

17 Mar 2018

Share Price	\$0.077
Prelim. Valuation	\$0.28
Price Target (12 month)	\$0.26

BATTERY MINERALS LTD (BAT)

Balama Central Scoping Study

Battery Minerals Limited (BAT) has recently released the Scoping Study for its second asset, the Balama Central Graphite Project in Mozambique. The Company released a Concept Study for Balama in October 2017 and highlighted the similarities between a future mine at Balama and the proposed operations at nearby Montepuez. The Balama Scoping study anticipates 53-55ktpa of 97% TGC graphite concentrate production over a 10 year mine life. Mine grade of 10.6% TGC and recoveries of 93% have been assumed. Given these parameters, we can see potential for annual production at the upper end of BAT's estimates; 55ktpa.

At this stage BAT has used the indicated component of the resource as its mine inventory. This comprises 836kt contained graphite of the 1.7Mt total Balama Central resource. We see opportunity for the mining inventory to grow given the large overall resource and the 43Mt - 78Mt @ 9% - 13% TGC exploration target for the project. Costs are slightly more than we were expecting for a Balama mine, with capex of US\$50M and opex of US\$372/t assumed in the study. We had envisaged opex closer to that of Montepuez (US\$337/t). BAT expects the Balama basket price to be US\$1,221/t FOB, higher than Montepuez on account of the higher concentration of larger flake size. On comparison with other East African developers' prices estimates, this would appear lower but has been calculated using the most up-to-date price deck available. BAT will move onto completing a DFS for Balama by mid-2018 and is targeting mine ramp up by the end of 2020. Given the funding requirements, we see end 2021 commissioning as more realistic.

Over 90% of Montepuez year 1 production committed

BAT has signed four binding offtake agreements in the past 3 months. It has agreements with US-based Urbix Resources for an initial 5ktpa of graphite concentrate (>95% TGC) over a 3 year term from 2019, with an option to bid for an additional 6ktpa. BAT has also signed binding offtakes with three Chinese graphite producers; Qingdao Guangxing Electronic Materials (GEM), Qingdao Black Dragon Graphite Co. Ltd (Black Dragon) and Qingdao Keshuo New Materials Technology Co. Ltd. All three agreements are for 10ktpa of graphite concentrate at a minimum of 95% TGC over an initial 3 years. Black Dragon has four mining operations in both Heilongjiang and Shandong, producing 50ktpa, while GEM recently signed a large cobalt offtake deal with Glencore. In total, BAT has 35kt of its 40kt production in year one committed.

Funding and mining license; the only pieces outstanding

With ~90% of Montepuez year one production committed and construction underway, the only barriers that remain is funding and the granting of the mining licence for Montepuez. The license application has been submitted and approval is expected imminently. We now model Balama Central as a standalone project and subsequently lower our company exploration value, which included Balama previously. We have reduced the Montepuez mine life to 10 years and model the high-grade scenario as outlined in the VES. The additional 10 year lower grade option has been included in our exploration value for BAT. We maintain our Speculative Buy recommendation with an updated NAV of 28cps (down from 31cps on account of the higher costs than expected for Balama). Our 12-month price target is 26cps (down from 29cps). We assume A\$35M of new equity is raised later this year.

Brief Business Description:

An advanced stage mineral exploration and development company focussed on the Montepuez Graphite Project in Mozambique. BAT aim to produce anode material for lithium-ion batteries from spherical graphite.

Hartleys Brief Investment Conclusion

Low cost, East African graphite developer with proven management. Four binding offtake deals have been signed.

Chairman & Executives

Jeff Dowling (Non-exec Chairman)
David Flanagan (Managing Director)

Major Shareholders

Farjoy Pty Ltd 12.5%

Company Address

10 Ord Street
West Perth, WA, 6005

Issued Capital 763.5m
- fully diluted 838.1m

Market Cap A\$58.8m
- fully diluted A\$64.5m

Cash (31 Jan 18e) A\$19.0m

Debt (31 Jan 18e) A\$0.0m

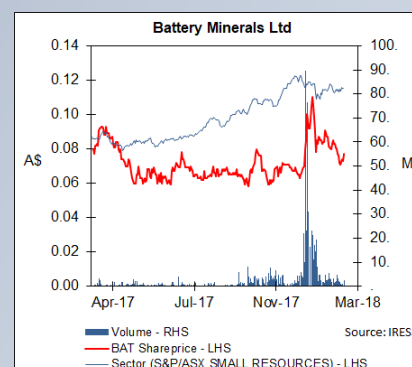
EV A\$39.8m

EV/Resource A\$4.9/t

EV/Reserve A\$10.9/t

	Prelim. (A\$m)	CY19e	CY20e	CY21e
Prod. 96% Flake	0.040	0.074	0.089	
Op Cash Flw	17.3	42.2	53.9	
Norm NPAT	9.59	26.3	31.0	
CF/Share (cps)	1.24	2.907	3.787	
EPS (cps)	0.83	2.278	2.685	
P/E	9.3	3.4	2.9	

