Initiation of Coverage
2 March 2021

RENERGEN
FUTURE ENERGY, TODAY

Renergen Ltd
Lighter-than-Air Falling to the Bottom-Line

Share Code: REN – Market Cap: R2.3bn – PE: -34.9x – DY: 0.0%

12m Target Price	**4977cps**
Share Price	**1952cps**
Implied Return	**154%**

Resources | South Africa

Business Overview: Near-term Helium & LNG Producer

- Renergen owns an onshore petroleum production right to the "Virginia Gas Project" that is rich in methane (LNG) and helium and the Group is developing in a two-phased approach.
- Renergen is in a formidable position to move up the value-curve as Phase One nears first-production.
- Importantly, the Virginia's Phase Two could be multiples the size of Phase One and unlock staggering value in the Group.

LNG & Helium Markets: Attractive Prospects

- South Africa is an energy-scarce economic region with both a good potential LNG demand and a potential supply deficit of the gas in its near-future as some existing assets come offline.
- The global helium market is opaquer, but the recent drop-off in USA supply and uncertainty around Russia's planned supply growth combine to imply tight(er) helium supplies post-pandemic. Finally, the major consumers of helium (aerospace, semiconductors & MRIs) are all above-average growth vectors and cannot substitute helium for anything else.

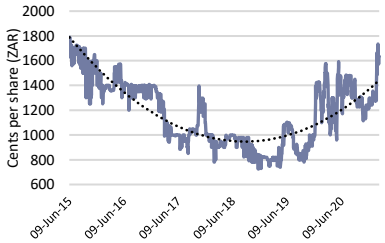
Forecast, Valuation and Implied Return: Upside Apparent

- Our DCF-driven sum-of-the-parts (SOTP) valuation for Renergen implies Phase One & Two—offset by central costs, debt and (potential) dilution—are worth 3539cps. After options for Evander and Cryo-Vacc are added, we see Renergen's share as potentially worth c.4247cps.
- Rolled-forward by CoE, our 12m TP is 4977cps.

Key Up- & Downside Risks: Lots of Moving Parts

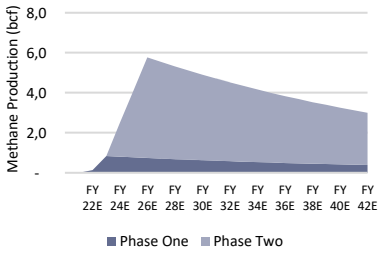
- Running a sensitivity analysis on our model highlights that Renergen's valuation is more sensitive to helium than LNG, but both prices are ultimately sensitive to the USD/ZAR rate.
- Inflation, production, and resource risks also exist here.

Renergen's Share Price



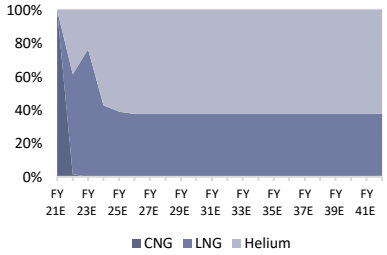
Sources: Profile Media, Blue Gem Research

Renergen's Forecast Production Profile



Source: Blue Gem Research

Renergen's Forecast Revenue Split



Source: Blue Gem Research

Production:	FY 19	FY 20	H1:21	FY 21E	FY 22E	FY 23E	FY 24E	FY 25E
LNG - Phase One (Giga Joules)	-	-	-	-	*150 000*	*750 000*	*864 000*	*829 440*
LNG - Phase Two (GJ)	-	-	-	-	-	-	*1 800 000*	*3 600 000*
Helium - Phase One (thousand cubic feet)	-	-	-	-	*9 707*	*23 298*	*22 366*	*21 471*
Helium - Phase Two (mcf)	-	-	-	-	-	-	*258 865*	*517 730*
Financials (R'000's):								
Revenue	2 987	2 635	910	2 275	67 613	264 444	1 679 969	3 055 634
Net Profit	-44 976	-52 619	-26 891	-67 610	-60 386	19 986	868 701	1 590 837
HEPS (cps)	**-47,3cps**	**-46,0cps**	**-22,9cps**	**-57,6cps**	**-51,4cps**	**13,8cps**	**502,9cps**	**920,9cps**
Price Earnings (x)	***-41,3x***	***-42,5x***	***-85,2x***	***-33,9x***	***-38,0x***	***141,7x***	***3,9x***	***2,1x***
Return on Assets (%)	*-19%*	*-8%*	*-3%*	*-8%*	*-2%*	*2%*	*15%*	*22%*

Sources: Renergen, Profile Media, BLM, MHA, various company reports & Blue Gem Research workings & assumptions

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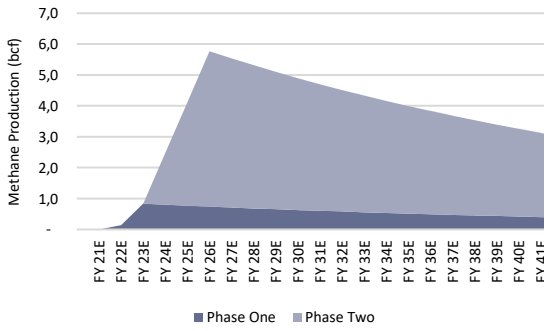
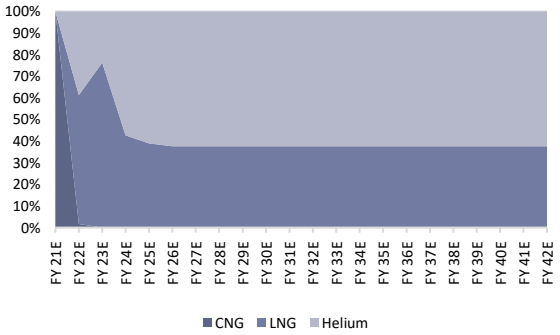
Summary & Forecast:	FY 19	FY 20	H1:21	FY 21E	FY 22E	FY 23E	FY 24E	FY 25E
Production:								
LNG - Phase One (Giga Joules)	-	-	-	-	*150 000*	*750 000*	*864 000*	*829 440*
LNG - Phase Two (GJ)	-	-	-	-	-	-	*1 800 000*	*3 600 000*
Helium - Phase One (thousand cubic feet)	-	-	-	-	*9 707*	*23 298*	*22 366*	*21 471*
Helium - Phase Two (mcf)	-	-	-	-	-	-	*258 865*	*517 730*
Gas Reserves:	**FY 19**	**FY 20**	**H1:21**	**FY 21E**	**FY 22E**	**FY 23E**	**FY 24E**	**FY 25E**
Natural Gas - 1P (billion cubic feet)	*40,8*	*40,8*	*40,8*	*40,8*	*40,6*	*39,8*	*37,3*	*33,2*
Natural Gas - 2P (bcf)	*139,0*	*139,0*	*139,0*	*139,0*	*138,9*	*138,0*	*135,5*	*131,4*
Natural Gas - 3P (bcf)	*284,2*	*284,2*	*284,2*	*284,2*	*284,0*	*283,2*	*280,7*	*276,6*
Helium - 1P (bcf)	*1,0*	*1,0*	*1,0*	*1,0*	*1,0*	*1,0*	*0,7*	*0,2*
Helium - 2P (bcf)	*3,4*	*3,4*	*3,4*	*3,4*	*3,4*	*3,4*	*3,1*	*2,6*
Helium - 3P (bcf)	*6,9*	*6,9*	*6,9*	*6,9*	*6,9*	*6,8*	*6,5*	*6,0*
Financials (R'000's):	**FY 19**	**FY 20**	**H1:21**	**FY 21E**	**FY 22E**	**FY 23E**	**FY 24E**	**FY 25E**
Revenue	**2 987**	**2 635**	**910**	**2 275**	**67 613**	**264 444**	**1 679 969**	**3 055 634**
Gross Profit	-210	-667	-412	-824	49 940	169 301	1 446 858	2 586 835
Operating Profit	-46 014	-67 305	-26 875	-90 431	-18 699	129 099	1 363 572	2 497 715
Net Profit	**-44 976**	**-52 619**	**-26 891**	**-67 610**	**-60 386**	**19 986**	**868 701**	**1 590 837**
Issued Shares (000's)	*100 135*	*117 427*	*117 427*	*117 427*	*117 427*	*172 742*	*172 742*	*172 742*
Weighted Shares (000's)	*86 997*	*109 799*	*117 427*	*117 427*	*117 427*	*145 085*	*172 742*	*172 742*
EPS (cps)	-47,0cps	-47,9cps	-22,9cps	-57,6cps	-51,4cps	13,8cps	502,9cps	920,9cps
HEPS (cps)	**-47,3cps**	**-46,0cps**	**-22,9cps**	**-57,6cps**	**-51,4cps**	**13,8cps**	**502,9cps**	**920,9cps**
Price Earnings (x)	***-41,3x***	***-42,5x***	***-85,2x***	***-33,9x***	***-38,0x***	***141,7x***	***3,9x***	***2,1x***
Total Assets	225 110	626 491	829 662	771 263	711 116	3 431 915	5 924 498	7 522 413
Property, Plant & Equipment	37 757	350 824	420 514	1 097 174	1 104 012	1 067 542	2 029 119	3 751 108
Intangible Assets	70 494	89 223	100 895	100 895	114 895	121 895	170 895	261 895
Equity	164 233	247 230	221 311	180 592	120 206	1 219 942	2 088 643	3 679 480
Return on Equity (%)	***-27%***	***-21%***	***-12%***	***-37%***	***-50%***	***2%***	***42%***	***43%***
Total Liabilities	60 877	379 261	608 351	590 671	590 911	2 211 974	3 835 855	3 842 932
Total Debt	39 647	351 182	579 851	579 851	579 851	2 199 476	3 819 101	3 819 101
Return on Assets (%)	***-19%***	***-8%***	***-3%***	***-8%***	***-2%***	***2%***	***15%***	***22%***
Return on Capital (%)	***-33%***	***-11%***	***-4%***	***-5%***	***-1%***	***5%***	***33%***	***36%***
Production & Revenue Profile:								

