



Galilee Energy Limited (GLL)

7 November 2022

Now is the time to prove the gas

Key Points

The Glenaras (Galilee Basin) gas pilot is on the cusp. There's a go-no go point approaching with gas rates building but still short of commercial definition just yet. The coals are regionally pervasive, geologically consistent and have delivered gas to surface, so defining a CSG resource is not the issue...economic gas rates have been and that is engineering. Gas rates are building, the threshold rate for commerciality is falling and the company is looking to deliver initial 'P' reserves in early '23...the re-rating point is approaching.

The business case is evolving. There are still key issues to be addressed, critically, water handling and path to market but the company has options in train. Galilee CSG is going to be a big, water producer but management is pursuing a commercial opportunity to turn water from a cost centre to a revenue generator and additionally, has recently entered a Heads of Agreement with APA to build a pipeline that will link any development into gas markets east and south. A full-field project could be in the order of 150-200TJd, which would ultimately require upwards of 500PJ of 2P and would likely be brought on stream sequentially. The planning is underway and the strategy is in place that could progress rapidly on achieving the commercial flow. The demand for gas remains high, finding a gas market will not be an issue.

The gas market is short and the investing market is short options to play the strongest macro dynamic. The most valuable asset to own in the energy space is gas in the commercial definition/pre-development phase, particularly with an open-ended carbon offset project. Galilee Energy can tick these boxes – resource is not the problem, market is not the problem, carbon offset won't be the problem. There is a project here to deliver.

Our View

We maintain our positive view of the Eastern Australia gas investment thematic on critical supply and capital constraints. Supply issues continue to support high short-term prices and anecdotally, discussions on new contracts point to increasingly more favourable terms to the supplier from here. With a secured path to market, the business case for GLL is more robust and now just **needs 'the flow rate'** to underpin 2P reserves. A success case at Glenaras **would result in a material unwinding of risk weightings and re-set of the economic base cases, delivering potentially transformative upside, likely well in excess of our ascribed valuation**, unlocking the value on a greater resource.

We initiate on Galilee Energy with a NAV of \$0.91 (A\$309mn) and a recommendation of Speculative BUY. The story is quite simple...just deliver the commercial definition from Glenaras the market is waiting to see. **The assumed gas price is the key sensitivity and for every \$1/gj change our Galilee Basin value would move by ~7cps (\$20mn).**

"Conflicts of interests are disclosed on the last page of this report."

Recommendation: Spec BUY

Summary (AUD)

Market Capitalisation	\$94M
Share price	\$0.275
52 week low (26-Sep-22)	\$0.24
52 week high (16-Nov-21)	\$0.48
Share price graph (AUD)	



Source: Yahoo Finance

Key Financials (AUD mn)

	FY22A	FY23E	FY24E
Production (PJ)			
Revenue			
EBITDAX			
EBIT	(20)	(13)	(8)
Underlying NPAT	(20)	(13)	(8)
EPS (cps)	(6.3)	(3.7)	(2.0)
Growth (%)	na	na	na
PER (x)			
EV/EBITDAX (x)			
CFPS (cps)	(4.7)	(3.7)	(2.0)
PCF (x)	nm	nm	nm
ROE (%)			
ROA (%)			

Galilee Energy Limited - Summary of Forecasts							Capitalisation A\$93 mn		GLL		Share Price \$0.275		
PROFIT & LOSS SUMMARY (A\$m)							BALANCE SHEET SUMMARY (A\$m)						
Year end June		FY21A	FY22A	FY23E	FY24E	FY25E	Year end June		FY21A	FY22A	FY23E	FY24E	FY25E
Commodity Price Assumptions							Cash		18.2	16.1	3.4	13.9	9.0
Gas	A\$/gj		10.00	10.20	10.40	10.61	Property Plant & Equip		0.2	0.1	0.3	0.1	0.1
							Exploration						
							Other significant assets						
							TOTAL ASSETS		20.9	18.6	8.0	17.2	12.2
							Borrowings						
							Provisions						
							Other significant assets						
Total Revenue							TOTAL LIABILITIES		4.2	7.4	4.0	3.1	3.1
Cost of sales							TOTAL EQUITY		16.7	11.2	4.1	14.1	9.2
Gross Profit							Gearing (dn/(dn+e))						
EBITDAX							CASH FLOW SUMMARY (A\$m)						
Other revenue		6.8	6.2	0.4	0.5	0.3	Year end June		FY21A	FY22A	FY23E	FY24E	FY25E
Other income							Operational Cash Flow		(3.7)	(4.1)	(2.6)	(2.6)	(2.6)
Write downs/impairments		(18.4)	(20.5)	(9.8)	(5.0)	(5.0)	Net Interest		0.1	0.0	0.0	0.0	0.0
Finance costs							Taxes Paid						
Other expenses		(7.0)	(5.5)	(0.3)	(0.3)	(0.3)	Other		8.6	7.9			
EBIT		(18.6)	(19.8)	(12.5)	(7.6)	(7.7)	Net Operating Cashflow		5.0	3.8	(2.6)	(2.5)	(2.5)
Profit before tax		(18.5)	(19.8)	(12.5)	(7.6)	(7.7)	Exploration		(19.2)	(18.3)	(9.8)	(5.0)	(5.0)
Taxes							PP&E		(0.2)	(0.0)	(0.3)	(0.1)	(0.1)
NPAT Reported		(18.5)	(19.8)	(12.5)	(7.6)	(7.7)	Petroleum Assets						
Underlying Adjustments							Net Asset Sales/other						
NPAT Underlying		(18.5)	(19.8)	(12.5)	(7.6)	(7.7)	Net Investing Cashflow		(18.7)	(18.5)	(10.1)	(5.3)	(5.6)
Margins on Sales Revenue							Dividends Paid						
EBITDAX							Net Debt Drawdown						
EBIT							Equity Issues/(Buyback)		15.0	13.8	0.0	18.4	3.2
NPAT Und							Other						
Change on pcp							Net Financing Cashflow		13.8	12.6	(0.1)	18.4	3.2
Total Revenue							Net Change in Cash		0.1	(2.1)	(12.8)	10.5	(4.9)
EBITDA							PRODUCTION						
EBIT							Year end June		FY21A	FY22A	FY23E	FY24E	FY25E
NPAT Adj.							TOTAL						
PER SHARE DATA							Sales Volumes						
Year end June		FY21A	FY22A	FY23E	FY24E	FY25E	as of 30/06/2022						
Shares Outstanding	M	295	339	339	377	383	Basin						
EPS Und	cps	(6.5)	(6.3)	(3.7)	(2.0)	(2.0)	1P 2P 3P 1C 2C 3C						
Growth (pcp)		na	na	na	na	na	Galilee Basin Glenaras 308 2,508 5,314						
Dividend	cps						Surat Basin ATP 2043 (Kumbarilla) 266 504 895						
Franking	%												
OCF per Share	cps	(4.9)	(4.7)	(3.7)	(2.0)	(2.0)							
NTA per share	cps												
KEY RATIOS							TOTAL						
Year end June		FY21A	FY22A	FY23E	FY24E	FY25E	574 3,012 6,209						
DN/(DN + E)		%					EQUITY VALUATION						
ROE		%					Interest		Pr	A\$M	Acps		
ROA		%					Glenaras		100%	50%	\$225	\$0.66	
(Trailing) Debt/Cash		x					Glenaras Upside		100%	5%	\$49	\$0.15	
							Stand-alone water option		100%	5%	\$13	\$0.04	
							ATP 2043 (Kumbarilla)		100%	5%	\$11	\$0.03	
							ATP 2050 (Springsure)		100%	5%	\$10	\$0.03	
VALUATION MULTIPLES													
Year end June		FY21A	FY22A	FY23E	FY24E	FY25E							
PER	x			nm	nm	nm					\$308	\$0.91	
Dividend Yield	%						Net Cash/(debt)				\$10	\$0.03	
FCF Yield	%			(13.3%)	(7.3%)	(7.1%)	Corporate costs				(\$8)	(\$0.02)	P/NAV
EV/EBITDA	x			nm	nm	nm	TOTAL				\$309	\$0.91	0.30

