility. That's one piece, so developing those in parallel generates value.

The second piece on those two facilities is - Scarborough gas has some particular part of its composition means you need additional investment in the North West Shelf facility to cater to nitrogen content and so forth that doesn't make that an ideal development concept. So at the moment our plan forward looks at taking Scarborough through Pluto with the balance going through the North West Shelf facility, particularly speaking to the higher resource.

Then we are actively working and well-advanced in the North West Shelf to secure our revenue generating tolling facility with Browse the anchor tenant there. So that for us represents addressing the biggest value drivers and commercialising the resource at a higher return and getting the most out of Karratha.

GLYN LAWCOCK, UBS: The capital up front for what you say the gas has got nitrogen problems, the tolling fee I would have thought you paid through a new plant versus an existing plant that you're in. How do you square those economics? I'm still confused with how the economics of what would be a minimal capital up front for pulling nitrogen out versus what will be quite a material uplift in the tolling fee, thanks.

Geraldine Slattery: So again, it kind of comes back to getting the most from our overall resource base, and a couple of other things maybe to add to what I've already said. The North West Shelf facility, we recognise the interest of the Browse partners in North West Shelf. So the complexities, beyond the commercial complexities, beyond the technical complexities of routing Scarborough.

That in itself is not a driver, we will recognise that from a pragmatic point of view in advancing both of those concepts in parallel. Rest assured that the tolling that we are currently negotiating through Pluto is commensurate with the risks, the exposures and the value propositions from Scarborough.

Ultimately, Glyn, everything comes back through our capital allocation framework, where it is rigorously tested by an independent part of the company, our governance process, that tests the assumptions, be they commercial and technical. As it stands, we see both of those moving forward in the early to mid-2020s, which is the highest value proposition for us.

Michiel Hovers: I think you've described it well to Glyn. I think we basically look at all of these options on the best route to market for any of these gas fields.

TYLER BRODA, RBC CAPITAL MARKETS: Two questions from me. One, in terms of the growing concerns around ESG facing the sector, how do you square that off in terms of cost of capital, or how do you look at that from a wider context of its impact on BHP as a group?

Then secondly, on Page 9 there's the reduction in volatility that comes from petroleum being part of the portfolio. There's a big bump there in 2025, can you just explain what is going on there? Thank you.

Geraldine Slattery: Okay, so let me start with the ESG. We look at that from two perspectives. One, back to our strategy and the attractiveness of the commodity. As Michiel explained, under any plausible scenario in the decarbonising world, throughout several decades we see strong demand particularly for oil owing to the scarcity of supply and parts of the demand sector that there are no readily technologically ready substitutes. So we continue to see demand and of course we think in ranges.

So we take account of the uncertainty and that of course is something that the marketing team do independently. What I and Sonia and the Petroleum team have focused on is bringing forward options that recognise that uncertainty. So whether it's Trion, whether it's Trinidad North or otherwise, we test for performance across the range of outcomes and from what you saw on the new books and on the slides today, you will find that they're very resilient across the price, they pay back in the mid case, is it a well under 10 years, five, six, seven years.

So the projects that you would see coming on stream here, we've got our money back from those by the early 2030s. So both from a commodity point of view and from a resilience of the investment those two things come together and we square that away in a practical sense through our capital allocation framework which tests across not just the financial metrics but also the payback times, the impact on the long-term diversification of the portfolio and other measures.

TYLER BRODA, RBC CAPITAL MARKETS: Just the volatility on NOCF

Geraldine Slattery: The volatility - that's something I think we test on with and without petroleum. I'll have to maybe come back to you on the specific bump there on 25 which we'll be very happy to take that separately if that's alright.

JACK GABB, BANK OF AMERICA: If I can just return to Scarborough for a second. On most people's estimates I think it's relatively lower return than your existing sanction projects which you said were 20% to 45%. Can you talk to the economics at all? Secondly, with the option agreement that you have for an additional 10% by the end of this year, does the exercising that option agreement have to go through the same capital allocation framework as a FID?

Geraldine Slattery: So the Scarborough economics I can't as you probably won't be surprised speak about the very specific details of those. They are tested across the range of outcomes. They are tested in both rate of return metrics but also their ability to deliver a return on capital even in a very low case outcome. We do look at their impact on cash flow out over the decade so there's a range of metrics.