	Mt	TGC Cont. Graph.
Resources	105.9	7.67% 8.2 Mt
Reserve	41.4	8.80% 3.6 Mt



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Hartleys has assisted in the completion of capital raisings in the past 12 months for Battery Minerals Limited ("Battery") for which it has earned fees. Hartleys has provided corporate advice within the past 12 months and continues to provide corporate advice to Battery for which it has earned fees and continues to earn fees. Hartleys has a beneficial interest in 4 million options in Battery.

SUMMARY MODEL

Battery Minerals Ltd								Share Price			
BAT								\$0.077			
Key Market Information											
Share Price								\$0.077			
Market Capitalisation - ordinary								A\$65m			
Net Cash (Debt)								\$19.0m			
Market Capitalisation - fully diluted								A\$65m			
EV								A\$46m			
Issued Capital								763.5m			
Options								74.6			
Issued Capital (diluted for options)								838.1m			
Issued Capital (diluted inc. options and new capital)								1232.6m			
Valuation								\$0.28			
12month price target								\$0.26			
P&L											
	Unit	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20	31 Dec 21	31 Dec 22				
Net Revenue	A\$m	0.0	0.0	46.1	85.9	101.9	179.9				
Total Costs	A\$m	-4.2	-6.4	-24.5	-40.0	-46.6	-72.0				
EBITDA	A\$m	-4.2	-6.4	21.6	45.9	55.3	107.9				
- margin		-	-	47%	53%	54%	60%				
Depreciation/Amort	A\$m	-1.4	-4.5	-9.0	-10.9	-14.2	-19.4				
EBIT	A\$m	-5.7	-10.9	12.6	34.9	41.1	88.5				
Net Interest	A\$m	0.2	0.3	0.2	0.1	0.2	0.6				
Pre-Tax Profit	A\$m	-5.5	-10.6	12.8	35.0	41.3	89.1				
Tax Expense	A\$m	0.0	0.0	-3.2	-8.8	-10.3	-22.3				
Normalised NPAT	A\$m	-5.5	-10.6	9.6	26.3	31.0	66.8				
Abnormal Items	A\$m	0.0	0.0	0.0	0.0	0.0	0.0				
Reported Profit	A\$m	-5.5	-10.6	9.6	26.3	31.0	66.8				
Minority	A\$m	0.0	0.0	0.0	0.0	0.0	0.0				
Profit Attrib	A\$m	-5.5	-10.6	9.6	26.3	31.0	66.8				
Balance Sheet											
	Unit	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20	31 Dec 21	31 Dec 22				
Cash	A\$m	18.8	21.9	5.9	8.9	11.5	64.1				
Other Current Assets	A\$m	0.0	0.0	5.7	10.6	12.6	22.2				
Total Current Assets	A\$m	18.8	21.9	11.5	19.5	24.1	86.3				
Property, Plant & Equip.	A\$m	2.8	48.3	63.0	58.0	122.9	107.5				
Exploration	A\$m	8.4	19.4	23.6	25.6	27.6	29.6				
Investments/other	A\$m	0.0	0.0	0.0	0.0	0.0	0.0				
Tot Non-Curr. Assets	A\$m	11.1	67.7	86.6	83.6	150.5	137.1				
Total Assets	A\$m	30.0	89.6	98.1	103.1	174.6	223.4				
Short Term Borrowings	A\$m	-	-	-	-	-	-				
Other	A\$m	0.3	0.5	1.9	3.1	3.7	5.6				
Total Curr. Liabilities	A\$m	0.3	0.5	1.9	3.1	3.7	5.6				
Long Term Borrowings	A\$m	-	35.0	32.5	10.0	50.0	30.0				
Other	A\$m	-	-	-	-	-	-				
Total Non-Curr. Liabil.	A\$m	-	35.0	32.5	10.0	50.0	30.0				
Total Liabilities	A\$m	0.3	35.5	34.4	13.1	53.7	35.6				
Net Assets	A\$m	29.6	54.1	63.7	90.0	120.9	187.7				
Net Debt	A\$m	-18.8	13.1	26.6	1.1	38.5	-34.1				
Cashflow											
