DISCOVERING A NEW OIL PROVINCE IN AUSTRALIA'S NORTH WEST SHELF

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I'd like to start today by thanking the organisers of AOG for allowing me the honour of delivering this keynote presentation, and to thank everyone for their attendance and welcome you to this magnificent event. I'd also like to acknowledge the presence in the audience of several of my colleagues from Carnarvon Petroleum and representatives of our Joint Venture partners, Apache, JX Nippon and Finder Exploration.

Before getting into this presentation, I'd like to start by sharing with you a little piece of personal information about myself that may just resonate with todays' subject matter. I was born in the Melbourne suburb of Footscray in 1967 into a family of one-eyed Bulldogs supporters. In my family there is only one possible team to support in the AFL and so I've always been a lifelong, died-in-the-wool red, white and blue Western Bulldogs supporter. And as most footy fans will know, the Bulldogs first and only premiership was in 1954.

As a consequence, I am driven by two fundamental and, at times, opposing forces; optimism and masochism. Ironically, as my career progresses I see a very similar duality among my fellow oil and gas explorers.

Explorers are, by nature, optimists.

Our careers are dedicated to the pursuit of making a significant discovery, knowing that the odds are stacked against us at every turn. Our pursuit is both a noble quest for knowledge and a mad scramble to be the first to unlock the riches that lie beneath the earth.

While we're optimists, we're also conditioned to expect and prepare for failure. Unfortunately this quest includes delays, cost blow-outs, out-right failures, and the worst of them all, "technical successes", all of which I can personally attest to. This is the masochistic element of an explorers' existence. Explorers must expect and even make a virtue of failure as the price for eventual success.

So here I am, after more than four decades of passionate, dedicated and heart-breaking support for my beloved Doggies, and I'm still waiting to savour my first AFL Premiership. The way I see it, the Western Bulldogs' quest for football glory is analogous to the quest of the junior exploration company searching for a major new oil discovery.

Fortunately for the shareholders of Carnarvon Petroleum, I've enjoyed more success discovering oil than I have supporting the Western Bulldogs.

Which brings me to the main theme of my presentation today, the discovery of a new oil province on the North West Shelf. I want to pause for a moment to acknowledge and give due recognition to all the people who made this discovery a reality. Especially the people who made the decisions and took the risks to acquire the Phoenix Blocks and to those who developed the initial exploration thesis that created the platform for Carnarvon's exploration success.

These people, some of whom are in this room today, deserve to be publicly acknowledged for their foresight and courage. As the "Grand Old Man of Exploration", Wallace Pratt once said "Where oil is first found is, in the final analysis, in the minds of men". Pratt also said that mental inflexibility was the greatest hurdle to overcome in finding oil.

We value the contribution of our people at Carnarvon and we foster a creative working environment, which is why our motto is to "Think Different and Act Differently". In essence, our view is that the key to exploration success lies in the imagination and the creativity of good people, and a bit of old fashioned good luck.

As most of you know, on the 18th August last year, Carnarvon announced that the Joint Venture, led by the operator Apache, discovered oil at the Phoenix South-1 well in the Bedout Sub-Basin in the North West Shelf. At the time, I described it as "the most significant new oil play in the North West Shelf since the Enfield discovery opened up the Exmouth Basin almost 20 years ago". In truth, we were hoping to make a gas discovery, so the fact that we encountered four discrete oil columns in the Phoenix South-1 well came as a very pleasant surprise.

It was a sublime moment. It was a moment I was proud to share with all our employees, our shareholders and our joint venture partners, and it will be a memory I cherish for the rest of my life.

But the moment doesn't last very long.

Since then the oil price has plummeted, market support for explorers has evaporated and our share price is back to where it was before our discovery. There have been moments when I've scratched my head and wondered if the discovery ever happened, but to be honest I'm not concerned about that now because we're in such great shape.

Over the last two years we've been transitioning our business into one that's well-resourced, well-funded and focused on the North West Shelf. We now have a clarity and focus to our business strategy, and we have the people and financial resources to execute the strategy.

