

Hazer Group Ltd (ASX:HZR)

Biogas for Demonstration Plant

17 June 2019

Hazer Group Limited (ASX:HZR) is adopting a multi-prong approach to commercialising its proprietary Hazer Process – the conversion, at moderate temperature and pressure, of natural gas and similar methane feedstocks into hydrogen and graphite, using iron ore as a process catalyst. On 31 May 2019, HZR announced that it had entered a MOU with Western Australian State Government-owned Water Corporation to explore the development of a 100tpa hydrogen production plant at the Woodman Point Wastewater Treatment Plant (15km south of Perth, WA).

An important step for the Commercial Demonstration Plant (CDP) Project

If negotiations with Water Corporation are successful, HZR will have secured (1) a physical location for its CDP and (2) a gas source (biogas) to produce 100tpa of hydrogen (and some 375tpa of graphite by-product). WA's largest wastewater treatment plant is presently looking to increase its waste water treatment capacity by ~30% to cater for projected regional population growth. Bearing in mind current, and indeed future, treatment plant upgrades, we believe that an important item in progressing the MOU will be finding a suitable location for the CDP. However, with a footprint of <400m² (i.e., less than 2 tennis courts), we believe that finding "room" for the CDP should not be a significant hurdle.

Although the bulk of biogas produced by the wastewater treatment process at Woodman Point is used to power onsite CHP reciprocating engines to produce electricity for internal use, a portion of the biogas is flared off (to waste). We understand that the treatment plant produces significantly more waste biogas than the CDP's required feedstock of two million m³ per annum. Thus, the Hazer Process offers the treatment plant operators an important avenue for carbon abatement and reducing the facility's total greenhouse gas (methane, CO₂) emissions. An additional incentive for the treatment plant operator could be potential income - even if nominal - from the sale of waste biogas to HZR.

We believe that HZR is currently in discussions with several potential hydrogen buyers including local bus fleet operators; we believe plans at this stage are for the graphite by-product to be sold into the spot market. During the March 2019 quarter HZR completed the FEED study for the CDP. Securing funding for the estimated A\$15m capex is clearly the next significant step. We note with interest that the Australian Government Renewable Energy Agency (ARENA) is actively investing in new renewable energy technologies including "green hydrogen" projects; recent projects funded by ARENA includes 50% of the A\$15m Jemena Power-to-Gas (P2G) facility in NSW in 2018, and 50% of the A\$7.4m Toyota Ecopark Hydrogen Demonstration project in Victoria in March 2019. According to ARENA's [website](#), as at 31 January 2019 ARENA had total funds of A\$379m available to commit to new projects, and expects that all funds will be fully committed by mid-2020. We suggest that HZR's CDP plant has a good chance of securing funding (A\$7.5m or 50% of capex) from this government-funded body.

Risk-adjusted SOTP target price: A\$0.45ps (unchanged)

Our estimated risk-weighted SOTP equity value for HZR is A\$43m, equivalent to A\$0.45ps (@ 97m shares). **We maintain a Speculative Buy (Higher Risk) recommendation.** We see further significant upside potential as the group's various projects (PTR and FBR) are advanced, and as our deep risk discount to these projects are unwound.

Share Price: A\$0.295

Target Price: A\$0.45

Target upside: 52%
Recommendation
Speculative Buy
Risk Assessment
Higher

Chemicals

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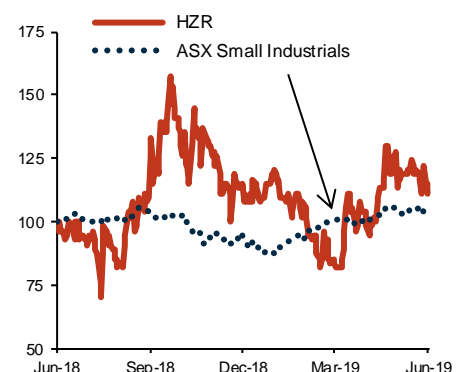
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Hazer Group Ltd

