

JGH - More advanced than some might realise in getting to pilot production

JGH is currently undertaking planning for an extended production test at the Tavan Tolgoi Coal Bed Methane (TTCBM) Project which **once completed will allow them to determine the best location for wells to be drilled for a pilot production program in mid to late CY 2023**.

Equipment for the extended production testing at Red Lake-5 and Red Lake-7 is forecast to be delivered and installed in late CY 2022/early 2023. Flow testing at Red Lake-5 and Red Lake-7 is then forecast to commence in early CY 2023.

JGH forecast to grow its net 2C Contingent Gas Resource of 148 Bcf in CY 2023.

The TTCBM Project (60% held by JGH) has an un-risked Gross Contingent Resources of 118 billion cubic feet (Bcf) of 1C, 246 Bcf of 2C and 305 Bcf of 3C. **Thus, JGH's net recoverable 2C un-risked contingent resource is 148 Bcf.** MST note the resource booking is likely to grow materially given the contingent resources are only for the Red Lake area, which is approximately 30 km² of the 203 km² prospective area and <5% of the license area (665 km²).

Supporting this view is the recent drilling carried out in the Baruun Naran permit (west of the TTCBM Project) and the TTCBM Eastern Zone. The first well, BNG-1, in Baruun Naran has intersected 35m of gassy coal in a 463m well and the first two wells in the Eastern Zone have both intersected gassy coal ((Vista-1, 38m from 116m of coal and Brownhill-1, 41m from 60m of coal). JGH believe this may demonstrate the strike distance of the CBM play is up to 35km.

Cooperation with local operators providing useful data for further developments

JGH has started working with Erdenes Tavantolgoi JSC (ETT is the license holder of the Tavan Tolgoi coal mine adjacent to TTCBM) and is carrying out shallow well work to provide gas assessment to aid with safety protocols and environmental credentials for ETT while at the same time giving JGH valuable data to allow a better understanding of the coal in the permit.

Small capital raise completed to fund pilot production equipment and 2D seismic

JGH has completed a \$3m capital raise (60m shares at \$0.05), with a free option exercisable at \$0.075 before 20 November 2025 for every two shares issued.

Valuation

Our valuation is unchanged at \$0.21. (See initiation note for detail and risk associated with our forecasts and valuation).



Jade Gas Holdings Limited (JGH) is a gas exploration company focused on the coal bed methane (CBM) potential of Mongolia. JGH's flagship project is the Coal Bed Methane gas project over the Production Sharing Agreement (PSA) area of Tavan Tolgoi XXXIII unconventional gas basin, (the TTCBM Project). JGH's strategy is to seek to develop the project so that gas produced may provide a reliable supply option to the oil and gas market and to the power sector in Mongolia.

See our initiation "[Jade Gas Holdings aims to support Mongolia's clean energy transition](#)".

Stock	JGH.ASX
Price	A\$0.05
Market cap	A\$70m
Valuation	A\$0.21 (Unchanged)

Company data

Shares on issue	1397.4m
Cash (September 2022)	A\$3.5m (\$6.3m post \$3m raise & costs)

Next news

Late CY 2022 - Production testing equipment forecast to be delivered and installed with flow testing to commence in early CY 2023

CY 2023 – Pilot production program

JGH Share Price (A\$)



