

### Natural gas and helium – nothing to laugh at

D3 Energy Limited (ASX:D3E) represents a compelling investment case leveraged play on natural gas and helium projects in South Africa. The association of natural gas with globally significant helium concentrations gives the company a material point of differentiation compared to its listed upstream peers. D3E has delivered significantly positive results through its first stage drilling and testing activity supporting an independent certification of initial reserves and resources underpinning a Production Right Area (PRA) application that could see the company at a project sanction stage by end-2026. From listing to project definition in under two years would be an impressive outcome. The producing Virginia Gas Project in the immediate vicinity of the company's tenements provides a working development analogue and perhaps a mechanism to leverage the commercialisation pathway. Critically, the gas resource is biogenic in nature – it recharges – and could potentially deliver 'open-ended' upside. The positioning in South Africa is strategic in a country facing a gas deficit with strong political support. D3E has recently added a new early-stage opportunity with tenements in the Arckaringa Basin (South Australia). We believe D3 Energy is carving out a niche in the global energy landscape by tapping into overlooked helium and gas plays in a region hungry for reliable energy.

#### Business model

D3 Energy is a play on the natural gas supply growth and energy self-sufficiency strategy of South Africa complemented by world-class helium concentrations, looking to leverage its early discovery and appraisal success into production, having submitted a PRA application. The economics of the play are well supported by an investment friendly fiscal environment, very low drilling costs and a globally significant helium opportunity in a supply constrained, high commodity price environment. The company is looking to use its early-mover advantage and proximity of the Virginia Gas project analogue to accelerate its path to first gas. The initial PRA is supported by resource certification representing only ~3% of its total permit area and delivering 'first gas' can establish the platform to unlock the transformational opportunities within its remaining tenement holdings. We believe the recent securing of Arckaringa Basin (South Australia) exploration permits signals its intent to seek new opportunities on a global basis. Importantly holding its assets at 100% provides additional future financing options.

#### The next 12 months to set up for production

Early results have proven a natural gas and globally-significant helium play with sufficient definition to progress an initial production application. Further drilling and testing is required to absolutely constrain the greater resource opportunity and production case as biogenic gas 'recharges'; and to better determine the capital requirements – how big and how long for how much. Delivering a project sanction by say end 2026, would likely be considered a game changer and critical validation of the project on a commercial basis, crystallising value. In practical terms, 2026 will be about determining the optimal engineering (processing design), securing conditional gas and helium sales agreements, more wells and more testing. Pretty much more of everything. On the success case it's not unrealistic to view the development case as somewhat 'open-ended' in terms of production and valuation.

#### We assign a NAV of \$307m (\$2.54/share) at the mid-point

Quantifying early phase upstream gas businesses can be a highly subjective exercise, particularly when pre-development projects retain degrees of technical and financing risk. **But this is where the short-term value lies – in commercial proof of concept.** We set our NAV range against risk-weighted development outcomes benchmarked to peer-group reserves metrics, noting that **the production case is heading towards project approval validation over the next 12-18 months where the commercial potential should be strongly defined** and risk weightings transfer to construction and commissioning. Our NAV range is set at \$195-379m (\$1.61-3.14/share) with a mid-point of \$2.54/share. The share price currently represents a market risk weighting of ~80% to our mid-point valuation.

Energy

17 September 2025

#### Share Details

ASX code	D3E
Share price (16-Sept)	\$0.475
Market capitalisation	\$57.4M
Shares on issue	121M
Net cash (est)	~\$5M
Free float	~40.5%
Avg daily volume (12 mths)	0.2M

#### Share Performance (12-months)



#### Upside Case

- Successful drilling and testing materially extends the prospective area and helium concentrations.
- Granting of the PRA and rapid progress to project sanction.
- Projected commodity prices rise above expectation.

#### Downside Case

- Future well results disappoint and point to more complex geology...complexity means cost.
- Delays in the regulatory process push back nominal timing.
- Analogue production plant under-performs.

#### Board and Management

David Casey	Managing Director/CEO
Greg Columbus	Chairman
Matthew Womer	Non-Executive Director
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## D3 Energy Limited – A Dual Gas Strategy

D3 Energy Limited (ASX.D3E) is a newly listed ASX listed company (13-May-2024), raising \$10m for the exploration and appraisal of its natural gas and helium projects in South Africa's Free State Province. The company is actively seeking to selectively expand its portfolio of early-stage opportunities and has recently secured new tenements in the Arckaringa Basin (South Australia)<sup>[1]</sup>. First stage drilling and testing; and re-evaluation work on legacy wells have been completed on the key tenement (ER 315) since listing, supporting the independent certification of initial reserves and resources (helium and methane). The gas source is defined as biogenic with active recharge and as such, the 'value upside' could be considered as unconstrained. The data-set to date confirms "...world-class helium concentrations of more than 5.0%" which underpins a potentially strong commercial case. The company has had its initial Production Right Application accepted by the government<sup>[2]</sup>, a critically important first step towards first production. The initial focus on South Africa is strategic, securing tenements immediately adjacent to the Renergen Limited (ASX.RLT) producing Virginia Gas Project, providing a development and economic analogue for commercialisation. In that regard, in combination with the very low capex nature of the gas plays, the upstream risks should be considered as comparatively low. South Africa's regulatory and fiscal regimes are highly supportive for upstream gas development with strong political support in a country facing a critical and impending energy deficit<sup>[3]</sup>. We suggest the demand for additional domestic gas supply, positions D3 as a key player in the country's energy supply and transition strategies. Whilst natural gas is commercial in its own right, the helium option provides an intrinsic point of commercial differentiation given projected demand growth, against constrained global supply delivering high pricing<sup>[4]</sup> for a commodity captured as a by-product.

[www.renergen.co.za](http://www.renergen.co.za)

## Investment Case...What Can The Near Future Deliver?

In our view, D3 Energy Limited represents a compelling investment case based on its strategic position as a dual commodity play with the potential to deliver a material re-rating in the period to end-2026.

The company has a number of unique characteristics which differentiate it from its direct operating peers and ASX-listed alternatives.

- High helium concentrations that can be considered as world-class<sup>[4]</sup> and significantly higher than many competitors (refer Exhibit A).
- Biogenic gas generation which implies strong continuing gas generation and recharge. On a drilling success case we could perhaps consider the prospectivity as a probability play rather than exploration weighted, with EURs (Expected Ultimate Recovery) 'open-ended' on a practical level.
- Unlike most helium players, D3E is pursuing a dual-continent strategy, being active in both South Africa and Australia, giving it geopolitical and geological diversification.
- Shallow wells and repurposed boreholes (like RBD01 and RBD03) reduce costs and can accelerate timelines making the company a low-capex evaluation and development operator.
- With helium prices surging globally, D3E's move to secure production rights appears strategically well-timed.
- Methane and helium provides dual commodity revenue streams...two for the cost of one.

On a return to drilling and progress through the Production Right Application process, the period out to end-2026, could underpin a material re-rating for the stock.

Positive results from further in ground evaluation works, would likely generate a significant reserves upgrade and put the company in a strong pre-development position, in our view.

## Catalyst rich over the next 12 months

Having potentially transformational assets is only part of the price discovery and re-rating equation...there needs to be a time line to de-risking and the success case; and the next 12 months can provide a number of material value accretion outcomes we suggest.

### South Africa

#### Granting of Strategic Integrated Project status

The Strategic Integrated Project programme is a South African government initiative where the government has pledged to focus building the infrastructure required to support new developments recognised as “...aimed at improving the quality of life for all South Africans”.

<https://www.gov.za/blog/strategic-integrated-projects>

#### Contingent Resource upgrades

...incorporating ER 386 (refer Exhibit 4)

#### Potential reserves upgrades

More drilling and flow rate testing can deliver data to support an uplift in certified reserves.

#### Gas Sales Agreement for PRA

This would be a material outcome and set the platform for the capacity of the first production project and as a basis for debt financing.

#### Granting of the PRA

Expected Q4 2026 / Q1 2027

### South Australia

#### Booking Prospective Resource estimates for PEL 121

...a look-through to the resource potential

#### Securing a partner for the drilling of the Hydrohelix Prospect (PEL 121)

#### Drilling Hydrohelix

Successful outcomes through this activity can provide the basis for transforming proof-of-concept opportunities to probability plays...unwinding the risk and crystallising to a NPV case.

## A Risk-Adjusted Valuation Range Of \$195m-379m

We ascribe a value range for D3E from \$1.61-3.14/share **with a mid-point (base case) of \$2.54/share**, noting the closing share price of \$0.495/share (15-Sep) represents a 70% discount to the low end of the NAV range.

We highlight that discounts of this magnitude are not unusual in the small-cap energy space where companies, like D3E are usually asset rich with transformational upside on derisking and upscaling the business success case. The key to closing the valuation gap is to progress commercial outcomes by working assets and delivering development quality gas (bankable) reserves.

There's low-hanging fruit that can be realised though final approvals on the PRA and further drilling evaluation across ER 315 out to end-2026. The magnitude of any rerating will likely be determined by the continuing delivery of strong gas and helium rates and upgrades to reserves (P gas) as a result.

### Exhibit 1: The NAV range represents a material premium to the market price

	Pr	Risky range (A\$m)			
		Low	Mid	High	
PRA	75%	\$32	\$99	\$131	'P' reserves although small and nominally pre-commercial. The reserves represent only ~10% of ER 315.
ER 315					
Contingent Resources	30%	\$143	\$183	\$219	Based on a risk-weighted value multiplier assuming conversion of 'C' to 'P' and a commercial outcome.
Other assets		\$20	\$25	\$30	Nominal only - includes permits (ex-ER 315), technical study areas and South Australian holdings.
		<b>\$195</b>	<b>\$307</b>	<b>\$379</b>	
Net cash/(debt)			\$5		
Corporate			(\$5)		
<b>TOTAL</b>		<b>\$195</b>	<b>\$307</b>	<b>\$379</b>	
Ordinary shares (m)	121	\$1.61	\$2.54	\$3.14	

Source: RaaS analysis. Risked ranges based on discretionary RaaS adjustments  
Reserves and resources data – refer **Exhibit 7**

In circumstances like this, establishing the nominal value range of a company on a pre-development/production basis is a somewhat discretionary exercise as it depends on the discretionary application of an analyst's assumptions and weightings against uncertain development outcomes.