ASX Code	HZR
52 week range (A\$cps)	A\$0.19-A\$0.45
Market Cap (A\$m)	29
Fully diluted no. of shares (m)	97
Av Daily Turnover (shares)	186k
ASX All Ordinaries	6,618
FY19E BV per share (A\$c)	5.9c
FY19E EPS (A\$c)	-3.7c
FY19E Net (Debt)/Cash (A\$m)	4.8

Relative price performance



HazerGroup Limited

Year ending June

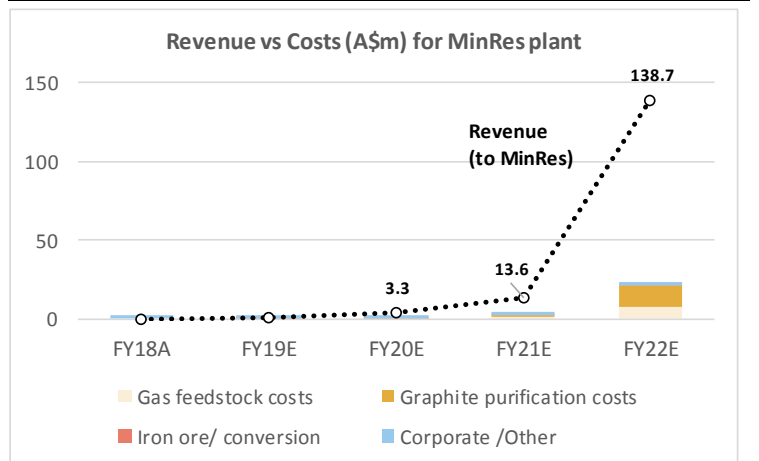
Profit & Loss Statement (A\$m)	FY18A	FY19E	FY20E	FY21E	FY22E
Revenue / Royalty income	0.0	0.0	0.1	1.4	17.3
Gas feedstocks costs	0.0	0.0	0.0	0.0	0.0
Iron ore catalyst/conversion costs	0.0	0.0	0.0	0.0	0.0
Corporate/Other costs	(5.1)	(5.3)	(5.5)	(5.8)	(6.1)
EBITDA	(5.1)	(5.3)	(5.4)	(4.4)	11.2
Depreciation & Amortisation	(0.6)	0.0	0.0	0.0	0.0
Operating profit	(5.7)	(5.3)	(5.4)	(4.4)	11.2
NOI (R&D rebate and share payment)	(5.3)	1.5	0.75	0.80	0.85
EBIT	(11.0)	(3.8)	(4.7)	(3.6)	12.0
Interest income	0.0	0.2	0.1	0.1	0.1
Interest expense	(0.0)	0.0	(0.3)	(0.9)	(0.9)
Tax expense	0.0	0.0	0.0	0.0	0.0
Reported NPAT	(11.0)	(3.6)	(4.8)	(4.4)	11.2
Normalised NPAT	(11.0)	(3.6)	(4.8)	(4.4)	11.2
EBITDA Margin (%)	na	na	na	na	65%
Operating profit margin (%)	na	na	na	na	65%
EPS Reported (A\$c)	(7.0)	(3.7)	(5.0)	(4.5)	11.6
EPS Normalised (A\$c)	(7.0)	(3.7)	(5.0)	(4.5)	11.6
EPS growth (%)	na	na	na	na	na
DPS - Declared (A\$c)	0.0	0.0	0.0	0.0	0.0
YE no. shares (m)	89	97	97	97	97
YE no. of fully-diluted shares (m)	158	97	97	97	97