Source: FactSet

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Financial data table

Jade Gas Holdings					JGH-AU
Year end 31 December					
MARKET DATA					
Price	A\$				0.050
52 week high / low	A\$		0.089		0.047
Valuation	A\$				0.21
Market capitalisation					
Shares on issue (basic)	m				69.9
Options & performance shares	m				236
Potential diluted shares on issue	m				1,633
INVESTMENT FUNDAMENTALS					
EPS Underlying	¢	(0.7)	(0.4)	(0.4)	(0.3)
EPS Reported	¢	(0.7)	(0.4)	(0.4)	(0.3)
P/E Underlying	x	n/m	n/m	n/m	n/m
P/E Reported	x	n/m	n/m	n/m	n/m
Free cash flow					
Free cash flow per share	¢	(0)	(1)	(1)	(1)
Free cash flow yield	%	n/m	n/m	n/m	n/m
Year end share price / Spot	A\$	0.070	0.050	0.050	0.050
Year end shares	m	1,209	1,397	1,557	1,640
Average shares on issue	m	859	1,282	1,474	1,595
Market cap (Y/E / Spot)	\$m	85	70	78	82
Net debt /(cash)	\$m	(4)	(3)	(3)	(1)
Enterprise value	\$m	81	67	74	81
EV/EBITDAX	x	n/m	n/m	n/m	n/m
Net debt / Enterprise Value	x	(0.0)	(0.0)	(0.0)	(0.0)
12 month relative performance versus S&P/ASX 200 Energy Index					
PROFIT AND LOSS (A\$m)					
Sales	\$m	0.0	0.0	0.0	1.7
Operating costs	\$m	(5.9)	(5.0)	(5.5)	(5.9)
EBITDAX	\$m	(5.9)	(5.0)	(5.5)	(4.2)
Exploration & development	\$m	0.0	0.0	0.0	0.0
EBITDA	\$m	(5.9)	(5.0)	(5.5)	(4.2)
Depreciation & amortisation	\$m	(0.1)	(0.1)	0.0	(0.2)
EBIT	\$m	(5.9)	(5.1)	(5.5)	(4.4)
Net interest	\$m	(0.0)	0.0	0.0	0.0
PBT pre impairments / unusual	\$m	(5.9)	(5.1)	(5.4)	(4.4)
Impairments	\$m	0.0	0.0	0.0	0.0
Pretax Profit	\$m	(5.9)	(5.1)	(5.4)	(4.4)
Tax expense	\$m	0.0	0.0	0.0	0.0
NPAT	\$m	(5.9)	(5.1)	(5.4)	(4.4)
Minority interests	\$m	(0.2)	0.0	0.2	(0.4)
Reported NPAT	\$m	(5.8)	(5.1)	(5.2)	(4.7)
BALANCE SHEET(A\$m)					
Cash	\$m	4.4	3.3	4.0	1.2
Receivables	\$m	0.1	0.1	0.2	0.2
Other	\$m	0.7	0.7	0.7	0.7
Current assets	\$m	5.2	4.1	4.8	2.0
Plant and equipment	\$m	0.8	2.8	2.8	2.8
Exploration and evaluation assets	\$m	2.6	7.2	11.7	20.5
Right of use asset / Other	\$m	0.3	0.3	0.3	0.3
Non current assets	\$m	3.7	10.4	14.9	23.7
Total Assets	\$m	8.9	14.5	19.7	25.7
Payables	\$m	0.4	0.4	0.4	0.4
Borrowings	\$m	0.0	0.0	0.0	0.0
Other	\$m	0.1	0.1	0.1	0.1
Current liabilities	\$m	0.5	0.5	0.5	0.5
Borrowings	\$m	0.3	0.2	0.2	0.2
Other	\$m	0.3	0.3	0.3	0.3
Non current liabilities	\$m	0.6	0.5	0.5	0.5
Total Liabilities	\$m	1.1	1.0	1.0	1.0
Equity	\$m	15.3	25.0	36.1	47.0
Retained earnings	\$m	(7.5)	(12.5)	(17.8)	(22.5)
Reserves	\$m	0.1	0.0	0.0	0.0
Minority Interests	\$m	(0.1)	1.1	0.4	0.2
Shareholder's equity	\$m	7.8	13.5	18.7	24.7
CASH FLOW (A\$m)					
OCF - pre interest & tax	\$m	(2.2)	(3.3)	(5.5)	(4.2)
Net corporate interest	\$m	0.1	0.0	0.0	0.0
Tax Paid	\$m	0.0	(0.0)	0.0	0.0
Other	\$m	0.0	0.0	0.0	0.0
Operating cash flow	\$m	(2.1)	(3.3)	(5.4)	(4.2)
PPE	\$m	(0.4)	(2.1)	0.0	0.0
Development capex	\$m	0.0	0.0	0.0	(4.0)
Exploration & evaluation	\$m	(1.4)	(4.7)	(4.5)	(5.0)
Other investing cash flow	\$m	(0.0)	0.1	0.0	0.0
Net investing	\$m	(1.8)	(6.8)	(4.5)	(9.0)
Net movement in Equity	\$m	8.1	9.7	11.1	10.9
Cash dividends Paid	\$m	0.0	0.0	0.0	0.0
Net debt movement	\$m	(0.0)	(0.1)	0.0	0.0
Other	\$m	(0.0)	(0.6)	(0.4)	(0.6)
Net Financing	\$m	8.1	8.9	10.6	10.3
Change in cash	\$m	4.2	(1.1)	0.7	(2.8)
Jade Gas Holdings License Locations					
Coal Bed Methane Project Resources & Reserves					
Permit (JGH interest)	Unit	1U	2U	3U	
Tavan Tolgoi (60%)	Bcf	216	1,044	3,062	
Barun Naran (66%)	Bcf	13	65	186	
Shivee Gobi (100%)	Bcf	500	2,000	6,000	
Eastern Gobi (100%)	Bcf	450	3,400	18,400	
Net to JGH	Bcf	1,088	6,069	26,360	
Permit	Unit	1C	2C	3C	
Tavan Tolgoi	Bcf	118	246	305	
Net to JGH (60%)	Bcf	71	148	183	