In relation to the Phoenix South well, it's hard to believe it's now six months since the discovery was announced. The true size and scale of the discovery is still being calculated and the potential recoverable reserves of oil have not yet been quantified. This process will take some time to complete, and we're not going to rush it, despite the understandable desire of investors and speculators for us to say more soon.

Before I go any further, let me tell you why I believe the Phoenix South-1 discovery is so important. The Phoenix South well categorically proved the existence of movable oil in a previously untested group of rocks, in a previously untested region. Nowhere else on the North West Shelf have hydrocarbons been found in this geological setting. What's more, the information we now have, indicates that the previously drilled Phoenix-1 well was, in all likelihood, an oil discovery. The next and an important test is Roc, which is expected to be drilled later this year.

So based on our seismic interpretations, data from the earlier Phoenix wells and our more recent Phoenix South discovery, we have at least three distinct oil structures, which means we have the beginnings of a new oil province within the Bedout Sub-Basin. Putting this into context, the Phoenix Joint Venture is now working on a more ambitious and expansive agenda of well and data acquisition with a more substantial time-scale than we had contemplated before the Phoenix South-1 result. In short, that is why the Phoenix South discovery is so important to Carnarvon and our partners.

I'm very proud to say that the Phoenix South well was discovered by people who saw the potential for the bigger picture and embraced the concept of thinking and acting differently. I would argue that the concept of thinking and acting differently is an essential element in the exploration business, and this can be seen throughout the history of oil and gas exploration in Australia.

Take the discovery of oil in Bass Strait, for example.

In March 1960, the American geologist Lewis Weeks met BHP Chief General Manager Sir Ian McLennan to discuss where BHP should look for oil in the coastal waters around Australia.

The American told Sir Ian to look for oil in Bass Strait, some of the most treacherous waters in the world. At that time, the conventional wisdom was that it was near impossible to drill there and, if oil was found, absolutely impossible to get into production. Lewis's response was typically simple and practical.

While he'd never been to or seen Bass Strait, he considered the area worth exploring and regarded the challenge of drilling there as purely an engineering problem that needed to be resolved. And ultimately, it was. That fateful discussion led BHP and ESSO to drill for oil, and for over 40 years the Bass Strait oil & gas province has made a massive contribution to Australia's economic development and prosperity.

This story provides an example of the radical thinking, nuts and bolts practicality and bold, decisive action that encapsulates the concept of "thinking and acting differently". It also demonstrates the value of keeping our minds open to new ideas, to embrace new thinking and to fiercely resist the mental inflexibility created by an unquestioning acceptance of so-called "conventional wisdom".

To provide some context to our Phoenix South discovery, it's worth considering some of the key historical events in the development of the North West Shelf over the past fifty years, and recognise how some of these events are analogous to the development of other major global oil and gas provinces.

The initial phase of exploration in any new province tends to focus on the largest and most exploitable reserves with the scale and production life to justify the huge investment in infrastructure and processing facilities necessary to bring them into commercial production – the so-called "low hanging fruit". On the North West Shelf, this period of initial exploration, during the late 60's through to the 80's, focused on large scale oil and gas projects in the Browse and Carnarvon Basins. Several decades and many billions of dollars later, the Browse and Carnarvon basins are now relatively mature, world-class oil and gas provinces yielding substantial returns.

With the focus on the "low hanging fruit" in the Browse and Carnarvon Basins during that initial period, other parts of the North West Shelf received little or no attention and remain relatively unexplored.

The Bedout Sub-Basin, which lies between the Carnarvon and Browse Basins, was just such an area.

The amount of exploration activity in the Bedout Sub-Basin in those early years was minimal and the results that were achieved suggested limited hydrocarbons were present and those that existed were in tight rocks. This hypothesis appeared to be confirmed by the results of the Phoenix-1 and Phoenix-2 wells drilled by BP in 1980 and 1982.