We broadly value the commercial opportunities represented in the resource base by applying an estimated unit gas value overlain by discretionary probability weightings (1-risk %), that reflects the position on the commercial timeline and project definition of the reserves.

Assigning values to Contingent Resources is always subjective and somewhat arbitrary. Whilst there is no specifically defined pathway to production at scale, the immediately adjacent, producing Virginia Gas Project can serve as a working analogue.

Translation of 'C' resources to bankable 'P' volumes should be relatively low risk by virtue of the low capex and inferred operating costs; and the nature of the gas resources themselves – with the high-value helium by-product and **biogenic nature of the gas resource (recharge) which likely understates the gas potential as measured.**

**We would highlight the added complication from the biogenic nature of the gas...it recharges.** So 'normal' application of a reserves production scenario, where we'd produce out the reserves and resources base is offset by the rechargeable nature of the gas generation for any given well.

In our valuation methodology, we attempt to capture this upside through adjusting probability weightings which will certainly be subject to change as further test data comes to hand, particularly on the asymptotic production level of the wells – the rate at which production = recharge.

To derive our value, we apply successive iterations of discounting/risk weighting -

- Converting contingent volumes to a nominal 2P equivalent using somewhat arbitrary weightings which vary between gas categories.
- As the number of completed wells in the play is somewhat small, there will be some intrinsic geological uncertainty and longer-term testing will be required to determine the steady-state production rate.
- Assign base-case average realised gas prices for both methane and helium. In this case **we assume US\$10/mcf for methane and US\$500/mcf for helium**, which can be considered very conservative within the context of the current demand for both products locally and internationally.
- The key sensitivity to our NAV is the assumed helium price which broadly moves on a 1:1 basis (a 10% change in He generates a 10% change in NAV) whilst methane leverages on a 10% : 2% basis.
- Assign a 'unit NPV' margin ranging from 20% to 30% for greenfield gas; although given our nominally low operating and capital cost assumptions, the margin could be materially higher.
- Apply a subjective risk weighting overlay which captures development uncertainties on timing, capex, scale and financing.

We have included comparative gas metrics to highlight where D3E sits against a portfolio of ASX listed gas plays but would highlight that apart from Renegen there is no absolute like-like comparison.

However, we should be cautious drawing conclusions on value on an absolute basis. The data should be used indicatively on a directional and 'multiple upside' potential basis.

**Exhibit 2: The peer group metrics point to the rerating upside on delivering a production outcome**

Company	Ticker	Share Price	Issued Shares	Capitalisation	2P	2C	MC/2P	MC/2(P+C)
		A\$	(m)	A\$m	PJ	PJ	A\$/gj	A\$/gj
Strike Energy	STX	0.105	3,297.9	346	270	69	1.28	1.02
Central Petroleum	CTP	0.060	745.3	45	73	52	0.61	0.36
Comet Ridge	COI	0.115	1,196.4	138	247	180	0.56	0.32
<b>Renegen Energy</b>	RLT	1.130	148.7	168	408	287	0.41	0.24
Blue Energy	BLU	0.007	2,128.6	15	71	1,640	0.21	0.01
Vintage Energy	VEN	0.005	2,086.9	10	51	65	0.20	0.09
Tamboran Resources	TBN	0.170	3,554.2	604		2,403		0.25
Beetaloo Energy	BTL	0.297	1,237.8	368		1,739		0.21
Omega Oil & Gas	OMA	0.435	245.9	107		1,730		0.06
Elixir Energy	EXR	0.044	1,399.6	62		2,866		0.02
<b>D3 Energy</b>	D3E	0.500	120.8	60	12	512	nm	0.12
<b>D3 Energy (@NAV)</b>		2.539						0.59

Source: Company data; \* COI 2C excludes gas Galilee Basin resources. \*\* TBN are quoted on a CDI basis  
 nm = not meaningful  
 Share prices as of close of trading 12-Sep.

It is not unreasonable to suggest that the success case for D3E including the granting of a Production Right, could underpin a rerating of the reserves metrics to levels comparable to stocks in production and/or pre-development (in a FEED process), say COI and CTP which represent de-risked gas (reserves and development pending resources).

Benchmarking in direct comparison to RLT as an analogue, against our NAV (mid-point) compares favourably as a rerating target. Further field success and progress to a production phase likely should deliver an equivalent risk status to D3E's 2P+2C volumes. The natural extension of the success case should (could) support a higher look-through metric.

Our NAV model is dependent on continuous progress towards production at scale. We are comfortable with our discretionary risk weightings.

**We reiterate the subjective nature of this analysis, particularly on a pre-development basis and reiterate that the range as noted is subject to material adjustment as current projects advance to FID and new opportunities begin to firm.**

## SWOT – Strengths Outweigh Weaknesses

We see the SWOT balance tilting more to strengths and opportunities particularly given the company's early-mover advantage in securing highly prospective tenements underpinned by positive first evaluation results. Low capital costs and high leverage to the helium success case provide a platform for potentially transformational value accretion.

### Exhibit 3: SWOT analyses – niche play ready to leverage energy and helium growth options

Strengths		Comments
<p><b>A strong acreage position in a highly prospective location.</b></p> <p>...with high working interests</p>	<p>The best place to be in an exploration sense is next to existing production – this provides the 'proof-of-concept' platform and ready commercial benchmarking. As much as exploration is a speculative business by definition, adjacent success simply lowers the 'finding' risk.</p> <p>Holding 100% of the interests means control of the cost and speed of programmes and expenditure with the flexibility to pivot to focus on 'sweet spot' results.</p> <p>High working interests also provide financing options via partnering.</p>	
<p><b>Helium is a key driver of the value proposition.</b></p>	<p>Natural gas is good but helium makes the play and the evaluation results indicate the company is delivering the strongest concentrations in South Africa to date at 5%+, with the potential to generate excess returns on low capex.</p>	
<p><b>Capex is low ('more bang for the bucks')...which suggests returns could be high.</b></p>	<p>Being shallow to target (200-400m), drilling costs are low on a comparative and absolute basis, which lowers the threshold for commerciality.</p>	
<p><b>A strong commercial operating environment and political support.</b></p>	<p>The <b>South African regulatory regime</b> is strongly supportive on a both a compliance and fiscal basis with pro-development government policies particularly towards energy (in)dependence and the critical role of gas in the future energy mix.</p> <p><b>Gas prices</b> are sufficient enough to support and encourage upstream exploration and the transition to production. The <b>helium outlook</b> through 2030+ is for sustained demand growth and rising prices.</p>	
<p><b>An early-mover advantage...</b></p>	<p>...in an as yet overlooked play and location.</p>	
<p><b>Biogenic methane means constant recharge...</b></p>	<p>...in a practical sense the gas reserves could be considered somewhat open ended on a per well and total basis, with helium concentrations consistent over time and that's a bonus outcome.</p>	
Weaknesses		Comments
<p>Company financing remains largely dependent on equity markets in the short-term.</p>	<p>This is the 'market curse' of small exploration companies. <b>Success case outcomes through the discovery and evaluation phase can mitigate the risks</b> – potentially limiting equity dilution.</p>	
<p>From an investor's perspective, domestic (Australian) funds have historically assumed higher sovereign risk weightings to African assets (ex-mining)...</p>	<p>...making price discovery potentially problematic particularly for niche business offerings like helium. We would highlight that on a project or M&amp;A level, corporates don't appear to have the same risk concerns. Delivering programmes on time and to budget would demonstrate material and continuous progress on the commercialisation pathway. <b>Markets are more likely be reactive to success outcomes, we think.</b></p>	
<p><b>Is there an acquisition opportunity unfolding here?</b></p>	<p>As an early-mover in an emerging industry sector, the nominal potential of the company as an acquisition opportunity seems reasonably strong. We suggest that it's likely any corporate interest would be dependent on commercial derisking. Should successful works in the next 12-18 months fail to be reflected in the share price, it's likely any potential deals would be pitched at a discount.</p>	
Opportunities		Comments
<p>With "<b>...a producing analogue 'right next door'...</b>"</p>	<p>...there are lessons to be implemented from missed opportunities for co-operative development in other, global gas developments. D3E has production options from scaling stand-alone facilities through tolling arrangements and / or leveraging the infrastructure footprint of Renegen's Virginia Gas Project.</p>	
<p>Diversification - with the company looking to apply its IP to other jurisdictions.</p>	<p>It's not just a South African story. D3E is actively seeking other gas-He plays on a global basis as evidenced by its entry into the Arckaringa Basin (South Australia).</p>	
<p>Potential to move into (production) rapidly.</p>	<p><b>The aim is for first gas sales in late 2027 or early 2028.</b></p>	
<p>Strategic timing – a good time to be chasing helium.</p>	<p>We suggest the risk on helium demand and pricing is subject to above consensus growth.</p>	
Threats		Comments
<p><b>Financing.</b> Companies on a pre-cashflow basis are dependent on external financing.</p>	<p>Equity raising and short-term debt funding options remain on the table and the quality of any partnering outcomes naturally comes down to price, although as a low capex play, equity financing should not be overly onerous...a little can go a long way.</p>	
<p>There is always 'some' sovereign risk...</p>	<p>...particularly in the currently volatile global political landscape. In an evolving energy operating environment, there is always the potential for a mismatch between the regulatory and financial requirements...and politics is politics. Whilst the potential for gas price controls in particular is low, it is not zero and the path to first gas is never smooth.</p>	
<p>The success case bring competition for acreage, services and capital.</p>	<p>On the basis that 'you can't monetise a secret', the more progress that is made and the stronger the commercial case, the more interest and competition will emerge as a result. There are benefits from increasing activity, particularly in terms of the roll-out of infrastructure but that is usually longer term with short-term risks to services (cost inflation) and acreage availability – local and global.</p>	