Source: Company, MST

JGH’s drilling program continues to be expanded

JGH has commenced drilling an additional well in the Red Lake area, Red Lake-7, which will be drilled as an extended and pilot production well with Red Lake-5, which is currently being re-drilled.

The flow testing from the extended production test on Red Lake-5 and Red Lake-7 is targeted for early CY 2023. Design and procurement planning is well advanced with a contractor engaged for the design work. The equipment is forecast to be delivered and installed in late CY2022/early CY2023.

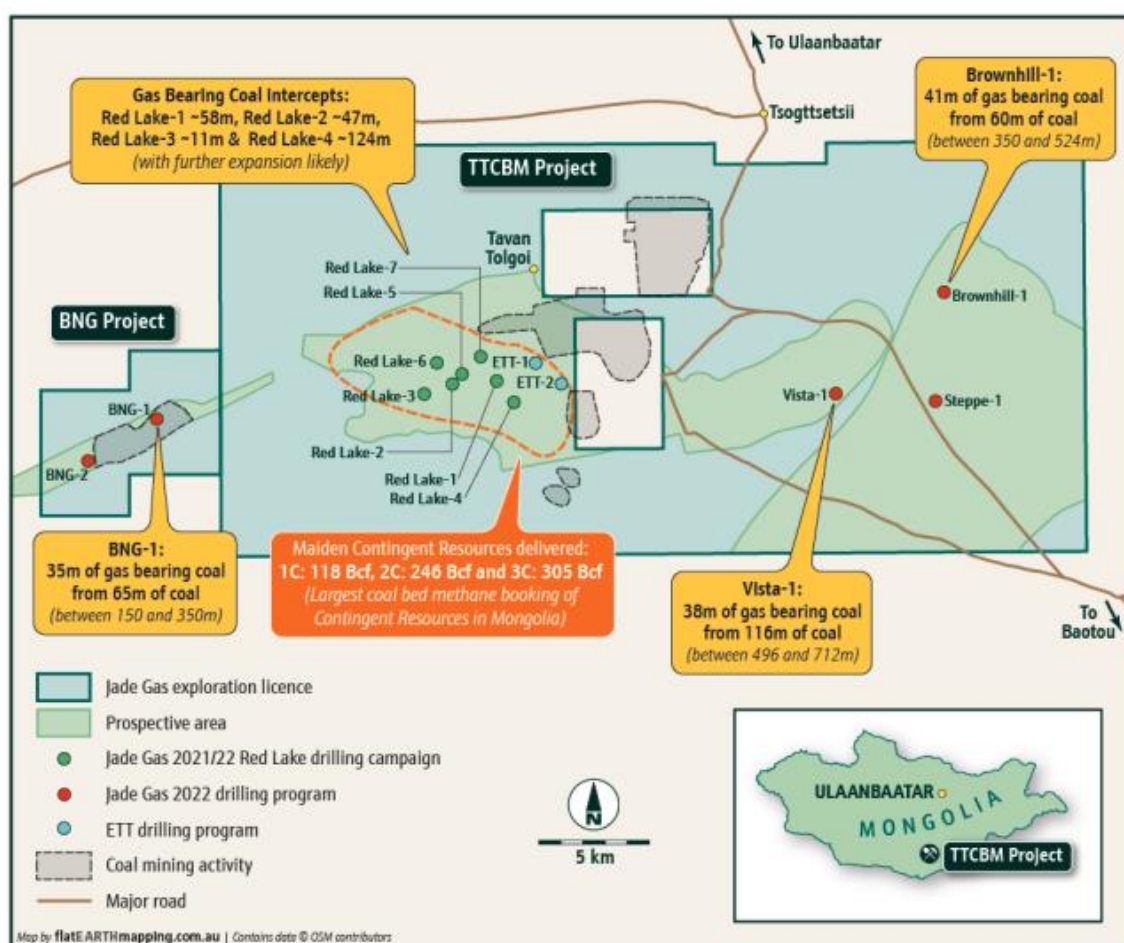
The Vista-1, Brownhill-1 and Steppe-1 exploration wells have been drilled in the eastern portion of the permit (See below) with the results being assessed. The Vista-1 well reached a TD of 810.5 m. 38.25 m of gassy coal was recovered between 496 m and 712 m. The Brownhill-1 well reached a TD of 524 m. 41 m of gassy coal was recovered between 350m and 524 m.

