

State Gas Limited

A good time to be delivering production

State Gas Limited (ASX:GAS) is a junior energy producer and explorer with assets concentrated in the Bowen Basin, Queensland. The company has been listed on the ASX since October 2017 and is set to make the transition from explorer to producer with the imminent start-up of the Rolleston West CNG Project. Although only a small-scale start-up, first gas is always a critical event driver in demonstrating the commercial potential of the assets and providing a platform from which growth strategies can emanate. By selling initially into the spot market, margins will be maximised. With the operating uncertainty lifted and small companies exempt from price restrictions, the timing is ideal for new developments. The assets are located within a transmission pipeline network with adjacent production analogues translating to relatively low operating and commercial risk. The company holds a material net 2C contingent resource base of over 500PJ and the strategy is now to convert resources into reserves and build production at scale.

Scope

This report has been commissioned by State Gas to present investors with an analysis of the opportunities emerging for the company over the next 12 to 18 months. The company is on the cusp of first production and the next 12 to 18 months will be about growing reserves to support production expansion. Although the resource and commercial risks are moderate to low, gas development can be a capital hungry business and progress may be capital rather than resource constrained.

Business model

State Gas is a junior gas company holding a suite of assets containing a significant 2C contingent resource base with a small-scale, initial production project set to commence imminently. The asset base is Queensland-centric, in the gas-prolific Bowen Basin with accompanying infrastructure and production analogues. In the gas business, resources can be converted to reserves rapidly and we suggest there are material expansion opportunities in the portfolio with transformational potential. First gas is materially important in demonstrating the commercial potential and generating cash flow given financing can be an ongoing concern for small companies. Beneficially, State Gas holds its critical licences at 100% which provides financing options through partnering. The company's resource base and high working interests provide opportunity and leverage but progress is more likely to be capital than opportunity constrained in the short-term and we cannot discount further recourse to equity market funding to deliver growth phases.

Scenario analysis

We have evaluated the GAS portfolio against a range of risk factors based on our assessment of the operating environment accounting for gas prices, location, timing, and scale of work programmes and financing. We include considerations based on factors such as comparative reserves metrics and peer group benchmarking on a relative basis only given the uncertainties associated with methods of certification and the small sample size. We highlight that our current assumptions are subject to potentially significant adjustment as further field and development works are undertaken over the next 12 months.

Riskied valuation of \$203m (\$0.91/share)

Valuing assets in a pre-evaluation, pre-development phase is a subjective exercise, particularly considering financing, timing and development model uncertainties. As with many small energy stocks, GAS holds assets with transformational potential - the resource opportunity is massive as represented by the contingent resource bookings. To close the value gap, the company needs to commence production at Rougemont – even a small-scale project lifts the commercial confidence and can demonstrate the intrinsic value of gas assets in a growth scenario. Further in-field activity to better define a greater economic case and build reserves can de-risk the entire portfolio, particularly with the flag raised for business as usual for small gas companies. We value on a riskied gas case against a conservative long-run gas price applying a discretionary RaaS risk overlay to set a base-case valuation. We assign a NAV of \$203mn (\$0.91/share) to GAS against a reference share price of \$0.18/share. The time has never been better to progress and deliver gas projects.

Energy

1 June 2023

Share Details

ASX code	GAS
Share price (31-May)	\$0.18
Market capitalisation	\$43M
Shares on issue	225M
Est. net cash at 31-March	\$1M
Free float	~56%

Share Performance (12-months)



Upside Case

- Well output above the model and rapid progress to the limit of the CNG option –
- 1.7TJd into spot gas sales can deliver material revenue
- Spot gas prices returning to 2022 peaks of \$50/gj
- Accelerating gas commercialisation across the portfolio...the supply squeeze is only going to get tighter and the opportunity is now

Downside Case

- The CNG Project underperforms either through plant or well issues
- Lower-than-forecast spot gas prices through the winter peak in particular, compressing margins
- Further recourse to equity markets for financing maximising early-phase dilution

Management and Directors

Doug McAlpine	CEO
Richard Cottee	Executive Chair
Tony Bellas	Deputy Chair
Greg Baynton	Non-Executive Director
Philip St Baker	Non-Executive Director
Jon Stretch	Non-Executive Director
Rob Towner	Non-Executive Director

Company Contact

Doug McAlpine +61 488 007 889
info@stategas.com

RaaS Contacts

Andrew Williams +61 417 880 680
andrew.williams@raasgroup.com
Finola Burke +61 414 354 712
finola.burke@raasgroup.com

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State Gas Limited – Transitioning To Production

State Gas Limited (ASX:GAS) has been listed on the ASX since October 2017 and now finds itself on the cusp of production with the Rougemont CNG Project set to commence in the September quarter. The company holds a portfolio of Bowen Basin CSG and conventional gas licences with ascribed contingent resources in excess of 500PJ pointing to the transformational potential opportunities. Whilst the Rougemont start-up will be small-scale, first gas is an important step in the transition from explorer to producer and the delivery of first revenue and cash flow. Financing is always a real and perceived risk for small companies and the gas business can be capital intensive – holding assets at 100% interests provides leverage to success and financing options through partnering whilst the securing of a JV partnership with Santos in ATPs -2068 and -2069 provides the opportunity for capital and operational synergies. The operating environment for new gas is as good as it has ever been with the removal of market uncertainty and gas price restrictions for small companies. The projected supply squeeze is real with base-load gas production in inexorable decline. Companies with gas in an appraisal or pre-development phase are in the prime position in absolute terms as new operations; and relative terms as a material resource holder in a market eschewing investment risk. Although we cannot state definitively that the M&A activity we have witnessed in the west will translate to the east coast, the conditions are prime for a significant re-rating of gas plays by the market or by corporates in our view.

Investment Case – A Good Time For Gas Production

As with many small companies in the energy sector, State Gas has been a slow work-in-progress given the embedded incremental and transformational potential inherent in gas volumes in a pre-production phase.

This situation is not unique to the company with investors frustrated at the long-dated nature of bringing new gas to market, now amplified by the systemic overlay of portfolios moving into a risk-averse and capital-conservation period.

The blessing and curse of small resources companies (oil and gas in particular) is that they are long resource opportunity and short finance; and the attraction of small plays is the leverage to success they provide but only if there are active discovery and evaluation campaigns in train. Continuing recourse to equity financing in the short-term cannot be discounted.

GAS is in a strong position having worked its Bowen Basin plays well over the past 12-24 months and is now on the cusp of first production from the Rougemont CNG (compressed natural gas) Project. Whilst the volumes will only build to 1TJd in the first phase, selling into the Brisbane spot market can deliver prices of \$20+/gj through the winter peak annualising to some \$7mn in headline revenue.

Over the course of the next 12 months GAS has an opportunity to double output (to the limit of the plant design), which could fund modest appraisal and evaluation works, converting C gas to bankable P gas with a reduced recourse to equity markets...minimising dilution.

The investment case is about first production and de-risking of the portfolio. The resource metrics table (refer **Exhibit 2**) demonstrates the magnitude of re-rating available as the commercial case for gas becomes better defined.

Risk-Adjusted Valuation Is \$203mn

We ascribe a value for GAS of \$204mn (\$0.91/share post offer) noting the closing share price of \$0.18/share (31-May) is a substantial discount to our NAV and represents a (further) market risk weighting of nearly 80%.

We highlight that discounts of this magnitude are not unusual in the small-cap energy space where companies, like GAS, are asset rich with transformational upside on small or restricted production bases. The key to closing the valuation gap is to progress commercial outcomes by working assets and delivering un-risked gas (bankable reserves).

There's low-hanging fruit in the company's portfolio, particularly within its 100%-owned licences (Rolleston West and Reid's Dome) and we would expect to see measurable progress in the de-risking and growth potential of the plays over the next 12-18 months.

Exhibit 1: There is asset value that needs to translate to the bottom-line

	WI	Pr	A\$m	A\$/sh	
Rolleston West (ATP-2062)					
Rougemont CSG	100%	25%	\$52		Ascribed 3C volumes = 161PJ with CNG Project start-up imminent
Bandanna West CSG	100%	15%	\$57		3C = 293PJ. Success at Rougemont can translate to the Bandanna play rapidly
Conventional Gas	100%	15%	\$3		If the CSG doesn't work, then there is no tangible value on a stand-alone basis
ATP-2068 / ATP-2069	35%	10%	\$5		Early-stage 'intrinsic value' only
Reid's Dome (PL-231)					
Reid's Dome CSG	100%	25%	\$79		3C = 660PJ. Appears more technically challenging than Rolleston West but gas opportunity is mapped as larger
Conventional Gas	100%	10%	\$5		Nominal as per above
Other			\$5		Nominal remaining exploration potential
			\$206	\$0.92	
Net cash/(debt)			\$1)		As per 31-Mar quarterly
Corporate			(\$5)		
TOTAL			\$203		
Shares issued (mn)	225			\$0.91	

Source: RaaS analysis; Discretionary RaaS risk adjustments

Assigning values to Contingent Resources is always subjective and somewhat arbitrary, particularly where the resources as certified are large (refer **Exhibit 8**) with no clearly defined pathway to production at scale. Translation of C volumes to bankable P volumes should be relatively less risky in the case of CSG but remains arguable and subject to capital and timing assumptions.

To derive our value, we apply successive iterations of discounting/risk weighting as follows:

- Convert contingent volumes to a nominal 2P equivalent using somewhat arbitrary weightings which vary between assets – we don't apply the same weightings to all gas. For example, Rougemont CSG data would support a nominally higher conversion rate on testing data versus Reid's Dome where the data is not as commercially definitive in an absolute sense in our view. Anecdotally, we note wells for the latter play may be more complicated.

Additionally, there is varying uncertainty associated with the certified volumes based on the density of drilling, testing and seismic data.

- Assign a base-case 'life of reserves' average realised gas price – in this case, we assume \$15/gj as a conservative estimate, noting the premiums that can be garnered in the spot market and industry noises indicating Wallumbilla/Sydney contracts are being sought at prices above our base case.
- Assign a 'unit NPV' margin ranging from 15% to 25% for greenfield gas.

- And finally, a subjective Pr (1-risk) weighting which accounts for development uncertainties on timing, capex, scale and financing. Given there is no clear commercial design at scale yet, estimate of unit capex/opex can't be made and we have applied probability factors at the lower end of the range.

We assume the 2P equivalent gas volumes will be produced.

We include comparative gas metrics only to highlight the potential unit uplift achievable from the GAS portfolio as resources are converted to reserves and the production growth opportunity crystallises; and as a benchmark against our assigned NAV.

Comparing on an absolute basis comes with embedded risks as all of the companies are at different positions along the development curve, but most notably with Blue Energy (ASX:BLU) and Comet Ridge (ASX:COI) both are well progressed in terms of reserves definition and project plans – we are comfortable with our assigned NAV under the assumptions as outlined previously.

