

# Hazer Group Ltd (ASX:HZR)

8 February 2019

## MIN pilot plant progress is key

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 into hydrogen and graphite, using iron ore as a process catalyst.

### Hydrogen-focused path

In September 2018, HZR successfully trialled the Hazer Process in an independently designed and operated external Fluidised Bed Reactor (FBR-EXT). The FBR-EXT process is representative of a typical FBR design in industry and is focused on the production of hydrogen, with graphite as a co-product. The purpose of the independent testing was to 1) obtain input from a FBR specialist on the operability and scale-ability of the Hazer Process and, 2) provide a comparison against Hazer's proprietary design FBR pilot plant (FBR-PP), which was relocated to Kwinana (near Perth) in Nov/Dec 2018. On the back of the strong performances of both the internal and external FBR tests, HZR commenced a FEED study for a A\$10m Commercial Demonstration Plant (CDP) producing ~100tpa of hydrogen and 250-375tpa of graphite. HZR expect to complete the CDP FEED Study in the current quarter (March 2019), and discussions are concurrently taking place with off-take partners, feedstock (biogas or natural gas) suppliers and project funding partners. HZR is also progressing with design studies for a A\$30-35m commercial scale Hazer Plant (2,500tpa hydrogen, 8,750tpa graphite).

### Graphite-focused path

Running in parallel to the above, HZR is collaborating with its investment and commercial partner Mineral Resources (ASX:MIN), which is currently constructing a 1tpa graphite-focused Paddle Tube Reactor (PTR) pilot plant - also located at Kwinana. In HZR's December quarter quarterly update, HZR disclosed that MIN has advised them that they anticipate completing construction and commissioning the PTR pilot plant in 1Q 2019. Note: HZR has disclosed that as the PTR project is being managed and executed by MIN, HZR will not be providing ongoing commentary on project progress to the market.

### Risk-adjusted SOTP target price: A\$0.45ps (A\$0.48 previously)

Although there has been slippage relative to the previously guided project timeframe, the news that the MIN-funded PTR pilot plant is targeting to be commissioned by March is a positive. We see development progress at the PTR project – which requires zero funding from HZR - as the most likely catalyst for near-term share price gains. Our estimated risk-weighted SOTP equity value for HZR of A\$43m, equivalent to A\$0.45ps (@ 97m shares), is comprised of:

- A risk-weighted NPV of A\$28m (A\$0.29ps) via technology licensing royalties stemming from Mineral Resources' sales of high purity graphite,
- A risk-weighted NPV of A\$9m (A\$0.09ps) from sales of graphite and hydrogen produced via a FBR commercial plant,
- A risk-weighted NPV of A\$2m (A\$0.02ps) for royalties stemming from potential technology licencing arrangements with Primetals Technologies.
- FY19E net cash of A\$4.8m (A\$0.05ps).

At current share price levels we believe HZR offers upside to our risk-adjusted target price; we see further upside potential as the PTR and FBR projects are advanced and as the deep discounts of 50% and 90% respectively are unwound.

**We maintain a Speculative Buy (Higher Risk) recommendation**

Share Price: A\$0.255

Target Price: A\$0.45

**Target upside: 75%**
**Recommendation**  
**Speculative Buy**
**Risk Assessment**  
**Higher**

### Chemicals

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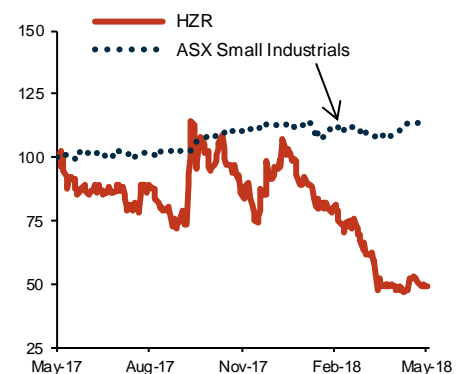
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### Hazer Group Ltd

ASX Code	HZR
52 week range (A\$cps)	A\$0.19-A\$0.50
Market Cap (A\$m)	25
Fully diluted no. of shares (m)	97
Av Daily Turnover (shares)	217k
ASX All Ordinaries	6.1596
FY19E BV per share (A\$c)	A\$7.9c
FY19E EPS (A\$c)	-3.7c
FY19E Net (Debt)/Cash (A\$m)	4.8

### Relative price performance



## Financial Statements

### 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)
<b>EBITDA</b>	<b>(5.1)</b>	<b>(5.3)</b>	<b>(5.4)</b>	<b>(4.4)</b>	<b>11.2</b>
Depreciation & Amortisation	(0.6)	0.0	0.0	0.0	0.0
<b>Operating profit</b>	<b>(5.7)</b>	<b>(5.3)</b>	<b>(5.4)</b>	<b>(4.4)</b>	<b>11.2</b>
NOI (R&D rebate and share payment)	(5.3)	1.5	0.75	0.80	0.85
<b>EBIT</b>	<b>(11.0)</b>	<b>(3.8)</b>	<b>(4.7)</b>	<b>(3.6)</b>	<b>12.0</b>
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
<b>Reported NPAT</b>	<b>(11.0)</b>	<b>(3.6)</b>	<b>(4.8)</b>	<b>(4.4)</b>	<b>11.2</b>
<b>Normalised NPAT</b>	<b>(11.0)</b>	<b>(3.6)</b>	<b>(4.8)</b>	<b>(4.4)</b>	<b>11.2</b>
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
<b>EPS Normalised (A\$c)</b>	<b>(7.0)</b>	<b>(3.7)</b>	<b>(5.0)</b>	<b>(4.5)</b>	<b>11.6</b>
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