Source: Company data; TC estimates, priced at 27.5cps

The planets are aligning for Glenaras

Galilee Basin – it's time to deliver the gas

Galilee Energy stands on the cusp of definition at its Glenaras Pilot Project. After works stretching back some 14-15 years, over thirty wells and the extensive pilot appraisal over the last 51 months (and counting), the company should be in a position to make a definitive decision on the commerciality of Galilee Basin CSG, perhaps by the end of 1Q'23.

The latest operational update (3-Nov) pointed to the highest recorded gas flow rate in the basin at 90mcf/d and climbing. Whilst that gas rate is not definitively commercial, we suggest the confidence level is rising and the critical flow level increasingly looks achievable. We estimate a commercial rate would need to be around 250mcf/d to provide the certainty to underpin an initial reserves certification.

The gas supply squeeze continues to be supportive for new supply, with demand for short and long-term gas remaining strong, despite the prevailing price. Anecdotally, short-term gas continues to be sought at prices up to \$25/gj, particularly in Queensland on an interruptible basis, pointing to the tightness and uncertainty in the short-term markets. We understand longer-term gas negotiations are beginning around \$12-15/gj. Until new supply is available at scale, we can't envisage any meaningful downward pressure on prices.

Risk weighted valuation of \$309mn (\$0.91/share)

Ascribing value to unproven resources is a highly subjective exercise subject to material adjustment as work programmes complete. Our Galilee Basin value is entirely dependent on delivering a success case via the delivery of commercially definitive gas flow rates and certification of bankable reserves. The Contingent Resources as declared are large and potentially transformational but the value proposition lies in the immediate area of operation around the Glenaras pilot. The remaining Contingent volumes represent significantly longer dated gas with a lower intrinsic value at this stage.

We note our assumed long run gas price is conservative and likely represents the low end of the range. **The average realised gas price is the key sensitivity and for every \$1/gj change, our Galilee Basin value would move by ~7cps (\$20mn).** We broadly value the resource base by applying an estimated unit gas value overlain by a discretionary probability weighting (1-risk %), reflecting the position on the commercial timeline and project definition...as yet the Glenaras project remains a proof-of-concept although the development parameters, target size and path to market are taking shape. Our probability weightings are subject to change as the macro operating conditions vary and the further production results are delivered.

Although still at a project defining stage, we see our asset valuation as broadly indicative of the potential growth opportunity, noting the upside leverage to the unwinding of risk as Glenaras operations progress.

Figure 1: Valuation breakdown – there's a big value opportunity on success. It's engineering not resource that unlocks the play.

	Interest	Risked		Comments
		A\$m	A\$/share	
Galilee Basin	100%			Heading into a 'go-no go' point. Commercial flow rates are an engineering issue, not a resource issue. Success at Glenaras readily translates through the entire permit area. The performance trend is pointing up but we shall see.
ATP 2019 (Glenaras)		\$225	\$0.66	Assuming an initial development reserves base of 250PJ against a long run gas price of \$12/gj.
ATP 2019 Upside		\$49	\$0.15	Weighted value across remaining 'C' volumes. Any value ascribed here is dependent on Glenaras results.
Stand-alone water		\$13	\$0.04	
Surat Basin	100%			Walloon CSG play in proximity to producing analogues and infrastructure
ATP 2043 (Kumbarilla)		\$11	\$0.03	Weighted value across remaining 'C' volumes using Glenaras methodology.
Bowen Basin	100%			In close proximity to Mahalo pre-production assets...the right address
ATP 2050 (Springsure)		\$10	\$0.03	Nominal value
		\$308	\$0.91	
Net Cash/(debt)		\$10	\$0.03	As at 30-Sep
Corporate costs		(\$8)	(\$0.02)	
TOTAL		\$309	\$0.91	Versus a reference share price of \$0.275
Shares on issue (mn)	339			

Source: TC estimates

We initiate coverage of Galilee Energy with a Speculative BUY recommendation and a NAV of \$0.91/share.

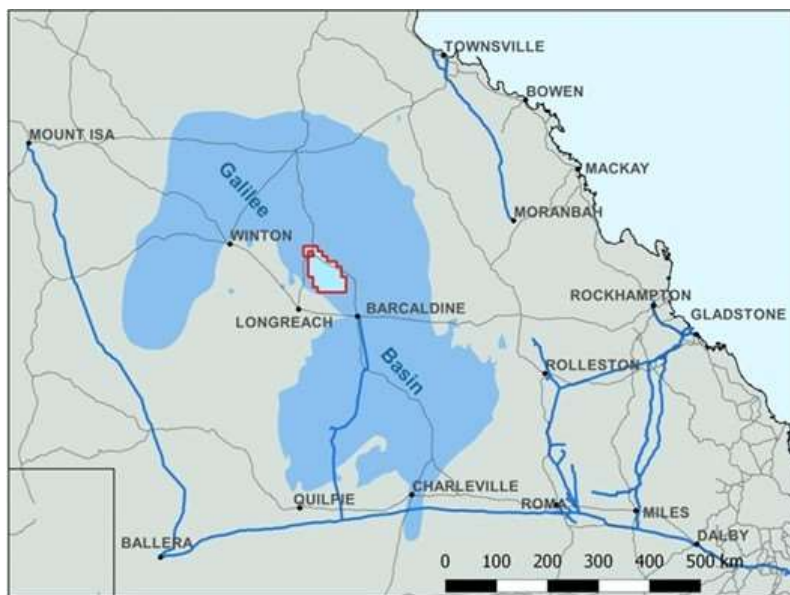
Delivering Glenaras opens the Galilee Basin to east coast markets

Galilee Basin – a potential overnight success a long time in the making

The Glenaras CSG Pilot, should economic rates be unequivocally delivered in early '23, will have been an overnight success nearly five years in the making, reflecting the technical difficulties associated with under-saturated coals and; high permeability and water content. There have been a number of iterations and adjustments to the pilot over the last five years and we note that incremental gains have been hard won and expensive. But the economic model is taking shape and is getting closer to unlocking the gas opportunity.