Exhibit 2: Reserves/resources metrics highlight the sector has cheap gas

Company	Ticker	Share price A\$	Capitalisation A\$m	EV A\$m	2P PJ	2C PJ	EV/2P A\$/gj	EV/2(P+C) A\$/gj
Blue Energy	BLU	0.028	52	59	51	105	0.56	0.39
Comet Ridge	COI	0.15	152	146	195	354	0.75	0.28
Galilee Energy	GLL	0.14	48	40		3,102		0.01
State Gas	GAS	0.18	43	41		535		0.07
State Gas (@ NAV)		0.91						0.36

Source: Company and ASX data; share prices as of close of trading 31-May

Our modelled value is dependent on continuous progress towards production at scale. We are comfortable with our discretionary (RaaS) risk weightings and note the risk weightings should unwind as new data comes to hand over 2023-2024, independent of commodity price assumptions.

SWOT Outlook – Positive Through 2023 And Beyond

SWOT weightings skew to the positive, particularly given the imminent production start-up at Rougemont and resource re-rating opportunities over the next 12-18 months.

Exhibit 3: SWOT indicates more upside than downside

Strengths	Comments
Assets in a concentrated, well-known and relatively low risk play	The risk is low. The Bowen Basin (Bandanna Formation) play is well known with proximate working analogues and a well-defined development design. All exploration comes with risk, but the company does not have to reinvent the wheel. As a rule, the best place to find gas is where it has been found before.
High equity interests across the portfolio	The company holds 100% equity interests across key assets in its portfolio offering success-case leverage and financing options.
No gas price cap applies	The draft Code of Conduct provides exemptions for small company, domestic gas suppliers for volumes up to 100PJ pa – GAS will receive market pricing.
Proximate to infrastructure hubs	The assets are strategically located close to major transmission pipelines providing a clear path to market for gas at scale.
Early production imminent...	...via CNG from Rougemont. Whilst this may only be a 1TJd option, it has to start somewhere...and first gas is an important indicator. Gas prices are on the rise and the timing, supplying into the winter peak, should deliver a premium pricing outcome.
A supportive regulatory environment at state and federal level	The Queensland operating environment encourages gas production and although there are remaining issues associated with federal energy legislation, GAS will benefit from a regulatory process aiming to support more gas into the local market.
Weaknesses	Comments
Gas aggregation may creep to the east...	Does the company have the scale (potential) or is it too far behind to attract interest? Assets in pre-production are the most attractive in an acquisition process.
Financing still largely dependent on equity markets in the short-term	Although initial production is imminent, it will be small scale and cash flow will be constrained. Financing may still be heavily equity dependent through the short-medium term and limit the scope and timing of growth activity.
The company is still in an exploration phase	Exploration/early-stage is by definition higher risk and higher capital costs. Drilling can be a capital-intensive exercise in a rising cost environment.
Market continuing to apply a high-risk weighting to gas opportunities	Markets are in wait-and-see mode. Markets remain uncertain with respect to Federal energy policy and the global economic outlook; and are eschewing higher-risk portfolio exposures – success cases may not be fully reflected in share price re-ratings.
High working interests	What is a strength can also be a weakness. Carrying costs at high working interests can be expensive through early phases of activity until assets are sufficiently evaluated to be of interest to third parties or at a pre-development stage.
Opportunities	Comments
The macro investment thematic continues to be supportive	ACCC/AEMO projections point to a material east coast gas supply shortfall from mid-2023 and increasing in the absence of new supply. There is a significant window of opportunity for new gas into the east coast market.
Gas aggregation may creep to the east...	The 2000's saw a massive gas aggregation play at work to support the development of Gladstone export projects, which are (now) short gas. The sector in Queensland is more fragmented and acquisition for volume can't be delivered from one play. The companies that can deliver reserves and pre-production options could be attractive, particularly if metrics remain cheap.
No 'domgas' reservation restrictions	GAS is free to sell 'at market' and to anyone – this provides a potentially material operating advantage over other Bowen Basin gas plays.
Relatively low-risk, inexpensive and leveraged growth	The geology of the Bowen Basin is well known, there are analogue production projects at scale (Arcadia) and in pre-development (Mahalo). Critical mass reserves should translate to production and cash-flow outcomes.
A partnership with Santos	A partner that can provide capital, technology and scale – it helps that Santos is reportedly eager to accelerate its gas options.
First production from Rougemont is imminent	First production is always a critical and potentially transformational event in the progress of a company from explorer to producer (and cash flow). Defining the economic case provides the base for growth and importantly provides a high degree of confidence in the asset potential, particularly to investors.
Threats	Comments
Federal regulation - it's likely not an issue now, but gas prices remain political	A light bulb moment has seen the Federal Government retreat from price caps and take a more market-based approach to new domestic supply. Whilst the headlines suggest 'business as usual', where there was previously no regulation and ministerial discretion, there is now. The potential remains for more regulatory intervention, not less in the medium-term.
Gas aggregation may creep to the east...	M&A has taken time to manifest and despite the bidding wars in the west, the real gas game is in the east. Reserves metrics are telling us 'gas is cheap'. At some stage, in a constrained market, there will be consolidation...but at what price and who gets left on the shelf?
Acceleration of renewables	Renewables work best with gas – this is not a company-specific issue.
GAS is not the only company chasing new gas	There are numerous options being pursued in other gas basins, most notably in Queensland CSG, the NT Beetaloo Basin and offshore Victoria. However, the timeline to market is not certain and success cases may not provide supply at scale.

Source: RaaS analysis

State Gas (GAS) – Chasing First Gas

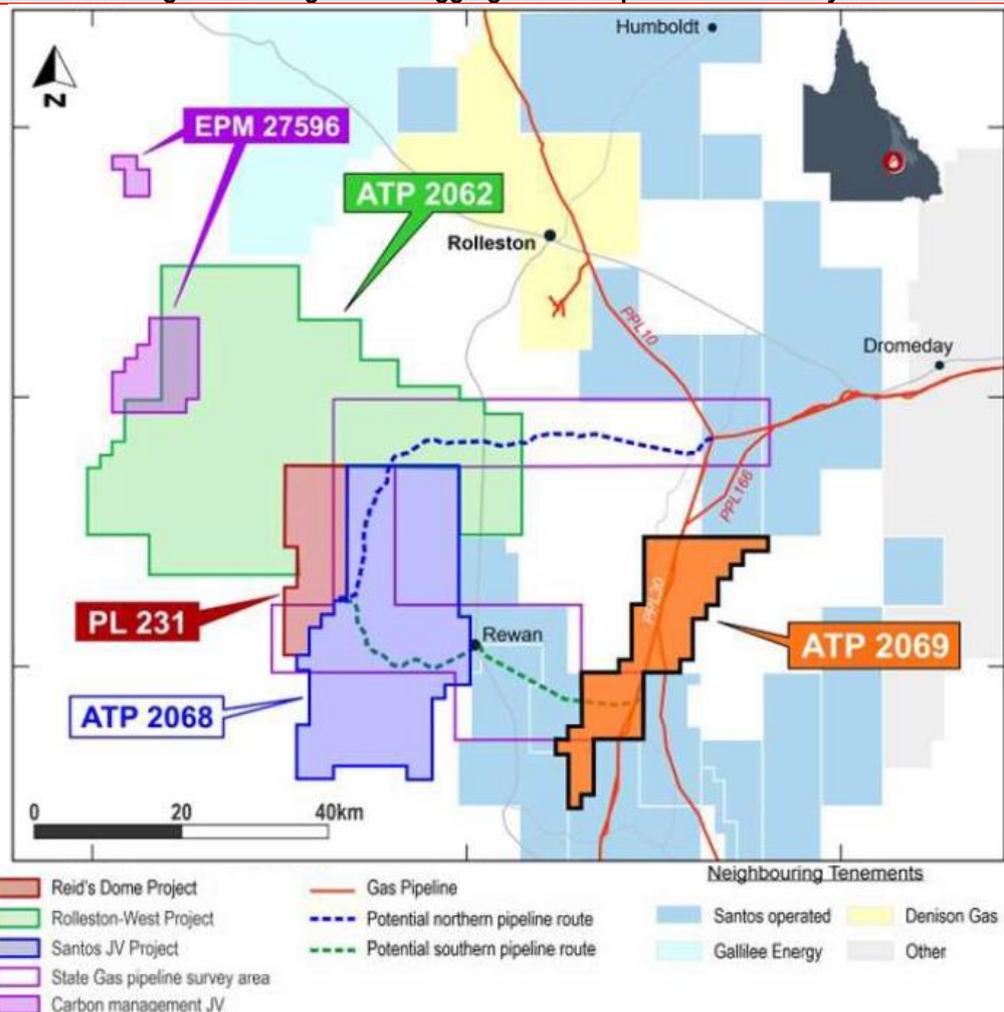
Poised to capitalise on a return to business as usual

State Gas is a highly leveraged play on the known gas potential of the southern Bowen Basin with a mix of unconventional and conventional opportunities highlighted by the recent success at Rougemont. The company is on the cusp of an initial production phase via a Compressed Natural Gas (CNG) project in progress and expected to be delivering into the nearby Queensland Gas Pipeline and interconnected east coast gas network, which lies approximately 30-50km respectively to the east.

As described by the company, CNG represents “...an innovative virtual pipeline solution” with raw gas transported by truck to an adjacent inlet point on existing pipeline infrastructure.

Although the CNG project will initially be a very small scale (c.1TJd) opportunity, first production and revenue are always important milestones in the transition from explorer to producer. The important aspect here is that the target Bandanna Formation coal measures are regionally pervasive with producing and pre-production analogues along trend at Arcadia and Mahalo – the geology is well known, the development style is well known, and expansion can be considered as relatively low-risk and limited by capital capacity rather than on a technical basis.

Exhibit 4: Contiguous acreage makes aggregation cheaper and more likely



Source: Company data

The company's most advanced projects are its Rolleston-West (ATP-2062) and Reid's Dome (PL-231) plays which straddle contiguous permits in proximity to major transmission pipeline infrastructure. State Gas holds these projects at 100% which provides the opportunity for an integrated approach to development,

advantageous from both technical and capital perspectives. Both of these permits can be considered as CSG and conventional gas plays.

Additionally, an integrated approach also enhances the appeal of the opportunity from a partnering perspective. In an environment short of gas supply and new opportunities, there is a compelling logic behind integration and consolidation outcomes in our view.

The key target within the GAS areas is the Bandanna coal measures which is a proven CSG play, producing at ~100TJd at the Arcadia Project and in pre-development at Mahalo to the north-east. The interval is pervasive across the Rolleston West acreage, with additional opportunities to chase more discrete conventional targets previously identified.

Where the benefits to CSG lie, is that in general terms the coal characteristics are pretty consistent across a regional area and success in drilling techniques in one area can largely be translated to adjacent areas in the absence of substantial changes in stratigraphy and structuring. Therein lies the low risk of CSG in a relative sense.

A pipeline option

The company commenced working on potential pipeline routes in 2018 and has been granted Pipeline Survey Licences (refer **Exhibit 4** enclosing the proposed pipeline routes). The proactive nature of these studies puts the company in a strong position to accelerate a large-scale development as and when critical mass gas reserves are certified.