Virginia Gas Production Profile - Phase One & Two



Virginia Gas Project - Estimated Split in Revenue



Sources: Renergen, Profile Media, Bloomberg, BLM, MHA, various company reports & Blue Gem Research workings & assumptions

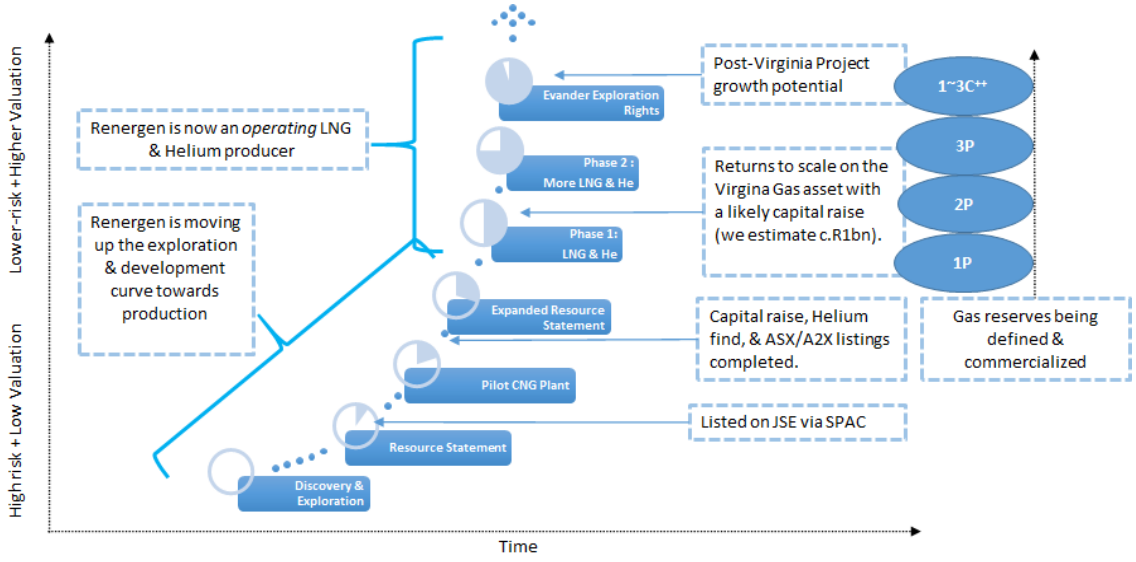
Summary of Renergen's Investment Case

Renergen Limited (REN.JSE, REN.A2X, RLT.ASX) wholly-owns an onshore petroleum production right in the Free State province of South Africa (the "Virginia Gas Project" – **Appendix A**). The resource is rich in methane (c.90% purity) and helium (c.3~3.5%$^{+}$ purity) that the Group is developing in a two-phased approach to produce Liquid Natural Gas (LNG) and helium. While helium is universally plentiful, its commercial production is globally limited and concentrations of >0.4% are considered appealing (i.e. a c.3~3.5%$^{+}$ helium resource is off extremely high). For more on the LNG and helium markets, refer to **Appendix B** and **Appendix C**.

Renergen is planning to sell its LNG into the local market (it has already signed with several logistics operators) while 80% of the helium in Phase One has an off-take agreement with Linde Plc, and Phase Two has large export potential. While Phase One offers a profitable runway with a higher proportion of expected LNG revenues to helium revenues, Phase Two is potentially a multiple thereof and could see the Group generating the weight of its revenue from helium. We expect—and have included in our modelling—that Phase Two will require a c.R1bn equity capital raise but Phase One is currently fully-funded.

Post-Phase Two, Renergen holds the rights to the Evander region (indeed, gas has already been found there, though with lower helium concentrations that the Virginia Gas Project but good yields against international benchmarks). Furthermore, the Group has developed Cryo-Vacc as a nitrogen/helium cold storage solution for the transport of vaccines (amongst other biologics) for periods up to 30 days.

Figure 1: Renergen's History, Present & Potential Investment Trajectory



Sources: Blue Gem Research theoretical illustration

We have modelled Renergen's fair value as a sum-of-parts (SOTP) for Phase One and Phase Two of its Virginia Gas Project, less the NPV of expected overheads, debt and anticipated dilution. We assume flat spot rates (i.e. unchanged diesel, LNG, helium & currencies prices) and strip out inflation in building our future expected net cash flows which allow us to extrapolate value now without embedding any "commodity options" into the valuation (gas projects tend to be front-loaded with capex and, thus, any assumption of a rising gas price leads to a material rise in concomitant implied NPV). Finally, while we note with interest the possible attractiveness of both Evander and Cryo-Vacc we only account for these as small "options" in our SOTP.

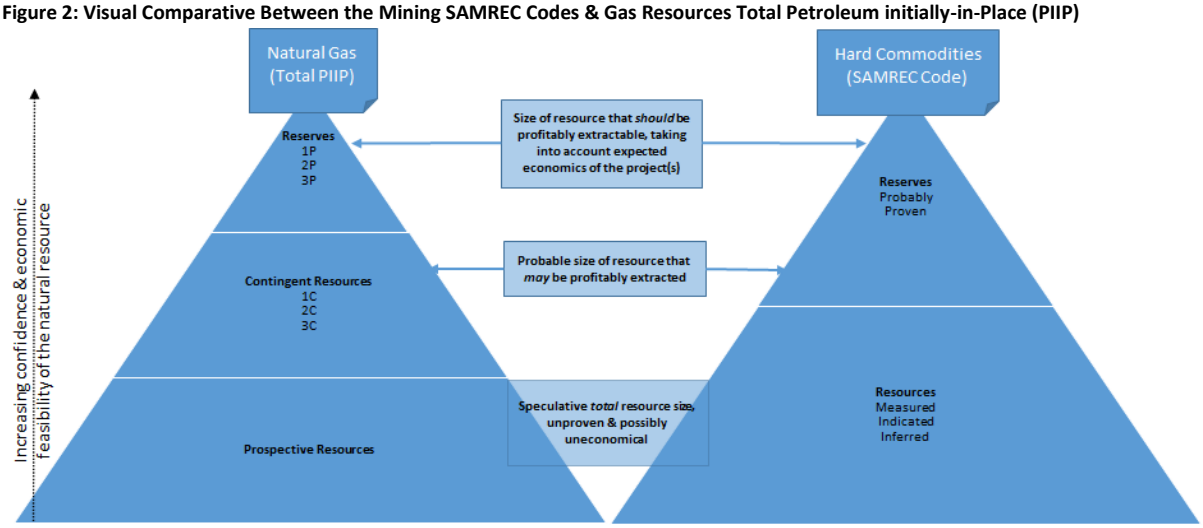
For brevities sake, we have put the background to the Group, its subsidiaries and the Virginia Gas Project's in **Appendix A**. **Appendix B** and **Appendix C** respectively summarize the LNG and helium markets while **Appendix D** touches on Renergen's corporate governance, structure and key management. We strongly encourage you to read these appendices as they add a lot of important information, background & context to this report.

Understanding Gas "Relative" to Mining

Gas resources and their development are not directly comparable to hard commodities, their mining and beneficiation. That said, this report is written for a South African investor and, thus, a short section detailing similarities and differences may help in understanding Renergen, its resource and how we have modelled it.

South Africa's mineral code is called SAMREC and the value (and commercial viability) of the underlying moves up the confidence curve from mere *resources* into actual *reserves*. Similarly, gas resources are accounted for and measured based on the Total Petroleum Initially-In-Place (PIIP) methodology that works its way up from mere *prospective resources* to commercially viable *reserves* (particularly at 1P-level).

Figure 2: Visual Comparative Between the Mining SAMREC Codes & Gas Resources Total Petroleum initially-in-Place (PIIP)



Sources: SAMREC Code, Petronas PIIP, MHA, & Blue Gem Research simplifying assumptions for a theoretical illustration

In terms of understanding development and operating differences, a key variance between gas and hard commodity resources should be pointed out: hard commodities are typically *inert* while gas is typically *mobile*.

This key difference implies that hard commodity extraction often involves spending more operating expenses (opex) on physically extracting the resource. The trade-off is that the projects, particularly open-cast mines, may have less required upfront capital expenditure (capex) but a much higher running opex at steady-state. On the other hand, once a gas well is opened and connected, it typically flows based on its own pressure and, thus, attracts a much lower opex. The trade-off is that the weight of capital is typically invested at the beginning of gas projects, thus creating a different shaped payoff to a typical hard commodity mine.