The Glenaras Project is located in ATP 2019 (GLL 100%) on the western flank of the Galilee Basin in central Queensland.

Figure 2: Connections needed to access market, but gas first



Source: Company data.

Exploration and evaluation activity for CSG on the western flank of the basin has been most intense over the last 15 years or so with some 700km of seismic, over 20 core holes and three multi-well pilots having been completed or underway. The vast majority of the expenditure has been committed by GLL on a sole risk and joint venture basis (with AGL).

In broad terms the CSG potential can be considered to be well understood although the specific mechanics of commercial exploitation are still to be defined. The historical challenge in the Galilee Basin has been being able to reach the required critical desorption pressure over a large enough area to deliver definitive and sustainable commercial gas flow rates. Overlying this problem has been changing well designs and continuously greater water production than predicted, necessitating frequent adjustments to pump type, sizes and capacity. Every campaign disappointment is, however, a rehearsal for success.

The vast majority of exploration and evaluation work on Galilee Basin CSG has been undertaken when the prevailing gas price has been low, so analyses and commentary have been critically impacted by poor headline economics based on low gas contents and lack of nearby infrastructure.

To a significant degree these factors are offset in the current environment by the material step-change in the gas price.

We note there have been no definitively economic gas flow rates recorded in the basin but what represents an economic flow now is significantly less than it was as recently as 2018, when the current Glenaras activity commenced.

Delivering a first gas project is critically important not only in terms of booking reserves but providing the 'base' with subsequent expansion opportunities becoming incremental, leveraging the existing dewatering and production base. Growth into a supply constrained market could be rapid.

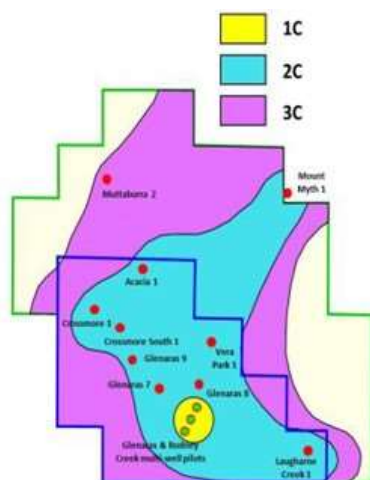
GLL considers the ATP 2019 permit to represent the sweet spot for CSG, where the Glenaras Pilot consists of five lateral (horizontal) and twelve vertical wells.

The consistent and pervasive nature of the primary target Betts Creek Beds underpins Tcf's of gas potential waiting to be confirmed. The current stage of pilot operations is expected to be "...the final step in converting the significant resources of the Glenaras Gas Project into a maiden Proved and Probable Reserve position".

The company has an independently certified Contingent Resource ascribed to ATP 2019, of more than 5,300PJ at 3C. We'd highlight that this is a dated certification (2015) not accounting for the recent pilot data or on a commercial risk basis. We suggest the 1C estimate is likely to be understated.

Figure 3: Resource estimates point to the intrinsic gas opportunity but are likely to under-estimate the immediate 'P' potential

1C*	308PJ	The 1C booking represents the area immediately around the current pilot operations. We note that since the time of the certification (01-Sep-2015) the pilot area has expanded and is draining a materially greater area across the entire coal sequence than previously considered.
2C	2,508PJ	
3C	5,314PJ	On that basis, the company believes the initial 2P reserves target could be upwards of 500 PJ. A reserves certification is anticipated in early 2023.



Seismic and historical drilling data underpin a high confidence level in the continuity of the Betts Creek coals and coal quality across the permit, which is ~2,500km²

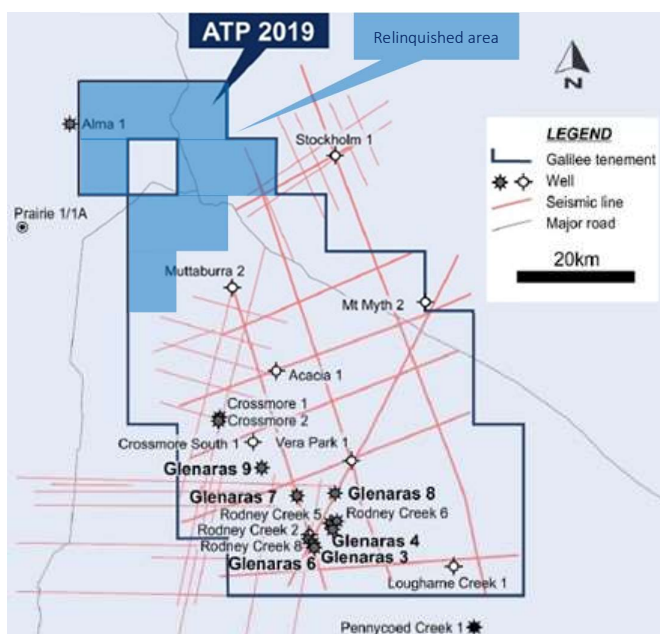
In late 2020, the company was able to secure the entirety of the extensive Contingent Resource in ATP 2019 with the concurrent award of two new Potential Commercial Areas (PCAs) – PCA-314 and -315.

The 3C estimate should be considered as a low probability, high-end case at this stage.

Source: Company data. * Resources estimates provided by MHA Petroleum Consultants LLV Inc and based on a deterministic methodology and have not been adjusted for commercial risk.

The current Glenaras pilot operations are not the first iteration of gas evaluation undertaken by Galilee Energy.

Figure 4: First iteration of Glenaras pilot work, delivering the first stable gas rate



A five-spot vertical well pilot consisting of the Glenaras-2 to 6 wells was drilled in 2009 by GLL in JV with AGL Energy (AGL.ASX).

In 2011 (the company delivered the first stabilised gas flow from a coal seam gas pilot in the basin at **54mcf/d over four days**).