Both north- and south-running routes have been evaluated with the more likely path being the northern corridor from Reid's Dome through Rougemont.

We understand early discussions have been held with infrastructure operators, who have been especially active of late announcing agreements with both Galilee Energy and Comet Ridge to evaluate connections into major transmissions lines. Naturally discussions and studies can only proceed on a conceptual level pending the declaration of sufficient gas volumes to optimise size and underwrite pipeline construction.

State Gas is proposing that Rougemont could provide the reserves to underwrite the financing of pipeline infrastructure to commercialise a major expansion into a large-scale project.

Any final agreement will be subject to the requisite environmental and government approvals.

There's more...

The company has secured a 35% interest in new permits ATP-2068 and -2069 in joint venture with Santos [(ASX:STO), 65%].

The new permits are adjacent to the Arcadia Gas Project (STO) and are contiguous with existing project areas held by both State Gas and Santos; and present opportunities for natural development synergies across the spectrum from capital investment through to off-take.

Santos is reportedly set to accelerate the commercialisation of its Queensland gas potential, which can only be good news for State Gas, should subsequent activity confirm the potential for a material gas resource, located within an infrastructure hub.

The Joint Venture is now planning early-stage exploration activities in what it considers to be the most prospective areas of the tenements.

The Arcadia project is a major gas development, producing from the same coals (Bandanna Formation) as the recent Rougemont success and mappable over a regional extent. In many respects the Arcadia development is thought to be the most appropriate southern Bowen Basin development analogue for gas at scale.

The plant is currently producing at rates consistently >100TJd, from wells with lateral completions pushing ~2,200m, with all-in costs implied at \$5.15/gj. We believe STO is targeting a material (10%+) reduction in costs.

We note the all-in cost estimate includes capex amortisation, so we estimate 'pure' operating costs would likely be in the range of \$3.50-\$4.00/gj.

Proactively, the company is putting in place a carbon mitigation strategy entering a Joint Venture with Rockmin Solutions Pty Ltd. The JV as reported will “... investigate the potential of the Buckland basaltic ignimbrite located within and nearby to ATP 2062 for a range of in-situ and ex-situ carbon capture and sequestration applications” using a process which safely traps CO₂ in a sub-surface basalt layer.

The JV has secured EPM-27596 (refer **Exhibit 8**) as the area(s) for potential ‘sequestration through mineralisation’ and plans to drill two holes over the next 12 months to confirm the ignimbrite opportunity.

The JV is evaluating the process currently being used by Carbfix (www.carbfix.com) in collaboration with heavy industry in Iceland, since 2019. We append some brief comments below and would refer readers to the company website for more details and technical papers on the operation of the process.

As noted, the in-situ mineralisation is being trialled by the US Department of Energy in a demonstration facility, with Rio Tinto recently announcing a project opportunity.

Carbfix is an Icelandic company which has developed a novel approach to capturing and storing CO₂ by its capture in water and its injection into sub-surface basalts.

Once in the sub-surface, the injected CO₂ reacts with the host rock forming stable carbonate minerals, thus providing for the safe, long-term storage of the captured gas. Carbfix imitates and accelerates these natural processes via natural processes that take about two years.

For the Carbfix technology to work, one needs to meet three requirements: favourable rocks, water, and a source of carbon dioxide.

On a first view, it seems unlikely that there will be sufficient CO₂ from State Gas sources on a stand-alone basis per se. The commercial model would most likely be on an aggregation basis, across the region.

We do not assign any material value to this opportunity at this stage but can speculate that the success case for the JV could be a large commercial business in its own right.

Coal Seam Gas – The Colour is Rouge(mont)

The Rolleston West Project

The Rolleston West Project area is contained within ATP-2062 (refer **Exhibit 4**) which was granted in September 2020. The permit is considered to be prospective for both CSG and conventional gas prospects and importantly does not come with a domestic supply obligation.

The company has identified a number of opportunities within the permit, nominated as the Rougemont and Bandanna West CSG fairways, which contain 2C Contingent Resources totalling 275PJ (454PJ at the 3P level - refer **Exhibit 8**). Ostensibly, there are sufficient gas resources to support a material development project subject to demonstrating a commercial flow rate.

Importantly, the conversion rate of 2P (from 2C) can be high for CSG particularly if the seams can be delineated as continuous and consistent in and across the geometry and geology (coal gas characteristics) of the play.

Successful evaluation results can trigger significant shifting of ‘C’ to ‘P’ for small improvements in economic parameters.

The initial evaluation campaign commenced in the June quarter (2021) and consisted of two core-holes (Rougemont-1 and -2), with both wells intersecting some eight metres (8m) of net coal.

Although these results could be considered as somewhat isolated, the data is highly encouraging, particularly the high-end permeability recorded in the R-2 well.

Rougemont-1	Log and core analyses		Rougemont-2
~495m	Depth to Top Coal		~295m
			Seam 1 @ 356m
			Seam 2 @ 384m
~8m	Net Coal Thickness		~8m
~2.4m	Thickest Seam		~2.8m
5-6m ³ /t (daf) <i>Assumed to be similar</i>	Gas Content (dry, ash-free [daf])	Seam 1	5.15m ³ /t (daf)
		Seam 2	6.0m ³ /t (daf)
~94% C1	Gas Specification <i>Approximate sales gas quality on an absolute basis</i>		~96% C1
	Coal Permeability- millidarcies (mD)	Seam 1	26mD
		Seam 2	395mD

Given the quality of the coal data, the company made a decision to undertake an initial testing programme at R-2, using the experiences garnered at Fairview and Mahalo, to draw the water down slowly.

The target sequence remained constrained by the head of water but was noted as delivering gas to surface through the campaign, which completed in the March quarter 2022. Analysis of the data and comparison to producing analogues suggested that commercial flow rates (then modelled as being between 400-1,400mcf/d) could be achieved from horizontal development wells.

To accelerate the commercial evaluation of the gas potential at this location, the company designed and completed a production pilot using the R-2 well as the supporting vertical producer with a new well (Rougemont-3) designed as a dual lateral completion (refer **Exhibit 5**).

Connecting the laterals to R-2 enables the pilot to be tested as a single unit.

Note: this design has most recently been successfully evaluated in the Comet Ridge (ASX:COI) Mahalo North area, which has delivered a material 2P-3P reserves outcome.

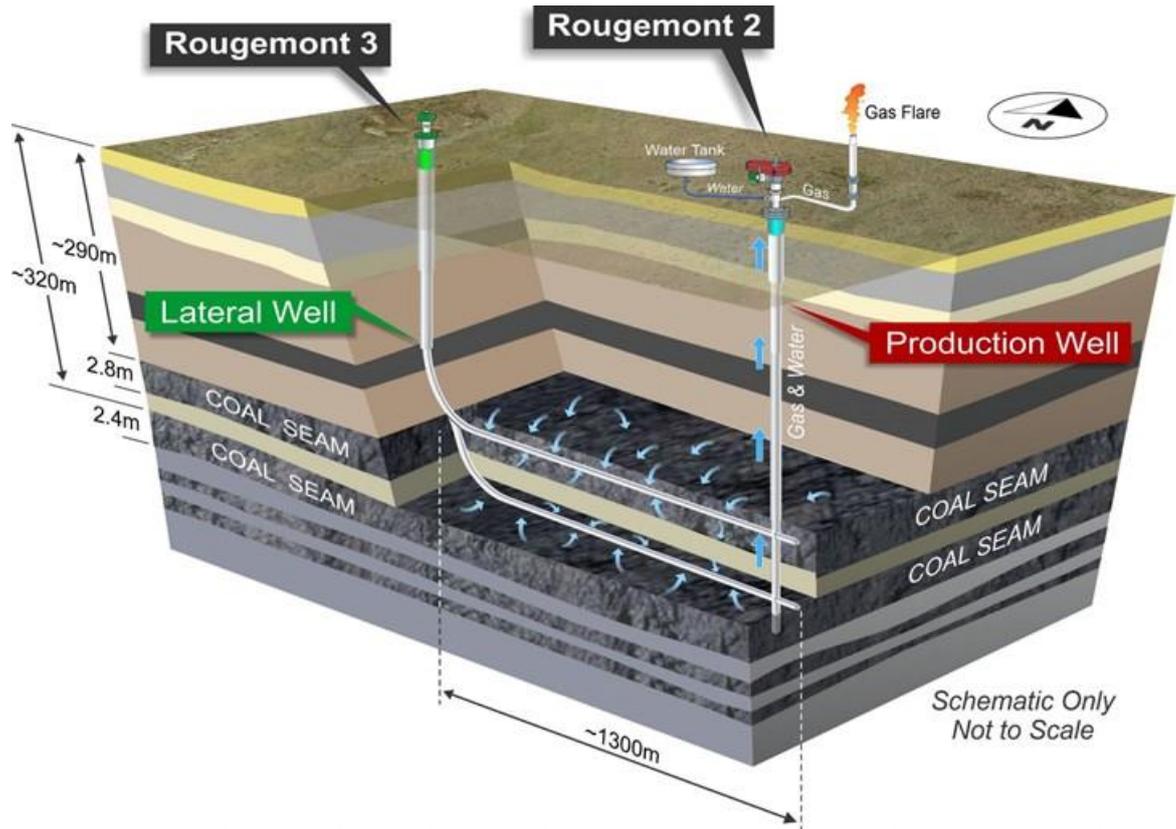
Both the Rougemont laterals were successfully completed with at least 97% of the bore hole landed within the target coals and totalling >2,400m of exposed seams. Gas shows whilst drilling indicated the coals are fully gas saturated.

In keeping with accepted Bandana Formation practice, the company commenced pumping down the water slowly to minimise any formation (coal) damage and maximise gas rates.

The Rougemont pilot began testing in late November 2022, with first gas recorded very early through the process, a highly encouraging indication of future production potential.

The pilot was recorded as “...producing a larger quantity of water than initially prognosed, confirming the high permeability in the coal seams within the two lateral wells, and therefore, potentially higher gas production from these coals once the water level has been reduced.”

Exhibit 5: Rougemont pilot design using analogues derived from Arcadia and Mahalo



Source: Company data

Data reported in the most recent Quarterly Report (March quarter 2023) indicated the company was somewhat excited by the testing results achieved to that date, describing the flow rates as ‘excellent’.

As noted by the company, the pilot data:

- Confirms excellent permeability within the target coal seams; and
- Indicates a stable economic gas flow rate of ~0.5TJd of pipeline quality gas.

It should be noted that flow rates represent the upper seam only at this stage, with the lower seam yet to be dewatered and without the benefit of any frack stimulation.

The pilot is now shut-in for pressure testing and to preserve gas rather than flaring.

On extrapolation, the company is extremely confident that the pilot can deliver a sustainable production rate of ~1TJd and be sufficient to underpin the commencement of its CNG Project option, with design and construction planning well under way.

Gas flow rates recorded during the production testing provide a high level of confidence that a material gas reserve can be proven, sufficient to underpin a stand-alone project and pipeline.