The accepted wisdom of industry experts was that the Bedout Sub-Basin was a write off and, as a consequence, no new wells were drilled in the area for the next 30 years. It is only now, with the benefit of new information and hindsight, that we've been able to determine that BP in all likelihood discovered oil at Phoenix 1 in 1980, but they didn't realise it at the time. Sadly for BP, and fortunately for us, things worked out differently.

My view is that the initial phase of exploration and commercialisation of large scale oil and gas projects on the North West Shelf has now passed, and new thinking is required to find new resources of an economically significant scale. This view is shared by the Carnarvon team, some of whom earned their stripes as petroleum geologists and geophysicists in the North Sea in the 80's and 90's. They see the current North West Shelf as analogous to the North Sea during that period.

Just as the initial North Sea fields that were brought into production during the 60's and 70's started to decline by the 80's and 90's, new exploration techniques, new seismic tools and new thinking helped create a second wave of oil and gas discoveries that breathed new life into the North Sea.

My belief is that the Phoenix South discovery could trigger the beginning of a renaissance on the North West Shelf and be a catalyst for a new wave of exploration around the Australian continental shelf.

This new wave of exploration will be aimed at identifying new play types in new areas that have been previously overlooked, or that simply weren't explored because they were considered too small, too difficult or sub-economic at the time.

Carnarvon's opportunity to enter the Bedout Sub Basin came in 2009 when the Global Financial Crisis was in full swing and many of the major oil and gas players on the North West Shelf were focused, as they are now, on cutting back on exploration expenditure.

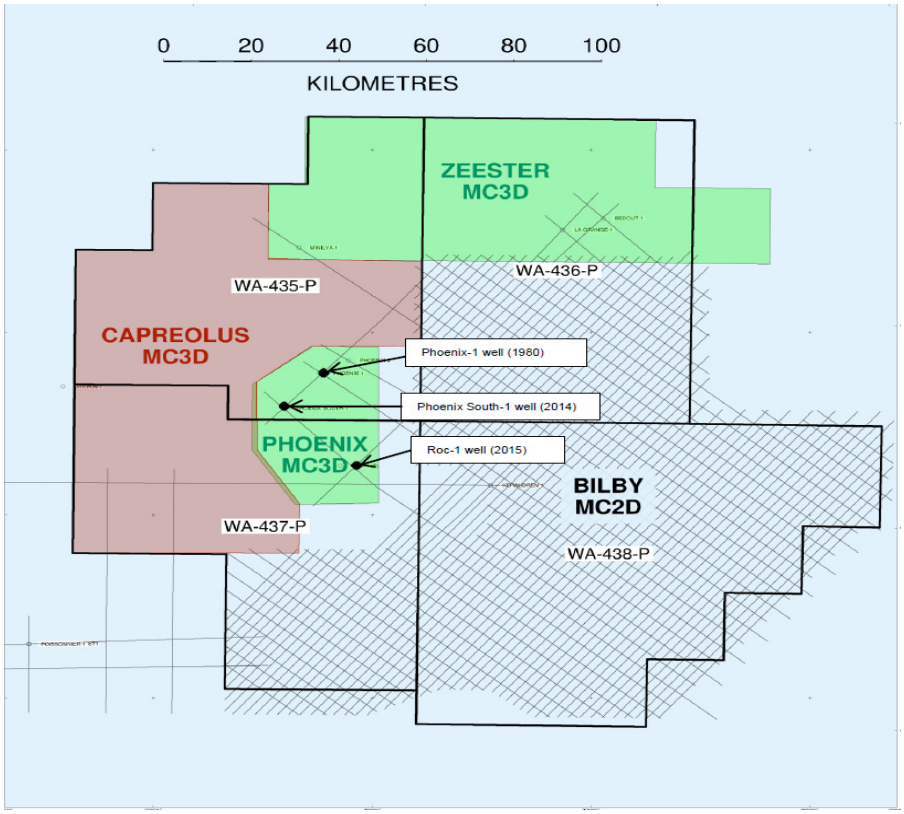
Carnarvon, and its partner Finder Exploration, were able to secure the Phoenix blocks in a government bid round. These blocks cover a substantial 22,000 square kilometres and importantly cover the entire basin. Carnarvon and Finder then acquired the first ever 3D seismic in the area and shot the data over BP's Phoenix-1 and Phoenix-2 wells.