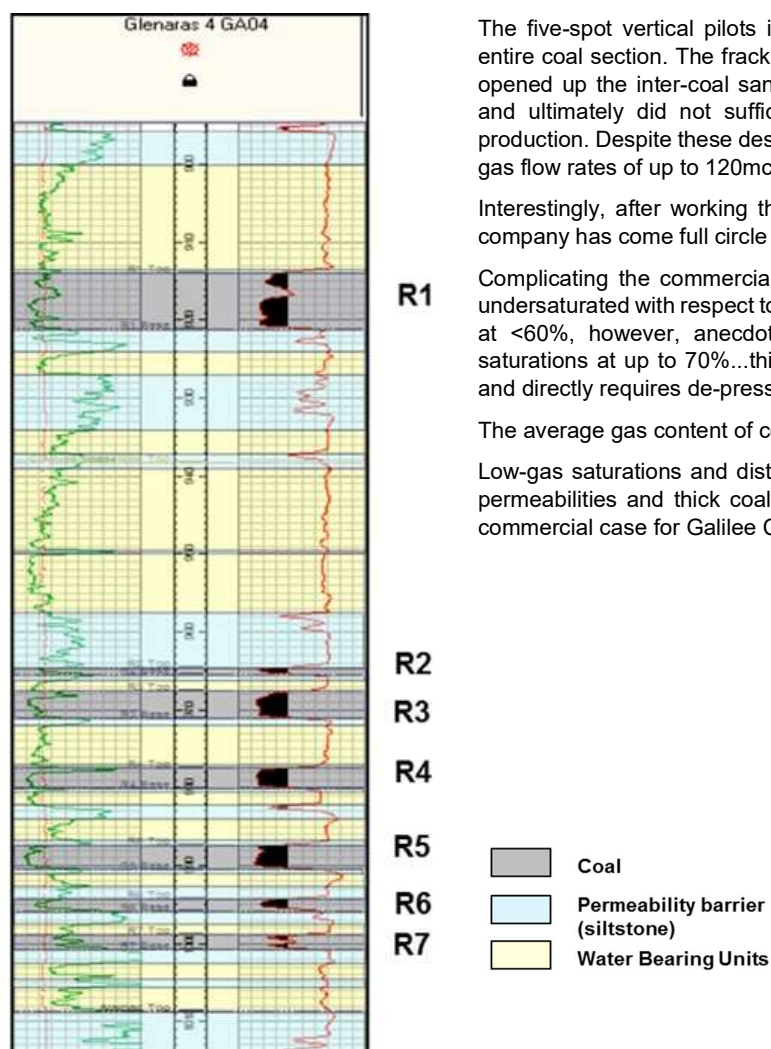
Glenaras-6 was part of a close-spaced five-spot, vertical production pilot across the R3 to R7 coal seams of the Betts Creek Beds.

The gas rate was not commercial and the JV conducted a three well step-out campaign to the north (G-7 to -9) confirming over 25m of coal in each well.

Galilee Energy assumed 100% of the equity interest in ATP 2019 in late 2015.

Source: Company data.

Figure 5: A multi-coal seam opportunity



Source: Company data.

A path to market

Galilee Energy has recently announced a non-binding MoU with APA Group (APA.ASX) on a potential pipeline connection of the Glenaras Project to its South West Queensland Pipeline (SWQP – depicted on **Fig.6**).

The MoU lays the out the broad terms under which APA could potentially build-own-operate a pipeline connection from Glenaras through its existing infrastructure network into the Queensland and other eastern markets. The initial concept is to potentially flow into the Cooladdi compressor station at Cheepie, which is located some 420km south of Glenaras.

All of this is predicated on the assumption that Glenaras can deliver a commercial flow rate and a project of sufficient scale and duration (60-100TJd over 15-20 years for instance) with expansion potential that would allow APA to sign off on the business case as a material addition to its portfolio.

As commented by GLL management...“...the potential to connect the Glenaras Gas Project with the SWQP and the multiple links into pipelines interstate would add optionality to discussions with potential gas customers and could expand the commercial opportunities available to Galilee” and that is the key to supporting a project at scale.

Dealing with APA also provides a strong degree of third-party credibility in terms of security of gas supply and in the project parameters for gas users. **Just deliver the gas rate first.**

The five-spot vertical pilots intersected and tested the gas potential of the entire coal section. The frack campaigns applied to these wells unfortunately opened up the inter-coal sandstone units which generated high water rates and ultimately did not sufficiently de-pressure the coals to optimise gas production. Despite these design flaws the Glenaras pilot did achieve irregular gas flow rates of up to 120mcf/d.

Interestingly, after working through a lateral development well concept, the company has come full circle and is revisiting the vertical completion concept.

Complicating the commercial case, the coals of the Betts Creek Beds are undersaturated with respect to gas. We note measurements reporting the level at <60%, however, anecdotally believe the ‘sweet’ spots can have gas saturations at up to 70%...this remains a significant level of undersaturation and directly requires de-pressuring to a lower level on a comparative basis.

The average gas content of coals is reported at <6 m³/t.

Low-gas saturations and distance from market are somewhat offset by high permeabilities and thick coals, but continue to be a key determinant in the commercial case for Galilee CSG.

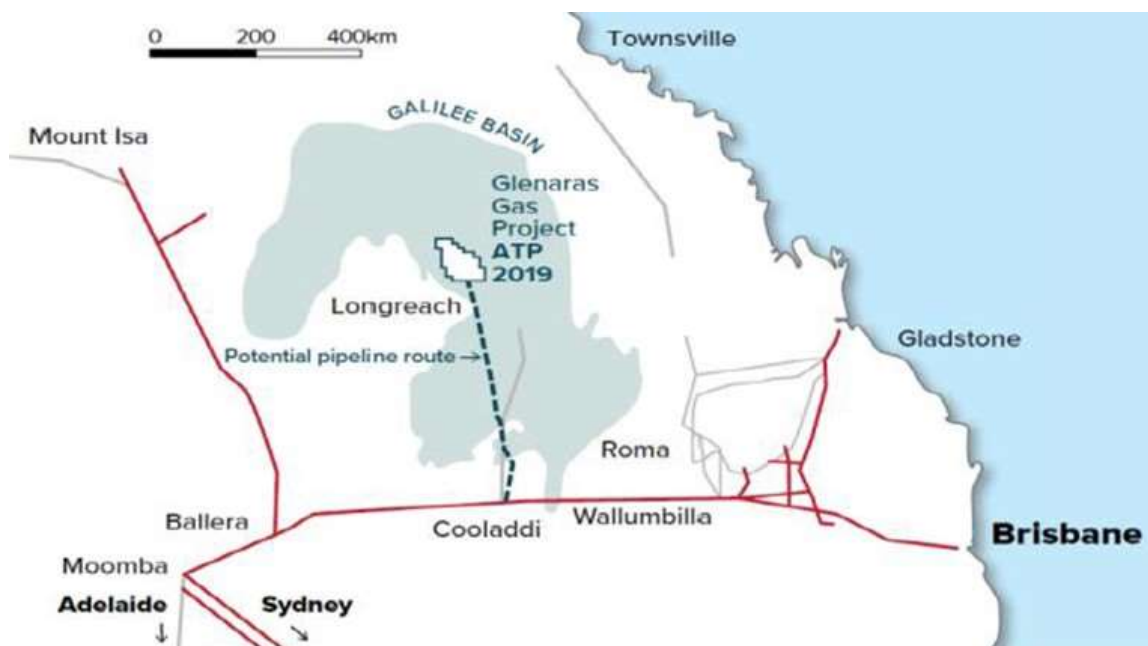
As an advantage, a new pipeline would likely be able to use the existing easement from Barcaldine to Cooladdi but would use the lowest capex option. No significant issues are anticipated in terms of land access and determining the optimal pipeline route should be low risk.

