

14 February 2024

Coffee Microcaps webinar – Empire Energy Group (ASX:EEG)

Duration 28 minutes 6 seconds

00:00:03:17- 00:00:33:24

**Alex Underwood, Managing Director of Empire Energy Group, (ASX:EEG)**

It's great to be here on Coffee Microcaps this morning. Good morning, ladies and gentlemen. As Mark mentioned, I'm up in Darwin today, visiting with some key members of Parliament and stakeholders as we look to move into production in the very near future. Empire Energy holds a very large position in the Northern Territory's Beetaloo Basin. The Beetaloo Basin is the world's third largest shale gas deposit.

00:00:34:11- 00:01:00:06

**Alex Underwood**

Shale gas is not particularly well known to Australian investors, but it is the energy source that has transformed America's economy over the last 20 years through the advent of vertical drilling and hydraulic stimulation. I was just in Houston last week at the NAPE Conference where I witnessed the incredible industry that has developed there now. About 70% of US gas comes from shale.

00:01:00:15- 00:01:27:06

**Alex Underwood**

They have the cheapest gas in the world. Around 40% of power production in the US comes from shale gas now in America. And it's also been really the predominant driver of the reduction in emissions intensity of their power system as it has displaced coal from the mix. So Empire has a very, very large resource. We have 42 trillion cubic feet of prospective resource.

00:01:27:18- 00:02:01:20

**Alex Underwood**

To put that into perspective, you need about 4 trillion cubic feet to underwrite an LNG export train for 20 years. With quite limited drilling, we have converted 1.6 trillion cubic feet of that to discovered resource. Critically, in the increasingly carbon constrained world we are in, we have very, very low CO<sup>2</sup> in our reservoir



by global standards. We have incredibly large contiguous acreage positions, about 100,000 acres on one side of the basin and about a million acres on the other side of the basin.

00:02:01:20- 00:02:29:04

**Alex Underwood**

So this is decades and decades of drilling inventory. And while there is some pipeline infrastructure currently in place, we are working with Australia's largest pipeline operator APA group to look at very, very large pipelines to connect into Australia's east coast, which is facing critical shortfalls, and also to Darwin, which is already a major supplier of LNG to Japan and the North Asian region.

00:02:29:19- 00:02:53:09

**Alex Underwood**

The rocks in the Beetaloo have world class characteristics and this has attracted some very prominent names out of the US shale gas sector who are now investing in this basin. We have a three-phase commercialisation strategy. Phase one is focused on bringing around 25 terajoules a day into production. That would go into a pipeline that goes immediately through our base, through our tenements.

00:02:54:05- 00:03:17:20

**Alex Underwood**

The owner of that pipeline is an arm of the Northern Territory Government and they will be putting in a pipeline connection for us in this half of the year. This pilot project, while it would start to generate quite significant revenues for us, it's also about maturing the resource demonstration of productivity and that will allow us to kick into much larger phases of development.

00:03:18:06- 00:03:47:04

**Alex Underwood**

Our second phase of development, which we anticipate would start in the next three or four years, would be significantly larger. Around eight times the size. And then the final phase of development is moving into LNG export. And as you can see, it starts to generate some very, very large valuation numbers in those future scenarios, based on independently assessed resources and fully modelled.

00:03:48:23- 00:04:15:20

**Alex Underwood**

So the world is going through an energy transition and the reality is that we need more gas as we transition to a lower emissions intensity world. Just in the last couple of weeks, Australia's Energy Minister Chris Bowen has been highlighting the importance of gas to provide back up for the intermittency of increasing renewables penetration. And the charts on this slide really demonstrate that.

00:04:15:20- 00:04:47:16

**Alex Underwood**

So the chart on the left hand side is from the Shell LNG outlook. It's one of the most respected LNG forecasts in the world. Shell, the very large European energy company, does this forecast every year. And as you can see, the demand is forecast to significantly outstrip existing sources of supply. Similarly, on Australia's east coast, we are facing critical shortages of gas by the mid 2030s we are likely to be about 50% under supplied.

00:04:48:04- 00:05:19:16

**Alex Underwood**

And when you look at the potential sources of gas to come into Australia's east coast to fulfill these shortfalls, we're really getting down to a few very small number of options. It's really either the Beetaloo or LNG import and LNG import would be very expensive because you'd have to pay global well parity prices and also has a higher emissions intensity compared to piped gas. Empire has a very, very large holding in the Beetaloo Basin.