The interpretation of this new data, and the interest that it generated, led to the introduction of two additional partners in Apache and JX Nippon. No matter how bold or gutsy we were, Carnarvon and Finder were simply not capable of exploring and developing an entire basin on our own.

We needed to attract major partners with technical competence and balance sheet strength to assume the lion's share of the financial and technical risk for testing our exploration thesis. Securing the support of Apache and JX Nippon, and most importantly ensuring that Apache took over operatorship of the Joint Venture gave us our best possible chance of success.

In retrospect, it's hard to see how this discovery could have been achieved without them.

In essence, we are building our knowledge and understanding of the Bedout Sub-Basin virtually from scratch. The reason is that we have a very limited amount of drilling and seismic data and the simple fact that we've not seen this type of oil reservoir combination on the North West Shelf before. Our first step, announced in January this year, was for the Phoenix Joint Venture to shoot 5,100 square kilometres of new 3D seismic (Capreolus MC3D), over two western permits within the Phoenix blocks.



Once the new Capreolus seismic program is complete, the Joint Venture will have 10,000, of the approximately 22,000 square kilometres of the Phoenix Blocks, covered by modern 3D seismic data. 3D seismic is a valuable tool for evaluating prospects, but eventually you have to stop analysing data and you have to drill wells.

The second step in our 2015 work program is to drill the Roc well later this year. The Joint Venture believes Roc is a more prospective target than Phoenix South, for three key reasons.

Firstly it lies in shallower water and is therefore cheaper to drill and develop. Secondly, the target sands are not as deep, so the reservoir is expected to be more productive. And thirdly, the target structure is larger than Phoenix South, so it has the potential to be a significant commercial discovery, if recoverable oil is found. If Roc turns out to be successful, we will be keen to move quickly to appraise the field and progress towards commercialisation.

That is the key reason why we decided to strengthen our balance sheet by selling our remaining interest in Thailand ahead of drilling the Roc well. By doing so, we have ensured Carnarvon has the financial resources to remain an active participant in the Joint Venture through this next exciting phase of growth.

Carnarvon also holds another exciting set of exploration plays on the North West Shelf, called the “Cerberus Project”. The Project comprises four contiguous permits in the heart of the Carnarvon Basin, in which Carnarvon holds 100% equity interests. I mention this project today because it shares a number of geological features that are similar to our Phoenix South discovery.

In particular, the Lower to Middle Triassic petroleum system at Phoenix South appears to be present in the Cerberus blocks. It's worth noting that over 1,000 exploration wells have been drilled on the North West Shelf, and only around 30 wells have been drilled into the Lower Triassic. Prior to Phoenix South, the last well drilled into the Lower Triassic on the North West Shelf was in the late 90's.

Phoenix South has proved categorically that the Lower to Middle Triassic is a working petroleum system extending beyond the Perth Basin and likely along the whole of the North West Shelf. Our strategy with Cerberus, as with the Phoenix area, is to seek out the right partners to help us develop this project to the point where we can commercialise our investment and create value for our shareholders.

One of the great advantages of having built up a solid balance sheet is that we now have a range of options available to consider.

Importantly, we are not dependent on the equity markets for funding our exploration activities in the foreseeable future. The Phoenix South discovery, and the running room that we have around it, is incredibly exciting. But as you see here we're also working hard to find additional discoveries on the North West Shelf.

As everyone in this room and everyone attending this conference knows, new discoveries are the lifeblood of our industry. Importantly, each significant new discovery breathes new life and hope into the sector, and attracts much-needed capital to help develop production facilities and associated infrastructure. With the sale of our Thailand assets complete and our eyes fixed on the North West Shelf, I'm confident that more oil and gas discoveries will come and that the North West Shelf still has many more hidden treasures to reveal.