The timing on APA pushing 'go' will primarily be led by GLL delivering a material 2P reserve certification.

Given the gas potential, we assume that any pipeline development plan would probably look at a modular style of design, with a maximum potential capacity that would be achieved through a combination of compression and twinning/looping.

Anecdotally we understand a full field development could require a pipeline of 150 to 200TJd (55-70PJpa)...that's ambitious as we await a definitive gas flow result, but at these levels that the equivalent of ~1-1.25Mtpa of LNG for context and scale.

Figure 6: Access to the gas network will provide GLL with multiple supply point options.



Source: GLL 30 Sep Quarterly report.

What could a development look like?

The foundation to any potential development scenario is bankable gas and what the level of initial reserves which could be underpinned from successful flow rates.

Taking a lead from the pipeline assumption of modular growth to 150-200TJd would point to perhaps an Arcadia model (as operating in the Bowen Basin), with an initial nameplate capacity of 75TJd but debottlenecked to >100TJd) as an analogue. The gas specification is very similar to the Bowen Basin with little in the way of inerts and no 'nasties' although by definition Glenaras gas will come with more residual water, perhaps requiring bigger glycol units.

At the commencement of the Glenaras project in 2018, management estimated the pilot had the potential to underpin a reserves booking of c.500PJ+ (2P). Subsequent operating data indicating the pilot area is interconnected from a production basis, led the company to upgrade the potential 2P reserves target to in the order of 800-1,000 PJ.

An initial reserves certification is anticipated in early 2023.

To get near to the volumes considered to be readily commercialisable may be beyond the scope of the pilot in its present form but to underpin a Phase-I development case it realistically doesn't need to be. **However, we suggest reserves will likely need to be in the order of 250PJ which is achievable we suggest.**

Certified 2P reserves of 250PJ would also fit in with, say, an Arcadia sized plant...75TJd would deliver c.27PJpa, essentially a 10-year project life as a bankable base case, with obvious expansion potential.

The agriculture bolt on option – water needs to be dealt with

Galilee management has indicated previously that “...(e)fficient (and potentially value-adding) water handling remains critical to the efficient operation of the pilot.” We would add that for any level of gas flow, water production and disposal costs can be an operational and economic constraint on any project scenario.

The company commenced water management trials in early 2020, assessing a number of water management options aimed at developing a portfolio of solutions that can complement a full field development. These projects are aimed at beneficially reusing the water as a value adding resource.

Whilst water management is an economic necessity for the Glenaras Project, value-adding is a point of differentiation and at a minimum, a potentially material cost offset compared to the standard Bowen and Surat basins CSG model.

Figure 7: How a centre pivot system looks in operation



Source: TC photo (from site visit).

The initial development involved using a centre pivot irrigation system over a 33ha area, trialling a number of crop options including forage sorghum and barley. The system recycles produced water from the wells with the water requiring no material treatment other than cooling. The crops are being provided to local landholders. The benefit of this style of project is its capacity to be scaled up on a modular basis.

Given the success of the initial system in terms of optimising water handling and crop production, the system was expanded to two pivots with a mobile irrigation scheme refer **Fig 8**).

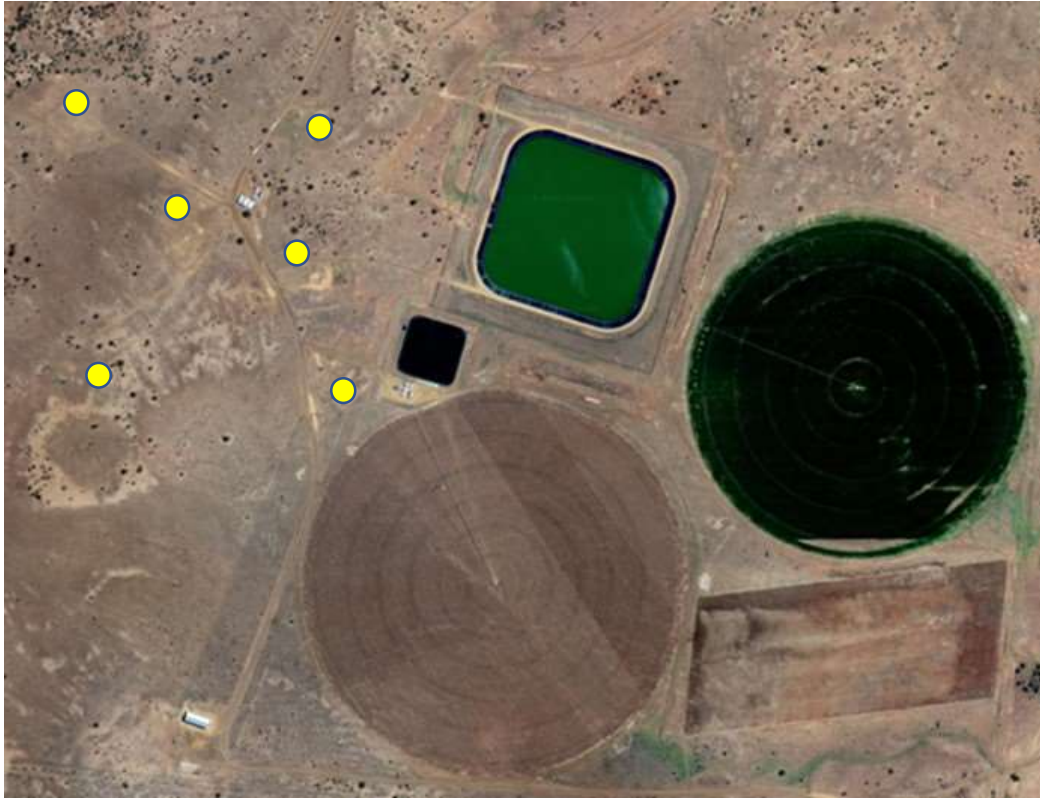
The project is capable of handling sustained water production of over 30kbd. In a full field development, water will be produced at a level significantly greater than current rates.

The irrigation operations have delivered multiple cuts of sorghum, oats and barley, demonstrating that the produced water can support the growing of a range of commercial crops.