00:05:19:16- 00:05:45:16

**Alex Underwood**

We have nearly 29 million acres across all of our tenements in the Northern Territory. This map shows all of the plays in the basin, so we have all of the orange acreage. We own 100% working interest in all of these properties. We've never sold down a private royalty, after the payments of the Northern Territory Government royalty and a royalty to traditional owners.

00:05:45:16- 00:06:13:23

**Alex Underwood**

We have a net revenue interest of around 87%. To put this into perspective, if you were drilling these wells in Texas after the royalties, you'd be looking at around a 75% net revenue interest. So we tend to keep more of the gas that we produce. In the middle of the basin in that sort of purplish colour is a company called Tamboran Resources, also listed on the ASX with their joint venture partner Daly Waters Energy.

00:06:14:08- 00:06:54:23



**Alex Underwood**

Daly Waters Energy is owned by Brian Sheffield, who is a very prominent figure in the Texan shale space. He founded a company called Parsley Energy, which was sold for around 6 billion USD to Pioneer Energy and Pioneer itself recently merged with ExxonMobil, the world's largest independent in a 65 billion US dollar transaction. In the light blue, we have Santos in JV with Tamboran and also INPEX at the very large Japanese company has the acreage in the pink and they have an LNG export terminal in Darwin that will require future sources of feedstock.

00:06:56:17- 00:07:20:22

**Alex Underwood**

As I mentioned, the resource in this basin is truly world scale. Andrew Liveris, who actually hails from Darwin, where I am right now, was the executive chairman of Dow Chemical, one of the world's largest petrochemical manufacturing companies, and he was Donald Trump's energy czar while Trump was the President of the United States has described it as the third largest shale gas deposit on earth.

00:07:21:09- 00:07:51:15

**Alex Underwood**

This is a stacked pay, which means we have four productive reservoirs and just one of those four stacked pays contains over 500 trillion cubic feet of gas in place, which is a really enormous number for oil and gas people. Empire under new management over the last five years has been really looking to get after these projects, convert prospective resource to discovered resource and we've been quite successful in those endeavours.

00:07:51:15- 00:08:17:08

**Alex Underwood**

So in 2021 we drilled our first vertical well at Carpentaria-1, on the eastern side of the basin. We then acquired properties in a scrip transaction from a company called Pangaea Resources. Pangaea was owned by Paul Fudge, one of the most successful entrepreneurs in gas in the Queensland LNG boom sorry, CSG to LNG boom of 20 years ago.

00:08:18:02- 00:08:55:02

**Alex Underwood**

On the back of that success in 2022, we carried out a fracture stimulation and flow test of that well. We also drilled our first horizontal well Carpentaria-2H, carried out more seismic and then in 2023 we had a very busy year of carrying out of the largest fracture stimulation in Australian history on that well. We then drilled a well that was twice the horizontal length, twice the frac size, had very encouraging results from those wells and we drilled our fourth well Carpentaria-4V, which delineates an additional resource.

00:08:56:00- 00:09:29:13

**Alex Underwood**

The resource numbers that we have booked are quite substantial for a company of our size and now we have focused on moving into our pilot development phase, as I mentioned, which would have us as the first company into production in the Beetaloo. The Beetaloo is compared by many to the Marcellus Shale in America. So the Marcellus Shale extends right up through the Appalachian region of America, so through Ohio, West Virginia, Pennsylvania, and then up into New York State.

00:09:30:05- 00:10:01:14

**Alex Underwood**

This basin has really underwritten the success of shale and cheap energy that all Americans enjoy. So the Marcellus now produces 25% of America's natural gas. And to put into perspective the impact of this on ordinary Americans, there have been estimates done that estimate that the average American household saves around 3,000 USD per year on their energy bills because of cheap gas, and it's all come from shale.

00:10:01:14- 00:10:38:14

**Alex Underwood**

So in this map, we can see the entire Marcellus Basin and then it's a 'to-scale' comparison to Empire's acreage. So huge running room, huge acreage and huge resource. So moving to our well testing results, the first well we ever drilled in this basin as a horizontal well was Carpentaria-2H. We drilled this well down into the mass, into the Velkerri-B Shale and we were able to drill 1.35 kilometres horizontally across this B-shale.