Source: RaaS commentary and analysis

## A Dive Into The Asset Base

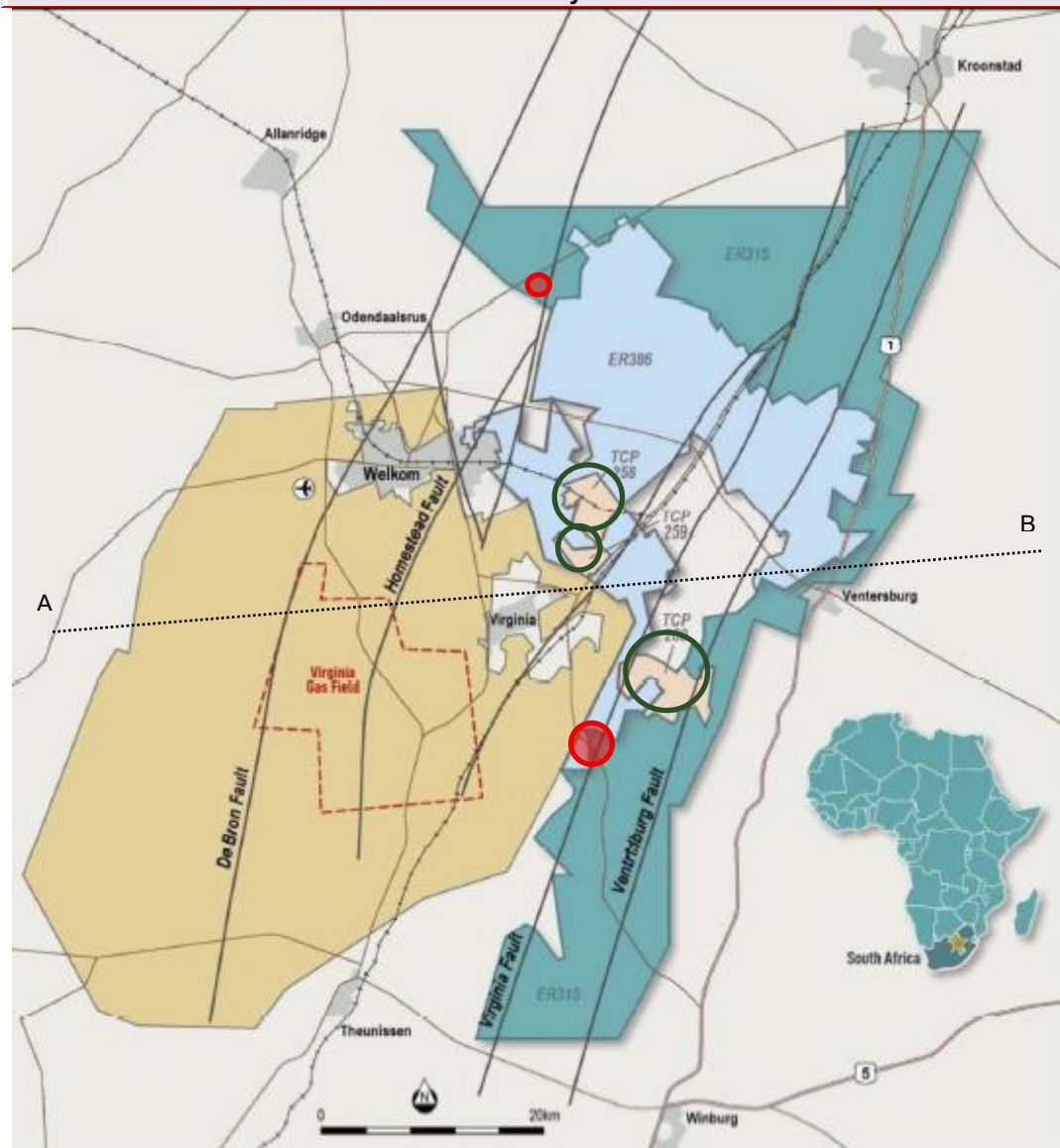
D3 Energy hold a portfolio of exploration focused natural gas and helium opportunities in South Africa and Australia.

The company holds four tenements totalling 395,892 acres (ac) or 160,000 hectares (ha) located in the Free State Province of South Africa and as described “...defined by their low-cost nature and high prospectivity, making exploration and development economically competitive”. Results of drilling and evaluation to date, strongly support that premise.

[www.d3energy.com.au](http://www.d3energy.com.au)

Within the South African portfolio, the company’s key asset is ER 315 (95,000 ha), located immediately to the east of the Renegen Limited producing Virginia Gas Project.

**Exhibit 4: Tenement locations and areas of activity – there’s more surface to scratch**



Source: Company data (D3E areas in green covering the Virginia and Ventersburg faults)

● Zones of initial drilling and evaluation activities across 2024-2025

● Recently granted Technical Co-operation Permits (TCP 258, -259, -260)

## A look at the South African gas play...

The company's permits are located some 250km south of Johannesburg in the eastern part of the Greater Karoo Basin<sup>[5]</sup>. The petroleum potential of the basin is considered to exist in three **unconventional play types**: shale gas, coal seam gas (CSG) and biogenic gas.

Early oil and gas exploration undertaken through the 1960's was commercially unsuccessful and the focus of drilling activity shifted to the onshore. It has only been relatively recently that the Karoo Basin has been revisited as a potentially prospective exploration area, largely on the commercial success of unconventional developments in CSG and shale gas globally.

Whilst the interest in the shale and CSG plays is increasing it has yet to translate into significant in-ground activity. Recent success cases **increasingly highlight the strong prospectivity of the third play – biogenic gas**, producing from the Virginia gas project and with D3E having a maiden Production Right Application accepted<sup>[2]</sup>.

Gas (with associated helium) is believed to have migrated from the underlying Witwatersrand Basin and being considered to be biogenic in origin, is constantly replenished...**a different association of 'renewable energy'**.

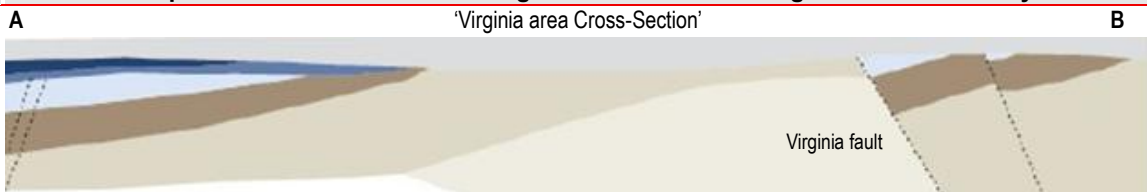
We would highlight that as yet on a limited number of data points (wells and long-term production measurements) the rate of replenishment is still to be confirmed. However, anecdotally local gas shows at the surface have been recorded as producing for years without showing any evidence of depletion.

The company has evaluated a number of its legacy wells (termed as 'blowers') across its recent works, **confirming the continuous nature of the flow rates**.

More production data needs to be garnered to enable the determination of asymptotic flow (essentially the point at which recharge equals production), but on a practical operating basis, long-life, stable rates could translate to –

- **open-ended(?) per well gas recovery rates (EURs);**
- **open-ended(?) gas reserves potential;**
- **rapid transition of development drilling to a 'high-confidence probability' based outcome; and**
- **materially lower sustaining capex complementing expected low initial development capex.**

### Exhibit 5: Simplified Cross-section of the Virginia Area demonstrating the fracture density

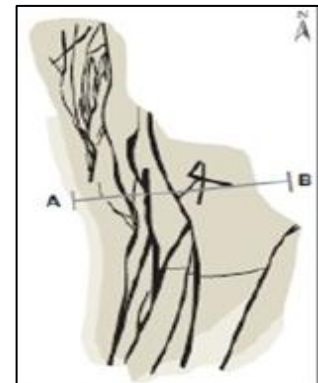


For simplicity, we will refer to the company's area of operations as the 'Virginia area'.

The Virginia area is "...structurally complex, with (a high density of) fracture zones trending approximately north-south and east-west intruded by dykes and pipes<sup>[6]</sup>."

The highly fractured and intruded network of the geology is considered to represent the critical gas migration pathways and structural control (locus) for gas accumulations.

As per **Exhibit 4**, the Virginia Fault runs close to the western tenement edge of ER 315.



Source: Petroleum Agency of South Africa

We highlight that D3E has been focussing its drilling activity along the known major fault lines (**refer Exhibits 4 and 5**) which has yielded strongly positive results.

We believe the ER 315, 2026 appraisal programme includes the acquisition of new telluric and seismic data and the drilling of multiple wells focussing on targets at shallow depth, around the areas of known blower wells and identified fault zones.

The programme is expected to be low-cost given the capex incurred to date with drilling and testing coming in at around A\$200k per well; and considered as low-risk drilling.

Understanding the extent and mechanisms of the structural trends is likely to be the critically important element in targeting future gas intersections.