Cash Flow Statement (A\$m)	FY18A	FY19E	FY20E	FY21E	FY22E
EBITDA	(5.1)	(5.3)	(5.4)	(4.4)	11.2
Investment in working capital	(0.3)	0.0	(0.0)	(0.3)	(3.9)
Tax expense	0.0	0.0	0.0	0.0	0.0
Operating Cash Flow	(5.3)	(5.3)	(5.4)	(4.7)	7.2
Capex	(0.5)	(0.3)	(0.3)	(0.3)	(0.3)
Other investments	0.0	0.0	0.0	0.0	0.0
Investing Cash Flow	(0.5)	(0.3)	(0.3)	(0.3)	(0.3)
Net interest received / (paid)	0.0	0.2	(0.2)	(0.8)	(0.8)
Debt draw down / (repayment)	0.0	0.0	5.0	5.0	(5.0)
Dividends paid	0.0	0.0	0.0	0.0	0.0
Equity raised / (repaid)	2.9	2.5	0.0	0.0	0.0
Financing Cash Flow	2.9	2.6	4.8	4.2	(5.8)
NOI	0.9	1.5	0.8	0.8	0.9
Inc/(Dec) in Cash	(2.0)	(1.4)	(0.1)	0.0	2.0

Balance Sheet (A\$m)	FY18A	FY19E	FY20E	FY21E	FY22E
Cash & Equivalents	6.2	4.8	4.7	4.7	6.7
Receivables	0.0	0.0	0.0	0.3	3.3
Inventories	0.0	0.0	0.0	0.1	1.0
Other Current Assets	0.1	0.1	0.1	0.1	0.1
PPE	0.8	1.0	1.3	1.6	1.9
Deferred tax asset	0.0	0.0	0.0	0.0	0.0
Other Non Current Assets	0.0	0.0	0.0	0.0	0.0
Total Assets	7.1	6.0	6.1	6.8	13.0
Payables and other current Liabilities	0.2	0.2	0.2	0.2	0.2
Short Term Debt	0.0	0.0	5.0	10.0	5.0
Long Term Debt	0.0	0.0	0.0	0.0	0.0
Other Non Current Liabilities	0.0	0.0	0.0	0.0	0.0
Total Liabilities	0.2	0.2	5.2	10.2	5.2
Total Equity	6.9	5.7	0.9	(3.4)	7.8
Net Cash/(Debt)	6.2	4.8	(0.3)	(5.3)	1.7

Substantial Shareholders	%	Date
Mineral Resources Limited	11.7	
Point at Infinity Pty Ltd	7.4	Aug-18
OOFY Prosser Pty Ltd	6.7	

Royalty income assumptions	FY18A	FY19E	FY20E	FY21E	FY22E
Graphite production (94%) (tonnes)	na	50	313	1,250	12,500
Graphite sales (99.9%) (tonnes)	na	40	250	1,000	10,000
Graphite price (US\$/t)	na	10,000	10,000	10,200	10,404
Graphite revenue (US\$m)	na	0.4	2.5	10.2	104.0
Hydrogen sales (tonnes)	-	-	-	-	-
Hydrogen price (US\$/t)	n/c	n/c	n/c	n/c	n/c
Hydrogen revenue (US\$m)	-	-	-	-	-
Revenue (total) (A\$m)	na	0.4	2.5	10.2	104.0
AUD:USD exchange rate	na	0.75	0.75	0.75	0.75
Revenue (total) (A\$m)	na	0.5	3.3	13.6	138.7
Natural gas price (A\$/GJ)	na	8	8	8	8
Gas feedstock required (tonnes)	na	72	453	1,812	18,116
Gas input costs (A\$m)	na	(0.0)	(0.2)	(0.8)	(8.0)
Other costs (A\$m)	na	(2.1)	(2.4)	(3.4)	(15.7)
Total costs (A\$m)	na	(2.1)	(2.6)	(4.2)	(23.7)
EBITDA (A\$m)	na	(1.6)	0.7	9.4	115.0
Royalty rate to HZR (%)	na	15%	15%	15%	15%
Royalty to HZR (A\$m)	na	-	0.1	1.4	17.3



Leverage	FY18A	FY19E	FY20E	FY21E	FY22E
Net Debt/Equity	cash	cash	-35%	cash	cash
Gearing (ND/ND+E)	cash	cash	-5%	-78%	cash
Interest Cover (x)	na	na	-26.5	-4.6	15.5