Then consider that, once operating, the insert nature of hard commodities means that the rate of extraction can be (to some degree) fine-tuned. If a miner wants to stop producing, it merely stops mining. Contrary to this, once the gas is flowing at a gas project from a well (or wells), the operational flexibility is more limited.

Finally, we have summarized key terminology and conversions for understanding gas(es) below:

- *cf – cubic feet or feet3*
- *mcf – thousand cubic feet or 1000 x cf*
- *bcf – billion cubic feet or 1,000,000 x mcf*
- *J – Joule; MJ – Mega Joule = 1,000 x J; & GJ – Giga Joule = 1,000 x MJ*
- *1 litre of diesel = 36.1MJ of energy*
- *20kg of LNG = 1GJ*
- *213cf of helium = 1kg of helium, thus 1mcf of helium = 4.7kg of helium*
- *1kg of liquid helium = 7 litres of helium (at -269 Celsius)*

Forecast & Valuation

Methodology & Universal Assumptions

Given that Renergen's underlying assets are finite natural resources (ignoring the biogenic nature of the methane), we have valued the Group based on a Discounted Free Cash Flow (DCF) model. We separate this model into three key parts: (1) Virginia Phase One, (2) Virginia Phase Two, & (3) Group overheads. We then add these parts together to arrive at a Sum-of-the-Parts (SOTP) for the Group before stripping out debt and expected dilution (from Phase Two) and then adding in a small "option" value for the Evander and Cryo-Vacc assets.

Key universal assumptions and their sources/rationale follow:

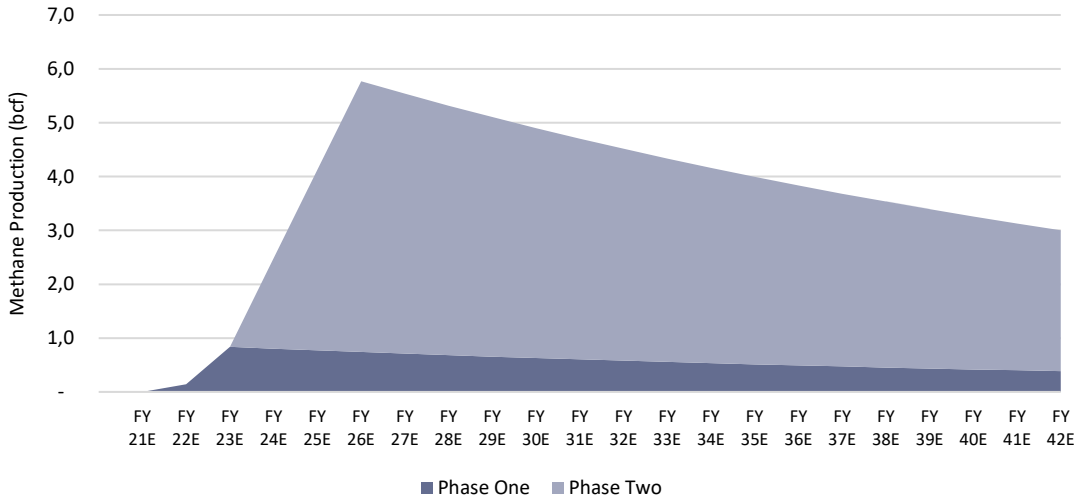
- **Weighted Average Cost of Capital (WACC)** is built from the Capital Asset Pricing Model (CAPM):
    - **Risk-free rate**: South African 10-year bond that is currently trading at an 8.9% yield.
    - **Beta**: We have used our 'Rule-of-Thumb' beta of 1.5x for Renergen (small cap + resource).
    - **Equity-risk Premium**: 5.5% based on long-term differences in domestic bond versus equity total returns.
    - **Cost of Debt**: 6.5% post-tax worked out from Renergen's blended funding that is either Prime plus 2% (less 28% corporate tax rate of South Africa) or 2.11% in USD (c.9.0%-post currency hedges) per its own Annual Financial Statement disclosures.
    - **Debt:Equity weighting**: While this will change on a spot-basis as the Group gears up for the different phases and then degears post-peak capex, we have selected 50% as an appropriate through-the-life-cycle gearing level.
    - **Inflation**: We have stripped South Africa's current CPI of 3.2% (source: Stats SA) out of the Group's WACC to arrive at a *real* WACC.
    - Hence, the (**real) WACC for Renergen equity is 8.6%**.
    - We have assumed that this WACC applies to all the Group's segmental DCF's, though in Phase Two (due to its more speculative nature as it digs in 2P reserves), we have added a further premium of +5.5% to the discount rate (i.e. *double* our equity-risk premium).
- **The USD/ZAR exchange rate used is R14.66**. As mentioned, we have assumed this spot rate remains flat for the DCF.
- **Gas assumptions:**
    - **LNG's spot price** is calculated at a 25%-discount to South Africa's Wholesale Diesel Price (A1) of 1294.7cents/litre. As mentioned, we have assumed this spot remains flat for the DCF.
    - **Helium's spot price** is assumed to be BLM's last recorded auction price in 2018 of $280/mcf. Linde's off-take for 80% of Phase One's is at the contracted price of $200/mcf while the remaining helium in Phase One and all the helium in Phase Two is priced at a 15%-discount to the helium spot price (i.e. $238/mcf). As mentioned, we have assumed this spot remains flat for the DCF.
    - **Methane runs at 90% purity and helium runs at 3%.** (source: MHA & historical evidence across existing wells, though there is evidence that indicates upside risk in this assumption)
- **Capex & operational assumptions**:
    - **Cost/well**: R1.5m (source: MHA guidance & confirmed with management)
    - **Success ratio**: 6 out of 10 wells drilled are successful (source: Historical evidence)
    - **Cost of connecting a successful well**: R1m (source: MHA and management guidance)
    - **Successful wells' flow rates of gas declines linearly at 4.0% y/y** after being connected (source: Historical evidence showing different wells declining flows of between 2% to 6% y/y)
    - **Stepped-fixed costs at a project-level** per c.0.8~1m GJ LNG-equivalent produced: R5.2m (~four small teams of employees rotating on eight-hour shifts every day of a calendar year)

- **Working capital** is assumed to a static 10% of revenue (Blue Gem Research assumption).
- **The economic life of the asset:** Our DCF's all run until 2042 (with*out* a Terminal Year) based on Renergen's petroleum production right expiring in that year. Arguably, though, the asset is materially longer-life than that and, the biogenic nature of the methane implies that it may be renewable and we would expect the Government to renew any viable right at that point in time.

The Virginia Gas Project: Graphical Representation

The combination of the above universal assumptions united with the different targeted (and guided-for) production rates and capex results in the below visual graphs illustrating the quantum, timing and production of the Virginia Gas Project's Phase One and Two.

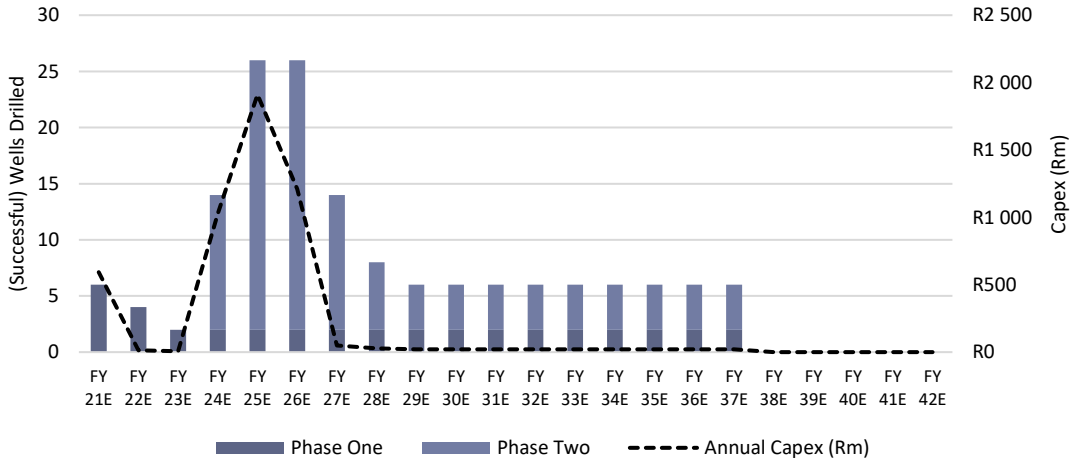
Figure 3: Our Expected (Methane) Production Profile for the Virginia Gas Project



Sources: Renergen, MHA, & Blue Gem workings and assumptions

What is obvious is that Phase Two is likely to be *multiples* the size of Phase One. While Phase One ran the pilot CNG project to de-risk itself, we could consider Phase One an enlarged "pilot" for Phase Two. Note that some of the central capex is front-loaded into Phase One and will be utilized in Phase Two, thus an IRR should be considered *across* the projects.