The CNG option...small but important

Planning for an early commercialisation option through Compressed Natural Gas (CNG) trucking has been under way since the September quarter 2022. The initial strategy was to consider CNG as the commercial base for its Reid’s Dome Project (PL-231, refer **Exhibit 4**), transporting a raw gas product some 60km into the transmission pipeline network.

Supply chain issues and the outstanding results from the Rougemont Project have resulted in a strategic shift to the Rougemont location. The modular infrastructure set-up and ‘set-to-go’ nature of the pilot make this an obvious and logical operating choice, which the company believes will “...support higher daily production volumes from both Rougemont and Reid’s Dome [with] opportunities to reduce both capital and operating costs.”

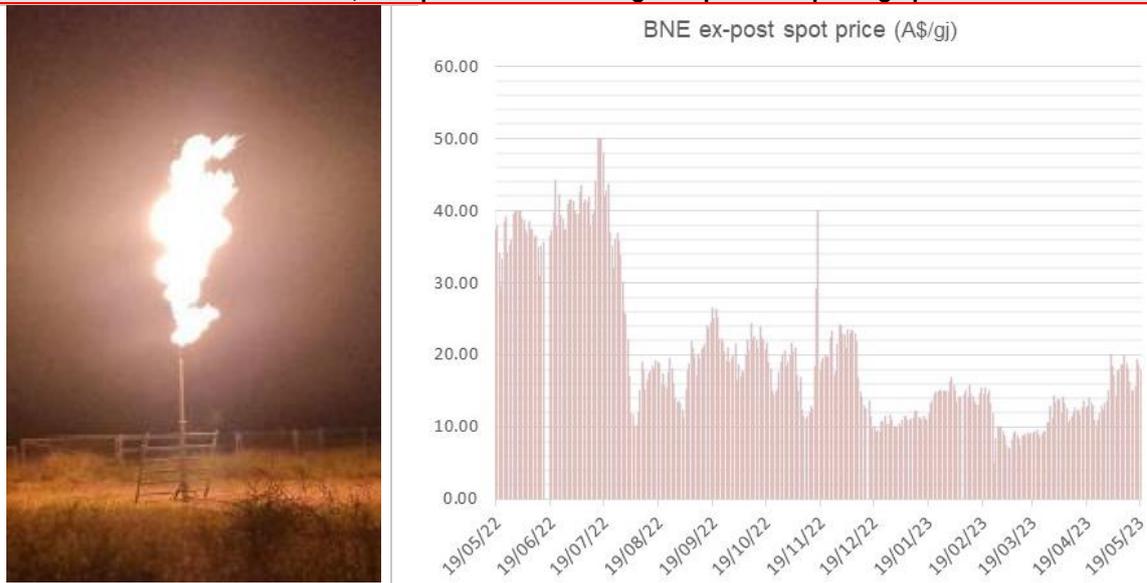
The operating plan is to build production from ~1TJd, which can be supported from the current pilot, to ~2TJd which would likely require the drilling of two new vertical wells.

We understand that trucking and compression constraints will limit the current plant design to a maximum of ~2TJd.

Gas from the CNG Project will be sold into the Brisbane spot market, which is heading into the winter peak (refer **Exhibit 6**). Whether Brisbane spot pricing peaks at levels between \$40-50/gj this winter remains to be seen, but daily spot rates are ranging up to 20TJd – 1TJd would generate \$20k per day. Averaging the immediate past 12 months delivers a daily rate of \$19.97/gj and revenue potential to \$7.3mn pa, should the market perform in line with the past year.

At this stage we suggest all-in costs could be perhaps \$7/gj (*RaaS estimate only*) but will most likely be determined by the cost of trucking rather than well/plant operating costs.

Exhibit 6: Gas flares = revenue, with production heading into premium pricing spot markets



Source: Company data (LHS); AEMO data (RHS)

The Reid's Dome Project

The Reid's Dome Gas Project is located within PL-231 (refer **Exhibit 4**), critically within 50km (west) of the Queensland Gas Pipeline. The company holds the licence at 100% providing financing options through partnering.

Exhibit 7: A more intensely drilled opportunity – there is gas but commerciality needs more definition

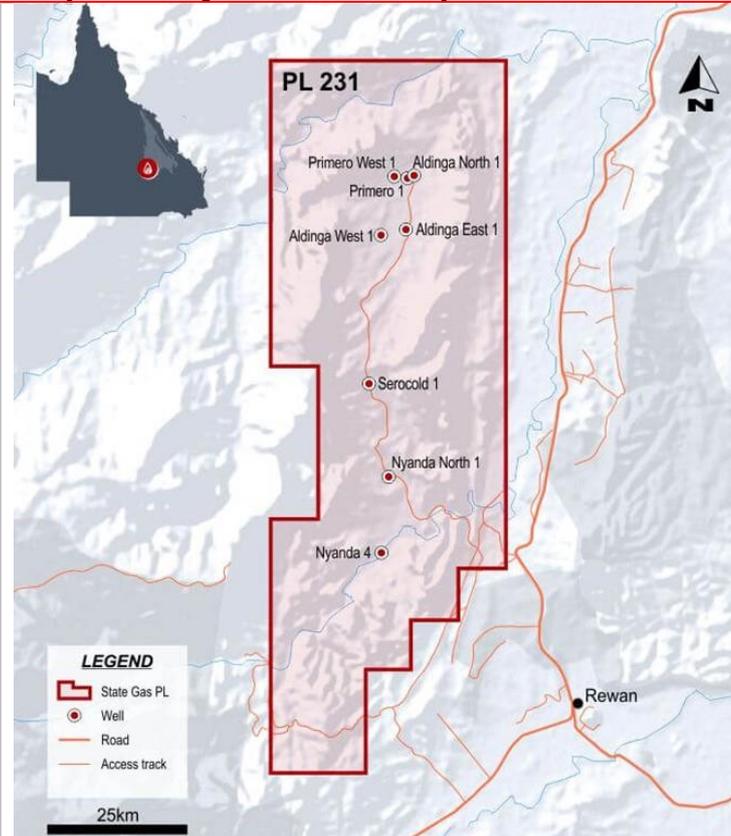
The Nyanda-4 well was the first CSG evaluation works conducted specifically for CSG in the permit.

The well was drilled to 1,200m and recorded 38m of net coal with seams up to 4m thick, but intersected thin coals and carbonaceous shales from 392-1,177m. The prospective interval was reported as being between 392-880m.

Good gas shows were evident on log records from 392m and DST data established good indicative permeability.

Well correlations (refer map on LHS) indicated lateral continuity of the Reid's Dome play across entire permit.

State Gas has established net coal thicknesses >30m in the 'producible zones' which have been mapped to below 1,100m, with gas contents averaging a very high 13.75m³/t (daf).



Source: Company data

Geologically, Reid's Dome lies along the Springsure-Serocold Anticline, immediately to the south of the Rolleston-West Project and is considered to be prospective for both conventional gas and CSG.

Conventional gas was first discovered at Reid's Dome in 1955, in the shallow Cattle Creek Formation and the underlying Reid's Dome Beds. Historically there have been a number of wells that have flowed gas to surface but without sustained commercial production.

Coal seam gas is also prevalent throughout the Reid's Dome Beds which include Permian coal measures across the permit. We note that CSG is a relatively recent development option and the vast majority of exploration across Reid's Dome has been for conventional accumulations, with State Gas undertaking the first significant exploration campaigns for CSG.

It should also be highlighted that the Reid's Dome coals are early Permian versus the Bandana coals at Rougemont which are late Permian – not all coals are equal.

CSG evaluation works commenced in late-2018 with the drilling of the Nyanda-4 (N-4) core-hole, which was followed up with a production test in late-2019, producing a sustained gas flow after only five days of dewatering. Water production was noted by the company as being "...at the lowest end of the range for coal seam gas" with gas "...consistently increas(ing) as the water level lowered."

That result is typical for Bandanna Formation coals, having been observed at both Arcadia and Mahalo. A managed (slow) draw-down of water has been the optimal method used to date with total water production rapidly declining and only aggregating low volumes in absolute and comparative terms – as water equals cost,

low water volumes and early gas breakthrough is important for development economics, perhaps not as much in the current operating environment, but certainly enhancing operating margins.

The N-4 well recorded stabilised rates of 140mcf/d, peaking at rates as high as 700mcf/d, which the company considers commercial.

N-4 production logs confirmed there were three prime production zones in the well, the most productive being the top (400-600m) and lower (1,000-1,200m) zones. These depths are atypical for CSG developments but on a positive note, gas at depth adds target horizons and increases areal extent, increasing the nominal gas potential and opportunity for greater reserves.

It's difficult, we suggest, to declare the flow data as absolutely commercial, but it is certainly encouraging enough to warrant more targeted activity to firmly establish type curves, reserves and the broad outline of any development plan.

State Gas followed up the Nyanda-4 evaluation with the drilling of the Aldinga East-1A and Serocold-1 wells along a north-trending line (refer **Exhibit 7**).

Both of these wells were reported as *"...confirming the presence of coal measures, similar to N-4, in the northern and central domains of the permit. Both wells contain a significant number of seams showing permeability" and "with gas content on par."*

- The Serocold-1 production test was conducted in Jan-2020 with gas indications evident within the first week; and
- The Aldinga East-1A well discovered a new conventional gas pool located in ~9m of gas sand in the Cattle Creek Formation. Sampling confirmed the gas to be pipeline-quality gas.

The well also intersected 14.6m of net coal.

Management has indicated it is confident both wells can be successful CSG producers.

The company has booked 2C Contingent Resources totalling 126PJ (230PJ at the 3P level -refer **Exhibit 8**) and similarly to Rolleston West, there appears to be sufficient gas resources to support a material gas project subject to demonstrating a definitively commercial flow rate.

There are technical challenges and not all CSG areas are the same – each particular area within any regional coal seam sequence may have its unique geological issues :

- Remedial work on the Nyanda-8 well indicated there was skin damage which was addressed via jetting. The remedial works resulted in a build-up in gas production, but only slowly; and
- The Serocold-1 well was impacted by a silting of the downhole pumps related to sand migration from inter-coal areas. Non-gas zones will likely have to be sealed off in future wells.

'Skin damage' – the reduction of formation permeability in the vicinity of the well bore caused by drilling and completion operations.

'Jetting' – a stream of air or water used to flush cuttings or clean rock faces from bore hole.

...A Santos plan

Building outside the box, State Gas has entered a “strategic partnership” with Santos by joint venturing in two new permits, ATPs-2068 and -2069 (refer **Exhibit 4**) contiguous to its current holdings to the south and east, adjacent to the Arcadia Gas Project.

As described by management, the JV “...creates an alignment of ownership interests across a substantial gas resource in the southern Bowen Basin, providing the opportunity for coordinated and synergistic development.”

The permit areas are indicatively thought to be ‘highly prospective’ for CSG and will be held 35% (GAS) and 65% (STO).

The JV provides for a low-cost expansion of the portfolio and obvious synergies through development tie-backs to plant and pipeline infrastructure.

