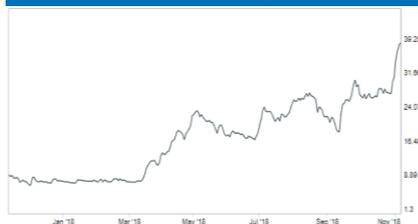


9 November 2018

BMN LN Mining & Metals



Source: LSE

Market data

Price (p)	36.3
12m High (p)	40.0
12m Low (p)	7.6
Shares (m)	1,115.5
Mkt Cap (£m)	404.4

Company summary

Bushveld Minerals is an AIM-quoted mineral resource development and production company. The group's key asset is a majority controlling interest in the Vametco vanadium operation in South Africa. Bushveld also has thermal coal interests via its wholly-owned Lemur Resources subsidiary and tin exposure via a 17.5% stake in AfriTin Mining Ltd.

Key forecasts

	2017	2018e	2019e
Sales (£m)	2.2	156.7	186.5
EBITDA (£m)	0.7	96.8	117.1
EBITDA, adj* (£m)	0.7	71.2	86.3
EPS (GBp)	(0.1)	5.0	5.4
EV/EBITDA (x)	na	4.1	3.4
EV/EBITDA adj* (x)	na	5.6	4.6
P/E (x)	na	7.2	6.7
Net cash (£m)	1.4	44.0	116.3

*Equity-attributable adjusted EBITDA

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Bushveld Minerals*

Q3 update: price strength offsets lower production

Strike-induced downtime at Bushveld's Vametco operation in South Africa saw quarterly vanadium output fall 15% in Q3 2018, temporarily frustrating efforts to grow annualised run rates following expansion initiatives. Bushveld has thus pared-back 2018 production guidance by up to 13%, and increased cost guidance by up to 6%. However, offsetting the unforeseen operational interruptions, the vanadium price environment has continued to strengthen – the Q3 average FeV price was up 24% vs Q2, before reaching a decade high of close to US\$130/kg in late October. We have adjusted our valuation and earnings forecasts for the revised operational guidance, but also for increases to our near-term vanadium price assumptions. Our sum-of-parts moves to 38p accordingly, and our 2018 and EBITDA estimate rises by 7%, to £97m (on a fully-consolidated basis). Our revised pricing assumptions remain well below current market levels, and we thus think the risks to both our valuation and earnings estimates lie to the upside.

- ▶ **Q3 operational update:** Q3 2018 vanadium production at Vametco fell by 14.6% relative to Q2, to 537t V, owing to operational interruptions stemming mainly from 16 days of unprotected industrial action in September. This lost time in Q3 compounded maintenance-related disruptions in Q2 and more recently, dampening the positive impact of expansion initiatives implemented during the year. The Q3 result takes production for the nine months to end September to 1,897/t, some 10% lower than output in the corresponding period of 2017.
- ▶ **Guidance revised:** As reported previously, the industrial action has since been resolved amicably. However, owing to the strike causing lower-than-expected output in Q3, as well as seven days of subsequent unplanned kiln maintenance downtime, Bushveld has revised down its full-year production guidance, to 2,600-2,650t (from 2,850-3,000t previously). Consequently, it has also increased its 2018 cost expectations, to R250-255kg V (from R240-250kg previously).
- ▶ **Productivity drive should see higher 2019 output:** Bushveld is driving operational improvement initiatives to enhance productivity levels. We would expect output to increase towards an annualised rate in-line with the recently completed capacity expansion to 3,750t pa heading in to 2019, assuming no further material interruptions. Another phase of expansion is being progressed to increase capacity to over 5,000t, at which level Vametco would account for >5% of global vanadium supply. Bushveld is evaluating the timing and investment requirement, which we believe is fundable from internal resources.
- ▶ **Pricing assumptions – chasing market upwards:** We have updated our model for the revised operational guidance, but also for an increase in our vanadium pricing assumptions. FeV rose sharply across Q3 2018, averaging US\$86/kg (up 24% vs Q2), and hit a decade high of close to US\$130/kg in late October. Against a backdrop of co-product supply constraints, this latest upwards surge appears demand driven, as new regulations for high-strength steel rebar in China take effect. We have lifted our 2018 price assumption from US\$68/kg to US\$80/kg (assuming a Q4 average of cUS\$100/kg, versus current European pricing of US\$118/kg), and have straight-lined our annual estimates thereafter down to our long-term assumption of US\$40/kg from 2021. Our resulting sum-of-parts is 38p (up from 36p previously), and our 2018 EBITDA estimate rises by 7%, to £97m. The latter puts Bushveld on an undemanding EV/EBITDA multiple of 4.1x on a fully-consolidated basis (5.6x on a 74% equity-attributable basis). We see potentially substantial upside to our earnings estimates and sum-of-parts valuation should vanadium hold even close to current market levels.

Q3 operational update

Industrial action dampens production performance

Vanadium production in the form of Nitrovan (a trademarked Vametco vanadium-nitrate product, which commands a similar price to ferrovanadium) totalled 537t in the three months to 30 September 2018. This represents a 14.6% reduction relative to Q2 2018, with the lower volumes a result of production interruptions stemming from a previously reported 16-day period of unprotected industrial action in September, but also a four-day protest in July by members of the local community.

The industrial action was resolved amicably on the 21 September, with the company and the Association of Mineworkers and Construction Union reaching agreement on the implementation of a framework for a new share options scheme for employees. Nonetheless, with the lower-than-anticipated production in Q3, and further downtime arising from an unplanned seven-days of maintenance work on the kiln at Vametco subsequently, Bushveld has reduced its 2018 full-year production guidance to 2,600-2,650t (from its last-stated guidance of 2,850-3,000t).