What I will say is that it is a high quality resource, that's why we remain in it and interested in it both in terms of its scale but also in terms of its access to the regional infrastructure and indeed as you would have heard there from Michiel its proximity to the growing Asian market. So you have an advantaged access point. So I think that Scarborough does offer a very good value proposition.

In terms of the 10% option, absolutely it's for all intents and purposes a connected but nevertheless separate investment, which comes under the same level of scrutiny as any other investment would. Then we're clearly already considering that. I think we'll go to the phone lines for a question.

LYNDON FAGAN, JP MORGAN: Thank you. Look, the first question is just on the Victorian assets which have been put up for sale by Exxon. Just wondering whether you would be a potential purchaser or potential seller of those assets and whether you could make some broader comment on our M&A might fit into the portfolio given that petroleum is only 7% of EBIT over the next few years.

Then I guess the second question is just on the Capex sort of going up to $4 billion a year, can you maybe talk a bit about what an unconstrained scenario actually means, so what are the constraints if you like that might pull that back and how the Capex would sit more broadly for the Group? I imagine in that window that it ratchets up to $4 billion, you've got Jansen coming on at maybe a $1 billion a year. Do we start to see the Group hit Capex levels of over $10 billion? Thanks.

Geraldine Slattery: Okay, we've got four questions there. Thanks Lyndon. So firstly Victorian assets, the Bass Strait assets, as I said during the briefing and just very briefly reiterating: very valuable to us, lots of cash and we continue to invest in the contingent resource because of its access to such a strong market.

In terms of the Exxon process, clearly it's a complex asset. It's owner operator and the Bass Strait has big importance to the security of the Eastern Australian gas market and so of course that does give us pause for thought. We're considering all of our options within that. In my view it's a complex transaction, it's not something that will play out very quickly.

I would anticipate that would take a couple of years and so we are considering our options and what that might mean to us. Our core strategy is still continue to get the most from that asset. Beyond the mid-2020s we are at this point we don't see material upside but we continue to test it because that's some of the highest returns that we'd likely see from any of our assets. So watching it but certainly at the moment very focused and just continuing to get the value from it.

M&A in the portfolio, we continue to see that as a mechanism that we could grow value in the portfolio. We see exploration as the most value accretive and highest returning way to bring new resource into the portfolio. However, when you think of assets like Trion or an asset that has similar characteristics to that, which speaks very strongly to the same set of criteria that informs our exploration strategy, then yes of course we continue to be open and indeed monitor the market for those kind of high returning opportunities. Of course back to the capital allocation framework, everything competes for capital across a range of metrics. We know that so anything that we bring forward into that of course has to satisfy those criteria.

The CapEx question, so the unconstrained case - the unconstrained case is essentially what we laid out here give or take, recognising that still many of those opportunities are early in their lifecycle. A reasonable view of how development planning would progress relative to our understanding of the resource base would demand the capital on average what we laid out today, our current equity interests and at the earliest possible timing.

In terms of the Group CapEx, of course we compete for capital. On an annual basis we go through the capital allocation process and so this is incumbent on what I do, what Sonia does and the team does, if we want to compete for that capital, then we have got to maximise the value of those opportunities. I think as has been already spoken from Peter and from Andrew, our guidance has been given for the next couple of years and beyond that the narrative has spoken to single digit numbers. My job is to make sure that we can command a big chunk of that Capex and deliver what we believe are very competitive projects. Thank you. Anymore from the phone? Yes.

MARK SAMTER, MST FINANCIAL: I'm just hoping for another follow up question on Scarborough and I guess when you look at the LNG market most of the empirical evidence would suggest that actually one of the biggest drivers for economics has been liquids and also brownfield expansion. I mean effectively when you're paying a tolling fee and what sounds like a very high tolling fee to Woodside, you're effectively building that project on greenfield economics with zero liquids. Just back to your capital allocation framework, LNG has been a pretty dreadful investment for everyone in the last decade.

You've got an awful lot of capacity being sanctioned without end buyer now so you're probably taking more price risk than you ever have before in an LNG project. How does Scarborough (a) stack up on a global cost curve basis, (b) how does to stack up for your economics via - isn't this worth more to someone who owns the infrastructure as well and then see within your capital allocation framework?

Geraldine Slattery: So maybe I'll answer from the asset perspective and you can take the LNG piece. So we're not at an FID point yet and so we're - but we are well advanced on the commercial negotiation. We do consider the outcome across the range of prices and ensure that we're well protected on the low side. Ultimately, this will compete for capital and so it will be tested independently of what the petroleum team do and with a strong governance process and we have a very strong capital allocation process.