	Unit	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20	31 Dec 21	31 Dec 22				
Operating Cashflow	A\$m	-4.6	-6.2	17.3	42.2	53.9	100.3				
Income Tax Paid	A\$m	0.0	0.0	-3.2	-8.8	-10.3	-22.3				
Interest & Other	A\$m	0.2	0.3	0.2	0.1	0.2	0.6				
Operating Activities	A\$m	-4.4	-5.9	14.3	33.5	43.7	78.6				
Property, Plant & Equip.	A\$m	-4.0	-50.1	-23.6	-6.0	-79.0	-4.0				
Exploration and Devel.	A\$m	-2.5	-11.0	-4.3	-2.0	-2.0	-2.0				
Other	A\$m	0.0	0.0	0.0	0.0	0.0	0.0				
Investment Activities	A\$m	-6.5	-61.1	-27.9	-8.0	-81.0	-6.0				
Borrowings	A\$m	0.0	35.0	-2.5	-22.5	40.0	-20.0				
Equity or "tbc capital"	A\$m	20.0	35.0	0.0	0.0	0.0	0.0				
Dividends Paid	A\$m	0.0	0.0	0.0	0.0	0.0	0.0				
Financing Activities	A\$m	20.0	70.0	-2.5	-22.5	40.0	-20.0				
Net Cashflow	A\$m	9.1	3.1	-16.0	3.0	2.6	52.6				
Shares											
	Unit	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20	31 Dec 21	31 Dec 22				
Ordinary Shares - End	m	759.0	1153.4	1153.4	1153.4	1153.5	1153.5				
Ordinary Shares - Wted	m	592.3	956.2	1153.4	1153.4	1153.5	1153.5				
Diluted Shares - Wted	m	617.6	956.3	1153.5	1153.5	1153.5	1153.5				
Ratio Analysis											
	Unit	31 Dec 17	31 Dec 18	31 Dec 19	31 Dec 20	31 Dec 21	31 Dec 22				
Cashflow Per Share	A\$ cp	-0.7	-0.6	1.2	2.9	3.8	6.8				
Cashflow Multiple	x	-10.3	-12.5	6.2	2.6	2.0	1.1				
Earnings Per Share	A\$ cp	-0.9	-1.1	0.8	2.3	2.7	5.8				
Price to Earnings Ratio	x	-8.4	-7.0	9.3	3.4	2.9	1.3				
Dividends Per Share	AUD	-	-	-	-	-	-				
Dividend Yield	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
Net Debt / Net Debt + Equity	%	-174%	20%	29%	1%	24%	-22%				
Interest Cover	X	26.7	35.8	na	na	na	na				
Return on Equity	%	na	na	15%	29%	26%	36%				
Analyst: Paul Howard								Last Updated: 17/03/2018			
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tbc capital could be equity or debt. Our valuation is risk-adjusted for how this may be obtained.											
Sources: IRESS, Company Information, Hartleys Research											

MONTEPUEZ UPDATE

BAT has released an update for its Montepuez development and plans to be commissioning in November 2018. The Company has made progress on key construction items and supply contracts, and has ordered long-lead items. BAT is spending A\$10M on this construction phase and has installed a temporary construction camp and water dams, and is expecting arrival of the crushing circuit on site any day. Site civil works are underway with contracts awarded for camp supply and construction, supply of the ball mill, flotation cells, re-grind mills and other processing components. We model total capex of A\$70M for Montepuez. With A\$10M already spent, we expect the remaining A\$60M to be funded through equity and debt.

BAT has commenced construction at Montepuez with site civil works underway and contracts awarded for camp supply and construction, supply of the ball mill, flotation cells, re-grind mills and other processing components.