**Exhibit 6: Summary of well results - highest helium conc in RBD 01 and 'new' prospectivity in the north**

Well / location	Ave flow rate mcf/d	Test duration	Gas composition (%)		
			He	CH <sub>4</sub>	
RBD 03	194	16 days	5.1	87.1	Recent workover of the well resulted in a 32% increase in flow rate. The well was originally drilled in 1982.
RBD 10 (re-test)	191	~7 days	4.7	87.7	Peak rate was recorded at 310 mcf/d.
RBD 01	93	15 days	6.2	85.6	The well has produced He concentrations as high as 8%.
RBD 12	5		4.8	84.3	
RBD 11	RTSTM		5.1	85.0	Diagnosed with bore-hole damage. Subsequent testing delivered low rates but cleaning up over time.
Nooitgedacht Major	95	14 days	5.6	83.2	Located some 40kn NW of the main testing area and has demonstrated gas potential extends to the north.

Source: Company data (various quarterly reports and presentations). Refer **Exhibit 4**

The summary of results in **Exhibit 6** demonstrate the highly consistent nature of the gas concentrations across the permit and importantly "...confirm (the working) geological model that gas (both helium and methane) migration (is) a function of faulting and associated fractures below the base of the Karoo Formation"<sup>[2]</sup>.

This recent exploration work has also led to the independent certification of reserves and Contingent Resources of helium and methane as per **Exhibit 7**.

**Exhibit 7: Initial gas reserves / resources – we expect 'P' volumes to grow in 2026**

Bcf	Reserves			Contingent Resources		
	1P	2P	3P	1C	2C	3C
Gross gas	7.2	14.4	23.0	329	533	825
<u>Gas composition</u>						
Net Helium (He)	0.4	0.7	1.1	13	22	34
Assumed He conc		5.6%			4.1%	
Net Methane (C1)	5.5	10.9	17.4	286	462	724
Assumed C1 conc		86.5%			86.7%	

Source: Company data<sup>[7]</sup>

We note that the reserves attribution is small and could be considered as sub-commercial, but it represents "...~3% of all contiguous tenements held by D3E". We understand the volumes are sufficient to support the recently submitted Production Right Application.

**A Production Right Application has been submitted and accepted**

The company has indicated it has lodged and had accepted an initial Production Right Area application (PRA) at ER 315 "...to be located in the southern portion of the permit () around the areas of RBD 01, RBD 03, RBD 10 and RBD 12 wells which were successfully production tested delivering significant helium results in produced gas, including a helium concentration of 6.2% at RBD 01"<sup>[2],[8]</sup>

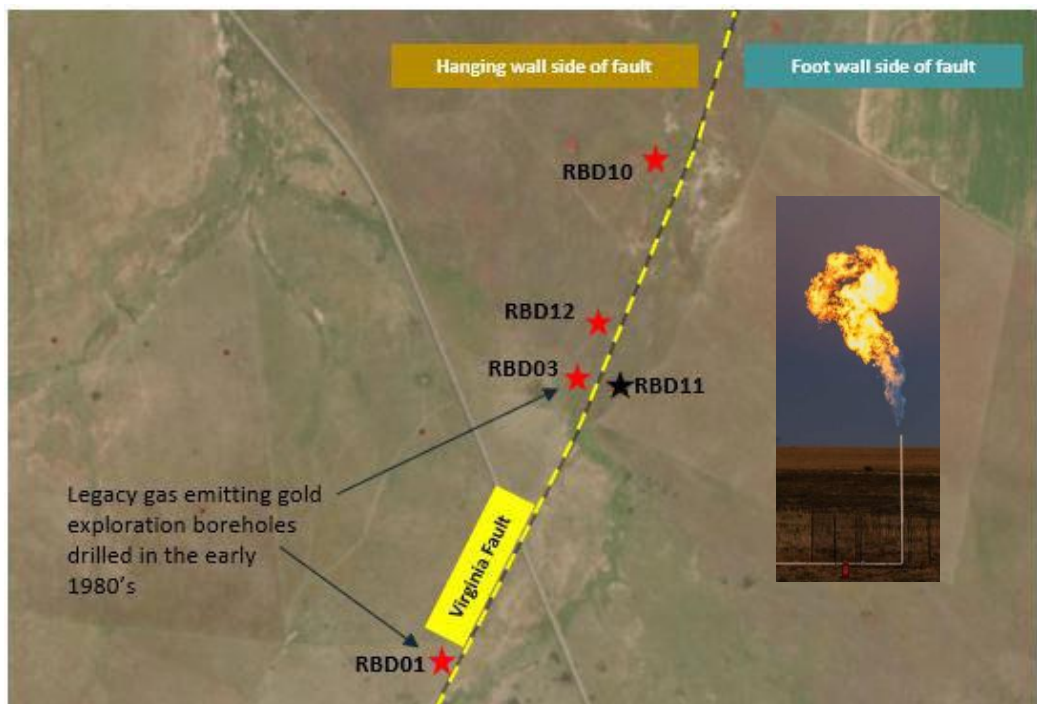
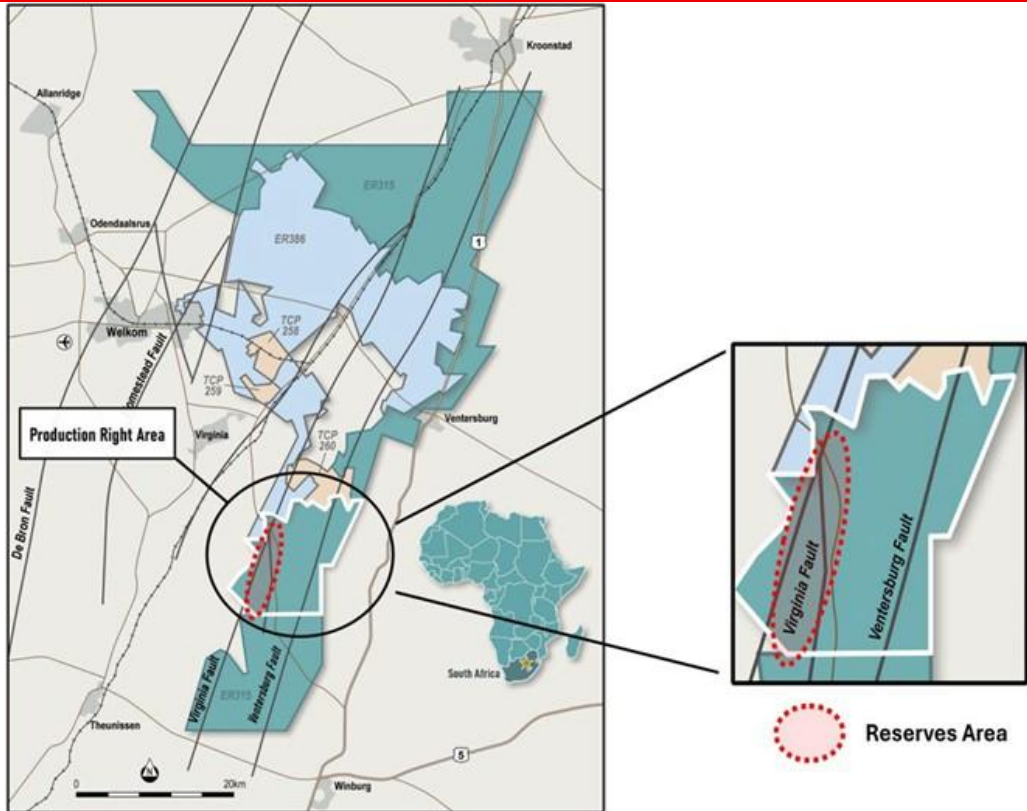
The reserves volumes as attributed apply to only "...the initial 16 wells planned along the Virginia fault line", however, we understand the PRA encompasses a potential 43 development well campaign across the application area – refer **Exhibit 8**.

The company has indicated its expects the nominal granting of the PRA to take around 18 months – in Q1'27.

It is worthwhile highlighting that the submission of the PRA has come some 15 months since the listing of the company and commencement of the initial drilling and testing activity representing “...a major technical and commercial milestone.

In any context, **this is a remarkably positive achievement** from the proof of the geological model, evaluation of legacy well bores; and drilling and testing of new wells to deliver data in support of a line-of-sight to first production (pending).

**Exhibit 8: The Production Right application area - small but significant**



Source: Company data (including snapshot of RBD-10 gas flare)<sup>[9]</sup>

The company has also been awarded three new Technical Co-operation Permits (TCPs) in areas adjacent to ER 315 (and ER 386) designated TCP 258, -259 and -260 – refer **Exhibit 4**) which are granted for one year on a 'desk evaluation' basis, which translates to exclusive exploration rights. The footprint is only getting bigger.

### **Biogenic Methane Generation**

The natural gas in this region of Free State is unique in that it is classified as being of **biogenic origin**, by definition meaning it is produced by **microbial activity** rather than thermal decomposition of organic matter.

Gas is **continuously generated at depth and migrates to the surface through natural fractures.**

As evidenced and note throughout the report, the gas contains >90% methane and unusually high concentrations of helium, which is generated from the radioactive decay of uranium and thorium present at depth.

The microbial colony "...has adapted to use radioactive energy as a heat source"<sup>[6]</sup> (akin to analogue processes in surface hydro-thermal pools associated with volcanic regions). On a global basis, whilst the occurrence of biogenic gas is relatively common, accounting for an estimated 20% of global gas discoveries, commercial biogenic gas developments are rare.

The Virginia Area represents not only South Africa's first onshore petroleum production and pre-development provinces, it is also one of the most geologically and biologically unique gas plays in the world.

The geological mechanism is relatively simple -

Groundwater circulates through large fault zones in the deep Witwatersrand Supergroup formations, interacting with bacteria which metabolises the carbon in the rock and groundwater, producing methane (CH<sub>4</sub>) as a byproduct.

The company's area of operations sits within the Vredefort Crater, the largest confirmed impact structure on Earth, which created the necessary structural trapping and migration systems to form a working (and regenerative) hydrocarbon system.

The system comprises a 'cap rock dome' acting as a comparative dam wall, that traps and accumulates gas, with an extensive system of faults and fractures allow gas to percolate upward. Later stage volcanic sills and impermeable sedimentary layers act as seals, helping retain the gas.