00:10:39:03- 00:11:06:03

**Alex Underwood**

We tasked our drillers with giving us a minimum of 1,000 meters of horizontal section. But when they were having good drilling conditions, we continued for an extra 30% or so and we did a 21 stage fracture stimulation. I should stress that this was a highly experimental, well design. We trialled lots of different stimulation methodologies. The fluids that you pump down the well, the way that you perforate the wellbore.

00:11:06:14- 00:11:35:17

**Alex Underwood**

And despite this very early stage and highly experimental design, we achieved rates that exceeded benchmarks put forward by analysts as being commercial for the basin. So we achieved around 3 million cubic feet of gas per day. When we move into development drilling, which we hope to do later this year, we will be drilling three kilometre horizontal wells and that means we're looking at around three times the production and the returns in our models look very, very good.

00:11:36:24- 00:12:05:09

**Alex Underwood**

Being in the shallower parts of the basin, it means that we enjoy a cost differential and under our operating model, working with our partners at InGauge Energy Australia's largest oil and gas consultancy, we've seen our capital costs running at around two thirds of those of our peers. On the back of that successful well, we then drilled another horizontal well from the same drill pad but in the opposite direction and broke more Australian records in doing so.

00:12:05:09- 00:12:31:15

**Alex Underwood**

So we drilled a 2.6 kilometre horizontal section. We had tasked the drillers with getting to at least two kilometres but we were seeing good wellbore stability and took it to 2.6 kilometres and we were carried out a fracture stimulation that was twice the size. So we've been really demonstrating at a very early stage in these basin's development that we can drill long horizontal wells, carry out fracture stimulation.

00:12:31:23- 00:12:51:21

**Alex Underwood**

And this really places us in a strong position now to move into the pilot production phase. While we have been focused on the eastern side of the basin, it's very important to note that we have an enormous acreage position on the western side of the basin. This is the acreage that we acquired from Pangaea two years ago.

00:12:52:20- 00:13:17:22

**Alex Underwood**

Pangaea has carried out seismic surveys. They've drilled vertical wells and the next phase of development for these properties will be to acquire additional seismic, which is the bright green lines here. And then we will start drilling horizontal wells along these seismic lines. This is a very well-located piece of acreage. It's right on the main north south pipeline of the Northern Territory.

00:13:18:09- 00:13:49:21

**Alex Underwood**

The pipeline runs parallel and very close to the main highway and also the main train line that goes through the middle of Australia, traverses these properties. To put this acreage position into perspective, a million acres, you simply could not buy an acreage position of this size as a contiguous acreage position in America. In America to acquire a 30 or 40 or 50,000 acre contiguous position would be considered very substantial running room.

00:13:50:07- 00:14:19:10

**Alex Underwood**

And so this acreage position could really underwrite significant LNG development for decades into the future. And there is a significant ramp up in activity occurring across this basin really being driven by Empire, Santos and Tamboran with their J.V. partner, Brian Sheffield. So the wells that we've drilled so far are here in the eastern side of the basin that I went through before.

00:14:19:20- 00:14:49:11

**Alex Underwood**

Santos has drilled two very successful early test wells in the deepest part of the basin, immediately adjacent to us on our west. And then Tamboran and their JV partners have been starting to accelerate activity from this acreage in the middle of the basin. A well that is currently being flow tested and I believe will be a real driver of momentum for this basin is Tamboran's Shenandoah South- 1H well.

00:14:50:20- 00:15:31:05

**Alex Underwood**

Their CEO in recent press releases has indicated that this well has been highly successful and results are expected at the end of this month and we wish them all the very best for that result. They have a plan to move this area into pilot production, taking gas into this pipeline, whereas our pilot project is taking gas from the eastern area and putting it into the pipeline that traverses our tenement. Late last year as part of this effort to move into pilot production, Empire had a really critical development. In order to take gas from these wells and put them into the pipeline,

00:15:31:15- 00:16:02:13

**Alex Underwood**

the gas needs to be processed and for some sources of gas in other basins, that means stripping out impurities. The gas in the Beetaloo Basin has very, very low impurities. We have low CO<sub>2</sub>. There's virtually no

H<sub>2</sub>S or any other nasties. And so the key thing we need to do with our gas is to compress it, and that's to get it up to the pressure that the pipeline requires. In order to build a new gas processing facility,

00:16:02:22- 00:16:44:11

**Alex Underwood**

this can be a quite expensive exercise, but also there's a significant lead time on the construction of the compressor engines that make up the heart of the processing facility. We were very fortunate to identify an existing facility that has been operated by AGL, one of Australia's largest energy companies on the outskirts of Sydney in the area called Camden for about the last 15 or 20 years. The coal seam methane fields that have been feeding this plant are being decommissioned as the City of Sydney grows ever outwards.