The fundamentals though I would perhaps challenge some of what you said there in terms of both the quality of the asset and its access to market. There is much going for it - the prize - the pie is big enough for both the upstream and the midstream and rest assured that we're focused on making sure that our return is commensurate with the upstream exposure to price or resource and equally that it will be fully tested within our own governance processes.

Michiel Hovers: Yes, maybe I can add to that Geraldine. Like every project, we test against our ranges that includes the possible low on LNG as well and Scarborough has to pass that test for this to be considered. A possible low on LNG is we're thinking about what could happen there or you could see Qatar for example advancing their north fields, accelerating development of that. That's part of our low case. We talked about the leapfrogging, that's part of the low case. So we test against that and Scarborough will be invested if that passes our low scenario.

MARK SAMTER, MST FINANCIAL: Have you - Michiel, I'm not sure if you said this probably before sorry, but have you talked about how much you'd want to have contracted or how much spot risk you're willing to take on the project?

Michiel Hovers: Yes, I can talk to that. So we're looking at a mix there. So as I laid out with the market changing there's a bigger spot market now and numbers quoted - a contract let's say up to three/four years about 40% of the market now. The liberalisation of the Asian power market I think is an important driver there where utilities are not necessarily looking for that long tenure.

So I think ultimately you end up with a mix of contracts where we're definitely looking to have some longer term contracts and that could be a mix of different indices and we'll consider those as well as some of that into the spot market but we'll definitely look to contracts, a big chunk of those funds.

MARK SAMTER, MST FINANCIAL: Thank you.

BREAK
SECOND Q&A SESSION:

TIM CLARK, SPG SECURITIES: I apologise if my questions are a little bit simple but I'm not an oil and gas expert. My first one is just how you think about event risk. Because we have not often, but we have seen big events and they cost a lot of money. And so how in your cost of capital or how in your project assessment do you add event risk to the bottom line.

And then secondly, I think I'm right in saying that your returns exclude your exploration costs, but compared to your minerals exploration, oil and gas exploration is quite a big cost. It's more significant. And don't you think in your returns you should have an accumulation of exploration costs divided up by success or something like that to make it like–for-like with the competition for capital?

Geraldine Slattery: Thank you, Tim. I'll start with the event risk. We have a reasonably sophisticated risk management system within the company that captures event risk across health and safety, across market, across our customer base and so we capture it in our capital allocation and governance framework where we specifically look at risk exposure in an unquantified way.

Part of that is reflected in the range work that Michiel talked about. We also reflect it in our cost of capital depending on the jurisdiction that we are operating in. And so that is reflected squarely in the economics. And so, whether it's in the governance or through capital allocation, we consider both financial metrics but also exposure to particular events.

In terms of our returns, I think numbers we showed you here are inclusive actually of exploration investment. So, the ROCE and the EBITDA numbers that we shared are inclusive of exploration.

LIAM FITZPATRICK, DEUTSCHE BANK: Just a broad question really. We've seen some of the other divisions in BHP give some fairly optimistic targets, if we think about Olympic Dam and Met Coal. And you've given some pretty bullish targets here for petroleum in terms of volumes - where they could get to. So, I'm just trying to think, what is a more realistic base case for this division? Is it to keep volumes stable out to 2030 or are you more ambitious than that? Thank you.

Geraldine Slattery: It comes back to our strategy and the returns we see from the suite of projects and the degree to which they can attract capital. We have communicated that we're in for the most part, the pre-FEED stage. And so, whilst I have confidence in the directional integrity of what has been shared there, of course there's always further resource understanding and development planning that goes into that.

But I think the integrity of the directional outlook is strong, as it exists today. In terms of our ability to deliver that, that will come squarely back to the ability of those projects to compete for capital. So, will it look exactly like that? Probably not, not exactly like that because inevitably we recognise that we optimise as we go through. That can get bigger as we further better understand the resource, refine the development concept, understand how we can access markets in places like Trinidad.

And we also recognise that we have both operatorship and high equity interest. And in the interest of a value-maximised case, we may choose to reduce our exposure to particular project opportunities.

ANDREW SNOWDOWNE, SANLAM INVESTMENTS: Two simple questions; you do show a chart in slide 11, which shows the exploration spend going forward. It's difficult to see the absolute numbers. Are we talking about 500 million? Is that the sort of figures over those periods, the two-year periods?