By entering into an agreement with State Gas, Santos is able to access new acreage that perhaps would not have been available on a sole-risk basis. The State Government has previously been more favourable in awarding new areas to smaller operators rather than risk the notional land-banking that can occur in larger organisations.

In many respects, the JV is advantageous to GAS with STO facing its own supply squeeze and needing to develop more gas for domestic supply. Progress on many STO Queensland CSG options has been measurably slow from arms-length observation, although smaller JV partners have indicated appraisal and development activities have been harder for big operators given the policy uncertainty that has only recently been addressed through the draft Code of Conduct.

We note the JV is currently developing early-stage exploration campaigns across both tenements.

At this stage, the JV with STO should be considered as a longer-dated option over future gas opportunities.

These licences have certified net 2C volumes attributable to GAS of 60PJ.

It's Always Beneficial To Start With (A Lot Of) Gas

It's naturally better to have 'P' volumes than 'C', but you have to start somewhere and we are encouraged by the volumes ascribed across the portfolio, which reflect the pervasive nature of the CSG play, but also the producing Bowen Basin analogues.

It's also better to start with a big gas number, which ultimately makes it easier to progress the commercial case – in this regard GAS is ticking both boxes.

The Bowen Basin has an extensive data set of producing wells, pilots, CSG exploration wells and coal bores that allow for local and regional correlations, complemented by seam correlation provided by seismic data where well control is less.

The Contingent Resource estimates were generated by James Crowley (*Executive GM – Exploration and Development*) and are an internal estimate. The volumes represent absolute estimates with no commercial risk overlay – and in an operating environment that is proving to be extremely volatile, this is an appropriate methodology at this stage of pre-development.

Risk factors are being applied by the market in proxy (represented by the share price and implied unit EV metrics – refer **Exhibit 2**) and within the RaaS valuation methodology.

Exhibit 8: Sufficient resource to underpin production and expansion

PJ	1C	2C	3C	1U	2U	3U	Conversion for valuation purposes (3C to 2P)	
							Weighting %	2P equivalent
Rolleston West - ATP-2062								
Rougemont CSG Fairway	53	91	161				35	56
Bandanna West CSG Fairway	92	170	293				34	101
Conventional Gas	6	18	52	1	5	23	20	10
	151	279	506				33	167
ATP-2068 (CSG)	25	43	68				13	9
ATP-2069 (CSG)	12	17	24	1	3	13	14	3
Reid's Dome – PL-231								
Reid's Dome CSG	84	192	660				13	84
Conventional Gas	2	4	8				13	1
	76	131	230				13	85
	274	535	1,266	2	8	35	21	264

Source: Company data (as at 28/4/23)

Contingent Resource estimates are based on technical data for the permits, regional geologic and production interpretations and in the case of the Reid's Dome and Rolleston-West Projects, data derived by State Gas from exploration activities on the permits, including reprocessing of seismic, drilling, core analyses, production testing and analyses of produced gas and water.

We can argue the estimates in total but we believe the data is broadly indicative of the magnitude of gas opportunity inherent in the portfolio.

These estimates are subject to material change as more definitive data on testing and coal quality comes to hand and underpins the definition of type curves and EURs (gas recovery per well), as are the RaaS and market risk weightings. **The risk resides both to the upside and downside.**

Board and Management

The composition of small company boards and management teams are no doubt more critical than for larger companies as the impact of seemingly incremental decisions can have a magnified impact on the growth and valuation of the company. There is less margin for error and often the Board is a critical source of working capital.

We note the recent important changes to the Board and register with the St Baker family coming onto the register through the capital raising in October 2022, with Philip St Baker and Jon Stretch joining the Board. The St Baker family have been important and material investors historically in the coal and power generation/gas infrastructure sectors and are now strategically transitioning into up-stream gas.

State Gas has a relatively large Board (six members) for a small company but all are highly experienced across the critical areas required to facilitate the transition of GAS from explorer to developer/producer, in the technical, financing and commercial spheres.

Board of Directors

Executive Chairman: Richard Cottee – LL.B (Hons), B.A

Richard is well known to the energy industry and finance sector as an executive and director across a number of listed entities, most notably as the former Managing Director of the Queensland Gas Company Ltd, prior to its acquisition by BG Group for \$5.7bn.

He is also the Chair of Elixir Energy (ASX:EXR), a CSG play across the massive resource potential of Mongolia.

Richard was formerly:

- Managing Director of Central Petroleum (ASX:CTP);
- Managing Director of Nexus Energy; and
- CEO CS Energy and NRG Europe

Deputy Chair: Tony Bellas – B.Econ, G.Dip (Education); FAICD, CPS. F.Geol.Soc (London)

Tony has an extensive breadth of operational and governance experience, particularly across the energy sector as the Chair of ERM Power Ltd, CEO of Ergon Energy and CS Energy.

He is currently:

- The Chair of NOVONIX Limited (ASX:NVX), a company focussed on clean energy solutions as a leading battery materials and technology company operating in North America;

...and formerly:

- A director of intelliHR (ASX:IHR), delisted as of 11-May-2023 after completion of its acquisition; and
- Chair of ERM Power Limited, Corporate Travel Management Limited (ASX:CTD) and Shine Justice Limited (ASX:SHJ).

Non-Executive Director: Greg Baynton – B.Bus (Accountancy), M.Economic Studies, Grad.Dip (App Fin), MBA

Greg joined the Board in June 2017 as an Executive Director, reverting to a non-executive role in November 2022 as part of a restructure after the capital raising of October 2022.

He has been a director of Australian exploration companies for over 20 years with interests and experience across the corporate advisory and financing sectors, specifically including clean energy, technology, fintech and strategic materials.

He is currently the Managing Director (and founder of Orbit Capital), a company offering corporate and financial services to the energy and resources, technology, infrastructure and agriculture sectors.

He is:

- A former Director of NOVONIX Limited (ASX:NVX), a company focussed on clean energy solutions as a leading battery materials and technology company operating in North America; and

- A former director of IntelliHR (ASX:IHR), delisted as of 11-May-2023 after completion of its acquisition.

Non-Executive Director: Philip St Baker - B.Eng (Mechanical Engineering)

Philip was appointed to the Board on 10-Oct-2022 as part of a restructure after the capital raising of October 2022.

As described, Philip is an “...experienced entrepreneur and investor, active globally with investments primarily in Australia and the USA.”

He has a broad range of experience in directorial and managerial positions as:

- Co-founder and first Managing Director/CEO of NOVONIX Limited (ASX:NVX), a company focussed on clean energy solutions as a leading battery materials and technology company operating in North America;
- Managing Director and Chief Executive Officer of ERM Power Limited (2006-2014) and as a Non-Executive Director (2017-2019);
- Director of the holding company for the St Baker Energy Innovation Fund;
- Alternate Director of Delta Electricity, owner of Vales Point Power Station and Chain Valley Colliery; and
- Non-Executive Director of the NAVIQ Group and Healthcare Logic Global (private).

Non-Executive Director: Jon Stretch - B.Sc (Computer Science), GAICD

Jon was appointed to the Board on 10-Oct-2022 as part of a restructure after the capital raising of October 2022.

He has a broad range of operating experience in senior management roles across the energy, information technology (IT) and telecommunications sectors, in both listed and private companies. Importantly, those roles have related to guiding companies through transformative growth strategies.

Non-Executive Director: Rob Towner

Rob was appointed to Board in November 2020.

He has over 25 years of multi-disciplinary experience through direct energy company (executive) management and across the corporate advisory and finance industry, having commenced in financial markets with Bell Potter and latterly as Managing Director and CEO of Triangle Energy (ASX:TEG) where he managed the company’s transition from an Indonesian E&P focus to a domestic producer (notably the Cliff Head Oil Field).

Prior to TEG, Rob was a financial markets/corporate advisory executive and involved in a number of capital raisings for projects throughout Australia, Canada, Asia and the USA.

As well as the former MD of Triangle Energy, he was also a Director of Botanix Pharmaceuticals Limited (ASX:BOT).

Exhibit 9: Directors’ holdings			
Director	Shares held	% of total	
Richard Cottee	1,566,896	0.7	
Tony Bellas	4,750,765	2.1	
Greg Baynton	29,060,289	12.9	
Philip St Baker	2,113,840	0.9	
Jon Stretch	829,336	0.4	
Source: Company data			

Management and operations team

Management and operational teams should not be seen in terms of individual capacity but rather complimentary skill sets that span the commercial and technical requirements needed to deliver the strategic outcomes in a company in a transformational stage.

Chief Executive Officer: Doug McAlpine – B.Com

Doug has recorded over 20 years of experience in strategic, operational and financial leadership coming to the role with an extensive operational background having served as the CEO of Collection House Limited, the Executive General Manager of Silver Chef Limited and CFO of Stanmore Coal Limited.

His management experience is complemented by a capital markets background with a strong knowledge capability *“...in the design and delivery of debt and equity capital solutions to support organisational growth.”*

Chief Operating Officer: Mike Herrington - B.Sc (Civil Engineering)

Mike is a well-known oil and gas industry executive having served previously as the COO of Central Petroleum Ltd (ASX:CTP) and the Queensland Gas Company (QGC); and Managing Director for Jabiru Energy and Enron Exploration Australia P.L.

His career commenced in a number of a ‘hands-on’, work-face roles in the oil and gas business – from exploration through to drilling and development and, latterly, a specific focus on bringing new CSG and conventional gas fields from discovery through to full commercial operation.

Executive General Manager (Exploration & Development): James Crowley – B.Sc (Hons. Earth Sciences)

James has an extensive range of operational experience in the oil and gas industry, progressing through junior field roles into senior executive positions for AGL Energy Ltd (ASX:AGL), Senex Ltd, Origin Energy Ltd (ASX:ORG) and Apache Corporation in Australia and internationally.

He has critical experience across the gamut of required skills from exploration through to appraisal and development.