Figure 4: Our Expected Capex Profile for the Virginia Gas Project



Sources: Renergen, MHA, & Blue Gem workings and assumptions

The Virginia Gas Project: Phase One

We see Phase One's NPV at c.R493m (Table 1) and, other than the universal assumptions, have assumed the following project-specific variables:

- **Production**:
  - FY 22E: Ramp-up produces two~three-months' equivalent of steady-state.
  - FY 23E: Steady-state achieved in this financial year.
  - FY 24E: Well flow-rates begin their linear decay (per the above noted universal assumption).
  - While helium should be c.3% of gas recovered, Phase One was scoped for a lower concentration of helium and, thus, only 300kg/day of helium should be produced for the target run-rate of 50tons/day of LNG.
- **Capex**:
  - FY 21E: Capex of R571m and all-in cost of wells (i.e. successful, unsuccessful & connecting costs) of R21m are largely incurred this year, though a little spills over into FY 22E.

Table 1: Virginia Project Phase One's Summarized Discounted Free Cash Flow (DCF) Model

(Rm)	FY 21E	FY 22E	FY 23E	FY 24E	FY 25E	FY 26E	FY 27E	…	FY 42E
LNG GJ's Produced (GJ)	-	*150000*	*750000*	*864000*	*829440*	*796262*	*764412*	…	*414377*
Helium Produced (mcf)	-	*9707*	*23298*	*22366*	*21471*	*20612*	*19788*	…	*10727*
Revenue	-	66,48	264,44	292,60	280,90	269,66	258,87	…	140,33
EBITDA	-	52,26	207,52	237,74	228,02	218,69	209,73	…	111,28
Tax	-	-18,47	-80,98	-88,40	-84,67	-81,10	-77,68	…	-40,80
Capex	-592,65	-14,00	-7,00	-7,00	-7,00	-7,00	-7,00	…	-
Working Capital	-	-6,65	-26,44	-29,26	1,17	1,12	1,08	…	0,58
Assessed Loss	-	18,47	80,98	88,40	-	-	-	…	-
Free Cash Flow	**-592,65**	**31,61**	**174,07**	**201,48**	**137,51**	**131,71**	**126,12**	**…**	**71,07**
Discount Rate	*1,0*	*0,9*	*0,8*	*0,8*	*0,7*	*0,7*	*0,6*	…	*0,2*
PV	**-R592,65**	**R29,10**	**R147,50**	**R157,16**	**R98,74**	**R87,06**	**R76,74**	**…**	**R12,49**
NPV									**R493,34**

Sources: Renergen, various company reports, MHA, Profile Media, Bloomberg, & Blue Gem Research assumptions and workings

We expect an Internal Rate of Return (IRR) for this project of 19.8%, though we reference our earlier comments around the front-loading of capex into this phase that lower its IRR but will bolster Phase Two's IRR.

The Virginia Gas Project: Phase Two

We see Phase One's NPV at c.R6.7bn (Table 2) and, other than the universal assumptions, have assumed the following project-specific variables:

- We expect Phase Two to be scoped by FY 22E/23E and begin building towards the end of FY 23E or the beginning of FY 24E. We have conservatively booked the capex from FY 24E and production from the last third of FY 24E.
- **Production**:
  - FY 24E: Four months of steady-state equivalent production achieved in ramp-up.
  - FY 25E: Eight months of steady-state equivalent production achieved in ramp-up.
  - FY 26E: A full year's steady-state achieved.
  - FY 27E: Well flow-rates begin their linear decay (per the above noted universal assumption).
- **Capex**:
  - Plant capex is c.R4bn with c.R300m more for the all-in cost of wells.
  - This capex is spread from FY 24E till FY 26E, with peak capex spend being lumped towards the end of FY 25E/start of FY 26E.
- **Discount rate adjustment:**
  - Given the more prospective nature of Phase Two and its utilization of 2P reserves, we have adjusted our discount rate upwards for *only* this DCF.
  - We have done this by adding a further 5.5% equity risk-premium into our WACC.

Table 2: Virginia Project Phase Two's Summarized Discounted Free Cash Flow (DCF) Model

(Rm)	FY 21E	FY 22E	FY 23E	FY 24E	FY 25E	FY 26E	FY 27E	...	FY 42E
LNG GJ's Produced (GJ)	-	-	-	*1800000*	*3600000*	*5400000*	*5184000*	...	*2810176*
Helium Produced (mcf)	-	-	-	*258865*	*517730*	*776596*	*745532*	...	*404143*
Revenue	-	-	-	1387,37	2774,74	4162,11	3995,62	...	2165,97
EBITDA	-	-	-	1260,77	2526,80	3792,83	3640,28	...	1963,72
Tax	-	-	-	-416,06	-806,25	-1184,53	-1136,06	...	-611,52
Capex	-	-	-	-1022,00	-1904,00	-1204,00	-42,00	...	-
Working Capital	-	-	-	-138,74	-277,47	-416,21	16,65	...	9,02
Assessed Loss	-	-	-	-	-	-	-	...	-
Free Cash Flow	**-**	**-**	**-**	**-316,02**	**-460,92**	**988,09**	**2478,87**	**...**	**1361,22**
Discount Rate	*1,0*	*0,9*	*0,8*	*0,8*	*0,7*	*0,7*	*0,6*	...	*0,2*
PV	**R0,00**	**R0,00**	**R0,00**	**-R212,56**	**-R271,64**	**R510,21**	**R1121,50**	**...**	**R84,79**
NPV									**R6694,54**

Sources: Renergen, various company reports, MHA, Profile Media, Bloomberg, & Blue Gem Research assumptions and workings

Our NPV for Phase Two generates an IRR of 133.4%, though we highlight our views that this is because Phase One already absorbed some of the capex costs for this second phase.

Thus, perhaps more reflective, we have calculated an IRR for the collective "Phase One & Two", which is still an attractive (though more reasonable) 56.3% return. Once again, this assumes static spot prices (which may create upside or downside) and it does not consider Group overheads (which would lower this IRR at a shareholder level ~ we estimate to c.50%, excluding Evander and Cryo-Vacc).

Sum-of-the-Parts (SOTP), 12m TP, Implied Return & Sensitivity Matrix

Taking our Phase One and Phase Two DCF's, calculating an NPV for Group overheads (i.e. a discount) and factoring in debt and (potential) future dilution, we arrive at a SOTPs for Renergen that indicates that the stock is worth c.3539cps. If we assume Cryo-Vacc and Evander both add +10% to the Group, this boosts our SOTPs to a fair value of c.4247cps, which rolled-forward at our (nominal) Cost of Equity implies a 12m TP of 4977cps.

Table 3: Renergen's Sum-of-the-Parts (SOTP) Valuation

(ZAR)	Value
Virginia Gas Project (Estimated NPV)	
- Phase One	R493 341 968
- Phase Two	R6 694 536 831
Head Office NPV (I.e., Discount to SOTP)	-R501 722 628
Enterprise Value	**R6 686 156 172**
Less: Net Debt	-R569 764 000
Equity Value (pre-diluted)	**R6 116 392 172**
Issued Share Capital	*117 508 067*
*Potential Phase Two Dilution**	*55 315 061*
Fair Value (ZAR cps)	**3 539cps**
Add: Cryo-Vacc Option	+10%
Add: Evander Gas Asset Option	+10%
Fair Value (ZAR cps)	**4 247cps**
12m TP (ZAR cps)	**4 977cps**

*Sources: Renergen, various company reports, MHA, Profile Media, Bloomberg, & Blue Gem Research assumptions and workings; * Assuming Phase Two needs a rights issue of c.R1bn and this is placed at a price of 1952cps (based on the Group's current ruling prices on the JSE).*

Below in Table 4, we have run a sensitivity analysis on key input spot prices (diesel, helium and the USD/ZAR exchange rate) to show how movements in these potentially change Renergen's valuation.

Table 4: Renergen's Sum-of-the-Parts (SOTP) Sensitivity to Key Spot Prices

Diesel/ZAR:	-10% weaker ZAR	-	+10% stronger ZAR
-10% lower diesel price	4474cps	3969cps	3464cps
-	4752cps	**4247cps**	3742cps
+10% higher diesel price	4976cps	4472cps	4020cps

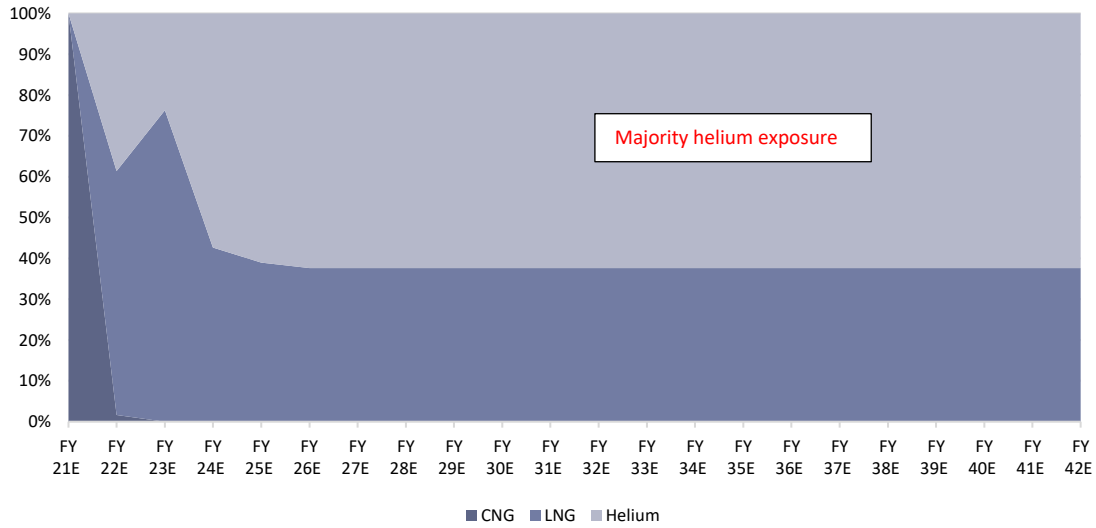
Helium/ZAR:	-10% weaker ZAR	-	+10% stronger ZAR
-10% lower helium price	4216cps	3759cps	3303cps
-	4752cps	**4247cps**	3742cps
+10% higher helium price	5288cps	4734cps	4181cps