And then the other question I have is just related to the actual ranges that you use. You've spoken lots about stress testing, looking at returns under different scenarios. I'm surprised by your oil range from $60 to $80 given spot is actually at $60. So maybe you could just talk to what you regard as a long-term oil price and just how flexible are those returns if you do it lower?

Obviously it's not a particularly high fixed cost industry, but how is it skewed if you go more towards a $50 per barrel oil price rather than $60 at the low end?

Michiel Hovers: So, you’re absolutely right. We think in ranges and we test all the projects against the lower case. We do not take a single point forecast. Nor do we actually disclose the ranges, but as I laid out today, and maybe, to add a bit more colour to that, if we talk about our low case, in oil, we look at a case where OPEC has no spare capacity, very, very rapid EV adoption so that we go to a high case for EV adoption, very low macro assumptions on that.

To give you some guidance, if you look at what we have approved so far, Mad Dog 2 is a good example where we said the project kind of breaks even at sub $50, I think that should give you some comfort on what we are looking for, also go forward, and that's kind of what we're looking at now on the Trion as well.

So we have used some data points in 60 and 80, that does not necessarily correspond with our ranges, but I guess the historic Mad Dog 2 example can give you some idea on what we're looking for. The first question?

Sonia Scarselli: I can take the first question. So what I understand is probably around the $700 million, in any given year what that covers, we have opportunities in the pipeline and they will mature through the next three years through drilling and further seismic data, and also we are looking to other opportunities for the portfolio.

Now, saying that, is not granted, so each of the opportunity that we have currently have on the portfolio has to compete for capital within the BHP portfolio, if it doesn't compete for capital we will not progress those. We bring forward only those opportunities that are really strong in terms of the terms. So yes, the budget is around that number but it can go up and down per annum.

TIM GERRARD, JANUS HENDERSON: I was just wondering with regard to your exploration priorities, you're sort of very heavy offshore Gulf of Mexico and up and down the coast there of the Americas. How do you feel about Deepwater opportunities elsewhere and what kind of –I guess you would see Deepwater as a natural competitive advantage. I'm a bit surprised you're not outside of that area. Thank you.

Sonia Scarselli: So from a Deepwater exploration point of view, we look from a global point of view where the resources are and we look for material opportunities where we can expand ourselves so we can get a larger position.

Where those are could be in different parts around the globe, it could be another are compared to where we are today, and so we are evaluating those as well. Saying that, again, they have to compete for capital, they have to be larger, material, high quality that we can expand through time.

Geraldine Slattery: Just a bit to add here. I think it's fair to say that we do look globally, what you see are the opportunities that have been high graded over the past couple of years. I think as Sonia shared during our presentation, we are also doing what we call the global endowment study to inform where we see future opportunities and whether it's the below ground risk or the above ground risk in fiscal terms in jurisdiction - that informs our appetite as to the competitiveness of those opportunities.

EDWARD STERCK, BMO: Just looking at the pipeline projects there, there's potentially quite a few coming on at the same time. Can you just comment a bit on the capacity within BHP to take on so many projects at the same time? Then also can you comment on inflation or otherwise in contractor rates and so on in the oil and gas industry. Thank you.

Geraldine Slattery: In terms of our capacity to take on the projects, so Trion is operated, Wilding is operated, Trinidad North is operated and the others are a little bit out in time Western GoM, depending what we find there. We have been preparing for this, this hasn't sort of all come upon us in the very recent past.

So whether it's the retention of experienced staff that were deployed to shale and come back over to conventional, whether it's some of our folk seconded into some of our big minerals projects. Spence Growth option, South Flank and so forth, desal in Escondida. We have leveraged the experiences in those projects, and of course we have a separate group to petroleum, the project centre of excellence that governance support standards.

We have also maintained relationships and partnerships with the service providers in advancing our engineering standards. So suffice to say we are where we expected to be today and we have built up our capacity, whether it's from internal resources or external.

Can you repeat your second question if you don't mind?

EDWARD STERCK, BMO: It was just on inflation and contractor rates.

Michiel Hovers: So I think we're just off the low on offshore cost inflation, but not that far off. So I think it's still a good part of the cycle and that's why we haven't seen dramatic cost escalation as of yet.