[www.d3energy.com.au](http://www.d3energy.com.au)

[www.renegen.co.za](http://www.renegen.co.za)

## ...South Australia adds diversification to the portfolio<sup>[10]</sup> [11]

In keeping with the company's stated strategy to selectively expand its portfolio of early-stage opportunities, D3E has recently (Jun-2025) been acquired new tenements in the Arckaringa Basin (South Australia), securing tenements PEL 121 and PEL 122.

These tenements encompass ~6,000 km<sup>2</sup>, but we caution that although these areas are considered to be highly prospective in exploration terms, this represents very early-stage, (frontier) activity so needs to be considered within the appropriate risk context as a longer dated opportunity.

The Arckaringa Basin offers a "...compelling combination of geological, geochemical, and strategic factors that make it a frontier target for both helium and hydrogen exploration".

That's a big and bold statement in isolation but the underlying technical reasoning on the plays looks valid, albeit as yet still broadly undefined.

### ■ Proven(?) sub-salt shows and analogues

- ...two of the only sub-salt penetrations in the Amadeus Basin recorded significant gas shows - **Mt Kitty-1** (9% [He], 11.5% [H], 13% [C1]) and **Magee-1** (6% [He], 39% [C1]).

### ■ Effective 'salt as a seal' geology

- ...the basin has thick halite and evaporitic sequences that should act as a major cap-seal;
- ...salt withdrawal and diapiric structures are readily visible on seismic, representing structural traps expected to be capable of concentrating helium and hydrogen.

### ■ Source and reservoir combinations tick the boxes

- ...organic-rich Permian shales above basement are considered as the primary hydrocarbon source;
- ...fractured basement zones beneath the salt offer secondary targets for hydrogen.

### ■ It's frontier exploration

- ...as we understand it, there have been no wells that have drilled through the full salt column into the primary sub-salt targets – essentially the play is largely untested, however;
- ...helium is a high-value gas and clean hydrogen is potentially lucrative in the energy transition markets, which can provide the success-case commercial underpinning for production.

D3E's tenements hold two prospects (Hydrohelix and Cootanoorina) and nine leads identified from the existing seismic data set, with the former considered as drill ready, subject to securing a partner and regulatory approvals, from mid-2026.

In broad terms, the Hydrohelix Prospect is considered to be an analogous target to the Mt Kitty well (referenced above) although a significantly larger target.

Within the context of an early-stage, first-mover asset, we see, the Arckaringa Basin as a stand-out, high-upside, low-competition opportunity.

## A comparison – D3E with Reenergy

Given the adjacent locations of D3E and RLT operations, we consider the use of Reenergy's Virginia Gas project as a development analogue as strongly valid and a pointer to the underlying value potential of the ER 315 area.

On like-like comparisons (refer **Exhibit 9**) -

D3E's **best recent flow rate** as recorded (RBD 10) compares well with the top end of RLT's portfolio.

We highlight the Nooitgedacht Major well that was materially lower on a raw gas flow rate basis but had "...an exceptionally high helium concentration" at 5.6%, which on economics has the potential to deliver a similar or greater unit value than corresponding higher-volume, lower-helium gas wells.

The look-through from the Nooitgedacht Major results suggest the high concentration helium play evident in the RBD wells, potentially extends through the north of the permit and could represent some of the highest **helium concentrations** reported in South Africa's onshore plays.

Although RLT grades are lower they are still commercially significant as evidenced by being in production...lower grades perhaps but relatively high gas production rates underpin the economic case.

D3E's wells are shallower at 200–600m, which should translate to **lower drilling and completion costs** versus RLT's completions, which are likely to hold a higher sustaining gas flow rate (deeper means higher pressure and generally being able to hold an economic flow rate for longer).

D3E is in an early appraisal/production application phase whilst RLT is producing and generating sales revenue with a Phase 2 expansion underway.

**Exhibit 9: Well to well comparisons highlight the helium concentration advantage of D3E**

	Well / location	Av. flow rate mcf/d	Test duration	Gas composition		
				He	CH <sub>4</sub>	
D3E (ER 315)	RBD 10 (re-test)	264	6.9 days	5 - 6%		Southern area
	The gas composition was not disclosed in the re-test results but earlier wells recorded similar helium concentrations within this range					
	Nooitgedacht Major	95	14 days	5.6%	83.2%	Northern area
RLT	Various wells across the Virginia Gas Project	Typically 120-200	'multi-day'	2 - 4%	85 - 90%	

Source: Company data (various quarterly reports and presentations)

It is worthwhile conducting a relatively high-level comparison between D3E and RLT to generate a simplified **per-well value-model** as the basis for an economic look-through to the development opportunity – refer **Exhibit 10**.

We caution that the general assumptions we have made with respect to helium and natural gas pricing and sales; and operating costs should not be considered as definitive and are only used on a demonstrative comparison basis.

Given the still relatively early-stage nature of the proposed D3E project, these results should be considered only within the context of the limitations (error range and restricted numbers) of the data set.

On a holistic per-well basis the production economics and operating margin is driven by helium, to which D3E has the stronger leverage compounding the nominally lower operating and capital costs.

The simplistic data suggests D3E will generate He to C1 revenue at a ratio of 5:1 (versus RLT at 2.6:1) clearly demonstrating that the advantage of greater helium concentrations starts at the well-head.

We would also draw attention to the aspect that although D3E wells potentially have a nominally lower comparative production rate, on a per capita basis with wells being inexpensive (c.A\$200k), it can **offset lower rates by drilling more for the equivalent capital budget**.

**Exhibit 10: Higher margin outcomes for D3E underpinned by higher He concentrations**

		D3E High-He Nooitgedacht Major	Regergen well	
Flow rate	mcf	95	200	<b>Regergen's advantage is in total throughput:</b> higher flow rates and more methane sales push absolute revenue higher.
<i>Gas composition</i>				
Helium	%	5.6	3	
Natural Gas	%	83	85	
<i>Product Price</i>				
<b>Helium</b>	<b>US\$/mcf</b>	<b>450</b>	<b>450</b>	
<b>Natural Gas</b>	<b>US\$/mcf</b>	<b>6</b>	<b>6</b>	
<b>Op Cost</b>	<b>US\$/mcf</b>	<b>1.50</b>	<b>2.17</b>	D3E's shallow wells will most likely have <b>lower drilling capex and opex</b> , with the capacity to be economically competitive on a per-dollar-invested basis even if gross revenue is lower.
<b>Daily output</b>				
Helium	mcf	5.3	6.0	
	US\$	\$2,394	\$2,700	<b>Helium drives the economics for both</b> — but D3E's high-grade helium means a small-volume well can still generate strong operating margins. Comparative contributions from helium production are <b>83% (D3E)</b> and 73% (RLT).
Natural Gas	mcf	78.9	170.0	
	US\$	\$473	\$1,020	Revenue ratio (He:C1) favours D3E 5:1 (D3E) vs 2.6:1...by a factor of 2
<b>TOTAL</b>	<b>US\$</b>	<b>\$2,867</b>	<b>\$3,720</b>	
Utility	days	330	330	
<b>Annualised</b>				
Revenue	US\$000's	\$946	\$1,228	<b>Price sensitivity is greater for D3E</b> given the proportionately larger leverage from nominal helium sales in the assumed D3E revenue mix.
Op Costs		\$47	\$143	...excludes royalties.
<b>Gross margin</b>	<b>US\$000's</b>	<b>\$899</b>	<b>\$1,085</b>	...95% for D3E vs 88% for RLT

Source: Company data and **RaaS assumptions**

We outline broad quantitative guidance provided from the company<sup>[9]</sup> highlighting the very low capital and operating costs of field operations (well drilling completion and production) as anticipated, suggesting our Exhibit 10 comparison may be understating the operating advantage potential held by D3E.

In a development scenario -

- No pumps or downhole equipment = **NO COST**
- No well workovers = **NO COST**
- Very low operating pressures = **LOW OPERATING and CAPITAL COST**
- No surface equipment = **LOW OPERATING and CAPITAL COST**
- Low pressure gathering systems / processing = **LOW OPERATING and CAPITAL COST**

The material costs are likely to be generated from the helium separation process, which is cryogenic.

Refer **Appendix A ('A Helium Quick-look')** for more details on the helium extraction process.

## Board and Management

The continuing evolution of the global economy is driving strong demand growth for resources and commodities in new industries previously unconsidered in economic outlook statements as recently as a decade ago. The 2025 outlook for helium in particular has shifted the demand focus toward frontier technologies, surging semi-conductor requirements and medical technology innovation.

*www.worldbank.com*

The strong forecast helium demand out to 2030 indicates there will be an accelerating requirement for new supply and initial exploration results suggest D3E is well placed to leverage that opportunity. In that regard it is up to the board and management to build upon its impressive progress towards a commercially defined project in a timely manner. **We believe the company has a board and management with strong technical and business expertise; and success in project implementation. We suggest the board and team are aligned as to the best way to deliver projects of scale in the natural gas and helium sectors by actively working its assets.**

### Board

#### **Managing Director / CEO: David Casey – B.Sc (Geology)**

David Casey has an wealth of experience garnered from over 30 years' in the oil and gas sector on a technical and managerial level. His background in listed company management is one of material shareholder success, initially with Eastern Star Gas Limited, where as Managing Director and CEO his role was pivotal in the appraisal, development and commercialisation of the Narrabri Gas Project (Northern NSW), where Santos Limited (ASX.STO) is poised to enter a production phase after acquiring the company for \$924m. David was CEO Australia and Asia Pacific at Warrego Energy Limited and a former Managing Director and non-executive director of Talon Energy Limited, both of which were acquired at material share-price premiums.