New projects will require skilled people and a range of services, products and technologies that will stimulate growth across a wide range of industry sectors and throughout the broader economy.

Exploration directly and indirectly supports tens of thousands of jobs across Australia and is needed to attract investment that creates long term economic growth and national prosperity. These benefits would be magnified if we were able to develop and bring into production a whole new oil province in the Phoenix South region. This would be an exceptionally rare and potentially transformational event for the Australian oil and gas sector.

I should qualify that statement by saying that capital investment in new resource projects is dependent on the projects generating robust levels of economic and social benefits for key stakeholders, including government and the broader community. If support from these groups is not firm, then the likelihood is that the project will not be developed.

In terms of the economic outcomes, capital expenditure levels and oil prices will both play a key part in the final investment decisions.

I'd like to now address the elephant in the room: oil prices and the global political, economic and cultural forces that are driving them.

There's no doubt that lower oil prices are having a positive impact within some parts of our economy. However for oil and gas explorers and producers, the collapse in oil prices is bad news, and is having a very real impact on the industry around the world. The most significant impact of lower oil prices is a substantial cutback in global oil and gas exploration.

Around the world drilling campaigns are being scaled back, deferred or cancelled, exploration budgets are being slashed and exploration departments are sadly being scaled down. We're seeing this response in big and small oil companies alike. The situation for Australian explorers is compounded by the loss of investor support and the capital to fund exploration in the resources sector.

These exploration cutbacks will have long-term implications for the discovery of new oil and gas projects around the world, and the immediate consequences are rippling through the service and supply industries that are represented in this room today and at the AOG conference outside.

They are causing real pain to real people and the impacts will continue to be felt for some time as the pain spreads throughout the broader economy.

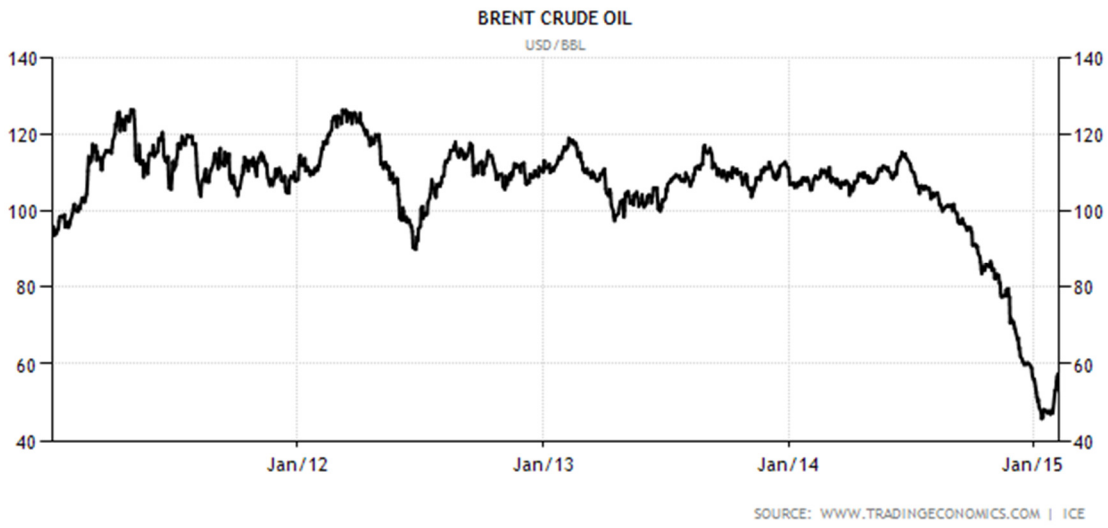
The only potential benefit of lower oil prices for the exploration sector is an anticipated moderation in our cost structures. While this may not please many of you who represent oilfield services and consultancy companies, in my view, this is ultimately good for the industry as a whole. It should help bring Australia's cost profiles in line with other major oil and gas producing regions, and ensure that we don't price ourselves out of the market.