00:16:45:09- 00:17:29:16

**Alex Underwood**

And so we were able to acquire this facility from AGL very serendipitously. It's just the right size. It processes a very similar spec of gas, it met our stringent technical due diligence process and we were able to acquire this plant for only \$2.5 million, which is a tiny fraction of what it would cost for a new build. And we are currently in the process of refurbishing the engines in a yard in Roma in Queensland, and we will be installing this plant in the Beetaloo later this year.

00:17:31:11- 00:17:59:02

**Alex Underwood**

While the pilot project is very significant for Empire shareholders, we're looking at revenues from that project of around \$100 million a year compared to the current market cap of about \$140 million. The potential of this basin is much, much larger than that, but it would require new pipelines to be built into Australia's east coast. We have been very pleased to partner with APA Group, which I mentioned before.

00:17:59:13- 00:18:21:05

**Alex Underwood**

They are looking at building a very large pipeline that would be an open access pipeline, so all Beetaloo plays would be able to deliver gas into this pipeline and it would connect into Mount Isa and then that would allow delivery of gas into all of the major demand centres on Australia's east coast, which is facing dramatic shortages in the years ahead.

00:18:21:15- 00:18:47:02

**Alex Underwood**



We are currently in gas sales negotiations with parties that would initially focus on the NT market, but we have received interest as far afield as Melbourne, even in the pilot phase, which gives you an indication of how tight the market is. The ultimate future of this basin is LNG export and you can't get much closer to the major demand centres for LNG in the world than Darwin.

00:18:47:02- 00:19:09:18

**Alex Underwood**

And as you can see here, it's the shortest sailing time for LNG ships of any of the major demand centres. And with our estimated landing cost of \$6.50 per mmBTU, which is around two thirds of the current LNG price, we see that there is there's likely to be very strong demand from LNG consumers for gas in the years ahead.

00:19:11:07- 00:19:35:12

**Alex Underwood**

As I mentioned, right now our focus is on selling gas into the Northern Territory market and the Northern Territory market is currently going through critical shortfalls. There is a field offshore in the western area of this map called Blacktip that has been supplying gas to the local market. Production from that field has fallen off a cliff. The contracted volumes are about 100TJ a day It's currently producing...

00:19:35:20- 00:19:59:24

**Alex Underwood**

...last time I checked, 20(TJ a day). Eighty percent of Darwin's power comes from gas and so there is a critical need for gas into the local market and we hope to be the company that will, expect to be the company that will, help to alleviate those pressures by delivering gas next year. We have been very capital efficient with the way we use shareholders' funds.

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**Alex Underwood**

We treat them, you know, we treat the funds as though we would our own. We've invested our own money in this company and our finding costs and our capital efficiency I think has been basin leading. Right now. We are getting very close to this development phase. So we have carried out the exploration work, we've identified the resource, we've demonstrated that we can commercially extract gas from the shales.

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**Alex Underwood**

And right now we are negotiating gas sales agreements, we are arranging financing, we are very advanced on government approvals and traditional owner approvals, which is a critical part of our business model, working very closely with governments and communities to ensure that everyone shares the benefits. And we do this in a responsible way and we are targeting a final investment decision on the pilot by the middle of this year so that we can be in construction in the second half of this year and commence sales early next year.

00:21:01:02- 00:21:07:16

**Alex Underwood**

And so on that note, I might pause and Mark if there are any questions, I would be very happy to answer them.

00:21:09:08- 00:21:46:08

**Mark Tobin**

And thanks, Alex. Maybe we'll just back up a small bit to do the approvals. You know, as we know, you know, when you're waiting on the government decisions to on go a project, months can seem to slip by without any kind of real movement. In terms of that process is that in train and now you're waiting for responses from various levels of government and from traditional owners or has as that process still yet to commence, maybe just give us where exactly you are in that process?

00:21:47:17- 00:22:37:11

**Alex Underwood**

Certainly, Mark, we are heavily advanced in the regulatory approval processes. In our pilot phase, the principal regulator of our activities is the Northern Territory Government. The Northern Territory Government has put onshore gas at the heart of their economic plans. They have a goal of reaching a gross domestic product of \$40 billion by 2030 and onshore gas is a real driver of those plans over the last five years, the Northern Territory Government has invested around \$100 million, implementing a very stringent and effective regulatory regime to ensure that shale gas development can occur safely and deliver benefits broadly across the economy...