Top 20 shareholding register

Exhibit 10: Some 40% of the issued capital is held by the top-10 shareholders

HOLDER		UNITS	%
TRIANGLE ENERGY (GLOBAL) LIMITED		23,884,693	10.62
ALLEGRO CAPITAL NOMINEES PTY LTD	<ALLEGRO CAPITAL A/C>	14,000,000	6.23
SUNSET POWER PTY LTD	<THE ST BAKER FAMILY A/C>	13,877,436	6.17
INVESTMENT FOR RETIREMENT PTY LTD	<FAULSTON SUPER ANNUATION A/C>	9,000,000	4.00
HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED		7,016,543	3.12
BONDS STREET CUSTODIANS LIMITED	<JOSEPS – V05938 A/C>	4,750,765	2.11
H&G INVESTMENT MANAGEMENT LTD	<H&G VAIL LANE FUND A/C>	4,299,454	1.91
TIMBER WOLF HOLDINGS PTY LTD	LONG SHORT A/C>	4,000,000	1.78
MR HARRISON THOMAS MC PHERSON ST BAKER & MS SOOK MUN CHAN		4,000,000	1.78
IMMANUEL DEVELOPMENTS PTY LTD		3,723,966	1.66
NATIONAL NOMINEES LIMITED		3,613,993	1.61
PHYSICK SMSF PTY LTD	<PHYSICK SUPER FUND A/C>	3,228,476	1.44
MR JAMIE PHEROUS	<BLACK DUCK HOLDINGS A/C>	2,870,935	1.28
CITICORP NOMINEES PTY LIMITED		2,712,552	1.21
AUSTRALIAN PHILANTHROPIC & SERVICES FOUNDATION P/L	<AUSTRALIAN PHIL SERVICE A/C>	2,451,000	1.09
MS AMANDA ELIZABETH KITSON COLLINS		2,442,025	1.09
ALLEGRO CAPITAL NOMINEES PTY LTD	<ALLEGRO CAPITAL ACCOUNT>	2,363,097	1.05
BUTTONWOOD NOMINEES PTY LTD		2,157,177	0.96
MR PHILIP MATTHEW ST BAKER \$ MRS PETA JANE ST BAKER	<P & P ST BAKER FAMILY A/C>	2,113,840	0.94
GRAEME ERIC FIELDING & NOELLE LEE HALPIN	FIELDING FAMILY SUPERANNUATION FUND A/C>	1,950,000	0.87
BRIDGESTAR PTY LTD		1,782,141	0.79
TOP 20 SHAREHOLDERS		116,238,093	51.70
Total Issued Ordinary Shares		224,832,305	100.00
Average monthly turnover for the 12-month period to 25-MAY-2023			5.9mn shares

Source: Company data (as of 24/05/23)

Exhibit 11: Financial Summary

STATE GAS		GAS				
YEAR END		June				
NAV	A\$	\$0.91				
SHARE PRICE	A\$	\$0.180 priced as of close 31-May				
MARKET CAP	A\$M	58				
ORDINARY SHARES	M	225				
OPTIONS & RIGHTS	M	5				

COMMODITY ASSUMPTIONS	FY21A	FY22A	FY23E	FY24E	FY25E
Realised Gas Price	A\$/gj			15.00	15.00
Exchange Rate					
Oil Price	US\$/b				
LPG Price	A\$/t				
Condensate Price	US\$/b				

RATIO ANALYSIS	FY21A	FY22A	FY23E	FY24E	FY25E	
Shares Outstanding	M	173	200	225	262	262
EPS (pre sig items)	Acps	(1.8)	0.7	(0.8)	0.1	1.3
EPS (post sig items)	Acps					
PER (pre sig items)	x			na	nm	13.9x
OCFPS	Acps	(0.7)	(0.6)	(0.4)	0.5	1.7
CFR	x			na	34.7x	10.5x
DPS	Acps					
Dividend Yield	%					
BVPS	Acps	14.6	15.7	16.2	15.9	16.9
Price/Book	x	1.2x	1.1x	1.1x	1.1x	1.1x
ROE	%	-12%	4%	-5%	1%	8%
ROA	%	-10%	4%	-5%	1%	7%
(Trailing) Debt/Cash	x					
Interest Cover	x					
Gross Profit/share	Acps			0.0	0.8	1.9
EBITDAX	A\$M			0.0	2.4	5.6
EBITDAX Ratio	%			na	53%	53%

EARNINGS	A\$mn	FY21A	FY22A	FY23E	FY24E	FY25E
Revenue					4.5	10.5
Cost of sales					(2.5)	(5.4)
Gross Profit		0.0	0.0	0.0	2.0	5.1
Other revenue						
Other income		0.1	0.0	0.0	0.0	0.0
Exploration written off						
Finance costs		0.1	(0.0)	(0.0)	(0.0)	(0.0)
Impairment						
Other expenses		(3.2)	1.4	(1.4)	(1.7)	(1.7)
EBIT		(2.9)	1.3	(1.8)	0.3	3.4
Profit before tax		(2.9)	1.3	(1.8)	0.3	3.4
Taxes						
NPAT Reported		(2.9)	1.3	(1.8)	0.3	3.4
Underlying Adjustments						
NPAT Underlying		(2.9)	1.3	(1.8)	0.3	3.4

CASHFLOW	A\$mn	FY21A	FY22A	FY23E	FY24E	FY25E
Operational Cash Flow		(1.1)	(1.2)	(0.9)	1.3	4.5
Net Interest		0.01	0.00	0.02	0.01	0.03
Taxes Paid						
Other						
Net Operating Cashflow		(1.1)	(1.2)	(0.9)	1.4	4.5
Exploration		(9.7)	(6.2)	(6.3)	(1.5)	(4.0)
PP&E		(1.0)	(0.0)	(2.3)	(5.0)	0.0
Petroleum Assets						
Net Asset Sales/other						
Net Investing Cashflow		(11.0)	(6.2)	(0.9)	1.4	4.5
Dividends Paid						
Net Debt Drawdown						
Equity Issues/(Buyback)		14.4	7.5	7.0	6.0	0.0
Other						
Net Financing Cashflow		14.4	7.5	6.7	6.0	0.0
Net Change in Cash		2.3	0.1	(2.9)	0.8	0.5

BALANCE SHEET	A\$mn	FY21A	FY22A	FY23E	FY24E	FY25E
Cash & Equivalents		3.2	3.2	0.3	1.1	1.6
PP&E & Development		0.9	0.7	3.1	8.1	8.1
Exploration		24.8	29.4	35.7	36.8	40.3
Total Assets		29.5	33.9	39.2	45.3	48.8
Debt		0.0	0.0	0.0	1.0	2.0
Total Liabilities		4.4	2.6	2.9	3.6	4.5
Total Net Assets/Equity		25.2	31.3	36.3	41.7	44.3
Net Cash/(Debt)		3.2	3.2	0.3	0.1	(0.4)
Gearing (d ₁ /(d ₁ +e))		na	na	na	na	na

nm = not meaningful
na = not applicable

PRODUCTION		FY21A	FY22A	FY23E	FY24E	FY25E
Rougemont	Gas TJ				300	700
TOTAL	kboe				50	117

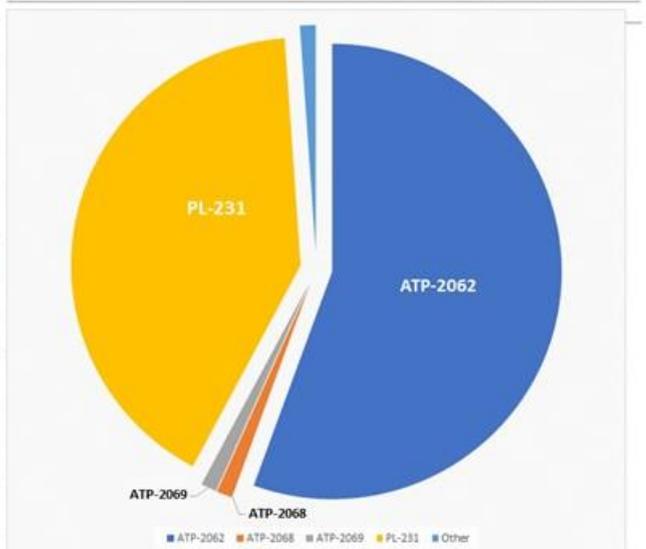
Sales Volumes		TJ	
		300	700

Product Revenue		A\$mn	
		4.5	10.5
		(2.1)	(4.9)
		15.00	15.00
		(7.00)	(7.00)
Cash Margin		53%	53%

RESERVES & RESOURCES		as of 28/04/23		
Permit	Project	1C	2C	3C
ATP-2062	Rougemont	53	91	161
	Bandanna West	92	170	293
	'Conventional'	6	18	52
ATP-2068		25	43	68
ATP-2069		12	17	24
PL-231	Reid's Dome	84	192	660
	'Conventional'	2	4	8
TOTAL	PJ	274	535	1,266

EQUITY VALUATION		WI	Acps
ATP-2062	Rougemont	100%	\$52 \$0.23
	Bandanna West	100%	\$57 \$0.25
	'Conventional'	100%	\$3 \$0.02
ATP-2068		35%	\$3 \$0.01
ATP-2069		35%	\$3 \$0.01
PL-231	Reid's Dome	100%	\$79 \$0.35
	'Conventional'	100%	\$5 \$0.02
Other		100%	\$5 \$0.02
			\$206 \$0.92
Net Cash/(debt)			\$3 \$0.01
Corporate costs			-\$5 (\$0.02)
TOTAL			\$204 \$0.91

Cash Producing Assets



Source: RaaS Advisory; Priced as at 31-May-2023

Appendix A – The Gas Market

More clarity on gas policy – that’s the good news

The investment case based on the gas supply squeeze-rising prices couplet has been prevalent for most of the past decade but has really only manifested in a macro sense over the past two to three years, reflected in materially higher contract and spot gas prices.

There is a real and obvious disconnect between gas resource opportunities and shares prices which are not reflecting the intrinsic value inherent in reserves and resources in a pre-development phase – held back by a number of factors:

- Restricted access to capital resulting in:
 - Excessive dilution from under-priced equity issues; and
 - Snail-like progress proving resources and building the economic case
- Accelerated growth path of renewables; and
- Energy policy uncertainty.

The macro-environment is still largely favourable and in the transition to a lower-carbon world, the prevailing weight of opinion overwhelmingly supports a continuing role for gas as a required energy source.

Over the past month or so, we have seen greater regulatory clarity in development pathway with the release of the Federal Government’s Safeguard Mechanism and Code of Conduct draft legislation. In combination with the finalisation of the Northern Territory legislation regarding the implementation of all of the recommendations from the Pepper Inquiry (Fracking Review), the operating and development requirements for projects through to first ‘new’ gas are largely defined.

However, the details are yet to be finalised and whilst on a headline basis the market looks like a reversion to ‘pre-intervention’ outcomes, there is a sting in the legislation that wasn’t there previously with the potential for more restrictive covenants embedded within the framework.

For example...

The **Safeguard Mechanism legislation** has a requirement of international best practice for gas fields that supply LNG projects as net-zero reservoir CO₂. Fields developed for domestic supply won’t necessarily have the same international best-practice requirement but that is to be determined over the coming months in consultation with industry and other stakeholders.

We suggest this requirement ‘is or can be’ potentially an open-ended commitment and we are uncertain what happens in a JV case where one party sells its gas to export and others to domestic offtakers(?).

The ‘Safeguard’ risks for smaller operators appear to me at the margin as worst in practice with those most at risk likely to be large-scale opportunities with comparatively high CO₂ contents.

The Federal Government has released its draft gas industry mandatory **Code of Conduct** (‘Code’) which ostensibly clears the way forward for smaller gas operators.

Industry body (APPEA) has released preliminary observations suggesting that whilst the Code recognises the “...critical need for investment in new gas supply to avoid future shortfalls in the east coast domestic market and to put downward pressure on gas prices”, the process and practice of the operating regulations remains somewhat “uncertain” (at least in our interpretation of its commentary).

As we read it, the Code basically indicated there will be “...**automatic exemptions from price controls for small, domestic-only producers**” but “...meaningful supply investments will require further conditional exemptions”.