Sources: Renergen, various company reports, MHA, Profile Media, Bloomberg, & Blue Gem Research assumptions and workings

The Group is certainly sensitive to diesel (through its LNG being contractually pegged to the domestic diesel price) and the USD/ZAR exchange rate (via its pricing of ZAR-diesel & $-based helium spot). That said, due to the weight of revenues in Phase Two coming from helium (Figure 5), it is *more* sensitive to this gas' spot price

movements and, thus, we would consider it more a helium-driven investment than an LNG one. Given that both spot prices (diesel via oil & helium) are ultimately priced in USD's, we see Renergen's valuation and expected future cash flows as having a strong Rand Hedge element.

Figure 5: Virginia Gas Project's Expected Split in Revenues



Sources: Renergen, various company reports, MHA, Profile Media, Bloomberg, & Blue Gem Research assumptions and workings

Key risks to our valuation

The key risks to our above valuation methodology, its related assumptions & its resulting answer are:

- **Spot prices**:
  - The USD/ZAR,
  - The Oil price in how it affects the domestic diesel price (*including* taxes), &
  - The helium price.
- **Yields, flow-rates & resource risk**:
  - The purity (see below) & flow-rates (we have assumed a 4.0% y/y decline from point of peak production over the life of the gas right) of natural gas from the Virginia Gas Project,
  - And, how much of it is methane (we have assumed 90%) relative to helium (we have assumed 3%; some wells have much higher concentrations), &
  - If all the resource that we *think* is there is *actually* there (i.e. the so-called 'below the ground' risk).
- **Other risks**:
  - If the Group cannot gain traction in the local trucking industry for conversion of LPG fleet into LNG fleet (see **Appendix B**),
  - Inflation and how it may affect both future opex and future capex costs,
  - Interest rates and how it may change borrowing costs and discount rates,
  - Potential future dilution (e.g. from Phase Two and, possibly, Evander), &
  - South African sovereign risk.

Appendix A: Renergen, Tetra4 & the Virginia Gas Deposit

Short History of Renergen Ltd & Tetra4 (Pty) Ltd

In 2015, Renergen listed on the JSE as a Special Purpose Acquisition Vehicle ("SPAC") and made its principal acquisition being a 90%-shareholding in Molopo (thereafter renamed "Tetra4"). Subsequently, the Group bought out the remaining 10% and Tetra4.

Tetra4 holds the first and only onshore petroleum production right in South Africa (valid until 2042). While we end our valuation of this asset in 2042, if you refer to the detail of the 'Virginia Gas Project' you will note that the methane gas is biogenic and, thus, arguably renewable and could last well beyond 2042. While sovereign risk attaches to this assumption, we would assume that the South African Government would renew any gas right on a resource that is still producing gas and generating value for the fiscus.

There was also a renewable asset in the Group, but this has now been disposed of to focus exclusively on the existing gas rights. Likewise, the Group also holds the rights to the Evander Gas Resource, which initial test have been positive (though with lower helium concentrations than the Virginia Gas Project).

Figure 6: Major Historical Milestones Forming The Virginia Gas Project

Sources: Renergen, various reports & Blue Gem Research workings and assumptions

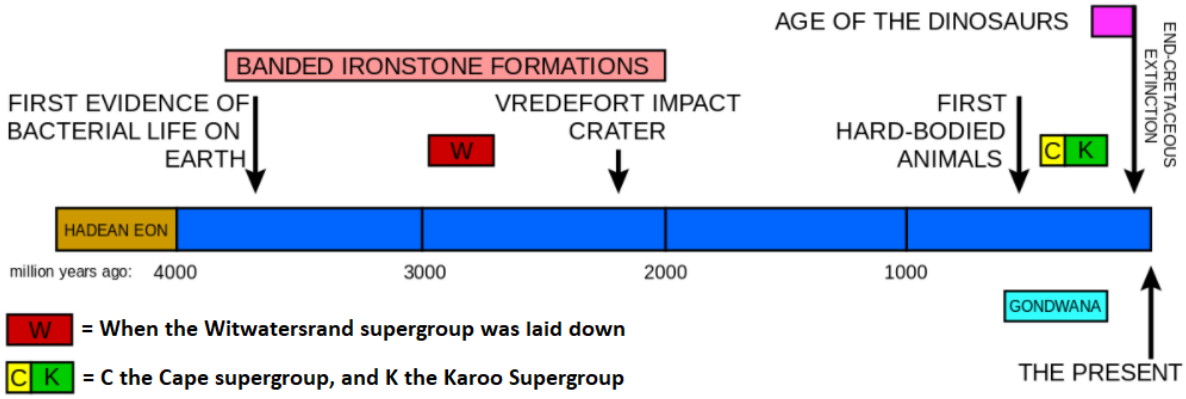
Finally, the Group has developed Cryo-Vacc, which is a nitrogen/helium cold storage solution for the transport of vaccines (amongst other biologics) for periods of up to 30 days. The initial tests have been successful, and the Group is rapidly rolling out—with technology & logistics partners—the product to help with the global distribution of the various COVID-19 vaccines. Ultimately, though, the cold storage biologics market is materially larger and, if this product can gain global traction, we think it may become a fully-fledged business in its own right (and, thus, could either be realized via a sale, unbundling or separate listing).

The Virginia Gas Deposit

A little over 2 billion years ago, a meteorite struck Earth leaving the largest verified crater known to man in the Free State (the Vredefort Crater). The original complex crater was c.300km across but has eroded to a much smaller circumference now. Perhaps more importantly, the meteorite—estimated to be between 5km to 10km in diameter—remains buried far below the existing geological structures. It is a meteorite rich in radioactive

uranium and thorium, which—as they decay—release helium. Passing methane (Figure 8) mixes with this steady release of helium and, thus, the Virginia Gas Resource is formed.

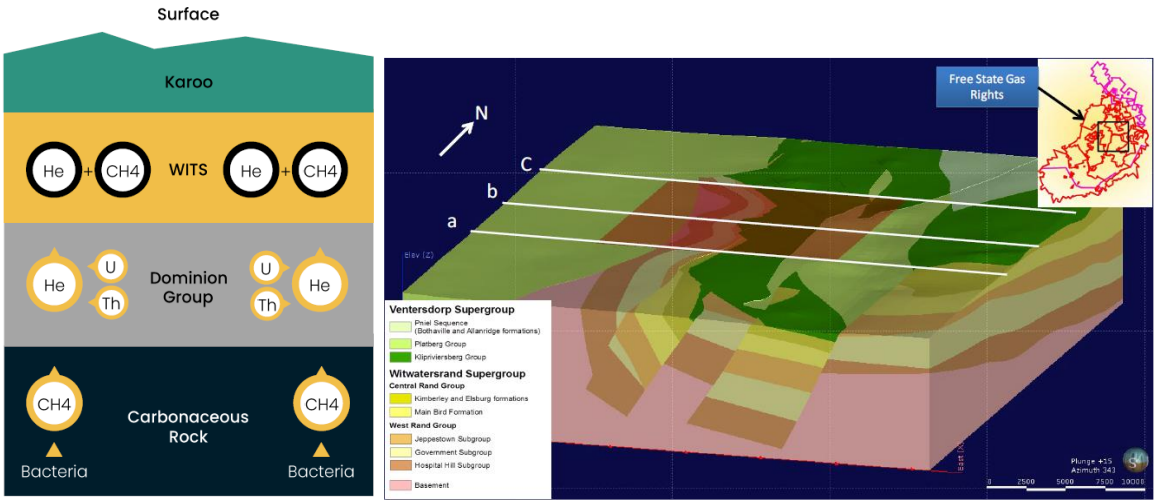
Figure 7: South Africa's Geological History



Sources: Geology.com, Wikipedia with Blue Gem Research highlights & emphasis

Deep within the Witwatersrand Supergroup unidentified bacteria consume the carbonaceous shales and excrete methane gas. This methane rises—mixing with the surrounding helium—and becomes guided into faults and fractures in the rock—building its pressure—that sees it ultimately arrive at the surface.