Fig. 1: BAT's offtake summary

Offtake Summary	Unit	Dec 19	Dec 20	Dec 21
Produced 96.7% TGC Flake (Total)	kt	40	74	89
GEM binding offtake	kt	10	10	10
Black Dragon binding offtake	kt	10	10	10
Keshuo binding offtake	kt	10	10	10
Urbix binding offtake	kt	5	11	11
Total committed	kt	35	41	41
% Committed	%	88%	55%	46%
Uncommitted	kt	5	33	48

Source: Battery Minerals Limited, Hartleys estimates

VALUATION

Our sum of parts valuation for BAT is based on discounted cashflows for the Montepuez Graphite Project and now includes the Balama Central Project. We model cashflows for the projects with discount rates appropriate for the stage of development (12% for DFS/VES and 14% for Scoping Study). We model Montepuez in line with Company guidance, presentations, the February DFS and have updated as per the Value Engineering Study (VES). Our model assumes operations commence in the MarQ CY2019 as per the VES with 40ktpa concentrate produced, and transitions to 100ktpa by FY22, with a modest increase in capex of US\$27M. We assume 10 years mining 12% TGC material. We previously modelled a further 10 years mining 7.5% TGC material but have removed this scenario for now and include it in our exploration value for BAT.

We model Balama Central in line with the recent Scoping Study, with an added contingency for capital. Our Balama basket price is slightly higher than BAT, based on comparison of peer basket prices. While BAT expects to be producing from Balama by 2021, we model this to occur in 2022 as we would expect it to be funded through operational cashflow out of Montepuez, which doesn't achieve full ramp up until that year.

We previously included Balama Central as and 'Other Assets/Exploration' in our sum of parts. We have now modelled Balama as an individual project and ascribe a nominal A\$75M for exploration upside (which includes the low grade, 10year option at Montepuez) across BAT's portfolio, given the large resources not in the current mine plans for both Montepuez and Balama.

We now model Balama Central as a standalone project

Our valuation for BAT is \$0.28

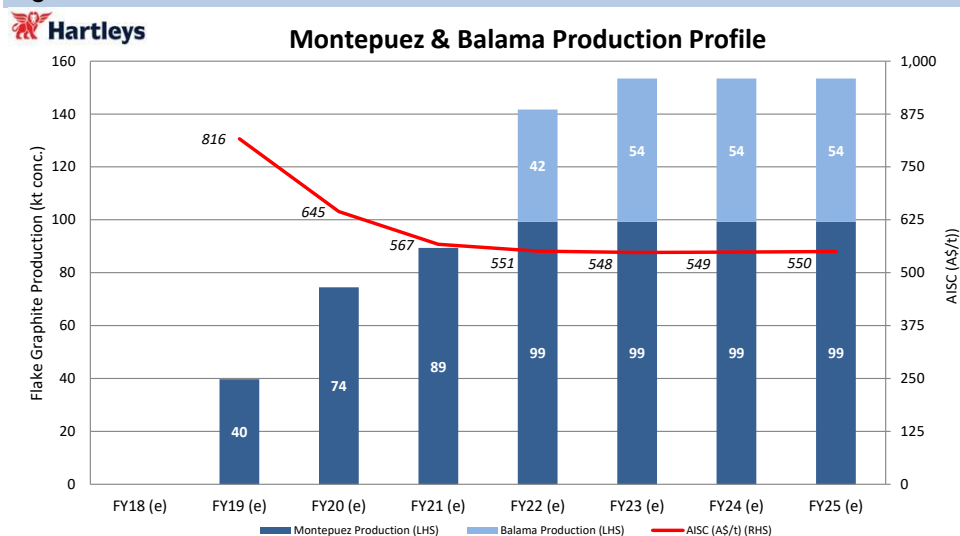
Fig. 2: Hartleys Sum of Parts Valuation for BAT

Valuation	\$m	\$/shr
95% Montepuez (pre-tax NAV at disc. rate of 12%)	270.4	0.22
95% Balama (pre-tax NAV at disc. rate of 14%)	119.2	0.10
Other Assets/Exploration	75.0	0.06
Forwards	0.0	0.00
Corporate Overheads	-47.6	-0.04
Net Cash (Debt)	19.0	0.02
Tax (NPV future liability)	-97.7	-0.08
Options & Other Equity	8.0	0.01
TOTAL	346.3	0.28

Source: Hartleys estimates

Our valuation for BAT is \$0.28

Fig. 3: BAT's Production Profile



Source: Hartleys estimates

Our 12-month price target is \$0.26

PRICE TARGET

Our price target is based on 40Ktpa production at Montepuez in FY19, increasing to ~100Ktpa by FY22, and 40ktpa at Balama from 2022, increasing to 50Ktpa. We have included weighting for the base case at consensus and spot pricing and also model a net cash scenario. Our twelve month price target is \$0.26 (down from \$0.28), based on a blended scenario analysis.