Valuation Ratios (x)	FY18A	FY19E	FY20E	FY21E	FY22E
Normalised P/E	na	na	na	na	2.6
Price/OP Cash Flow	-5	-5	-5.3	-6.1	4.0
Book value per share (A\$c)	4.4	5.9	0.9	-3.5	8.0
EV/EBITDA	-5	-5	-6	-8.1	2.5
ROE (%)	-160%	-62%	-526%	127%	144%

Risk-weighted SOTP target price	(A\$m)	(A\$ps)
NPV of technology licencing arrangements (TLA) with MIN (10ktpa G)	56	0.57
<i>Discount (timing, royalty rate, operations, high purity graphite price)</i>	<i>50%</i>	
Risk-weighted NPV of TLA with Mineral Resources (ASX:MIN)	28	0.29
NPV of FBR commercial plant (100% HZR) (8,750tpa G, 2,500tpa H)	86	0.89
<i>Discount (timing, financing, operations, hydrogen price)</i>	<i>90%</i>	
Risk-weighted NPV of FBR commercial plant	9	0.09
NPV of TLA with Primetals Technologies (for 1X 500ktpa methanol plant)	89	0.91
<i>Discount (timing, royalty rate, operations)</i>	<i>97.5%</i>	
Risk-weighted NPV of TLA with Primetals Technologies	2	0.02
FY19E net cash / (debt)	4.8	0.05
Risk-weighted group valuation and target share price	43	0.45

Current share price	0.295
% upside / (downside)	52%

Recommendation and risks

Risks to our earnings profile and target price include, but are not limited to:

- **Timing – MinRes:** Nearly 65% of our SOTP valuation is based on the estimated NPV of royalties associated with technology licencing arrangements with Mineral Resources (ASX: MIN). MinRes is a significant shareholder in HZR and in December 2017 signed a binding Co-operation Agreement with HZR. However, the precise nature of the licencing arrangements – including royalty rates to HZR - have not been disclosed.
- **Timing – FBR commercial plant:** A significant portion (20%) of our group valuation is based on the estimated NPV of sales of graphite and hydrogen from a FBR commercial plant. At this juncture, the plant is at the Concept Study stage; the timing, costings, and critically the financing, of the plant have still to be confirmed.
- **Operational/Technical:** The Hazer Process – converting natural gas to hydrogen and graphite using an iron ore catalyst - has been successfully demonstrated in laboratory-scale apparatus and at a pre-pilot plant level. Under the MoA with MinRes, initial commissioning of a 1tpa ultra-high purity graphite pilot plant is scheduled for the March quarter 2019. Success here will largely determine the timeline associated with scaling up production to 10,000tpa.
- **Natural gas costs:** The only input cost of significance in the Hazer Process is the cost of natural gas feedstock. We calculate that in the proposed modified process for MinRes (which will produce graphite only, not hydrogen and graphite), some 18,000t (960,000GJ) of natural gas is required to produce 10,000t of ultra-high purity graphite. At our base-case natural gas price of A\$8/GJ (real), we calculate natural gas input costs will come to ~A\$8m. Natural gas prices significantly higher (or lower) than forecast will reduce/increase margins.
- **Graphite price:** Our NPV₁₀ for the MinRes royalty stream to HZR is particularly sensitive to realised prices for ultra-high purity graphite (99.9% C). Our base-case price assumption is US\$10,000/t (real); this compares to current synthetic graphite prices of ~US\$12,000-20,000/t and US\$7,000-10,000/t for spherical coated natural graphite prices.
- **Hydrogen price:** Our NPV₁₀ for the FBR commercial plant is particularly sensitive to realised prices for hydrogen. Our base-case price assumption is US\$7,500/t. Note: hydrogen fuel retail prices in the US are currently between US\$13,000-US\$16,000/t.
- **Currency:** A stronger/weaker AUD:USD exchange rate relative to our base-case of US\$0.75 will reduce earnings/increase earnings respectively.
- **Other:** Increased competition from new and existing technologies, regulatory risks, dependence upon key personnel,
- **Financial risk – the ability to fund the group’s activities before forecast first material royalties from are received; we estimated these will be in FY22E from the Min Res JV.**

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