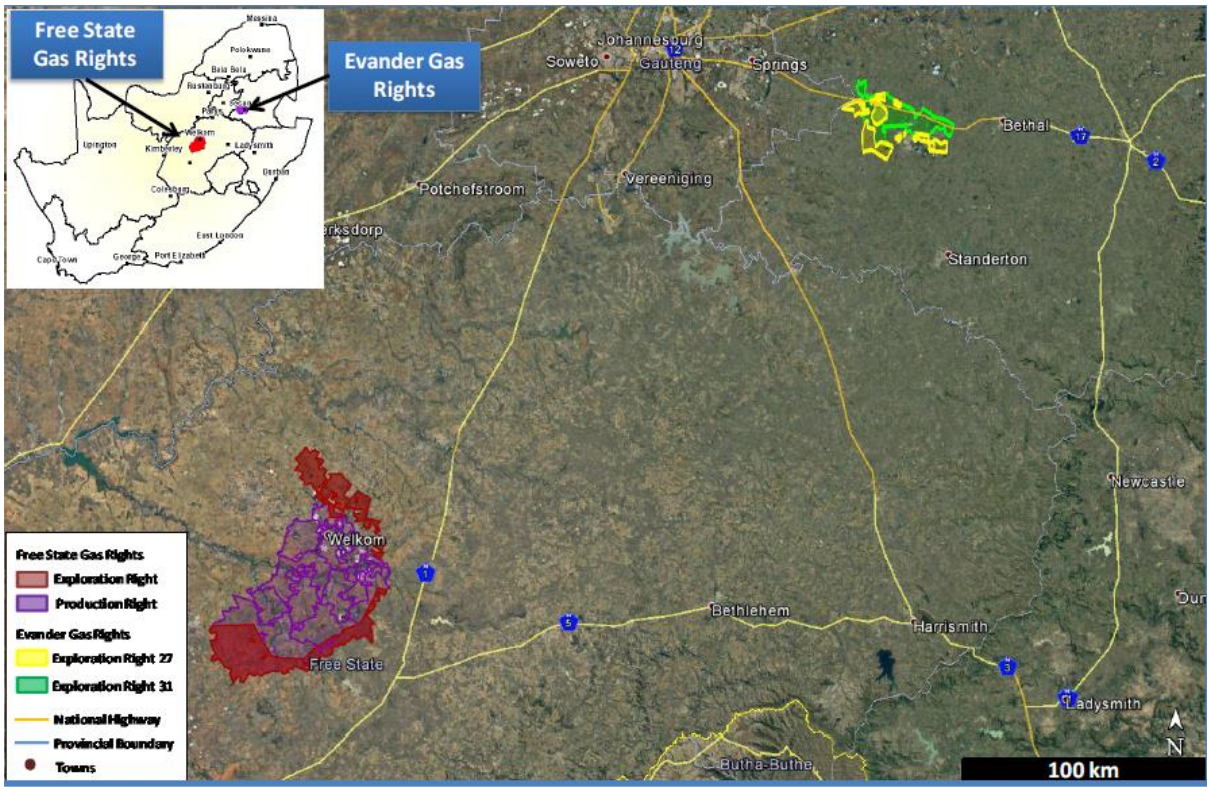
Figure 8: Illustrative Cross-section of Resource & Rand Group's Known Faults

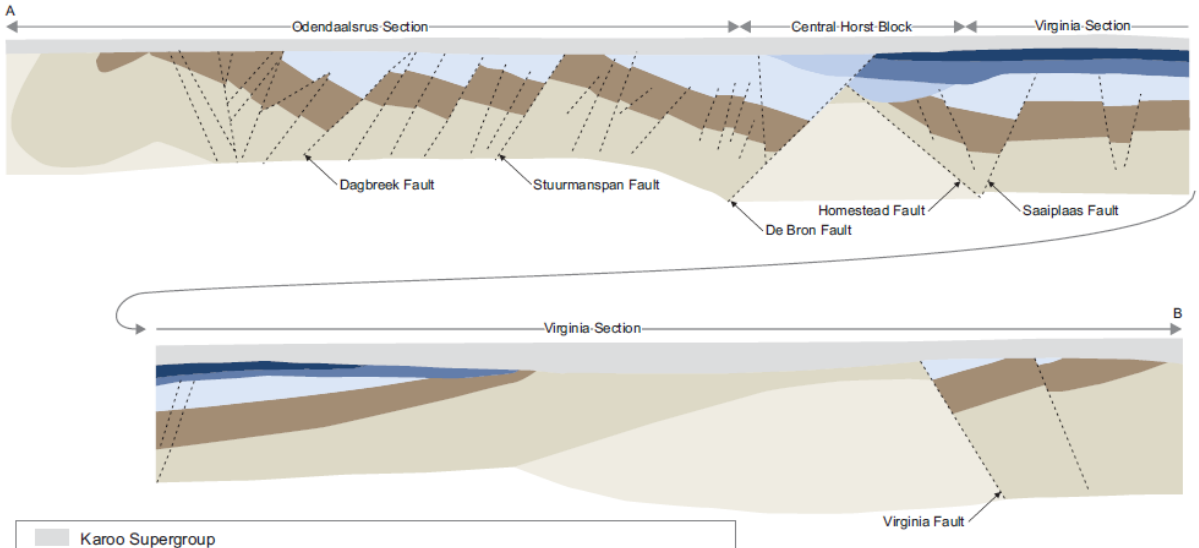


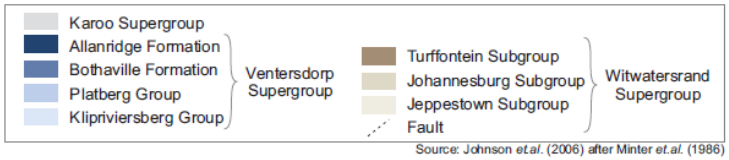
Sources: Renergen, MHA Petroleum Consultants

In this way, methane and helium are both generated, gathered in sufficient concentrations to become economically viable and—in the methane's case—are arguably renewable (even though in this research report we have assumed a decay in the flow rates of 4% y/y to agree with current gas methodology norms).

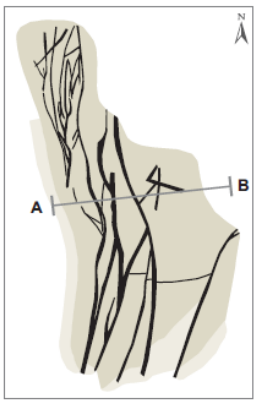
Figure 9: Geography, Detailed Cross-section & Stratigraphy through the Virginia Gas Project







Source: Johnson *et.al.* (2006) after Minter *et.al.* (1986)



		Soil and alluvium	
			Unconformity
Karoo Sequence (183-22m)	Ecca Group	Sandstones, carbonaceous shales, and coal seams	
	Dwyka Group	Tillite	
			Unconformity
Ventersdorp Supergroup (up to 710m)	Klipriviersberg Group	Grey-green pyroclastics and amygdaloidal andesitic lavas	
			Unconformity
Witwatersrand Supergroup (up to 2,000m)	Central Rand Group	Quartzites, amygdaloidal lava, shales, and conglomerates, including the Kimberley Reef	
	West Rand Group	Greywackes, quartzites, and magnetic shales	
			Unconformity
Archaean Basement	Central Rand Group	Schists, metasediments, and gneissose granites	

Sources: MHA Petroleum Consultants, Renergen, Venmyn/Deloitte Independent Reserves Update Report on the Virginia Project

Appendix B: The Liquified Natural Gas (LNG) Market

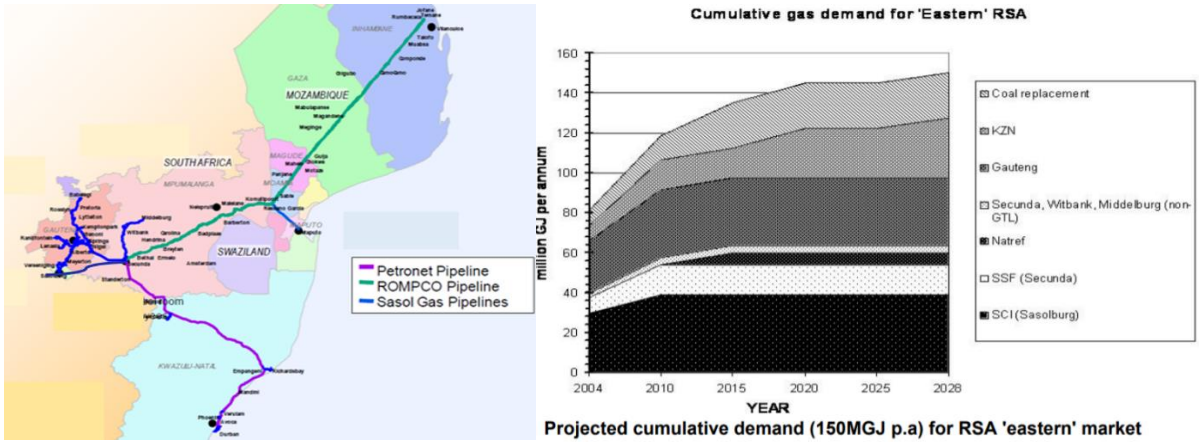
Supply of LNG (in South Africa):

The liquefaction of natural gas has allowed for the ease of its transport and, thus, the global trade in the commodity to spring up. Despite this, there remain geographic premiums, particularly when either inland (i.e. further from the ports that the LNG ships can reach) or when existing pipeline infrastructure significantly lowers delivery costs (i.e. there are very low opex costs involved after a pipeline is built).