For a junior exploration company like Carnarvon, which has demonstrated the ability to be bold and decisive during industry downturns, the challenge is to be suitably prepared and positioned to take advantage of opportunities when they arise. We did this in 2009 at the height of the Global Financial Crisis when we took on the Phoenix area acreage.

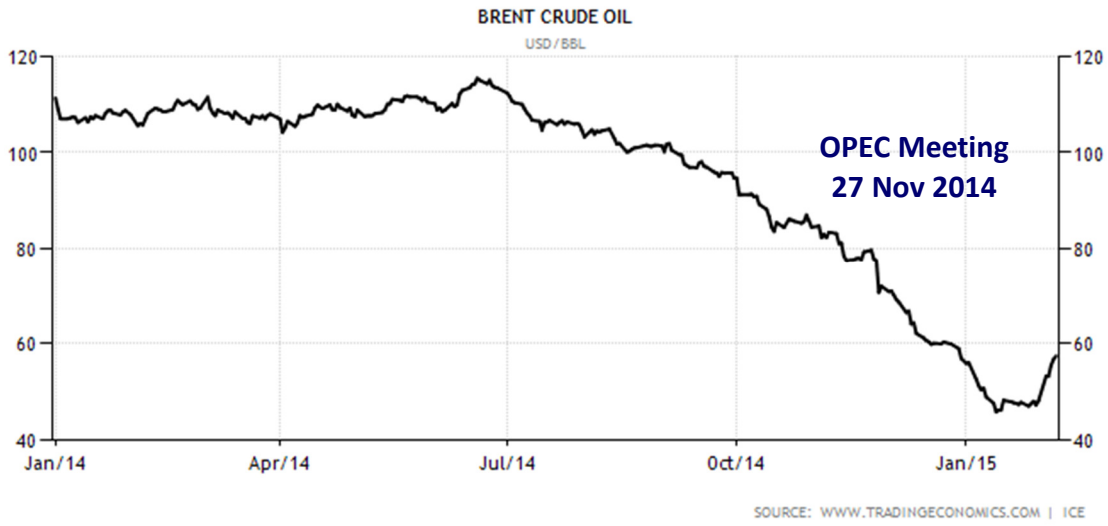
The Carnarvon team are seeing similar circumstances now, in which good opportunities are beginning to arise. Importantly we now have the time and the money to take advantage of these opportunities and set our business up for the future and capitalise on an expected stabilisation in global oil prices later this year. I'm sure we all have our views and opinions about what is driving the oil price and where it will go in the future.

I'd like to take a moment to share with you my thoughts on this topic and to explain to you how we are positioning ourselves to take advantage of the opportunities that are being generated.

As you can see, the Brent crude oil price was reasonably stable for a period of almost three and a half years until the middle of 2014, when prices began to fall.