DAVID WALKER, CLIME ASSET MANAGEMENT: Thank you, David Walker from Clime Asset Management. You've spoken about the framework for evaluating projects, could you give us some examples of conventional oil projects that BHP has rejected or downgraded in recent years?

Geraldine Slattery: Good question. I'm going to get Sonia actually to share some on the exploration side.

Sonia Scarselli: So one example we have tested in the last couple of years, we had a position in the Beagle basin in north Australia and we are the two large blocks and [unclear] was our partner. So what we did, we did have commitments for potential drilling. We did acquire 3D seismic data and evaluated the area and after the technical evaluation we did not see the potential we were expecting going in, and also the risk profile was too high. So we actually turned that down, we did not move it forward, and there are other examples that I can share later.

Geraldine Slattery: Samurai is probably another very recent example where a nice discovery north of Shenzi, we understand the basin well, but ultimately it was not material enough to compete in our portfolio, a more natural owner was found for that. We got our money back. We didn't take that forward for all the right reasons.

RYAN KAUPPILA, PUTNAM INVESTMENTS: I think on Orphan you said you're likely to farm that down pre-drill, could you just discuss at a high level the cost benefit analyst that you do in-house around why you're reticent to carry an exploration well at 100%.

Sonia Scarselli: That's a very good question. In that case there are - for the Orphan basin there are a few reasons why we would probably look to bring in partnerships. It's a larger position, there are multiple upsides, the potential. So from a cost analysis, even bringing in partners, does definitely not reduce the upside and the value.

On the other hand, also we leverage a partnership to really better understand the subsurface, to test different scenarios and reduce overall the risk. So when we think about the Orphan basin, it comes quite natural to bring in partner, we have done something similar in Trinidad and Tobago, we entered 100% on the southern licences and after we brought in BG at the time, Shell today to reduce some of that exposure and similar on the northern licences with BP. So something pretty common and we will look into that for Eastern Canada as well.

Geraldine Slattery: The phone lines, I think we're going to take them from there now.

LYNDON FAGAN, JP MORGAN: Thanks a lot. Just going back to the Capex situation, if I take the guidance of almost $4 billion a year over that period and even the period before that at $2.5 billion a year, it doesn't look like BHP is going to generate any positive free cash flow before FY25 from the division. I guess it feels a little bit like US onshore where we're chasing good IRRs but for a period of positive free cashflow many years in the future. So I'm just wondering if you could reflect on that and whether the division is actually living within its means with that level of investment? Thanks.

Geraldine Slattery: Thank you, Lyndon. A couple of points. As I spoke about, capital is managed at a group level, that is what I would say first, and it's not managed at the petroleum level. That reflects part of the strength of the portfolio in that we are able to invest counter-cyclically when we see the best value potential.

On the second point I would reiterate is the flexibility we have in some of those opportunities to optimise, whether it's through phasing or equity. Finally, we don't have to play any of those levers, if they are the most attractive opportunities in the portfolio and we can demonstrate that, then they will command the capital.

In terms of the cash flow generation piece then we don't share the specific scenarios, but across the range of price outlooks, over the medium term they are incredibly resilient to commodity prices. Notwithstanding the capital intensive period, as you call out.

LYNDON FAGAN, JP MORGAN: Thanks.

TONY ROBSON, GLOBAL MINING RESEARCH: Following up on Lyndon's question, it wasn't so long ago of course you were pumping several billion dollars a share into US shale, it seems to be like there's an acceleration at the moment because there's possibly a catch-up effect. The rest of the world, if you like, was on the hiatus and exploration development, while US shale was ongoing. Is that the truth or you were saying - would you believe that these projects would have happened at this stage in any case? Thank you.

Geraldine Slattery: So the projects in the portfolio today have in large part come about from the reset of the exploration strategy from five years ago when we both recognised the potential for Deepwater and the potential for such opportunities to be competitive, and we stayed in the exploration game, in fact, when many left. That had allowed us to take advantage of lower cost of service and in fact bring forward the projects that we have talked about today.

So in terms of where we are today, in large part you have to go back five years and recognise that it was our strategy of then that brought this forward. I think Scarborough was for us the outcome of a strategic partnership with Woodside and trying to get better connectivity in alignment with the big infrastructure player in the west.

So that is what has brought us to today. In terms of the go forward, I think the nature of the projects that we talked about today are such that there is adequate history in our performance and in industry to demonstrate the robustness, put that together with our governance, our capital allocation. There is no doubt that the strength of the investments across the range of outcomes is very well tested internally and we have shared some of that today.