Although in principle, the growing of commercial crops does create the potential for adding value, the primary business of the company is producing gas and minimising water production. The company is, however, in a unique position to leverage its operating position to manage and monetise its emissions strategy as a potential revenue centre, as an important precursor for future field development.

We have assigned a value to the water option, based on anecdotal suggestions the project could generate an operating cost offset in a gas development of up to \$1.00/gj.

Figure 8: The water handling works may be able to grow to support a full-field development



Source: google earth, selected Glenaras wells ●

Other assets

There are other opportunities in the portfolio, which have some long-dated and we suggest higher-risk potential value, but the reality is these projects will sit well back in the queue given the capital commitments and management time required for progressing Glenarar through to a project sanction.

Holding both of these permits at 100% does give the company some financing options. We think there is intrinsic value associated to the permits that could be attractive to third parties, particularly if a deal can be done around the remaining work commitments. A partnering deal would provide a benchmark value metric.

Given the priority of Glenarar, we ascribe a nominal value only to these assets within the Galilee energy portfolio at this point.

Figure 9: Spreading the risk – there's Surat and Bowen basins opportunities



Source: Company data.

Surat Basin ATP 2043 (Kumbarilla Project) - granted August 2019

ATP 2043 is 384km² in area, ideally located close to existing production and pipeline infrastructure, being less than 10km from production facilities and adjacent to the south of the Ironbark CSG project.

The acreage is considered to have dual prospectivity within the Walloon coal seam gas fairway and the oil and gas prone eastern flank of the Taroom Trough, where the Moonie Oil Field can be considered as an analogue.

Galilee was granted operatorship and 100% working interest in permit, effective 1st August 2019 for a term of 6 years

The permit contains certified Contingent Resources with 266PJ classified as 1C by MHA Petroleum Consultants .

Figure 10: A good starting point – ascribed gas resources provide a platform

Contingent Resources (PJ)	1C	2C	3C	
ATP 2043 'Kumbarilla'	266	504	895	With the focus on the Galilee Basin operations, activity has been deferred but the identified gas potential provides optionality. These are 'Mahalo' scale numbers albeit higher risk.

Source: Company data.

The initial work programme consisted of reprocessing of 675km of legacy 2D seismic data and the drilling of three core-holes, with both aspects completed through 2020.

The three wells, Kumbarilla Central-1, -2 and -3, all drilled through the complete Walloon section and confirmed CSG potential, with net coal consistently higher than pre-drill expectations and ranging from 22m to 25m.

As reported a "...key objective of the drilling programme was to identify the predicted presence of a fracture network within the Walloons', which was confirmed. However, the high degree of fracturing in places precluded the testing of some of the most prospective coal seams and the drill stem tests that were performed indicated lower than expected flow".

Enhanced fracture permeability is a critical feature of the highly productive CSG fields in the basin, particularly on the world-class Undulla Nose immediately to the north of Kumbarilla.

Surat Basin coals are a prolific CSG play, but can require higher levels of appraisal than Bowen Basin options for example. Whilst Surat coals sequences can be mapped regionally, coals in individual permits can be localised and unconnected, requiring more appraisal wells and may not be suited to long lateral completions...it can be a challenging gas play.

No meaningful activity has been conducted over the last two years.

We value the asset on a contingent resource basis against long run gas assumptions with a discretionary risk weighting.

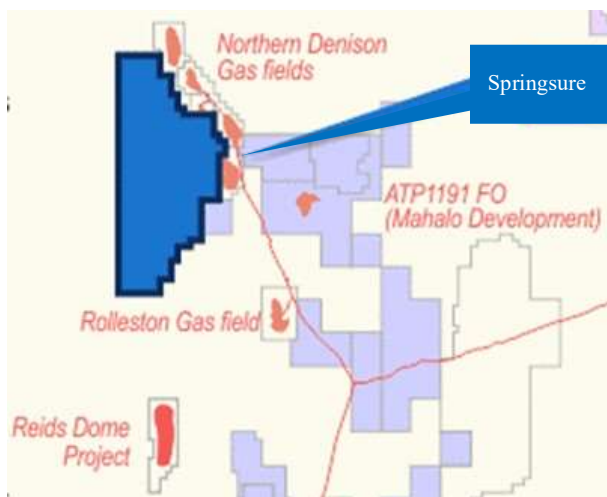
Bowen Basin ATP 2050 (Springsure Project) - granted 30/10/19

Galilee Energy holds ATP 2050 (100%) as an exploration option for CSG in the Denison Trough region, with defined gas potential in relatively shallow horizons, less than 10km from the Northern Denison gas fields production and pipeline facilities.

The permit lies adjacent to the west to the emerging Mahalo gas development (COI.ASX and STO.ASX) heading towards a project sanction decision in the next 12-18months (TC estimate).

The permit has been granted for a six-year term.

Figure 11: Acreage surrounded by gas plays in evaluation or pre-development stages.



Coal seam gas

The main exploration play is the CSG potential of the Bandanna Formation looking through to the Mahalo area successes as a potential development analogue.

We believe the target coals are deeper through ATP 2050 and may not be as naturally fractured as at Mahalo where there is a stronger structural flex across the Comet Ridge...fracking may be required.

The Reids Dome Beds are also considered as a viable CSG target. The Rougemont-2 well drilled in 2021, intersected gas-bearing Bandanna coal measures supporting the geological model and confirming excellent permeability.

Conventional gas

The permit is also considered prospective for conventional gas with a number of historical wells flowing gas from the Cattle Creek Formation.

Source: Company data.

Having been granted tenure in late 2019, activity to date has been restricted to seismic reprocessing and evaluation, while the focus of the company has been directed towards the Glenaras operations.

The company is seeking farm-in partners to progress exploration activity with drilling commitments by 2025.

We value the asset on a nominal basis only, given its position along the development timeline and likely higher technical risk.

Key risks

We highlight immediate areas of risk which could influence the investment decision through the short and medium terms.

This commentary should not be viewed as a comprehensive list of risk factors nor a comprehensive and detailed dissection of the underlying factors, but rather key considerations to be evaluated when walking through the risk weighted returns potential.

Delivering gas - it's engineering not geological

There is gas in the Galilee Basin coals so there is little 'resource' risk, but delivering definitively commercial gas rates has been elusive. If it's not a resource issue then it must be an engineering issue...and all engineering problems can be solved with the application of capital.

Solving the engineering is the primary risk. There's a reason the Glenaras works have been ongoing for some 51months (and counting). It has effectively become a long-dated R&D project, with clear knowledge gaps that have only been filled on a trial-and-error basis.