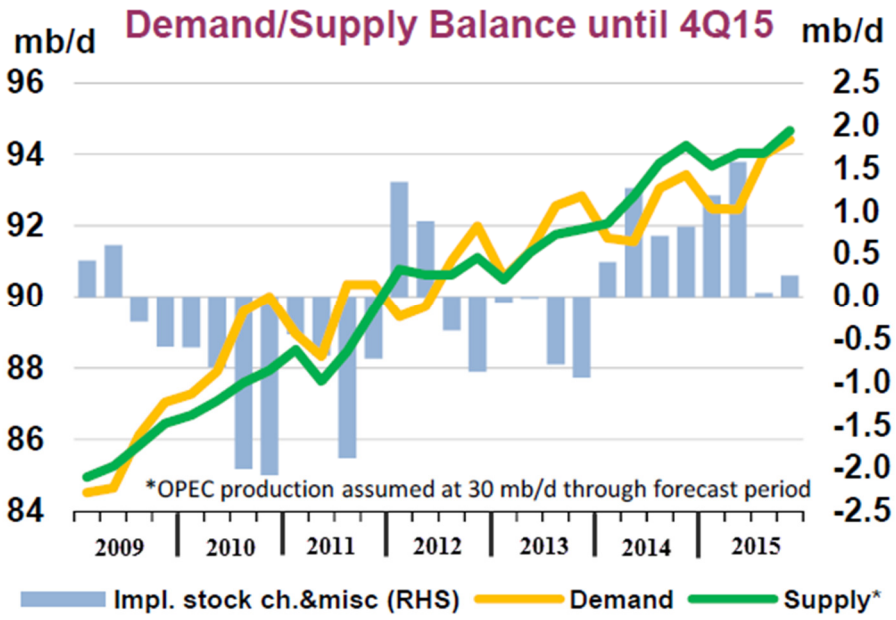


It is also worth noting that the price collapse had significant momentum well before OPEC's meeting on 27 November, when OPEC agreed to maintain its oil production levels.



So the question is what drove the fall in the oil price in 2014, and how can we position our business to capitalise on an expected improvement in oil prices in 2015?

The International Energy Agency "Demand/ Supply Balance Report" for 2015 tells us a lot about the oil supply and demand trends over the previous six years.



The first thing to notice is that demand (shown in yellow) has been on an upward trend since 2009 and that it moves seasonally in a reasonably predictable manner. The second thing to notice is that at the start of 2014, supply (shown in green) started to exceed demand, resulting in an over-supply in the level of crude oil inventories (represented by the blue bars), particularly in the US.

So in the second quarter of 2014, oil prices fell and inventory levels spiked at the same time.

The fundamental issue is that until supply and demand achieves some form of equilibrium, the current supply surplus, and therefore lower oil prices, are expected to continue. As you can see in the chart, the International Energy Agency is predicting this point of supply/demand equilibrium will occur around the third quarter of this year. Where you can see the yellow and green lines intersecting.

What is interesting is that the current gap between global oil consumption and global oil production is not as large as prices would suggest.

There is currently an estimated production surplus of approximately 2 million barrels of oil per day, or roughly 2% of global production. This surplus is likely to remain in place only for as long as it takes higher-cost producers to be driven out of the market. US shale oil producers have been very successful over the last 4 years, adding around four million barrels of oil per day in additional production. However this oil is expensive to produce on a full-cost basis, and as we know, when prices fall it's generally the high cost producers that suffer the most and respond first.

On a daily basis we're reading that US shale oil producers are slashing costs and jobs, and importantly, as a lead indicator to future production declines, are standing down drilling rigs at a very rapid rate.

At the time of preparing this paper, over 600 US land rigs have been stood down in the past two months. That's a significant number, relative to the 1,600 operating at the peak last year. Fewer rigs working means fewer wells being drilled, which will inevitably have an impact on US shale oil production.

Remember the world is only in over-supply by around 2 million barrels of oil per day and the US produces around 9 million barrels of oil per day.

So my view is that in the near-term, US shale oil producers will shoulder the heaviest load in terms of taking the excess supply out of the market. This will take some time to wash through and for the natural decline rates to begin to have any significant effect. Because of this, in the very near-term, we could actually find US production rates increase and see some further softening in oil prices. But if oil prices are difficult to predict in the short term, then they're even harder to predict in the medium and long term.

This makes it very difficult for business to make forward commitments around large projects and importantly to budget for new exploration programs. So how do we see things at Carnarvon, and what effects do we see oil prices having on our business?

I'll say at the outset we're oil price bulls over the longer term. Firstly, there doesn't appear to be any structural problems on the demand side. Demand for oil is expected to maintain a steady upward trajectory, particularly in the Asia-Pacific Region.

Secondly, US shale oil supply costs are at the higher end of the industry cost curve but have the potential to come down over time. Importantly, US shale oil is what I'd describe as "short-cycle supply". Meaning that within a relatively short period, oil production can be increased or decreased by changing the level of drilling and completion activities.