Fig. 4: Price Target

Price Target Methodology	Weighting	Spot	12 mth out
NPV base case, assuming significant equity dilution	60%	\$0.28	\$0.32
NPV at spot commodity and fx prices	20%	\$0.27	\$0.32
Net cash	20%	\$0.02	\$0.02
Risk weighted composite		\$0.22	
12 Months Price Target		\$0.26	
Shareprice - Last		\$0.072	
12 mth total return (% to 12mth target + dividend)		264%	

Source: Hartleys Estimate

Fig. 5: Key assumptions and risks for valuation

Assumption	Risk of not realising assumption	Downside risk to valuation if assumption is incorrect	Comment
Graphite prices are higher than BAT's estimates	Med	High	Our valuation is sensitive to commodity price assumptions.
Further offtake agreements past 2022 to accommodate Balama	Med	Extreme	Without further past year 3 offtake, the projects will struggle
Economic mine life of 10 years	Low	Med (although also could be upside)	We believe our mine life assumptions are realistic based on current resources. Mine life could be increased should further high grade resources be discovered.
Debt funding	Med	Extreme	We assume the project can be debt funded. We assume an interest rate of 12%.
Equity funding	High	Extreme	We assume BAT can raise the equity to fund Montepuez
First production	High	Moderate	We assume first full scale production in early-CY19
Conclusion	<i>Given the lack of transparency in graphite pricing, we view BAT as a moderate risk. No long term offtake agreement and no mining license is the biggest threat to our valuation, in our view.</i>		