The first of two wells in Baruun Naran permit have been drilled. BNG-1 reached 463m and intersected 35m of gassy coal between 150m and 350m depth.

Because of the success in finding gassy coal west of the TTCBM, JGH now believes that the strike distance of the CBM play from BNG to Vista-1 and Brownhill-1 could be 35km or greater.

If Steppe-1 in the east is also successful, this could increase the strike length to ~40km.

Figure 1 – TTCBM and Baruun Naran Drilling Program



Source: Company

Jade Gas Holdings has been busy

Figure 2 – Jade Gas Holdings looking to drill pilot production wells in CY 2023

Key Recent Achievements	
Date	Event
Nov-21	Six Well Drilling Program commenced at TT CBM Gas Project in Mongolia following on from the eight well program completed in CY2019.
Jan-22	Red Lake-1 exploration well reaches total depth (TD) of 1,012 metres (m) with all three target coals seams (III, IV and 0) intersected and cored between 730 m and 900 m.
Jan-22	Two rigs spud wells at the second (Red Lake-3) and third (Red Lake-4) targets.
Feb-22	JGH granted two coal bed methane Prospecting Agreement Permits (Shivee Gobi and Eastern Gobi), covering a total area of 18,000 km ² .
Mar-22	Positive results indicating gas composition at coal seams III and IV from the Red Lake-1 drilling with methane (CH ₄) of 98% and 92.5% respectively.
Mar-22	Well data received: Red Lake-2 : Total depth (TD) 790 m, 46.8 m of gas bearing coal intersected; Red Lake-4 : TD 863 m, 65.3 m of gas bearing coal intersected.
Apr-22	Non-binding gas offtake memorandum of understanding signed with UB Metan LLC
May-22	Red Lake-5 spudded
Apr-22	Gross unrisks prospective resource (2U) for recently 100% acquired licenses of 5,400 Bcf estimated (Shivee Gobi 2,000 Bcf and Eastern Gobi 3,400 Bcf).
May-22	Further positive results from drilling at Red Lake. Red Lake-1 , 58 m of gas bearing coal recovered; Red Lake-3 : 11 m of gas bearing coal recovered (only from Coal Seam 0). Red Lake-4, additional gas bearing coal recovered from Coal Seam VIII lifting gas bearing coal from 65 m to 124 m.
May-22	Red Lake-1 gas content lifted to 12-17 m ³ /t
Jun-22	Red Lake-6 spudded. Completed in August and is marked for use as an observation well.
Aug-22	Decision to drill three new targets in eastern zone of TTCBM (Vista-1 , Brownhill-1 and Steppe-1) as well as Red Lake-7 (proposed production test well along with Red Lake-5).
Aug-22	Secures Prospecting Agreement over 66% interest in Barun Naran coal field (west of TTCBM) with Khangad Exploration, a subsidiary of Mongolia Mining Corporation (HKSE.0975)
Aug-22	TTCBM resource booked . 118 Bcf of 1C, 246 Bcf of 2C and 305 Bcf of gross contingent resource booked at the Red Lake area which represents ~30 km ² of the 203 km ² prospective area (~15%) and 665 km ² of the license area (~5%). JGH holds 60% of the license.
Sep-22	Vista-1 well reaches TD of 810.5 m. 38.25 m of gassy coal recovered between 496 m and 712 m. Red Lake-5 being redrilled in preparation for extended production testing.
Sep-22	JGH to work with Erdenes Tavantolgoi JSC (ETT is the license holder of the Tavan Tolgoi coal mine adjacent to TTCBM) to provide gas assessment to aid with safety protocols and environmental credentials.
Oct-22	ETT-1 and ETT-2 cored wells have identified gassy coals at shallower levels than the Red Lake wells which are likely to form a focus for locating CY 2023 wells for the Pilot Program.
Nov-22	Baruun Naran well BNG-1 reached 463m intersected 35m of gassy coal between 150m and 350m depth.
Nov-22	Brownhill-1 well reaches TD of 524 m. 41 m of gassy coal recovered between 350 m and 524 m.
Future News Flow and Event Catalysts	
Date	Event
Late CY 2022	Steppe-1 well in the eastern zone of the TTCBM permit to be assessed.
Late CY 2022	Equipment for extended production testing at Red Lake-5 & Red Lake-7 to be delivered and installed.
Early CY 2023	Flow testing at Red Lake-5 and Red Lake-7 forecast to commence.
CY 2023	Pilot production wells to be drilled