We will not specifically touch on the global LNG market because Renergen's Virginia Gas Project lies in South Africa. Not just is this gas reserve inland (Free State Province – See Figure 9), but South Africa lacks any domestic LNG reserves. Thus, key variables in Renergen's LNG supply-side economics are in its favour and we will zoom into these factors within the *South African* LNG market analysis.

Currently, natural gas from Mozambique is piped down to South Africa (via a low-pressure reticulation – Figure 10) and predominantly used by Sasol in its petrochemicals business. Unfortunately, this gas reserve will soon be depleted. Further away, Mossel Bay Gas to Liquids plant continues to operate, albeit its resource is also fast depleting.

Figure 10: Existing Gas Pipe Infrastructure in (Eastern/Inland) South Africa & Expected Demand



Sources: South African Government (Gas Infrastructure Plan – 2005 Update) & Owner Team Consultation

While Total in Mozambique has planned for a large LNG project to come on stream in the medium-term, the rise of Islamist militant insurgency in the northern province of Cabo Delgado is increasingly putting this at risk. Likewise, while Total's deepwater discovery of gas in the Brulpadda & Luiperd blocks off the south coast are material in size, their development and the timing thereof remain uncertain.

Just Johannesburg alone is estimated to use 200,000~220,000 GJ of gas a day and, given the depleting reserves and uncertain new supply, there is likely to be a deficit situation in the near- to medium-term. Furthermore, this is ignoring the range of trucks and motor vehicles that use LPG and could be converted to LNG (Table 5).

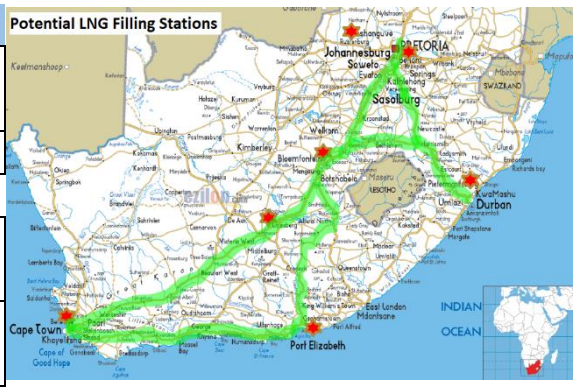
(Trucking) Demand for LNG:

While industrial, LPG demand for gas (i.e. Sasol) and consumers underpin South Africa's broader demand for gas (and will require the commodity in the event of any domestic supply deficit), there is a further opportunity in the conversion of truck operators' fleets from LPG to LNG. Beyond the ecological savings, Renergen's pegging of its LNG to 75% of the diesel price implies a further 25% monetary saving.

Renergen's CNG pilot project saw >1km driven by its trucking customer. Subsequently, the Group has signed on further truck operators. This success and the Group's strategy of rolling out a well-to-tank LNG network (Figure 11) dictates our focus on the domestic heavy trucking industry as a natural buyer of the Group's LNG.

Table 5 & Figure 11: Renergen's Well-to-Tank Plans & a Calculation of the (Potential) Domestic Trucking Industry's LNG Market

Potential Domestic Truck Fleet Conversions to LNG:	30 August 2020
(1) Heavy Trucks in South Africa	387 908 registered trucks
(2) Average GJ's consumed per truck/day	8,0 GJ/day (inc. downtime)
(1) x (2) x 365 days = GJ/year for industry	1 132 691 360 GJ/year
Renergen Production of LNG	
- Phase One (GJ/year)	912 500 GJ/year
- Phase One (% of trucking market)	***0,08% market share***
- Phase Two (GJ/year)	5 475 000 GJ/year
- Phase Two (% of trucking market)	***0,48% market share***



Sources: Stats SA (heavy trucks - 30 August 2020), Renergen various reports & Blue Gem Research workings and assumptions

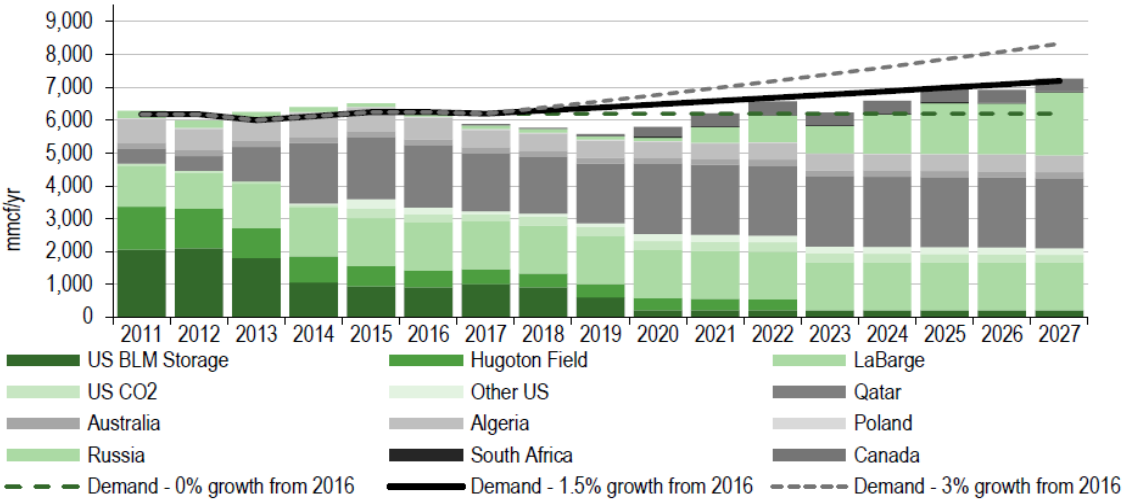
What is clear from Table 5 is that if Phase One and Two's LNG *entire* production is sold into the local heavy truck market, its use would still be <1.0% of the market share of the registered heavy trucks in South Africa (with the remaining trucks still running on LPG). Hence, we feel comfortable that the Group's targeted market for their production is large enough to easily absorb it.

Conclusion:

While LNG is a global commodity, Renergen's inland production should have unique regional advantages in both cost and the potential for any domestic supply deficit. Furthermore, its marketing to the local heavy truck industry has both attractive economics for itself (pegging it to the local diesel price & taxes) and its customers (ecological and economic efficiencies). Finally, the domestic trucking market is sufficiently large that we believe Renergen will not struggle to gain traction for their entire production of LNG here.

Appendix C: The Helium Market

Figure 12: Estimated Globally Demand/Supply Forecast for Helium (mmcf/year)*



*Sources: JR Campbell & Associates report for BLM, Edison Research & various other reports; * Above assumes Gazprom's Amur helium production comes on stream per its target – any delay or underperformance of this supply will likely see a helium supply deficit (unless zero growth in demand is assumed).*

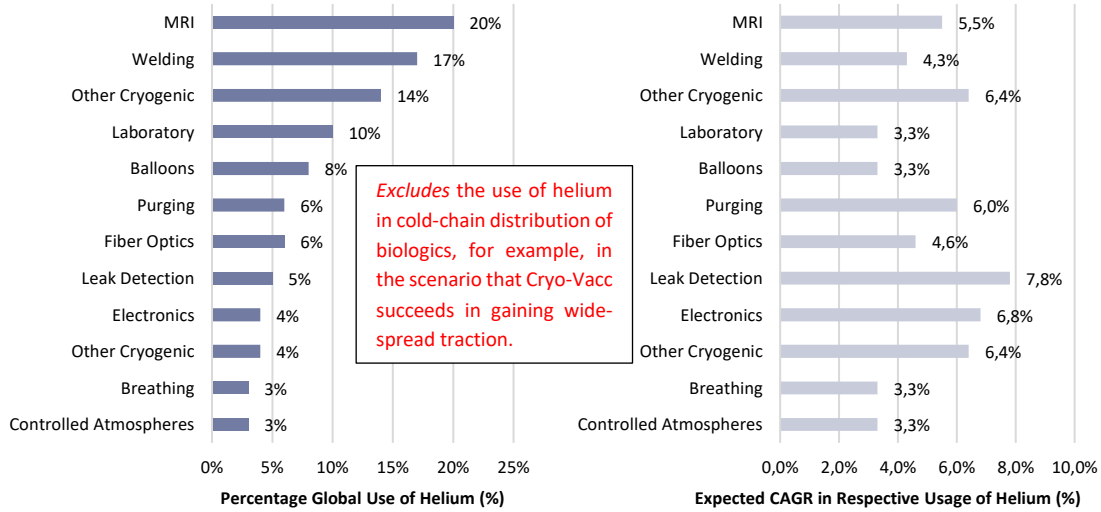
Demand for Helium:

Helium has some unique properties that make it irreplaceable for what it is used. These properties are:

- Extremely low boiling point,
- Small atomic size,
- Low atomic weight,
- Unreactive nature, &
- High thermal conductivity.

The above properties make helium excellent for uses that need cooling *without* the risk of reaction and/or utilize one or more of its other properties (e.g. lighter than air). Figure 13 reveals how the current global demand for helium is stacked while also showing the relatively high expected growth rates of each demand vector (excluding any demand creation from the Cryo-Vacc business).