Source: Hartleys

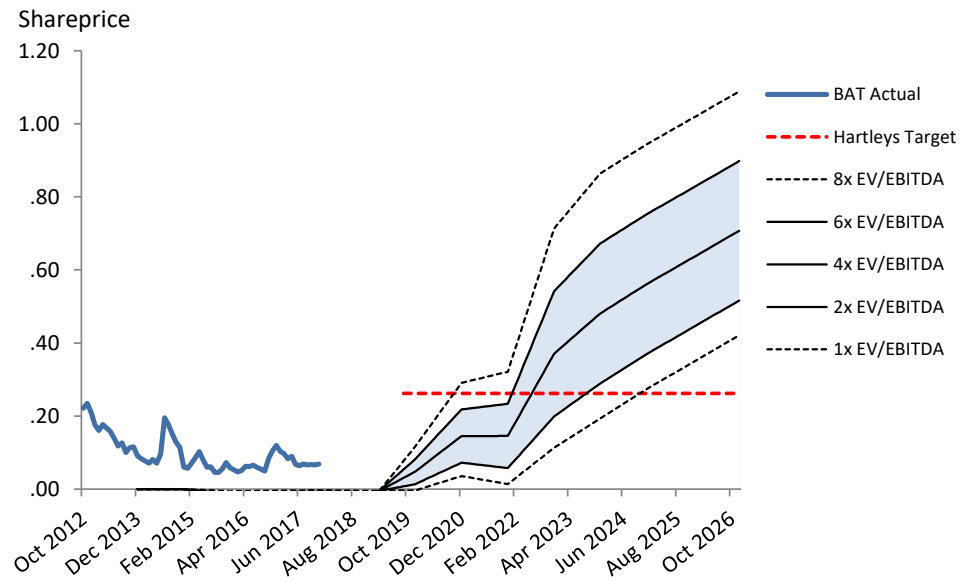
Fig. 6: Model Assumptions

Assumptions	Units	Montepuez			Balama Central		
		VES 2017 Stage 1+2	Hartleys Montepuez Estimates	Difference	Scoping Study 2018	Hartleys Balama Estimates	Difference
Assumed mine inventory	Mt	41.4	41.4	0%	8.9	8.9	0%
Avg LOM Graphite grade	%	12.0%	12.0%	0%	10.6%	10.6%	0%
Contained graphite	Mt	4.97	4.97	0%	0.94	0.94	0%
Stage 1 throughput	Mtpa	0.5	0.4	-20%	0.54	0.53	-2%
Stage 2 throughput	Mtpa	1.0	1.0	0%			
Graphite recoveries	%	80%	80%	0%	93%	93%	0%
Concentrate grade	%	97%	97%	0%	97%	97%	-1%
Stage 1 conc. production	Mtpa	0.05	0.04	-20%			
Stage 2 conc. production	Mtpa	0.10	0.10	0%	0.055	0.054	-1%
Mine Life	yrs	20	10	-50%	10	10	0%
First Production		Dec-18	Mar-19		Dec-20	Mar-22	
Basket Price	US\$/t	932	931	-0.2%	1221	1305	6.9%
Jumbo	US\$/t	4% 1,750	2,021	15%	29% 1,750	2,021	15%
Large	US\$/t	14% 1,300	1,368	5%	25% 1,300	1,368	5%
Medium	US\$/t	10% 1,025	1,042	2%	9% 1,025	1,042	2%
Fine	US\$/t	72% 800	766	-4%	37% 800	766	-4%
Annual Revenue							
Stage 1	US\$M	46.3	37.0	-20%	67.0	70.7	5%
Stage 2	US\$M	92.6	92.4	-0.2%			
Total Operating Costs	US\$M	337	337	-	372	372	-
Total Project capital	US\$M	67.3	77.0	14%	50.0	60.0	20%
Stage 1	US\$M	42.3	50.0		50.0	60.0	20%
Stage 2	US\$M	25.0	27.0				
NPV12	A\$M		270				
NPV14	A\$M					119	

Source: Battery Minerals Limited, Hartleys Estimates

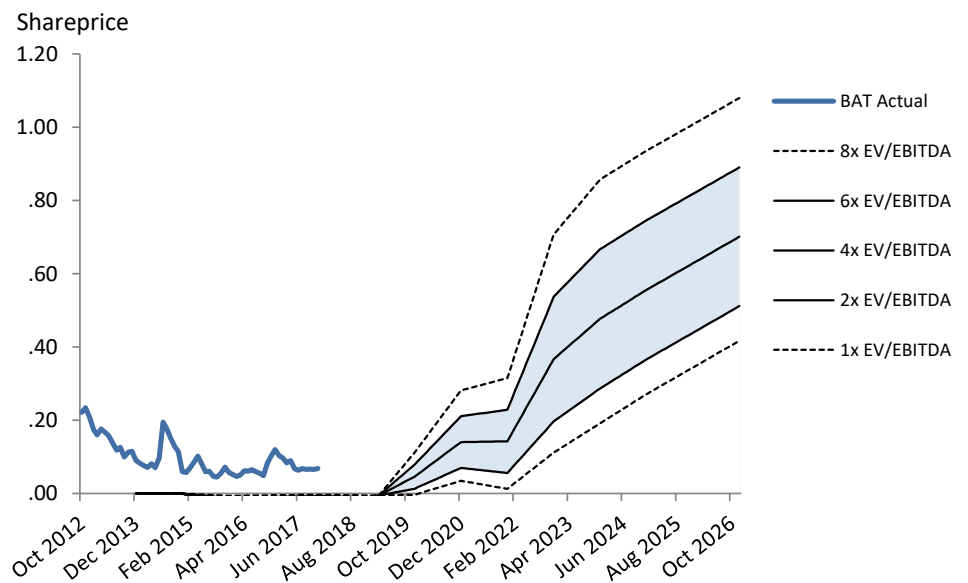
EV/EBITDA BANDS

Fig. 7: Using Hartleys base case commodity forecasts



Source: Hartleys Estimates, IRESS

Fig. 8: Using spot commodity prices



Source: Hartleys Estimates, IRESS

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Hartleys Recommendation Categories

Buy	Share price appreciation anticipated.
Accumulate	Share price appreciation anticipated but the risk/reward is not as attractive as a "Buy". Alternatively, for the share price to rise it may be contingent on the outcome of an uncertain or distant event. Analyst will often indicate a price level at which it may become a "Buy".
Neutral	Take no action. Upside & downside risk/reward is evenly balanced.
Reduce / Take profits	It is anticipated to be unlikely that there will be gains over the investment time horizon but there is a possibility of some price weakness over that period.
Sell	Significant price depreciation anticipated.
No Rating	No recommendation.
Speculative Buy	Share price could be volatile. While it is anticipated that, on a risk/reward basis, an investment is attractive, there is at least one identifiable risk that has a meaningful possibility of occurring, which, if it did occur, could lead to significant share price reduction. Consequently, the investment is considered high risk.

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