With the \$12/gj price cap for new gas contracts nominally extended through to mid-2025, the exemption from price control is welcome news for GAS and we understand the ‘meaningful supply’ condition to be relatively generous (up to 100PJ pa), such that as it relates to any material growth strategy would not impact the exemption status in any way.

We remain somewhat at odds with the need for approvals to be at the joint discretion of the Climate Change and Energy Minister and Resources Minister, which we suggest could lead to, perhaps, unnecessary delays, particularly in areas that may be across the mandates of both departments.

Exemptions (as granted) may only be in effect for one year, opening the possibility that some projects “...may need to reapply many times over the course of project operations, with no guarantee that the basis for an exemption today will be sufficient for an exemption in the future”. APPEA also indicated that “...[c]onditional exemptions may also be varied or revoked at any time”.

We suggest that rolling exemptions are likely to be an extreme case and that exemptions are more probably to apply over an investment period, whether that is field life or contract life as the nominal term. However, more clarity over these procedures would be welcome prior to submissions.

We also query whether the exemptions are going to be company or project/JV specific, apply to the individual project or in aggregate, and how any equity sell-down is treated, particularly if it's to a party (big company) that may be in other projects not qualified for exemptions.

As pointed out by APPEA “...[l]ong-term capital investments for new gas supply cannot be made on the basis of one year of certainty” and whilst these T&Cs may of necessity be couched in oblique/opaque terminology to cover potential loopholes, the “discretionary” nature of the process probably remains the key area of concern.

A piece of good news for the industry per se, is that the draft Code likely won't be imposing a cost-plus model and binding arbitration. In effect, the reasonable-pricing provision can effectively be considered as ‘off the table’.

As commented though, “...the revised approach [may continue to represent] significant complexity and Ministerial discretion to the operation of the gas market”.

APPEA conclude by commenting that “...further clarity and refinement will be needed across a number of areas to ensure the domestic gas market is able to function effectively”.

The gas supply squeeze continues

We draw on recent ACCC analyses and AEMO gas utilisation data and cite from the following ACCC publications where highlighted:

*ACCC Gas inquiry 2017-2025 Interim Report (July 2022) – published 1-Aug
ACCC Gas inquiry 2017-2025 Jan 2023 Final Report – published 27-Jan-2023*

The ACCC in its analysis has forecast:

- A “...**30PJ gas shortfall** across the east coast market in 2023”;
- “...**significant uncertainty about the supply outlook for 2023** – lower-than-expected supply or higher-than-expected demand, such as for gas-powered generation, could heighten the risks”;
- “...**there are limited options for averting a shortfall in the domestic market in 2023**”; and
- “...**LNG producers are expected to have sufficient uncontracted gas to meet uncontracted domestic demand**” they are yet to commit sufficient volume under firm contracts to address the risk.”

We have previously commented that in the supply-demand model, the only input with some certainty is supply volumes but that estimate becomes ‘vaguer’ the longer-dated the prediction becomes. Whilst the 2023 supply estimate is likely a high-probability number, if there is a projected shortfall now, that only becomes magnified in future years on natural decline and historical delays on forecasting the timing of new project start-ups.

We note recent commentary from Exxon-Mobil directly indicating that:

- “...the company's wells in the Bass Strait (Gippsland) have **shrunk in number from 122 in 2010 to 68 today**, and would continue to rapidly decline”;
- “...by next winter, it expects to have 36 wells producing to six gas platforms supplying two onshore gas plants; **a 70% reduction in the number of producing wells since 2010**”; and

- ...the Gippsland Basin production plant “**will no longer have the capacity to step in to provide whole-of-market solutions** when additional gas is required to support the electricity market.”

The market will be fully supplied – by definition, the market is always fully supplied, with the balancing mechanism being the Short-Term Trading Markets (STTM) and prices set sufficiently high enough to attract gas back into domestic supply.

The higher prices evidenced in both spot and contract outcomes is the direct result of a lack of new supply alternatives, where the ACCC concluded there were a number of structural factors that needed to be addressed, specifically identifying:

- The need for “**...(g)reater diversity and more timely supply**”;
- “**...enforcing compliance with work programmes**”; and
- “**...introducing a third-party access regime for upstream infrastructure.**”

Notwithstanding project-specific risks, we interpret the macro issues as positive for gas supply holistically and ultimately, as a call for **more gas, from more areas, more rapidly.**

Naturally, this can only come at a cost – “**...further investment will be required to avoid shortfalls in the longer term.**”

- “**...long-term supply and demand outlook across the east coast gas market is uncertain.**” Gas demand is expected to decline over time (a shift to greater electrification and transitions towards net-zero targets), however, there will be “**...ongoing need for gas from some commercial and industrial users in particular.**”
- “**...there are likely to be shortfalls across the east coast gas market from 2027** arising from domestic and export demand **without steps being taken.**”

Any commentary on the state of future gas markets should be made with due consideration of the firm and potential new supply coming to market in the period to 2025, tempered by statements associated with recent company outlook presentations made through the last financial reporting period and notwithstanding any further legislative issues:

- Beach Energy (ASX:BPT) has ‘completed gas’ waiting to be connected into its under-utilised Otway Gas Processing Plant from a next phase of Thylacine-Geographe development, although we suggest that should already be figuring into the ACCC analyses.
- Cooper Energy (ASX:COE) had plans to deliver gas from its Offshore Otway Basin, OP3D project by mid-2025, however, outlook commentary directly suggested that the mid-2025 target was ‘gone’ with the timing of the drilling campaign uncertain on issues related to the Federal Government’s gas policy, notably the ‘reasonable pricing’ provision. Should the OP3D project successfully deliver FID, we suggest COE’s wells will likely shift to later in the campaign and first gas could be deferred by at least 12 months.
- Armour Energy (ASX:AJQ) is set to commence its production enhancement campaign to build production at Kincora to up to 10TJd by end-2023 and up to 30TJd in 2025.
- Comet Ridge (ASX:COI) is looking to take FID on two projects across 2023 at Mahalo (Main Block) in joint venture with Santos (ASX:STO) and Mahalo North. In combination, both of these projects could ultimately deliver 100+TJd, with first gas at a small scale by early 2024. The company expects to be making a submission to the requisite federal departments from July as the first practical test of the process under the Safeguard Mechanism.
- Santos Limited (ASX:STO) at Narrabri. Anecdotally, we understand there is likely significant resistance to any development at a land-owner level and with uncertainties related to the Safeguard Mechanism (and Code of Conduct – reasonable pricing provisions) the timing and approvals process should be considered fluid. In some ways, as a potentially relative high CO₂ gas, Narrabri looks as far away from commercial certainty as it has ever been.
- Galilee Energy (ASX:GLL) hoped to declare initial reserves at its Glenaras Project in H1 2023 but continuing issues related to well performance make this timing unlikely and delivering initial production by 2025 highly uncertain.

- Blue Energy (ASX:BLU) is currently appraising its northern Bowen Basin CSG play with the potential to declare maiden reserves perhaps by mid-2023. Production requires sufficient scale to justify new pipeline connections into the Queensland network.
- Empire Energy Group Ltd (ASX:EEG) is targeting a first gas project FID in the NT Beetaloo Basin by end-2023, with works over the remainder of this year including continuing production testing, an initial reserves declaration, gas sales discussions and FEED studies. First gas on a small scale would be deliverable in 2025.
- Tamboran Resources Ltd (ASX:TBN) is ‘twinning’ the timeline of EEG and also seeking a first Beetaloo Basin project sanction by end-2023 with first gas in H2 2025.
- Arrow Energy (unlisted) has sanctioned the first phase of its Surat Gas Project. With drilling having commenced in 2020, the project includes over 600 wells aiming to produce ~300TJd over 27 years, primarily for export. The project is underpinned by a gas sales agreement with the QCLNG Joint Venture.
- Senex Energy (unlisted) announced plans for a A\$1bn expansion in its Surat Basin gas operations (Aug-2022), looking to increase production to 60PJpa by end 2025. Management has indicated the increase in supply would “...mostly be directed to the domestic market.” As at its last published financial update (Feb-2022), SXY was already producing ~27PJpa. ExxonMobil and Woodside (ASX:WDS) announced plans in Mar-2022, to increase gas deliverability from the Bass Strait (Gippsland Basin) project at a gross cost of A\$400mn, through the expansion of the Turrum Field and development of the Kipper Gas Project. The two new projects are planned to deliver up to an additional 200PJ through 2028, of which 30PJ would be produced in 2023.

AEMO data to date points to a significant decrease in gas supply year-on-year with the winter peak to come. We suggest 2023 production numbers should already be factored into the ACCC forecasts which may not account for accelerating well abandonment and potential push back to new projects.

However, all the projects as listed require material capital and sustaining capital investments including new pipeline inter-connections. Additionally, these projects may not provide the scale of production growth or reserves potential to create a fundamental shift in supply, particularly after accounting for the decline curves in major production hubs and ullage in export facilities.

Are import facilities the wildcard?

Assuming the approvals process is navigated in a timely manner, perhaps an import facility could be operational sometime in 2025, but the issue will be securing third-party supply in a global gas market benchmarked against international crude oil prices.

Although the forward crude oil curves are pointing to the expectation of weaker prices across the forecast term, there is significant volatility in short-term pricing and on long-run assumptions (US\$75/b, 0.75c [A\$100/b]) the starting reference price will likely be A\$16-17/gj ex-transport and re-gas costs.

Importantly, once operating, an import terminal(s) would set an import parity pricing (+) benchmark for gas supply at the margin into gas hubs.

The economics of LNG import options remains somewhat problematic depending on the differential of the supply-demand prices.

Gas prices...no longer locked to \$12/gj

Although the portfolio of reported growth and development opportunities can be considered incremental on an holistic basis to east coast gas supply, the opportunities are meaningful and in some ways transformational to individual companies.

Over the course of the next 18 months or so, we can see a number of companies making the transition from explorer to producer and/or building on existing supply platforms.

In our view, the most critical constraint in the small-cap space will remain access to capital.