#### **Non-Executive Chair: Greg Columbus – MBA**

Greg Columbus has 15 years' experience as Managing Director and main board Director for Clarke Energy Limited, a privately owned multinational company in the sale, engineering, installation and maintenance of power plants that utilise gas compressors and gas engines. Clarke Energy is a wholly owned subsidiary of the Kohler Group which operates in over 28 countries. He has accumulated extensive upstream oil and gas exploration and development experience across a number of board positions in the listed company space including - Chairman of Warrego Energy Limited (ASX:WGO) until its acquisition by Hancock Energy for approximately \$440m, Non-executive Chairman of Talon Energy Limited (ASX:TPD) until its acquisition by Strike Energy Limited (ASX.STX) in December 2023 for the equivalent of \$155m.

#### Other current directorships -

Non-Executive Director of Galilee Energy Limited (ASX.GLL) - appointed 17-Sep-2020

Non-Executive Director of Noble Helium Limited (ASX.NHE) – appointed 24-Sep-2023

#### **Non-Executive Director: Matthew Worner – LLB, B.Bus**

Matthew Worner is a qualified lawyer, with extensive experience in the oil and gas sector having held various legal, commercial and Company Secretarial positions with ASX listed companies. He is formerly a Non-Executive Director of Talon Energy Limited (no longer listed), Patriot Lithium Limited (ASX:PAT) and recently resigned (31-Jul-2025) as a Non-Executive Director of RBR Group (ASX:RBR). Matthew is currently a Partner at VECTOR Advisors, a boutique corporate communication, investor relations and reputation management firm.

### Technical Management

#### **Technical Manager: John Zetzman – B.Sc (Int Trade, Bus, Econ, Geol), MBA**

John Zetzman has over 30 years' experience working in the energy exploration sector and he was among the first to identify the shale potential in South Africa and his involvement was critical in submitting the first application for a large-scale exploration right focussed on shale. He was integral to the identification and application for the exploration right currently held by Renegen Limited, which is now the first onshore gas / helium producer in South Africa.

### South African Director of Motuoane : Marek Ranoszek– B.Sc.Hons (Geol), Masters in Business Leadership

Marek Ranoszek is an experienced leader in the oil and gas exploration and production sectors. He has over 30 years' experience having served as Managing Director and Country Manager for several large US independent oil and gas production companies in South Africa, including Anadarko, Pioneer Natural Resources as well as Asset Manager and Services Manager for Total Energies EP in South Africa.

### Chief Operating Officer: Gerard Ryan– M.Eng (Pet Eng) UNSW, B.Eng (Mech) USQ

Gerard Ryan holds Petroleum and Mechanical engineering degrees and is an experienced executive manager in the energy sector with over 25 years' experience in drilling, petroleum engineering and production operations. He has a strong track record of delivering oil and gas exploration and development projects managing multiple disciplines to first gas. Gerard was previously the COO for Eastern Star Gas and Galilee Energy. He is a Chartered Professional Engineer and a lifetime member of the Society of Petroleum Engineers.

### Exhibit 11: Director's holdings

	Latest ASX notice	Fully Paid Ordinary Shares	Options D3E OPT 01 - 03	Performance Rights D3E PR 01 - 03
David Casey	31/12/2024	6,214,925	1,500,000	2,400,000
Greg Columbus	31/12/2024	4,081,875	1,000,000	1,020,000
Matthew Womer	31/12/2024	5,000,050	1,500,000	2,400,000
D3E OPT 02 / 03 escrowed to 13 May 2026			8,000,000	
D3E PR 02 / 03 escrowed to 13 May 2026			8,320,000	

Source: Company data (holdings as of last ASX releases)

Unlisted Options (D3E OPT 01 - 03): ex-price \$0.30, ex-date 08/05/2027 and 08/05/2028

Performance Rights (D3E PR 01 - 03): vesting determined against a series of share price benchmarks and cumulative gas sales

As a recently listed entity, the corporate structure is clean and currently consists of 121m ordinary shares and up to ~9.8m unlisted options and performance rights with the options currently in the money.

## Top 20 shareholding register

### Exhibit 12 Register is dominated by the top 20

HOLDER	UNITS	%
NOVO RESOURCES PTY LTD	13,755,500	11.39
HOLDREY PTY LTD <DON MATHIESON FAMILY A/C>	7,724,795	6.40
CITICORP NOMINEES PTY LIMITED	7,706,138	6.38
DAVID CASEY	6,481,593	5.37
MILTON JOHN ZETZMAN	5,817,950	4.82
TAMLIB INVESTMENTS PTY LTD	5,817,950	4.82
MATTHEW MCNEILL WORNOR <MM WORNOR FAMILY A/C>	5,125,605	4.24
MR SIMON CLARKSON	4,411,250	3.65
DISCOVERY INVESTMENTS	4,346,493	3.60
HSBC NOMINEES (AUSTRALIA) LIMITED	4,027,103	3.33
KEVIN RATHBUN	3,878,600	3.21
JEC CAPITAL PTY LTD <JEC CAPITAL A/C>	3,085,000	2.55
HONEYBALL HOLDINGS PTY LTD <HONEYBALL HOLDINGS A/C>	2,812,500	2.33
BNP PARIBAS NOMS PTY LTD	2,074,867	1.72
BNP PARIBAS NOMINESS PTY LTD <IB AU NOMS RETAIL CLIENT>	1,859,938	1.54
PINE STREET PTY LTD <PINE STREET A/C>	1,617,500	1.34
DORIEMUS SUPER FUND PTY LTD <DORIEMUS SUPER FUND A/C>	1,526,250	1.26
MR ALAN FLETCHER>	1,500,000	1.24
SOOTHJET PTY LIMITED <SPA SUPERANNUATION A/C>	1,449,998	1.20
HSBC NOMINEES (AUSTRALIA) LIMITED – A/C 2	1,326,833	1.10
HSBC NOMINEES (AUSTRALIA) LIMITED	1,050,192	0.87
<b>TOP 20 SHAREHOLDERS</b>	<b>87,396,053</b>	<b>72.35</b>
<b>Total Issued Ordinary Shares</b>	<b>120,795,006</b>	

Source: Company data (as of 15/09/2025)

## Appendix A – A Helium Quick-look

The helium market is estimated (**refer reference list at end of this section**) to be 6.7 bcf for 2025...that is nominally small on an absolute volumetric basis, but is estimated to be a US\$4bn+ equating to ~US\$600 mcf. It's a high revenue (and margin) commodity particularly as it is only captured as a by-product of natural gas production, which provides a low operating cost base in any respect.

The inferred He pricing essentially demonstrates that reserves do not need to be big or flow rates strong to be profitable.

The forecast for the helium market is for steady demand growth through 2030 although the current size of the market and magnitude of the CAGR (compound annual growth rate) has a wide range dependent on the scope and methodology used by any particular analyst. The indicative growth rate is estimated to be in the range of 6.7–8.3%

On growing demand against constrained supply and storage limitations, the global market has experienced a nearly constant escalation in prices.

Helium has utility across diverse sectors including healthcare, electronics and aerospace. Intuitively, as global healthcare and high-tech industries expand, demand for helium continues to rise and we suggest the error range on forecasts is likely to be wide and as indicated above, may even be somewhat conservative.

### Helium applications

This is not intended to be a comprehensive list but rather highlighting key demand segments -

- The critical demand driver is the **medical and healthcare** industry, representing ~40% market share, especially in MRI and respiratory treatments. Liquid helium is “irreplaceable” in cooling superconducting magnets used in MRIs, NMR and other research applications.
- Multiple **cryogenic** applications - Noted as the largest application segment.
  - **Electronics and semiconductors** is the fastest-growing segment, driven by global chip manufacturing expansion.
  - Leading-edge technologies and innovations, like **quantum computing and quantum communication**, frequently depend on superconducting components that necessitate liquid helium for precise cooling and maintaining temperatures close to absolute zero.
- The **aviation industry** is expanding requirements for helium driven by its critical role in leak detection and specialised welding processes, particularly in hot wire gas tungsten arc welding (GTAW).
- ...**space exploration, defence industry, particle accelerators, green-hydrogen initiatives and expanding EV battery recycling.**

### Helium pricing

The helium market is effectively controlled by global conglomerates with high barriers to entry and reserve constraints likely to suggest the probability of price competition to be low.

Global supply is limited to a few countries, notably the U.S., Qatar, and Algeria although South Africa presents a diversification opportunity given its globally best helium concentrations. However, the play is only at an early stage of development and scale will take time.

Helium pricing begins with the cost of extraction and purification. Feed gases have typically contained only 0.3–3% helium by volume, so separation relies on energy-intensive cryogenic distillation and extraction costs can vary widely depending on the feed-gas helium concentration and the scale of the processing plant.

Ultra-high purity helium costs between US\$28 -92/cum (cubic metre), depending on the exact grade.  
(US\$ 793- 2,605/mcf equivalence)

The cost of helium is getting higher and higher because helium extraction is challenging and the supply of helium is limited.

[www.westairgases.com](http://www.westairgases.com)

The price a gas producer realises for helium at the wellhead (raw gas stream) is not a simple market-quoted rate but likely to be a negotiated outcome based on netback formula embedded in a gas-sales contract.

In essence, the producer and the helium purchaser would agree on a reference helium value, then subtract all downstream costs to “bring” helium back to the point of production. However, it’s more likely that separation into two phases, domestic natural gas and helium (gaseous or liquid) is undertaken at the plant and a price negotiated on an ex-plant or delivered basis.

### How Is Helium Extracted?

The process of separation is termed called cryogenic distillation, which leverages helium’s extremely low boiling point (-269°C).

Through the process cooling the raw gas mixture, different components will liquefy at different points and drop out the gaseous phase. As helium has the lowest boiling point of any element, it remains in gas form making separation possible.

This separation process is high cost and critically dependent on the concentration of helium.