Source: Company

Drilling Results from Red Lake to date

The current six well drilling program is focused on delivering contingent resource certification in 3Q CY2022. The drilling program is primarily to determine the gas composition, the level of gas desorption, coal bed permeability and the gas saturation in the coal.

Red Lake-1

- Total depth reached at 1,012 m, coal seams of interest intersected and cored between 730 m and 970 m depth, 145 m of coal core recovered of which 58 m was gas bearing, Gas composition: 98% methane in seam III, 92.5% methane in seam IV; gas content of 12-17m³/t, up from initial estimates of 11-15m³/t.

Red Lake-2

- Total depth reached at 790 m, coal seams of interest targeted at 600 to 800 metres depth, 131 m of coal core recovered of which 47 m was gas bearing.

Red Lake-3

- Total depth reached at 702 m, 11 m of gas bearing coal recovered.

Red Lake-4

- Total depth reached at 863 m, 124 m of gas bearing coal recovered.

Red Lake-5

- The well has recommenced, after running into problems in May (drill string got stuck down the hole). Once the well is completed, it will be cased (4.5") down to 680m and will be left open-hole for subsequent completion and production testing.

Red Lake-6

- The well will complete shortly and has been marked for future use as an observation well. Negligible gas content was observed so it will be used to monitor seam pressures during extended and pilot production testing.

Offtake opportunities

Key to the success of the projects is finding an offtake partner for the gas. JGH has stated that it has had discussions with multiple parties interested in transitioning away from coal fired electricity, the majority of which is imported from China as their energy source.

JGH noted that the TTCBM Project is ideally located within 100 kms of a number of significant mines and other mineral deposits.

Obvious candidates we see are Rio Tinto's "Oyu Tolgoi" copper gold mine, Erdenes Tavan Tolgoi's "Tavan Tolgoi" coal mine and Xanadu Mines "Kharmagtai" copper gold project.

JGH stated that it is estimated that over 500 MW of power will be required to meet the electricity needs for the expected production from these operations over the coming years.

The TTCBM Project and BNG permit are well situated to take advantage of this forecast power demand as these producers look for a cleaner source of energy to drive operations than coal and diesel generated power.

JGH "anticipate that a mixture of gas, wind, solar and batteries will drive the energy needs of Mongolia's South Gobi mining operations, with the reliability of a localised natural gas supply to form the base load source for this demand over many years."