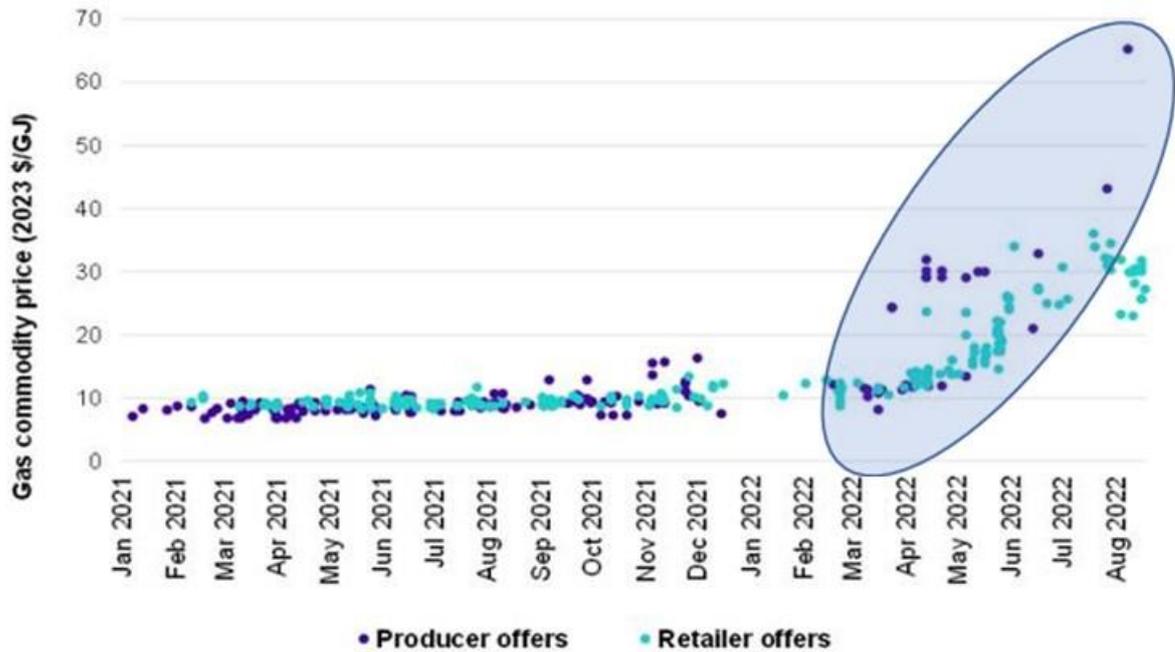
Forecasting future gas prices is the unicorn, particularly given the political issues associated with energy prices through the transition period to renewables and into the next federal election. There is the spectre of materially rising gas prices and increasingly shrill noises being made by commercial and industrial (C&I) gas users on economics, job losses and capacity closures.

As a long-term, arms-length observer we can point to history and suggest that upstream industry commentary has been highlighting/warning on rising gas prices for at least the past 15 years, with increasing volume.

Anecdotally, we believe gas buyers continue to approach existing or emerging gas producers pre-emptively on east coast gas supply for 2024 and beyond and have been discussing prices well in excess of a nominal \$12/gj benchmark.

There is somewhat of a disconnect between the headline noise and what is happening on the ground in a practical sense.

Exhibit 12: The most recent AEMO data points to a wide range of gas price bids and offers across 2023



Source: AEMO data

Appendix B – The Bowen Basin Gas Play

The Bowen Basin lies predominantly in eastern Queensland with the southern-most tip extending into New South Wales.

Maximum sediment thicknesses can be found into ‘depocentre’ features – the Taroom Trough to the east and the Denison Trough to the west. The State Gas areas are primarily situated along the Denison Trough, where a thick sequence of sands and coals were deposited.

We cite a recent APPEA presentation as the source for part of this commentary, highlighting the gas prospectivity and development methodologies used throughout the basin and relative differences from north to south.

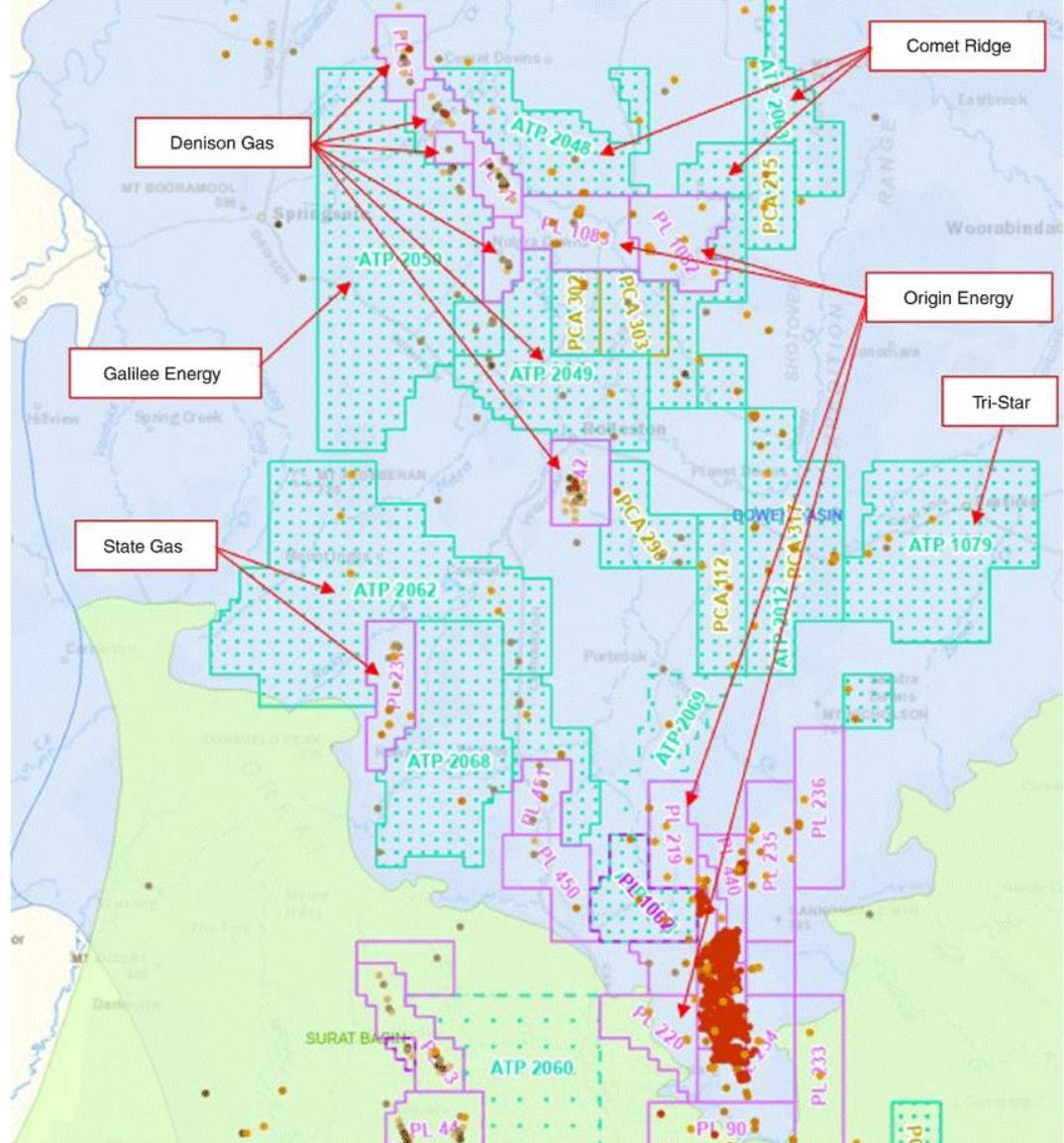
Technology review of the Northern Bowen and Galilee basins

Michael P. Scott, Raymond Johnson Jr, Janny Spilsbury-Schakel and Andrew Garnett

The APPEA Journal #63 90-109

Published: 11 May 2023

Exhibit 13: Areas relevant to State Gas including analogue wells and projects



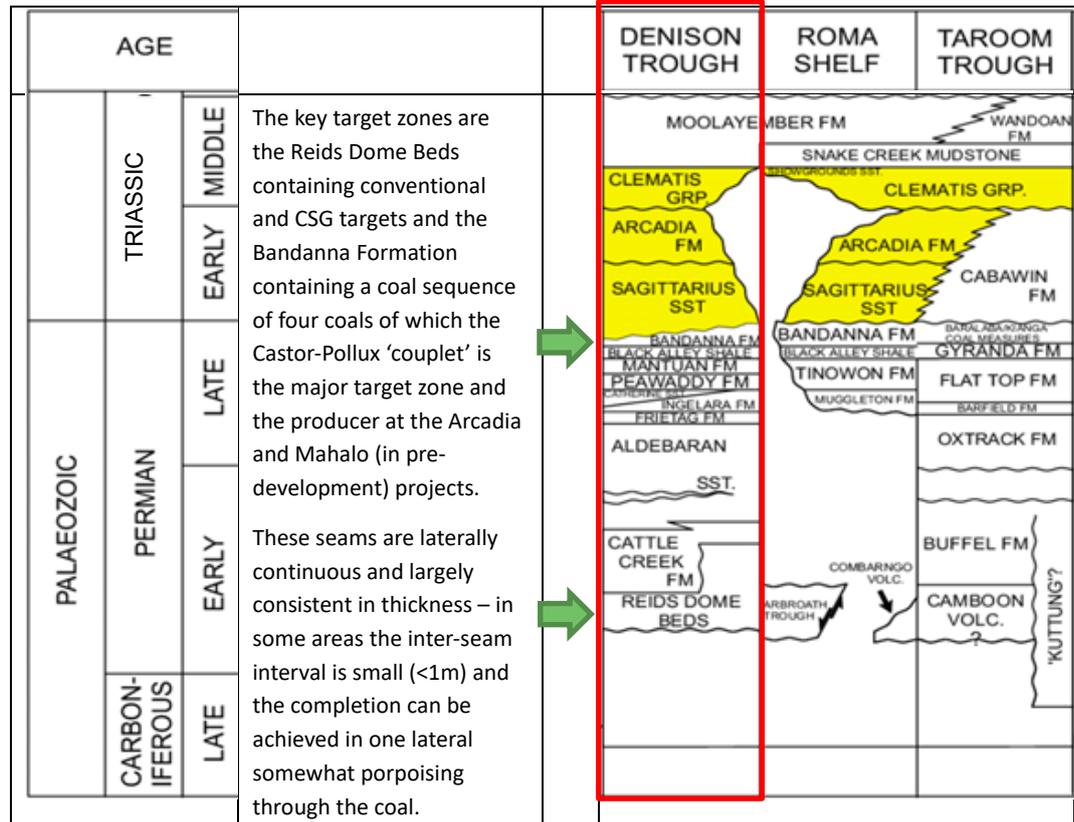
Source: APPEA Journal as referenced above

Note: The majority of the tenements that are not labelled in this Exhibit are operated by Santos

As reported, over 100 hydrocarbon discoveries have been made in the Bowen Basin, with approximately one-third becoming producing fields.

Economic hydrocarbon discoveries have been made through the stratigraphic sequence, however, “...the most important reservoirs are in the Early Permian and Middle Triassic”. Proven plays are both conventional and unconventional, mostly structurally controlled anticlinal closures and fault rollovers (conventional) and a transformational CSG fairway.

Exhibit 14: Highlight the structural trend and target zones applicable to State Gas



Source: APPEA Journal as referenced above



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RaaS Advisory Pty Ltd

ABN 99 614 783 363

Corporate Authorised Representative, number 1248415

of

BR SECURITIES AUSTRALIA PTY LTD

ABN 92 168 734 530

AFSL 456663

Effective Date: 6th May 2021

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Contact Details, BR and RaaS

BR Head Office: Suite 5GB, Level 5, 33 Queen Street, Brisbane, QLD, 4000

RaaS. 20 Halls Road Arcadia, NSW 2159

P: +61 414 354712

E: finola.burke@raasgroup.com

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