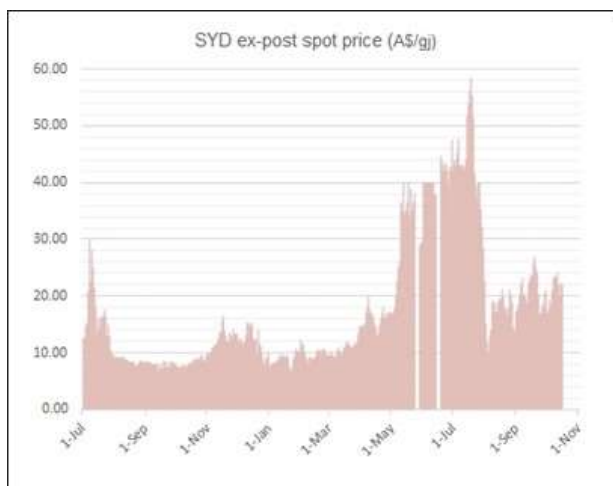
From a GLL perspective there has continued to be sufficient encouragement to want to continue the pilot operations through four iterations, vertical wells to lateral completions and back to vertical again, but **the risk for investors is that the next six months does not deliver a definitive outcome either way and requires another round of works and capital.**

In a \$3-4/gj, oversupplied gas market that was prevalent 20 years ago, the Galilee option would likely be considered too hard, but that's not where the market is and a commercial end-game feels tantalisingly close, particularly with a targeted reserves declaration in early '23.

East coast domestic gas markets

Galilee Energy and other upstream gas companies provide insightful analysis into the current state of the industry through their presentations and releases. We add commentary on where we see the risks and outcomes over a reasonable investment window.

Figure 12: STTM curves point to the supply squeeze happening now...not in 2023.



From 1-Jul-2021

Note shift in curve over 12 months with post winter shoulder and summer STTM prices dominantly in the \$6-8/gj range compared >\$20/gj in the current period.



From 1-Apr-2022

A shorter data set but represents what we suggest is an upward shift in the base cycle STTM price currently >\$20/gj, with 'air-conditioning' season (another electricity peak) to come

Source: AEMO data; TC commentary.

There is a gas supply squeeze, that AEMO and ACCC analyses suggests can strongly manifest through 2023. Oops, that warning is a bit late, it's already here and **the modelled gas shortfall may be too conservative.**

The AEMO and ACCC studies are determined on a proprietary supply demand model. The highest confidence element of that modelling is supply. Upstream operators provide their projections on current operational performance and; the timing and scope of any new developments. However, 'best efforts' forecasts even within a 12month period come with a significant level of uncertainty which materially increases, the further into the future the projections are made.

Demand projections are by definition a low confidence estimate. Gas consumers are driven by a matrix of factors impacting consumption that are difficult to predict. In our view and certainly in the context of this commentary, demand estimates are somewhat 'black box' in nature.

A tight supply market likely translates through to persistently high gas prices and gas price are high; and likely to stay high through a reasonable investment window. Anecdotal industry commentary points to short-term supply deals (perhaps on an interruptible basis) being discussed at \$20/gj and above, with longer-term contracts (say a 3+3 term) beginning in a range of \$12-15/gj.

The Short Term Trading Market (STTM) data (refer **Fig 12**) highlights that the supply squeeze and demand push on gas prices is here now, somewhat exacerbated by significantly higher prevailing LNG benchmarks. The STTM is a balancing mechanism, meant to deliver a price that draws marginal gas into the domestic market, but daily quotes have well exceeded LNG equivalents even on a 'net back' basis.

The gas markets need more gas...if not from organic sources (new developments) then imports, however, importing gas sets an import net back price for new supply at the margin and that's a global price mechanism.

New domestic developments need to be of scale to have a pricing effect and there's nothing that has been sanctioned on the immediate horizon.

The domestic market will always be fully supplied – but that incremental gas comes with a rising price tag, we suggest.

The rush to renewables

Are renewables sounding the death-knell for gas? Yeah...no, well certainly not yet.

Coal-fired and gas-fired baseload power stations are being phased out for subsidised renewables but haven't reached the scale required to totally replace the existing baseload network.

The closure of coal fired generation has increased the amount of peaking gas and the amount of time that gas price was dictating the price of electricity

With further closures scheduled out to 2025, the network could become increasingly unstable on a base-load case.

Renewable sources with battery storage will increasingly penetrate the market but there are infrastructure and economic impediments to accelerating, let alone delivering the development requirements, even with the best of intentions.

Certainly, within a reasonable investment time-frame, we see the role for gas in Australia's energy mix as likely to grow rather than decline.

Financing

As with all small companies on an ex-production basis, future financing for GLL will be an issue, particularly through the evaluation and appraisal stage of projects. Has financing become more difficult? Markets have been supportive for the right story at the right stage – there has to be a clear path to commerciality and demonstrable value accretion (ie a defined business case).

The primary source of financing has been and likely will continue to be, the equity market. Although every round of equity financing means dilution on a per share basis, the value accretion from a success case should still materially outweigh the dilutionary impact at this stage.

The liquidity constraints (refer Top 20 shareholding) and dominantly retail/small investor nature of register can make securing further equity financing more difficult through the current period of market uncertainty. But it's a fine line.

High working interests provide partnering options and it seem logical that GLL will likely seek a carry or monetisation across Glenarar through the development stage, but partnering means dilution at the asset level.

Debt financing is more difficult in the current operating environment, with increasingly stringent caveats on carbon neutrality, at higher coupon rates, shorter-terms and balance sheet restrictions. Lenders will want more certainty not less, meaning more due diligence and more hedging (which for gas projects probably translates to a higher level of contracted offtake with low volatility pricing).

In effect we can call that a higher level of opportunity cost.

More traditional lenders will probably want less exposure than previously and the risk is whether projects can still be debt funded to say, 70% or is that more likely to be 50-60%?

If mainstream banking debt becomes harder to source, that implies a greater reliance on more boutique sources.

Early gas sales or prepayments remain an option.

Ultimately, good projects will be financed but the onus will increasingly be on the developer to demonstrate the robust nature of their project economics.

Directors and Shareholders

Skills in the right places

The Board offers a strong spread across the required competencies as befits a company pursuing an evaluation and development strategy on a key asset with significant technical challenges. Their collective experience covers the breadth of requirements, particularly in terms of understanding and accessing financial markets given the capital intensity of the current operations and the geological and engineering expertise to progress the Glenaras Project to a successful commercial outcome. Importantly, the Board has the skills to position and drive the company to the next level of capitalisation and we suggest optimise shareholder returns on the path to (potentially) first gas.

David Casey – B.Geo.Sc (Hons)

Managing Director and CEO – Appointed 01/12/21

David is a highly experienced and successful oil and gas industry executive with over 30 years of experience across all aspects of the energy business from exploration and appraisal through to drilling, testing and production operations, on a global basis.