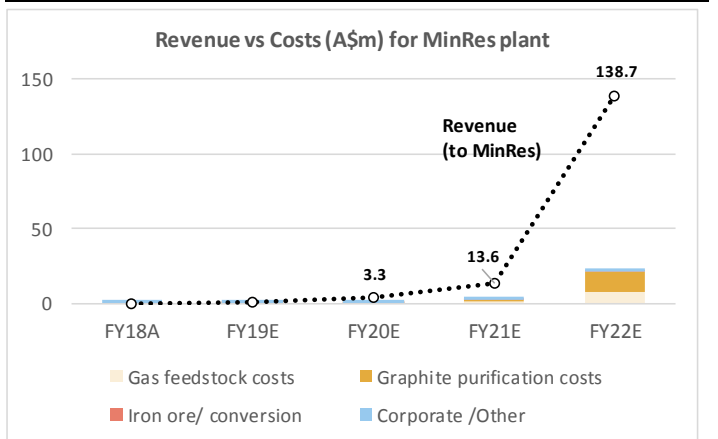
Cash Flow Statement (A\$m)	FY18A	FY19E	FY20E	FY21E	FY22E
EBITDA	(5.1)	(5.3)	(5.4)	(4.4)	11.2
Investment in working capital	(0.3)	0.0	(0.0)	(0.3)	(3.9)
Tax expense	0.0	0.0	0.0	0.0	0.0
<b>Operating Cash Flow</b>	<b>(5.3)</b>	<b>(5.3)</b>	<b>(5.4)</b>	<b>(4.7)</b>	<b>7.2</b>
Capex	(0.5)	(0.3)	(0.3)	(0.3)	(0.3)
Other investments	0.0	0.0	0.0	0.0	0.0
<b>Investing Cash Flow</b>	<b>(0.5)</b>	<b>(0.3)</b>	<b>(0.3)</b>	<b>(0.3)</b>	<b>(0.3)</b>
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
<b>Financing Cash Flow</b>	<b>2.9</b>	<b>2.6</b>	<b>4.8</b>	<b>4.2</b>	<b>(5.8)</b>
NOI	0.9	1.5	0.8	0.8	0.9
<b>Inc/(Dec) in Cash</b>	<b>(2.0)</b>	<b>(1.4)</b>	<b>(0.1)</b>	<b>0.0</b>	<b>2.0</b>

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
<b>Total Assets</b>	<b>7.1</b>	<b>6.0</b>	<b>6.1</b>	<b>6.8</b>	<b>13.0</b>
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
<b>Total Liabilities</b>	<b>0.2</b>	<b>0.2</b>	<b>5.2</b>	<b>10.2</b>	<b>5.2</b>
<b>Total Equity</b>	<b>6.9</b>	<b>5.7</b>	<b>0.9</b>	<b>(3.4)</b>	<b>7.8</b>
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	

Source: Company, IRESS, State One Stockbroking forecasts

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
<b>Graphite revenue (US\$m)</b>	<b>na</b>	<b>0.4</b>	<b>2.5</b>	<b>10.2</b>	<b>104.0</b>
Hydrogen sales (tonnes)	-	-	-	-	-
Hydrogen price (US\$/t)	n/c	n/c	n/c	n/c	n/c
Hydrogen revenue (US\$m)	-	-	-	-	-
<b>Revenue (total) (A\$m)</b>	<b>na</b>	<b>0.4</b>	<b>2.5</b>	<b>10.2</b>	<b>104.0</b>
AUD:USD exchange rate	na	0.75	0.75	0.75	0.75
<b>Revenue (total) (A\$m)</b>	<b>na</b>	<b>0.5</b>	<b>3.3</b>	<b>13.6</b>	<b>138.7</b>
Natural gas price (A\$/GJ)	na	8	8	8	8
Gas feedstock required (tonnes)	na	72	453	1,812	18,116
<b>Gas input costs (A\$m)</b>	<b>na</b>	<b>(0.0)</b>	<b>(0.2)</b>	<b>(0.8)</b>	<b>(8.0)</b>
<b>Other costs (A\$m)</b>	<b>na</b>	<b>(2.1)</b>	<b>(2.4)</b>	<b>(3.4)</b>	<b>(15.7)</b>
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%
<b>Royalty to HZR (A\$m)</b>	<b>na</b>	<b>-</b>	<b>0.1</b>	<b>1.4</b>	<b>17.3</b>



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	2.2
Price/OP Cash Flow	-5	-5	-4.6	-5.3	3.4
Book value per share (A\$c)	4.4	5.9	0.9	-3.5	8.0
EV/EBITDA	-4	-4	-5	-7.0	2.1
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
Discount (timing, royalty rate, operations, high purity graphite price)	50%	
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
Discount (timing, financing, operations, hydrogen price)	90%	
Risk-weighted NPV of FBR commercial plant	9	0.09
NPV of TLA with Primetals Technologies (for 1X 500ktpa methanol plant)	89	0.91
Discount (timing, royalty rate, operations)	97.5%	
Risk-weighted NPV of TLA with Primetals Technologies	2	0.02
FY19E net cash / (debt)	4.8	0.05
<b>Risk-weighted group valuation and target share price</b>	<b>43</b>	<b>0.45</b>

 Current share price 0.26  
 % upside / (downside) 75%

Note: Per share valuations based on 97m quoted shares in issue

## 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 (at 13.5%), 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 only 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 NPV<sub>10</sub> 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 NPV<sub>10</sub> 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 Mineral Resources are received in FY22E.**

Recommendation:

**Speculative Buy**  
(Higher risk)

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