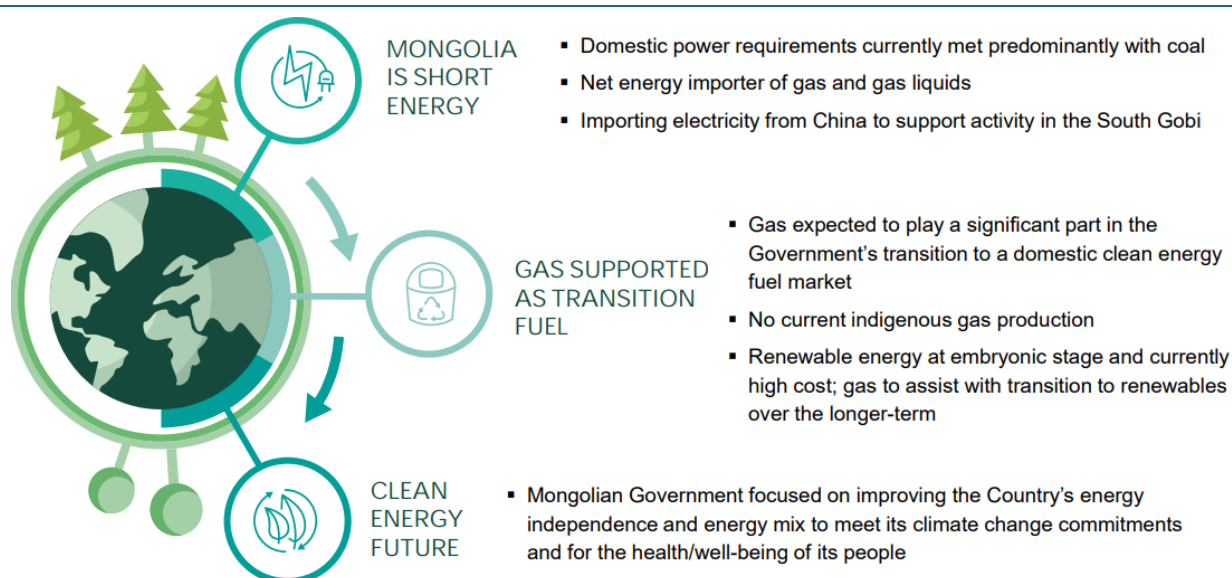
Investment Thesis:

Jade Gas Holdings Limited (JGH) wants to be part of the global momentum shift toward the use of cleaner fuels in the energy supply chain. There is a growing acceptance that a shift towards a cleaner energy supply will require natural gas during the transition period. These market conditions provide a positive backdrop as JGH advances its TTCBM Project in Mongolia.

JGH is a gas exploration company which has entered into two joint ventures, as well as having 100% of two larger permits for the exploration and exploitation of coal bed methane (CBM) resources in Mongolia. The flagship project is the TTCBM Project which is a 60/40 joint venture with Mongolian State-owned entity Erdenes Methane LLC to explore for and develop the coal bed methane resources in the world class Tavan Tolgoi Coal Field area in the South Gobi region of Mongolia.

See our initiation “[Jade Gas Holdings aims to support Mongolia’s clean energy transition](#)”.

Figure 3 – Mongolia is looking to transition to a cleaner independent energy supply



Source: Company

JGH operates and manages the TTCBM Project through its subsidiary Methane Gas Resource LLC (MGR), a 60:40 joint venture (JV) company partnering with Erdenes Methane LLC (EM), the representative company for the Mongolian Government. The JV was formed with the intention to explore, develop and produce gas from the TTCBM Project located in the South Gobi region of Mongolia.

It is the strategy of JGH to seek to develop all of its projects so that gas produced may, in the long-term, provide a reliable supply option to the oil and gas product market and to the power sector in Mongolia, both to the capital city of Ulaanbaatar and also into regional areas.

Achievement of this strategy would partially displace imported gas and gas liquid products and reduce higher carbon emitting fuel sources such as coal and diesel, the result of which would be the improvement in air quality of Ulaanbaatar city and other towns.

Supporting Mongolia’s energy transition is a key priority and success for JGH will result in:

- Improving Mongolia’s energy independence.
- Supporting Mongolia’s significant future energy demand growth.
- Decarbonising the economy by improving the energy mix with cleaner fuel sources.
- Environmental and health benefits for the people and country of Mongolia.

Market Opportunity for Jade

As there is presently no indigenous production of gas and only small amounts of oil production within Mongolia, nor suitable refinery capacity, Mongolia meets its oil and gas requirements through importation of gas and other oil and gas products. Furthermore, the switching from coal to natural gas to supply Mongolia’s growing energy requirements is expected to align with the Mongolian Government’s push for an alternative source of future energy production to its traditional supply.

It is the intention of JGH that if the TTCBM Project can produce coal seam gas economically, JGH will establish gas sales agreements with customers within the country who are currently meeting their requirements through imports of gas and other petroleum products. Furthermore, JGH intends to expand the market for natural gas into other areas of the economy not currently using gas, by providing a reliable and long-term supply source.