### Helium Projects

The most readily documented example of commercial helium production is the North Field (Qatar) – considered to be the world’s largest non-associated natural-gas field, underpinning Qatar’s status as the top holder of helium reserves although only in **trace amounts (0.04%)**. However, as the sheer gas throughput of the processing plant is so large, it’s one of the planet’s biggest helium sources.

Qatar operates two helium plants at Ras Laffan, with a combined capacity of about **2.0 Bcf pa** of liquid helium equating to approximately **25% of the global supply** at full capacity. A third helium plant servicing the North Field East expansion, is expected to add **~1.5 Bcf pa** from 2027, potentially lifting Qatar’s share of global supply to **~35%**.

#### A summary of data sources reviewed -

*[A review of helium resources and development - ScienceDirect](http://www.intelligasconsulting.com)  
<http://www.intelligasconsulting.com>  
[www.qatarenergyiq.qa/english/operations/ras-laffan-helium](http://www.qatarenergyiq.qa/english/operations/ras-laffan-helium)  
[www.akapenergy.com](http://www.akapenergy.com) (Qatar energy’s north-field-east-project-to-produce-~1-bcf-helium)  
[www.expertmarketresearch.com](http://www.expertmarketresearch.com) (reports-helium-market)  
[www.helium-one.com](http://www.helium-one.com) (helium-market)  
[www.mordorintelligence.com](http://www.mordorintelligence.com) (industry-reports-helium)  
[www.precedenceresearch.com](http://www.precedenceresearch.com) (helium-market)  
[www.grandviewresearch.com](http://www.grandviewresearch.com) (industry analysis-helium)*

## Appendix B – South African Energy Outlook

South Africa is facing a looming ‘gas cliff’ with the Mozambique Pande and Temane fields set to cease operations by June 2026. These fields are linked to South Africa via an 865km pipeline into the country that has been a key component of the region’s energy network, connecting with Sasol’s gas infrastructure and supporting other major industrial operations. The field abandonments foreshadow a major supply gap.

The implications are that without new sources of supply, the government has highlighted “...risks of industrial shutdowns and job losses....sparking calls for rapid domestic exploration and LNG imports”.

[www.pinsentmasons.com/en-gb/out-law/analysis/new-gas-strategy-report-a-start-but-more-clarity-required-for-south-african-industry](http://www.pinsentmasons.com/en-gb/out-law/analysis/new-gas-strategy-report-a-start-but-more-clarity-required-for-south-african-industry)

### Strategic Importance of Natural Gas

Compounding the gas issue is the overarching strategy of decarbonisation and the phasing out of coal for generation. Gas is being positioned as a transition fuel and a long-term economic enabler

- A “**bridge to renewables**” with a lower carbon footprint as a practical interim solution while renewables scale up.
- Supporting the existing “**industrial backbone**” into key sectors like synthetic fuel production, chemicals, and heavy manufacturing.
- Delivering “**energy Security**” by replacing aging coal plants. Gas is to offer dispatchable power to stabilise the grid as renewables scale up.

These issues and arguments are not unique to South Africa as Australia also grapples with the phasing out of coal power generation and (self-inflicted) constraints to gas supply – even progressing LNG import terminal options.

There are some arguments that gas should be “...central to South Africa’s long-term energy economy”, with ambitions for gas to make up **about 25% of South Africa’s energy mix** and scale generation from 180 GW to 1,000 GW by 2050. The next few years will determine whether it can be scaled fast enough to avoid the gas cliff and support the energy transition.

The South African government has been actively enabling energy policies to support the development of gas projects<sup>[12]</sup> through the -

- **Gas Master Plan (GMP)** which aims to map out long-term infrastructure needs; set investment guidelines for pipelines, LNG terminals, and storage facilities; and set in place a predictable regulatory environment for investors.
- **Gas Amendment Bill** to modernise and streamline the legal framework for gas development by clarifying licensing procedures; providing mechanisms for third-party access to infrastructure and supporting competitive pricing mechanisms.
- **NERSA [National Energy Regulator SA] Strategy Report (2025)** emphasising the options of LNG imports from regional partners (Namibia, Angola, and Tanzania); development of domestic gas resources and integration of gas with renewables and hydrogen for a balanced energy mix.

The midstream is considered as the weakest link in the gas chain—critical infrastructure like import terminals, pipelines and distribution systems are either underdeveloped or “...stuck in endless feasibility assessments”.

We note commentary from a previously referenced Mail & Guardian article<sup>[3]</sup> that “...South Africa’s gas industry remains nascent and characterised by minimal domestic gas production, a lack of diversification of gas supply sources, limited geographic scope of existing gas market concentrated in four of the nine provinces in the country, limited gas infrastructure, and overdependence on a single source of imported gas, among others”.

South Africa’s gas demand has historically been quite flat at ~**171 Bcf pa** between 2014 and 2023, primarily used for synthetic fuel production through Sasol’s Secunda plant, with only limited power generation due to the poor density of transmission infrastructure.

There are a number of gas projects pending but not yet in production

**Exhibit 13: No shortage of gas but no real progress to production**

Field	Location	Operator	Reserves	Status	
<b>Brulpadda</b>	Offshore	Africa Energy Corp	1.3 Tcf / 80 Mb	FID pending	Harsh operating conditions, TotalEnergies 'pivot' to Namibia, off-take uncertainty
<b>Luiperd</b>	Offshore	Africa Energy Corp	2.1 Tcf / 112 Mb		
<b>Ibhubesi</b>	Offshore	Sunbird Energy	540 Bcf / 4.3 Mb	Stalled	High capex and 400km pipeline
<b>E-BK</b>	Offshore	PetroSA	33-53 Bcf / 2.6-4.2 Mb	FEED	Single well tie-back, modest volumes, Petro SA financial constraints

Source: Offshore-technology.com, various project searches

**Brulpadda and Luiperd** are considered the most promising discoveries but the 'pivot' of TotalEnergies towards Namibia is concerning, citing the difficulty being "...*monetising these assets for the South African market was economically challenging given long-standing issues around gas pricing and offtake agreements*".

[www.totalenergies.com](http://www.totalenergies.com)

<https://www.energize.co.za>

The **Ibhubesi** development plan is for 14 wells and a material offshore infrastructure development, but is considered to be stalled given a complex mix of technical, economic, and strategic hurdles that have hindered its development for over two decades, including but not limited to -

- Shallow water (250m) but remote and exposed to Atlantic swells;
- 400km pipeline to Saldhana Bay for processing and compression
- US\$1.4Bn in capex
- No binding GSAs and limited access to capital
- Regulatory (licensing and environmental approvals) have been slow and fragmented

<https://www.oneworldgroup.co.za>

[www.offshore-technology.com](http://www.offshore-technology.com)

## Appendix C – South African Fiscal Regime

Compared globally, South Africa's regime is considered investor-friendly and uses a hybrid fiscal system for upstream oil and gas which includes -

- **Corporate Income Tax:** Standard rate of 27% applies to oil and gas companies.
- **Additional Oil and Gas Tax (AOGT):** A supplementary tax based on profitability, similar to a resource rent tax.

The AOGT is a profitability-based imposed levied to ensure the government captures a fair share of economic rent from highly profitable oil and gas projects.

This tax applies only when a company's profitability exceeds a certain threshold, measured by the ratio of taxable income to gross income. The threshold ratio is set at 2.5 : 1.

If a company's taxable income is more than 2.5 times its gross income, the additional tax applies at a rate of 5% for each unit the ratio exceeds 2.5, up to a maximum of additional 20%.

In a similar fashion to Australia's Petroleum Resource Rent Tax (PRRT), early-stage projects (and D3E in this specific instance) are unlikely to trigger the threshold due to high initial capital costs and ongoing allowances (deductions) for exploration and development costs.

The deductible allowance provisions allow for an immediate expensing of capital expenditure with uplifts of 100% for exploration and 50% for development costs.

- **Royalties:** Levied under the Mineral and Petroleum Resources Royalty Act and are typically capped at a maximum rate of 5% flat.
- **Withholding Taxes:** Applied to certain payments to non-residents, such as interest and royalties.

[www.taxcom/org.za](http://www.taxcom/org.za)

[www.treasury.gov.za](http://www.treasury.gov.za)

[www.gov.za](http://www.gov.za)

[www.treasury.gov.za/comm\\_media/press/2021/TaxPolicyDiscussion/](http://www.treasury.gov.za/comm_media/press/2021/TaxPolicyDiscussion/)

The above referenced Oil and Gas Tax Regime Discussion Paper noted that *the IMF and Davis Tax Committee consider South Africa's fiscal regime as "...efficient and well-balanced, offering early cost recovery and low upfront tax burdens, which is attractive for exploration"*.

The discussion paper modelled South Africa against 86 countries and found it to be *"...competitive, especially for offshore gas projects ... avoiding front-loading taxes, which is a common deterrent in other jurisdictions."*

## Appendix D – Risk commentary and observations

Although the company has made material progress from listing and could be considered as being on the cusp of delivering its first sanctioned project there are remaining operational and corporate hurdles to navigate to the Final Investment Decision and initial production.

We don't intend for this commentary to provide a comprehensive scoping of the potential risks remaining but rather as a high-level overview of issues that will always need to be navigated and potentially have a chance of altering the path to market or cashflow.

### **Delivering gas – we see it as engineering not geological**

Although there have been a relatively limited number of wells drilled in the play, the gas potential and helium concentrations have been readily demonstrated through the company's drilling and workover campaign.

Having said that, the well portfolio is limited and areally restricted. More holes in the ground and evaluation of 'blowers' will be required to definitively convert the opportunity into a predictable probability play, particularly in the northern area of ER 315.

Not all fractures and faults will perform the same way and material variations can occur over short distances particularly where faulting is the primary control - geology and engineering don't always co-operate, nothing is absolute and geological uncertainties are never zero.