00:22:37:20- 00:23:12:00

**Alex Underwood**

...taking into account the interests of all stakeholder groups. The key regulatory document that requires approval is called an environment management plan. We have had four of those environment management

plans applied for and successfully approved over the last few years. We have just submitted recently the plan that would allow us to move into production. Under the regulations, the regulator has three months to approve the plan and we are highly confident we will get that approval.

00:23:12:11- 00:23:45:13

**Alex Underwood**

Those plans are very detailed documents. It requires us to consult broadly across the community to get the approval of the surface landholders for our activities, demonstrate that we can protect aquifers, minimize our emissions and there is a real impetus from the government, not only in terms of its economic plans but also for energy security. You know, there is more gas needed in the market imminently and that process is developing very well.

00:23:45:13- 00:24:11:00

**Alex Underwood**

And I've been meeting with very senior members of the government just this week to talk about our plans to move into production. They are very keen for us to move into production as quickly as possible. The other key stakeholder group who are very important partners of ours are traditional owners. We operate on Aboriginal land. We cannot carry out our activities without the full and informed prior consent of the traditional owners.

00:24:11:11- 00:24:37:01

**Alex Underwood**

We gained that consent for the exploration phase in 2014 and we have been operating under an agreement with the traditional owners for the last ten years. We also attend annual work program consultation meetings with the traditional owners and I attend the vast majority of those meetings as CEO, which I think is an important mark of respect to the elders.

00:24:37:01- 00:25:18:14

**Alex Underwood**

And I always start each meeting by saying that we are guests operating on their land and we respect their interests and their viewpoints. We've taken traditional owners out to our sites to see these processes so they can understand the protections we're putting in place for their cultural heritage, their land and their water. And now we are advanced on a process of moving into what's called beneficial use of the test gas, which would essentially be selling the gas while we hold an exploration permit. The economic benefits to these traditional owners of selling gas in this pilot phase will be very substantial...



00:25:18:24- 00:25:29:13

**Alex Underwood**

...and we are currently working through an agreement with those traditional owners, which we hope to get executed in the middle of this year.

00:25:30:24- 00:25:58:17

**Mark Tobin**

Just two things quickly before we let you go, Alex. One, I just put into the chat for everybody the latest RaaS research note, which takes into account that last Appendix 4C, so feel free to download that and then a question Alex, on, you know, cash position, cash burn, you know where you are now. You know, I know R&D credits and all that are going to be pretty large in your case.

00:25:59:01- 00:26:09:04

**Mark Tobin**

And you know, where does that get you in terms of getting this pilot project actually built? You know, getting the stuff on site and getting to that, you know, FID decision.

00:26:10:18- 00:26:34:14

**Alex Underwood**

Yeah. So Empire's cash balance now is currently in the middle of the quarter, so I won't give you an exact number, but it's somewhere in the \$15-20 million range. We have been very careful stewards of that of our shareholders capital over the years. You know, we've seen we've seen some screaming highs and some screaming lows in small cap, small cap equity markets over the last five years.

00:26:34:14- 00:27:05:18

**Alex Underwood**

And we always keep enough money in the tin that we can survive a rainy day. Our cash burn compared to our peers tends to be quite low. Where, you know, we run a pretty lean and mean but highly effective team and we anticipate that presently we have enough capital to get through to the final investment decision. In terms of our plans for how to finance these projects, it is absolutely not our intention to just go out and issue that amount of equity.

00:27:06:12- 00:27:27:22

**Alex Underwood**



We have an existing credit facility in place with Macquarie Bank. It's actually the team at Macquarie that I've worked for ten years. I was one of the first ever members of that team back in the mid 2000 to the mid-teens. That facility has the ability to grow quite substantially on the back of R&D tax credits. We've now received three R&D tax refunds.

00:27:27:22- 00:27:57:16

**Alex Underwood**

Last year's was \$15 and a half million. We believe next year's will be substantially larger on the back of a very active program this year. Once we have a gas sales agreement in place that should also allow for development financing. We are also running a farm out process at the moment which may allow us to sell down at the asset level and really get focused on developing this project in a way that absolutely minimises dilution of shareholders interest, which we believe will maximise net asset value per share.



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