Such sales opportunities may include, but are not limited to:

- Compressed natural gas (CNG) for delivery via truck to local towns for small scale commercial use.
- CNG or LNG to be delivered via truck into the capital city of Ulaanbaatar to be used in the transport sector as fuel for heavy vehicles and other transport vehicles.
- Sales of gas to regional mining projects via newly established pipeline(s) to be used as fuel for heavy mining fleet and/or gas fired power generation to meet the needs of the mining operation(s).
- Sales of gas into the capital city of Ulaanbaatar, via a c.540 km pipeline.
- Sales of gas via a yet to be constructed pipeline into the north of China, linking with the existing and extensive transmission network in the region.

With that in mind JGH has signed two memorandum of understanding (MOU) with UB Metan and Monhorus

JGH has signed a non-binding gas offtake memorandum of understanding (MOU) for potential gas sales to Mongolia’s largest liquified natural gas (LNG) importer and gas distributor, UB Metan LLC (UBM).

Figure 4 – UB Metan memorandum of understanding

UBM delivers connectivity to commercial gas sales for TTCBM Project

- Non-binding gas offtake memorandum of understanding signed with UBM
- UBM is Mongolia’s largest importer of LNG, largest gas distributor and a Jade shareholder
- MOU delivers a framework for TTCBM Project commercial gas sales
- Both parties to work toward a binding long-term gas sales agreement on commercial terms (post 2023 pilot production program at TTCBM)
- Aligned partnership focused on delivery of independent cleaner energy for Mongolia
- UBM to potentially provide infrastructure to support on-site compression of natural gas (CNG)
- CNG to be transported to Ulaanbaatar, nearby towns and mining sites



View of commissioned L-CNG fuelling station



LNG Storage Tanks Pump station



Bus fuelling

Source: Company

We note, UB Metan, Mongolia’s largest LNG importer and distributor has participated in the last two capital raises lifting its shareholding to over 9.66%.

The MOU plans to work towards establishing a commercial long term gas sales agreement post the proposed 2023 pilot production program.

As part of the proposal, JGH may look to UBM to provide the above ground infrastructure for the compression of the gas before UBM sells it through its own distribution network.

Under the MOU with Monhorus, planning is underway to assess:

1. Small scale utilisation of gas to power well site requirements during the extended production testing and pilot plant operations,
2. supplementing existing power supply sources at the TTCBM Project camp, and
3. the potential to supply electricity into the local electricity grid.

Valuation demonstrates upside to current share price

Our valuation is unchanged at \$0.21. See our initiation note for details.

Capital structure

We have assumed for our valuation that all the options vest and all the performance shares issue vest. From FY2023 to FY2025 we have assumed an additional ~A\$25m of equity is raised via option exercise and new equity issuance.

Figure 5 – JGH current capital structure

Current Shares on issue (m)						
		1,397.4				
Ticker	Shares assumed to issue (m)	Total	Exercise Price	Cash raised (A\$m)	Exercise Date	Comment
Options JGHAC & JGHAD	90.0	90.0	\$0.045	4.1	30-Jun-23	
Options JGHAЕ	12.0	12.0	\$0.045	0.5	22-Sep-24	
Options JGHAU	4.0	4.0	\$0.100	0.4	31-Oct-24	
Options JGHAF	4.0	4.0	\$0.120	0.5	1-Feb-25	
Options JGHAW	12.0	12.0	\$0.090	1.1	19-Apr-25	
Broker Options JGHAX	10.0	10.0	\$0.090	0.9	5-May-25	
Options	30.0	30.0	\$0.075	2.3	30-Nov-25	
Broker Options	1.0	1.0	\$0.075	0.1	30-Nov-25	
Performance shares JGHAQ	48.0	48.0				
Performance rights JGHAT	25.0	25.0				Tranche 1 at \$0.105 and Tranche 2 at \$0.14
Other equity (m)	236.0	236.0		9.8		

Source: Company, FactSet, MST

Risks to our forecasts and valuation include:

- sovereign and political risks associated with operating in Mongolia,
- exploration success and operating and development risks,
- project funding,
- permit application and permit renewal,
- joint venture risk,
- general regulatory risk,
- risk associated with drilling,
- insurance,
- substitution of gas,
- third party risk,
- environmental,
- commodity price volatility and exchange rate,
- reliance on key personnel,
- climate change risk,
- requirement for capital,
- changes in tax legislation, and
- economic growth in Mongolia.

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