David has a strong track record of achievement having been actively involved in the start-up, development and sale of successful exploration and production projects best demonstrated by his tenure at Eastern Star Gas where he oversaw the building of one of NSWs' most successful gas companies, growing it from modest beginnings (<\$50m) before ultimately being the subject of takeover by Santos for >\$1Bn.

He was most recently MD/CEO at Talon Energy which has recently had a significant gas success at Walyering in the Perth Basin.

He is a member of the AusIMM, PESA and a lifetime member of the SPE.

Other directorships in listed companies - current

Talon Energy Limited

Appointed 19/07/20

Ordinary Shares held as at 3-October

156,250

Shares Options

156,250 (ex-price \$0.48)

Performance Rights

3,450,000

Ray Shorrocks – B.A. History/Philosophy (Hons), M.B.A. Finance

Non-executive Chairman – Appointed 31/03/18, Appointed to Board as Non-Executive Director 02/12/13

Ray has over 20 years' experience in the investment banking industry, across all areas of mergers and acquisitions and equity capital markets. He is a former director and head of the corporate finance department of Patersons Securities Limited in Sydney.

Other directorships in listed companies - current

Hydrocarbon Dynamics Limited

Appointed 12/01/16

Cygnus Gold Limited

Appointed 28/01/20

Alicanto Minerals Limited

Appointed 07/08/20

Former Directorships in the last three years

Bellevue Gold Limited

Resigned 09/09/19

Estrella Resources Limited

Resigned 01/02/19

Ordinary Shares held as at 21-Sep

2,708,386

Shares Options

2,875,000

Stephen Kelemen – B.E. (Mechanical)

Non-executive Director – Appointed 31/03/18

Stephen has diverse petroleum industry experience across reservoir, development, operations and exploration developed over a 38-year career with Santos Ltd. Most notably he led the company in securing a major position in CSG including the 2005 acquisition of Tipperary Oil & Gas, pursuing the concept of CSG to LNG and evaluating plays and acreage with the potential to deliver reserves.

He is an Adjunct Professor for CCSG (Centre for Coal Seam Gas) at UQ, the Deputy Chair (Petroleum) for the Queensland Exploration Council and a member of Core Energy & Resources Pty Ltd Technical Advisory Council. He has been Chairman of SPE (Australian/NZ Council), Chairman SA Section of SPE, member APPEA Operating and Safety Committee, President of QUPEX, and member CCSG Strategic Advisory Board.

Other directorships in listed companies - current

Elixir Petroleum Limited

Appointed 06/05/19

Ordinary Shares held as at 21-Sep

368,750

Shares Options

718,750

Gordon Grieve - BA, LLB.

Non-executive Director – Appointed 06/09/19

Gordon has over 30 years' experience as a solicitor and counsel working with energy and resources companies in Australia and overseas and is the current Chairman of Partners at Piper Alderman, leading both their International and Energy & Resources Groups.

Gordon provides the expertise and guidance in the areas of corporate governance and compliance, company takeovers and schemes of arrangement and has represented companies and directors on all facets of major corporate transactions and commercial litigation. Gordon guided the growth and development of Eastern Star Gas from start-up through to its acquisition by Santos for \$900mn.

Gordon is a Member of the AICD and a member of the Law Societies of Queensland and NSW.

Ordinary Shares held as at 21-Sep

368,750

Shares Options

718,750

Greg Columbus

Non-executive Director – Appointed 17/09/20

Greg has over 30 years of experience in the Energy, Oil and Gas sectors across a number of technical, commercial and executive roles. He is an experienced director with strong competencies across the commercial, strategy, corporate finance and legal areas and issues. Greg has a track record of successfully delivering large, complex oil and gas projects and has also been involved in numerous M&A activities.

He has been the Managing Director and a Main Board Director for Clarke Energy Group (A Kohler Company) for the past 18 years. Clarke Energy are a privately owned, multinational power solutions company specialising in the engineering, installation and maintenance of power plants and gas compression stations, operating in 28 countries. He is also currently Chairman of Young Presidents Organisation Gold (YPOG) Chapter in South Australia.

Other directorships in listed companies - current

Warrego Energy Limited

Appointed 22/10/18

Ordinary Shares held as at 21-Sep

436,563

Shares Options

875,000

The Top 20

Despite the quantum of capital raising over the last four years, the register remains dominantly retail and ultimately needs to transition to a more wholesale base to deliver price discovery and easier access to equity capital markets. Material progress towards a development phase should see the company become more attractive to larger wholesale funds with limited alternative, leveraged exposures to key investment thematic

Figure 12: A tight register...liquidity can become an issue for investors

Top Holders (Grouped) As Of 17/10/2022

Composition : ORD

Rank	Name	Units	% Units
1	CARPE DIEM ASSET MANAGEMENT PTY LTD	33,174,604	9.80
2	CS FOURTH NOMINEES PTY LIMITED <HSBC CUST NOM AU LTD 11 A/C>	28,328,558	8.37
3	MORGAN STANLEY AUSTRALIA SECURITIES (NOMINEE) PTY LIMITED <NO 1 ACCOUNT>	23,402,015	6.91
4	ECARLATE PTY LTD	19,259,738	5.69
5	HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED	12,676,708	3.74
6	UBS NOMINEES PTY LTD	8,070,506	2.38
7	JBAM GLOBAL INCOME FUND	6,120,000	1.81
8	COPULOS SUPERANNUATION PTY LTD <COPULOS PROVIDENT FUND A/C>	5,586,533	1.65
9	HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED - A/C 2	5,504,562	1.63
10	CARPE DIEM ASSET MANAGEMENT PTY LTD <LOWE FAMILY A/C>	5,083,622	1.50
11	EYEON NO 2 PTY LTD	4,725,809	1.40
12	J P MORGAN NOMINEES AUSTRALIA PTY LIMITED	4,504,115	1.33
13	SPACETIME PTY LTD <COPULOS EXEC S/F NO.1 A/C>	4,100,405	1.21
14	TDF PROPERTIES PTY LTD <THE TDF PROPERTY A/C>	3,935,250	1.16
15	LEAVER FUNDS MANAGEMENT PTY LIMITED	3,562,985	1.05
16	COPULOS FOUNDATION PTY LTD <P & M COPULOS FOUNDATION A/C>	3,465,750	1.02
17	CARPE DIEM ASSET MANAGEMENT PTY LTD <LOWE FAMILY A/C>	3,315,229	0.98
18	MACLANS SUPERANNUATION HOLDCO PTY LTD	3,300,000	0.97
19	NEWECONOMY COM AU NOMINEES PTY LIMITED <900 ACCOUNT>	3,213,987	0.95
20	CITICORP NOMINEES PTY LIMITED	3,204,448	0.95
Totals: Top 20 holders of FULLY PAID ORDINARY SHARES (Total)		184,534,824	54.51
Total Remaining Holders Balance		154,002,675	45.49

Source: Company data

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