However, data to date has been relatively consistent across the D3E activity and the extensive number of legacy (blower) wells suggest there is little 'resource' risk.. By definition, if there is not a resource issue then what remains must be an engineering issue...and all engineering problems can be solved with the application of time and capital.

Working the engineering is likely to be the primary risk but we see that more in the development sense – plant and operations rather than the field. On very low drilling costs to date, somewhat 'open-ended' EURs and current helium concentrations, even low flowing wells are likely to be commercial on balance.

Although we have noted the differences between D3E and RLT wells, the producing Virginia Gas Project provides a working analogue and reduces the high-level risk.

However, **the risk for investors is that the results from 2026 drilling and evaluation generate a layer of inconsistency and complexity that could push out the commercial timing** with implications for future capital availability.

### **Financing**

With no current cashflow from operations, the company will be dependent on equity financing at least through the short-medium terms. Whilst the company is operating in a low capital cost play and has managed its cash prudently, longer times to completion of field activity or cost blowouts could result in calls on equity financing (or other capital instruments) earlier or at a higher magnitude than anticipated.

A reliance on equity financing is not unusual for companies in a proof-of-concept/pre-development stage of working their assets.

We would highlight that whilst raising equity is dilutive in an absolute sense, the company is at a position on a path to project start-up where any share dilution could be materially offset by the unwinding of risk weightings as projects move into FID then cash flow.

### **The macro – commodity prices and sovereign risks**

It's difficult for us to envisage a scenario where South African domestic gas and / or helium prices collapse to the point where the economics of a D3E project look marginal.

The primary environment looks strongly supportive in an economic sense with projected demand growth compounding supply constraints, suggesting commodity prices are more likely to remain high or rise, in our view.

South African government policies and improving global economic conditions (especially falling interest rates) should make the operating environment, especially financing, easier. The early-mover advantage held by the company provides a material operating window before any significant supply side response to challenge constraints in the market and pricing outcomes.

The company's extensive tenement holdings provide scaling via modularisation, so in many respects the development opportunities look set and low risk

Sovereign risk is always a tricky thing to gauge as holistically, in what jurisdiction can a company operate that doesn't have some embedded risks on a financial and regulatory basis?

Political risks are never zero even in the most benign of jurisdictions – one only have to look at the tariffing uncertainty that is the U.S and the litany of changes impacting the Australian oil and gas upstream industry over the last 30+ years (e.g. PRRT, Native Title, fracking bans, gas price caps, reservation schemes; and onerous, time consuming, replicated and expensive approvals processes) to conclude that to a variable extent it is part of the cost of doing business.

Our direct experience would suggest it has historically been more of an issue on an ASX level that international oil and gas assets in smaller ASX listed companies have generally been discounted and at times, price discovery has been slow. Ex-ASX markets, particularly in Europe (say) have generally managed country risk on a portfolio basis.

The risk though may be more perception than reality in that South Africa has been a major project destination for mining companies, whilst the petroleum business has been nascent in comparative and absolute terms.

**We believe the best outcome for D3E is to keep delivering its work programmes on time and budget, generate positive results and continue progress through the approvals processes to an initial project sanction.**

**Exhibit 14: Financial Summary**

D3 ENERGY LIMITED		D3E				nm = not meaningful na = not applicable						
YEAR END		Jun										
NAV	A\$m	\$2.54										
SHARE PRICE	A\$cps	\$0.495				close of trading		16-Sep				
MARKET CAP	A\$m	60										
ORDINARY SHARES	M	121										
OPTIONS	M	22										
RATIO ANALYSIS		FY23	FY24	FY25E	FY26E	EQUITY VALUATION						
Shares Outstanding	M	63	121	121	121	Risked Range			Low	Mid	High	
EPS (pre sig items)	Acps	(3.68)	(4.95)	(2.79)	(1.93)	A\$m	Low	Mid	High	A\$/share		
EPS	Acps	(3.68)	(4.95)	(2.79)	(1.93)	PRA	32	99	131	\$0.26	\$0.82	\$1.08
PER	x	na	na	na	na	Contingent Resources	143	183	219	\$1.18	\$1.51	\$1.81
OCFPS	Acps	(0.03)	(0.02)	(0.03)	(0.04)	Other Assets	20	25	30	\$0.17	\$0.21	\$0.25
CFR	x	na	na	na	na							
DPS	Acps	na	na	na	na		<b>195</b>	<b>307</b>	<b>379</b>	<b>\$1.61</b>	<b>\$2.54</b>	<b>\$3.14</b>
Dividend Yield	%					Net cash/(debt)		5				
BVPS	Acps	0.09	0.11	0.09	0.07	Corporate costs		(5)				
Price/Book	x	4.1x	3.1x	3.7x	5.3x							
ROE	%	na	na	na	na	<b>TOTAL</b>	<b>195</b>	<b>307</b>	<b>379</b>	<b>\$1.61</b>	<b>\$2.54</b>	<b>\$3.14</b>
ROA	%	na	na	na	na	Shares on issue (M)	121					
(Trailing) Debt/Cash	x	na	na	na	na	Shares on issue (M)	131	diluted		<b>\$1.51</b>	<b>\$2.36</b>	<b>\$2.92</b>
Interest Cover	x	na	na	na	na							
Gearing dn/(dn+e)		na	na	na	na							
EARNINGS		A\$000s	FY23	FY24	FY25E	FY26E	CASHFLOW					
Sales							A\$000s					
Corporate and admin			(331)	(1,416)	(2,102)	(1,997)	Operational Cash Flow					
Exploration expense			(944)	(881)	(1,661)	(750)			(2,016)	(2,395)	(3,226)	(4,486)
Employee benefits			(178)	(497)				30	41	86	105	
Share based payments							Taxes Paid					
DD&A				(25)	(25)	(25)	Other					
EBIT		(1,424)	(3,518)	(3,367)	(2,332)		Net Operating Cashflow					
Profit/(Loss) before tax		(1,424)	(3,518)	(3,367)	(2,332)				(2,045)	(2,436)	(3,312)	(4,592)
Tax payable							Payments for Acquisitions					
Profit/(Loss) after tax		(1,424)	(3,518)	(3,367)	(2,332)					(79)		
Other Comprehensive Profit/(Loss)							Proceeds from sales					
Forex		(348)	90					111				
Total Comprehensive Profit/(Loss)		(1,772)	(3,428)	(3,367)	(2,332)		Dividends received					
											(9)	(100)
BALANCE SHEET		A\$000s	FY23	FY24	FY25E	FY26E	Net Investing Cashflow					
Cash		1,885	8,587	5,268	576		Share Issues					
Exploration & Evaluation		4,584	4,625	5,996	7,335			285	9,167			
Other		699	433	372	381		Convertible bonds					
Total Assets		7,168	13,645	11,636	8,292		Option exercise					
Payables		1,828	110	200	350		Net debt movement					
Provisions							Other					
Debt							Net Financing Cashflow					
Convertibles								285	9,167	0	0	
Total Liabilities		1,828	110	200	350		Share Issuance					
Total Net Assets/Equity		5,340	13,535	11,436	8,048		Net Change in Cash					
Net Cash/(Debt)		1,885	8,587	5,268	576			(1,649)	6,653	(3,321)	(4,692)	
							Cash					
								1,885	8,587	5,268	576	
Share Capital		7,709	17,677	17,661	17,661							
Reserves		(348)	1,397	2,681	1,624							
Retained Earnings		(2,021)	(5,539)	(8,906)	(11,238)							
Shareholders Funds		5,341	13,535	11,436	8,048							

Source: RaaS Research Group

## References, Data Sources and Glossary

Note Reference	Document Ref	Data specifically referenced in this Report	Date Published	Title/Source
[1]		D3 Energy ASX release	17-06-2025	D3 Energy acquires highly prospective helium and hydrogen permits in South Australia
[2]		D3 Energy ASX release	08-09-2025	D3 Energy Production Right Application Formally Accepted
[3]		'Mail & Guardian' press article	16-05-2025	<a href="#">Will South Africa survive the looming gas cliff?</a>
[4]		www.usgs.gov		<a href="#">Helium Statistics and Information   U.S. Geological Survey</a>
[5]		Petroleum Agency of South Africa	Aug-2024	<a href="#">Petroleum Potential of the Karoo Basins</a>
[6]		Petroleum Agency of South Africa	Aug-2024	<a href="#">Technical Information Pamphlet Biogenic Gas</a>
[7]		D3 Energy ASX release	24-07-2025	ER 315 Maiden methane and helium reserve certification
[8]		D3 Energy ASX release	28-07-2025	Quarterly Activities Report   30 June 2025
[9]		D3 Energy ASX release	10-09-2025	Good Oil & Gas Energy Conference Presentation
[10]		D3 Energy ASX release	17-07-2025	D3 Energy acquires highly prospective helium and hydrogen permits in South Australia
[11]		South Australia Department for Energy and Mining	2024	<a href="#">Arckaringa Basin   Energy &amp; Mining</a>
[12]		www.nersa.org.za	22-04-2025	"Strategy for a gas, renewable energy and hydrogen partnership in South Africa - A regulator's perspective" (22-April-2025)

**All financial data in Australian currency unless otherwise specifically stated**

FEED	Front End Engineering and Design	CCS	Carbon capture and storage
FID	Final Investment Decision	FPSO	Floating Production Storage and Offtake
SPA	Sales and Purchase Agreement	CO <sub>2</sub> / CO <sub>2</sub> -e	Carbon dioxide / Carbon dioxide equivalent
		H <sub>2</sub>	Hydrogen
		He	Helium

# FINANCIAL SERVICES GUIDE

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ABN 99 614 783 363

Corporate Authorised Representative, number 1248415, of

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Effective Date: 26<sup>th</sup> March 2024

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In writing to: Australian Financial Complaints Authority, GPO Box 3, Melbourne, VIC, 3001.

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