So one area I'm watching closely is the response from US producers to changes in the oil price and the time-lag between this response, and changes in production levels and oil prices. But what we really need is stable oil prices to ensure the necessary investments in exploration will continue to meet future global demand.

This is critical in the longer term if we are to continue supplying 33 billion barrels of oil to the world each year. That's 92 million barrels of oil per day multiplied by 365 days.

I have a real concern that the job losses and redundancies that are happening right now within our industry, especially in the area of exploration, are an over-reaction to a relatively short-term drop in oil prices.

These job losses are hurting families, careers and businesses, damage is being done to reputations and relationships and hundreds of talented, dedicated and experienced people will permanently leave our industry. This aggressive cost-cutting response to the drop in oil prices is potentially creating the conditions for the next labour shortage in Western Australia.

I would argue that this represents a false economy. It doesn't save money in the long run, it will actually drive up costs and perpetuate the "boom/ bust" cycle that characterises our industry, and the WA economy.

As an industry we need be more strategic with how we develop and nurture our people. We also need to develop greater corporate resilience to the impact of short-term oil price volatility.

Based on recent reports from BP, the world has approximately 50 years of current oil reserves to meet this growing demand. When you consider that it's over 60 years since the Bulldogs won their only Premiership, 50 years doesn't seem very long to me. If the history of our planet has shown us anything, it's that an inability or an unwillingness to adapt to change is the shortest route to extinction.

All of us in this room should draw comfort from the fact that our industry has repeatedly shown its capacity to adapt to change and to think and act differently when required.

We've barely scratched the surface in terms of Australian offshore and onshore exploration. This vast land mass and the continental shelf that surrounds it, remains substantially under-explored for hydrocarbons, and as we have recently demonstrated, new oil provinces are still being discovered.

I've cited a number of examples to illustrate this point and the need to be mindful, as an industry and as individuals, of accepting without question the "established wisdom". Before we discovered oil in the Bedout Sub Basin, the established wisdom was that the area was not prospective.

If we as an industry intend to play a role in providing efficient, affordable energy to the world beyond the next 50 years, we must continue to innovate and develop new technologies to enhance our exploration and production capabilities. We also need to invest in our people and create an environment for them to build stable and rewarding careers by fostering imagination, creativity and mental flexibility.

This is what excites me, and gives my team the optimism they need to get out of bed each day.

With the North West Shelf's "low-hanging fruit" already picked, thinking and acting differently provides a clear path to future exploration success. As an explorer, I accept that the financial and technical risks on the North West Shelf are increasing, as new oil and gas resources become harder and more expensive to find, and the risk of failure is commensurately higher.

That is the duality, the optimism and the masochism, which lies at the heart of the explorers' existence.

Which brings me back to my beloved Bulldogs and the harsh reality of our enduring quest for that elusive AFL Premiership. It is my hope that I will live to see the Doggies hold up an AFL Premiership Cup at some point in my lifetime. Preferably several times, but let's not get ahead of ourselves here.

Until the happy day comes, I remain ever-hopeful and firm in my support of the club, secure in the belief that it will happen.

And when it does, my expectation is that the long years of waiting and frustration will be replaced with the warm soothing glow of success. I've had the opportunity to bask in the glow of success recently, and although the glow is still there, the soothing warmth doesn't last very long.

For my team at Carnarvon and for our partners, the focus is on the hard work ahead and continuing to think and act differently to unlock the secrets of the North West Shelf. Notwithstanding the economic and commercial pressures we are all facing at present, the great challenge for our industry is to continue our bold quest for discovery.

The small, dedicated team of people at Carnarvon, that I have the privilege to lead, are resolved to meet this challenge. We will do this by continuing to think and act differently, we will reject mental inflexibility, we will question the accepted wisdom of the day and we will challenge ourselves to create something truly remarkable.

Thank you ladies and gentlemen for your time today. I hope my presentation has been inspiring and thought-provoking and I hope to stand before you again to talk about our next exploration success, and, I hope, wearing a Western Bulldogs AFL premiership tie.

Thank you.