YUBO MAO: EXANE BNP PARIBAS: Just a quick couple of questions. First on productivity gains, where do you see the most potential for further improvement after the progress in recent years? Secondly, on the competition landscape in the Gulf of Mexico, what has happened in the recent couple of years in terms of capacity, cost curves, Capex intensity, et cetera. Thank you.

Geraldine Slattery: In terms of productivity gains, that's an interesting one. We put our attention to where we see the biggest prize, and for us that's at the moment at the front end of the life cycle. So maybe I'll get Sonia to pick up on it and maybe some examples there.

Then secondarily, it's in our project development and so we leverage our project centre of excellence and lessons from other projects throughout BHP, picking up particularly on automation, digital technologies and particularly the use of data through data science, and maybe there's one to pick up on there.

Sonia Scarselli: Yes, to add on that, especially on the usage of data finds and artificial intelligence we are progressing at a global endowment study that really position ourselves from a global point of view they are yet to find and we are working together with our copper partners. The key element of that is really introducing some of the new technology and innovation and we're seeing a disrupting different type of industry and leveraging that to create a competitive advantage and also position ourselves for future access.

Geraldine Slattery: Right and the Gulf of Mexico, can I just clarify were you talking about the service sector there?

YUBO MAO: EXANE BNP PARIBAS: Yes.

Geraldine Slattery: So as Michiel said, we see some movement in the market particularly around subsea service providers and infrastructures as that has been a focus in the more recent years in terms of accessing fast development cycles but still quite low and on the deepwater drilling market, I think we see slow movement but still very competitive.

DAVID WALKER, CLIME ASSET MANAGEMENT: By how much would you say this year's world economic slowdown has reduced total world demand for oil?

Michiel Hovers: So I think when we started the year, our internal forecasts I think we had at 1.5 million barrels a day. We're now kind of closing in on the one. I think we're slightly above one if you ask the analyst team today. That's kind of broadly in line with what we've seen other analysts say I think people are putting in around 1. I think we are still at 1.2. So a couple of hundred thousand barrels.

DAVID WALKER, CLIME ASSET MANAGEMENT: So what kind of growth, baseline growth do you see looking out into the future?

Michiel Hovers: Yes, so if you look for the next 10 years, we assume roughly around a million barrels. Demand per day a year growth in our central case. As I laid out we have the difference cases like we're in the low case we see peaking 2025 but in central case you have another million barrels of growth for the next decade, a year.

DAVID WALKER, CLIME ASSET MANAGEMENT: Thank you. Also, global bond yields have risen a little bit just lately. If world bond yields have now bottomed and are maybe trending a bit higher, how does that affect your cost of capital and decisions about whether rates of return on projects are high enough?

Michiel Hovers: You want to comment on that?

Geraldine Slattery: Look, I think it's our cost of capital and how we think about it. We test that through the scenario analysis pretty regularly and we're satisfied with where we are today. I think the range in work kind of protects us kind of across the range of outcomes there and supports resilient investments. It's something that the - it's done independently of the asset team. It's done by the finance and strategy team with on a very regular basis.

PAUL McTAGGART, CITI: T & T North is a meaningful chunk of the valuation uplift in the potential for the business. We don't have a lot of parameters to think about in terms of scale, potential kind of OpEx, Capex, how it might look and feel. So obviously in coming to those numbers, you've thought about plenty of that, would you care to share some of that with us?

Geraldine Slattery: Sure. So and I think some of this is in the pack Paul. So in terms of the scale we've talked about, what we've modelled based on that resource is a 1.5 BCF a day facility. We have assumed a - it's somewhat analogous to Scarborough, so in terms of we don't share our capital estimates at this point in time but it's analogous to a Scarborough type development concept and cost recognising we're early in the stage there.

So I've reasonably , it's a subsea integrated development and we assume at this point for the purposes of the illustration that we tie into shallow water infrastructure that allows access into ultimately the domestic market and the LNG market.

PAUL McTAGGART, CITI: Pricing?

Geraldine Slattery: Pricing?

PAUL McTAGGART, CITI: In terms of product price you're talking about there.

Geraldine Slattery: So we wouldn't be talking about that but we talk about the domestic market and the LNG market and I think Michiel has probably shared our outlook on…

Michiel Hovers: Yes.