Figure 13: Global End-uses for Helium & (Expected) Respective Growth Rates



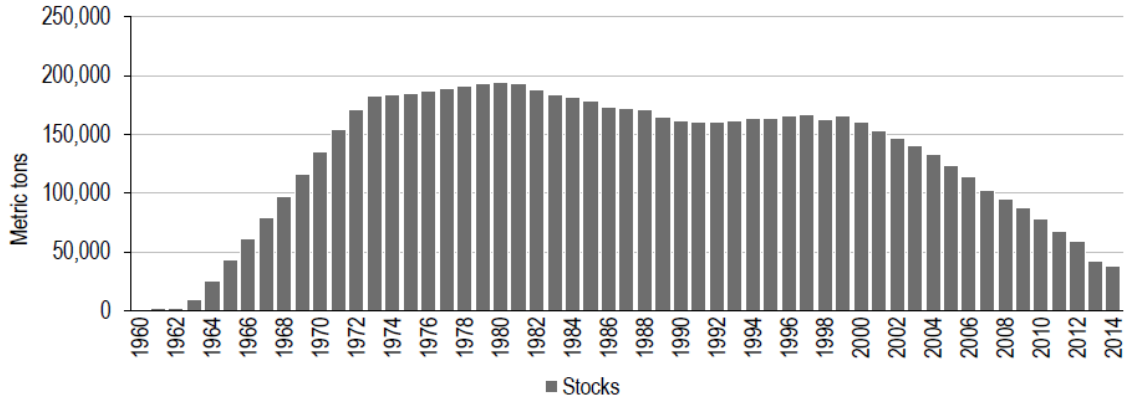
Sources: Kornbluth consulting, Various macro-economics industrial forecasts, and Blue Gem Research workings & assumptions

Supply of Helium:

While helium is the second most common element in the universe, its supply on Earth is quite constrained and most of its commercial production originates as a c.0.4% by-product of natural gas. Due to this by-product nature, helium supply is closely correlated to the commercial viability & supply of natural gas.

In 2013, the US passed legislation to begin liquidating its strategic helium reserves. This move kept a lid on helium's spot market via plentiful auction, though, Figure 14 reveals how this process has now played out. Hence, the final auction price for helium of $280/mcf was materially higher than historical prices.

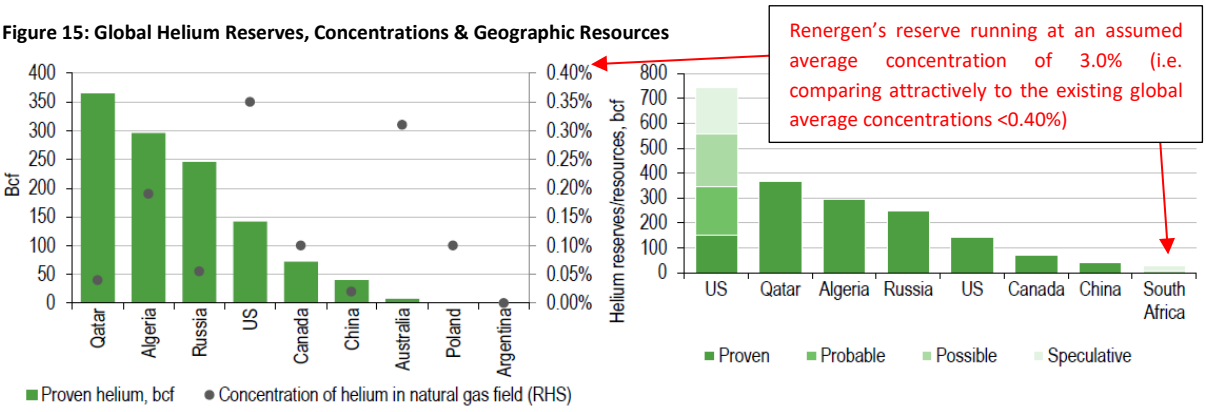
Figure 14: US Strategic Reserves of Helium



Source: BLM

Moving beyond the US, most of the global supply of helium comes as a by-product from four large gas fields(/facilities), being LaBarge (ExxonMobile ~ c.25% of global supply), Hugoton (lying in the US but it is towards the end of its life), Algeria and Qatar (Helium I and II projects ~ c.28% of global supply). Russia's Gazprom's Amur project could replace the helium supply deficit created by the end of the US stockpile auction, but mega-projects like Amur are often delayed and could well yield lower than expected helium concentrations (they currently expect 0.15%). *Assuming* Amur hits its targets, within 5~10 years, its production could make up c.30% of the global supply.

Figure 15: Global Helium Reserves, Concentrations & Geographic Resources



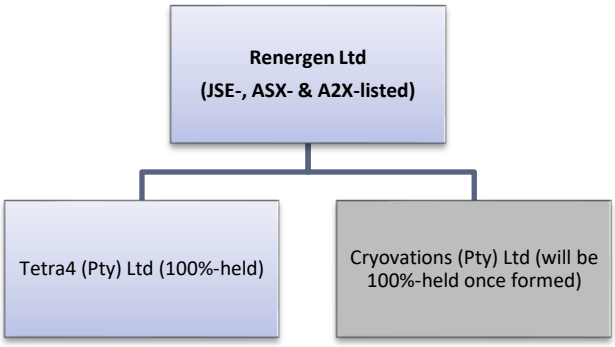
Sources: BLM, USGS, Edison, various reports, & Blue Gem Research additions

Conclusion:

Helium is an *un*substitutable & irreplaceable input into a range of sophisticated uses that—on a balance of probabilities—are growing in importance (e.g. aerospace, semiconductors & MRI). While the pandemic has seen industrial and retail use of helium drop and Gazprom's Amur project should see some supply coming back to the market, we would argue that the price for spot helium has upside. This upside could be caused by a combination of the geopolitical/risky nature of its supply and the reality of a steadily growing demand for the irreplaceable commodity.

Appendix D: Group Overview, Governance & Management

Figure 16: Summarised Group Structure



Sources: Renergen and Blue Gem Research workings

Renergen's group structure is clean (Figure 16) with its single major underlying asset being its 100%-shareholding in Tetra4 (Pty) Ltd that holds the Virginia Gas Project (and Evander) rights. The Group's Cryo-Vacc product is held directly by the Group, though management has asserted their intention to set up a separate subsidiary that will thereafter hold this business ("Cryovations (Pty) Ltd").

Likewise, the Group features well against our short governance checklist and appears to have well-aligned interests with shareholders without excessive remuneration.

Table 6: Summarised Corporate Governance Checklist

Corporate Governance Aspect	In Place?	Comment
External auditors?	Yes	The Group currently has Mazaars appointed as their external auditor with the audit partner specifically being Shaun Vorster.
Internal audit function?	Yes	Renergen's Audit, Risk & IT Committee oversees a range of functions, including the outsourced internal audit service performed within the Group.
Appropriate management incentives/alignment with shareholders?	Yes	While a share-based incentive is in place, initiating founders remain key management and large shareholders (holding c.15% of the Group's shares in issue), thus aligning their interests with external shareholders. Executive remuneration for FY 20 was R12m or c.0.5% of the Group's market capitalisation. Non-executive remuneration for FY 20 was R5m or c.0.2% of the Group's market capitalisation. Thus, the total Board remuneration for FY 20 was less than 1% of the Group's market capitalisation and, therefore, we do not believe that this is in any way excessive.
Independent non-executive Chairman?	Yes	Brett Kimber is the Group's independent non-executive Chairman and comes with a background in the gas industry. He served for a quarter of a decade at Linde (including a period as Managing Director of Afrox).
Balance of non-executives on the Group Board?	Yes	There are six non-executives on a Board of nine directors.

Sources: Company AFS, Blue Gem Research

Management

Stefano Marani: Chief Executive Officer & Managing Director

BSc Actuarial Science, BSc Hons in Advanced Mathematics of Finance

Stefano was part of the team which acquired Molopo South Africa Proprietary Limited (now Tetra4) from its previous owners, Molopo Energy Limited, and has been involved with the company in a management role since April 2013. He has significant experience in the areas of structured finance and advisory. After completing his formative training with Deutsche Bank, he was recruited by Morgan Stanley in London, where he was ultimately charged with building their sub-Saharan African fixed income capital markets business. *Date appointed to Board: 20 Nov 2014.*

Nick Mitchell: Chief Operating Officer

Microsoft Certified Systems Engineer (MCSE) A+ Certified

Nick was instrumental in the acquisition of Tetra4 from Molopo Energy Limited in October 2013 and subsequently developed and implemented Tetra4's vertically integrated business plan. He has extensive

experience in infrastructure projects across Africa supported by a network in territories including Cote d'Ivoire, the Democratic Republic of Congo and Mozambique. *Date appointed to Board: 25 Nov 2015.*

Fulufhedzani Ravele: Chief Financial Officer

BComm Financial Accounting, Postgraduate Diploma in Accounting

Fulu obtained her CA (SA) qualification with Deloitte South Africa in 2012. She has experience in financial accounting, internal and external audit. After qualifying as a CA(SA), she was seconded to Deloitte LLP Los Angeles office as an audit senior. She was appointed as a management accountant at Barclays Capital South Africa in June 2013, where she focused on reporting financial results for Corporate and Investment Banking (CIB) South Africa and rest of Africa. *Date appointed to Board: 25 Nov 2015.*

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** Market prices in this report predominantly set to intra-day prices noted on the 23/02/2021.*

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Renergen Limited	B

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