TIM GERARD, JANUS HENDERSON: Look, you've given us some good insights into what the business might look like in five or six years and then ongoing from that. If you - and I dare say you do a lot of scenario analysis - I'm just wondering if the time comes when BHP does commit to Jansen there might be more pressure on fossil fuels and the cost of carbon.

You've got your production profile in place and the strength of petroleum in place. If BHP were to spin you out, how would you think the way in which you manage your business would change either in terms of the exploration spend you could afford? The risks that you'd be willing to take in deepwater et cetera, et cetera? When you do your scenario analysis and have a think about how you would manage a single company, what kind of thoughts come to mind?

Geraldine Slattery: I'll start maybe. It still comes back - a lot of it still comes back to our outlook on the demand side and indeed in the supply side and the range of outcomes that we see there. Beyond the current portfolio, we recognise the inherent uncertainty both from demand structure on the oil side but also demand growth and so the commodity attractiveness piece is still, is the integral part of what drives that.

I think we would continue to monitor the yet to find volume, he exploration success and the inducement curve to inform the scale and the attractiveness of our - the opportunities, of which would in a large part come from the exploration of today. If that answers your question, I'm not sure I properly understood it.

TIM GERARD, JANUS HENDERSON: Well I'm sort of kind of wondering how you would manage the company differently without having a large company to support you?

Geraldine Slattery: Okay, that's a very different question. So we are within the BHP portfolio. We believe that we benefit from that and we contribute into that. We're integral to the strategy of BHP and that's where we see petroleum generating most value and most return and that's what I'd say on that.

EDWARD STERCK, BMO: Just going to Eastern Canada and it's obviously quite a long dated project - maybe this will be less of an issue by the time a development decision is made - but I think I'm correct in saying that it is also known as iceberg alley. How do you mitigate those risks if that is the case and what does it look like from a production perspective?

Sonia Scarselli: I can take it. Yes, so when we, and kind of we did evaluate the different development scenarios and also considered the iceberg situation there are ongoing development and production. So there are facilities that can handle and enable that. The icebergs are monitored there. We know when they're coming, the course can be sort of moved. So there is quite a lot in place that can have to mitigate that. So as we will come with the development scenario, we will take into consideration all of those scenarios as well.

DAVID RATCLIFFE, GLOBAL MINING RESEARCH: Just coming back to your charter, the unconstrained scenario and where production could go. Could you actually talk to the production mix there? Obviously, you talked to preferring oil, can you actually grow the oil as a percentage of that production mix?

Geraldine Slattery: So we do grow it out into the middle of 2020s. We go from some 39% today out to 45%. Beyond that we do have a lot of gas as you would have seen in the portfolio. Can we grow it? Yes, the GoM assets have a lot of embedded growth options, that's what makes them so attractive, the heartland concept. Trion of course is coming into the portfolio and we continue to explore, we'll be exploring around Trion.

The Western GoM is an oil play, Eastern Canada is an oil play and we are also testing in the southern licences in Trinidad. Beyond that whether it's continued exploration or acquisition, it's in pursuit of oil assets because we believe they're more competitive and ultimately can generate more returns. So I think that answers your question.

BEN GOODWIN, MERLON CAPITAL: Just wondering what sort of work you've done on US onshore as the - I mean that's been the biggest driver of supply over the last five to 10 years. What's your sort of outlook for that underpinning your forecast for oil?

Michiel Hovers: Yes, thanks for the question. Yes, as I laid out today, I think we see it coming into a much more mature stage of development now. So when you look at a couple of years ago we had on a liquids basis like I think two years ago two million barrels added, this year it will be a bit over a million, for next year we see around a million barrels added. So where is the growth coming from? It's predominantly Permian. So I think it's 75% or 80% of the onshore growth is going to come out of Permian so the other basins might have a little bit of growth but Permian is where the growth is.

On the total crude oil basis, we see peak at around 16 million barrels. On a liquids basis that would be 22 million barrels and that's in the mid-2020s. So still some growth but much lower and plateauing and then starting to ease off beyond that. So in certain Permian is the growth factor and if you think about cost wise I think Permian costs at the moment, core Permian is anywhere between I think $30 to $50 and then you start moving out of the core and more the fringes which is why there's a cost curve attached to that.

Geraldine Slattery: I think we're out of time and you know welcome you to join us for refreshments after this. Thank you very much to those who joined us on the phone lines and on the webcast and indeed to you here. Alright.

Michiel Hovers: Thank you.

Sonia Scarselli: Thank you.