The reduced volumes and some cost inflation have also led the group to upwardly revise its unit cost guidance for the year, to R250-255/kg V (versus R240-250/kg previously). Cash production costs in Q3 averaged R298/kg, up 11% on those achieved in Q2 owing to the lower volumes resulting from the production interruptions.

Fruits of expansion should come through in 2019

Vametco has capacity potential of 3,750t pa following the completion in June of a US\$2.5m internally-funded expansion programme (building on an earlier debottlenecking initiative implemented by Bushveld after taking control of Vametco in 2017). Bushveld continues to implement operational improvement measures to enhance Vametco's productivity, and we would expect production rates to increase towards the expanded 3,750t pa capacity level heading in to 2019 (assuming no further material operational interruptions).

A further capacity expansion to 5,000t pa is planned, involving an upgrade of the kiln feed and discharge equipment and an expansion of the process circuit's evaporative capacity. The group is in the process of regulatory approvals for this next phase of expansion, and is reviewing the timing and required capital investment. The capital cost has been previously guided at around US\$15m, which we believe would be eminently fundable through internal cash generation.

Completion of the Phase Three expansion will see Bushveld emerge as a primary producer of significant scale, increasing its share of a structurally challenged global vanadium supply market from around 3% currently to over 5%.

Moreover, during Q3 Bushveld completed an exploration drilling programme at Vametco aimed at enhancing geological confidence and grade continuity of resources. The results will feed in to an updated resource estimate in Q1 2019. Allied with positive results from initial drilling of Bushveld's adjacent Brits property, we believe this could eventually result in an increase in mineable resources, which in turn may support a further expansion in the future beyond the 5,000t pa near-term target (management has an ambition to grow Bushveld's production capabilities to around 10,000t pa over the longer term).

Vanadium prices continue to strengthen

Vanadium prices maintained their upwards trajectory in Q3, ferrovanadium (FeV) averaging US\$86/kg for the period, an increase of 24% relative to the Q2 average. Post period end prices spiked even higher, with European market prices reaching a decade-high of close to US\$130/kg before easing back somewhat to the current level of around US\$118/kg.

The steep upwards price trend was established last year, fuelled initially by growing market tightness on constrained co-product supply, historically the world’s dominant source of vanadium (weak steel prices earlier this decade prompted a curtailment of high-cost magnetite iron-ore based steel production, the side-effect being a reduction in co-produced vanadium slag by-product from such operations). The latest leg up appears more demand-side driven, with new regulations for construction steel rebar in China due to come in to effect from November 2018. These new regulations are part of a safety push to reduce the use of inferior steels in building constructions by eliminating the use of low-strength rebar. Importantly, the regulations set out stringent specifications (including the amount of vanadium additive required) for three different high-strength rebar standards. If enforced strictly, we believe these new regulations could lead to a significant and sustained increase in intensity of vanadium usage in the domestic Chinese steel market.

Figure 1: Vanadium ten-year price history (FeV basis)



Source: Bloomberg (Metal Bulletin data) and vandiumprice.com

Other than in the, in our view, unlikely event of significantly higher global steel demand, we don’t see the factors behind this ‘perfect storm’ for vanadium prices unwinding in the near term. We believe this structural change places increasing strategic importance on *primary* vanadium producers such as Vametco.

We have increased our 2018 average FeV price assumption to US\$80/kg (up 18% on our previous assumption of US\$68/kg), simply taking the nine-month market average to end September (just over US\$72/kg) and assuming a Q4 average of cUS\$100/kg (still a conservative 15% behind current prices). Cognisant of the historic volatility of vanadium markets through a cycle, we consider it prudent to continue to use a conservative long-term price assumption of US\$40/kg from 2021. We straight-line our price assumptions down from US\$80/kg in the intervening years.

Or long-term price assumption could prove extremely conservative, particularly if the vanadium redox-flow battery (VRFB) market expands materially. However, we would caution that, ironically, prolonged elevated vanadium prices could inhibit the widespread commercial role out of VRFB technology given that vanadium electrolyte is the single largest cost component of a VRFB unit.

Valuation

We have updated our valuation to incorporate Bushveld’s revised 2018 guidance, FX movements, and our upwardly adjusted vanadium price assumptions. The net result is a 5% increase to our risked NAV estimate, to 38p per share (rounded), our higher pricing assumptions more than offsetting our now more conservative 2018 production and cost forecasts.

Figure 2: Base-case sum-of-the-parts valuation*

		Unrisked	Risk	Risked	
		US\$m	multiple	US\$m	GBP/s
Vametco (BMN share)	NPV _{10%}	452	1.0x	452	31.2
Mokopane	NPV _{10%}	404	0.2x	81	5.6
Brits	nominal	20		20	1.4
AfriTin Mining (17.5%)	market	3		3	0.2
Lemur Resources	nominal	10		10	0.7
Corporate G&A	NPV _{10%}	-22		-22	-1.5
EV		867		544	37.5
Adjusted cash (mid-2018)	estimate	5		5	0.4
NAV		872		549	37.9

*Assumes long-term (from 2021) US\$40/kg V price and R14.00:US\$1 FX rate Source: ARC estimates

Vanadium price and ZAR:USD exchange rate assumptions are the two key variables in our NAV estimate (Figures 3-4). As can be seen, our revised 38p per share valuation may prove extremely conservative if current vanadium market strength holds – our long-term FeV price assumption (introduced in our cash flow model from 2021) is more than 65% below current vanadium market pricing levels.

Figure 3: Risked NAV (GBP) sensitivity to V price (flat from 2019*) and FX rate

		Ferrovanadium price (US\$/kg V)						
		40.00	50.00	60.00	70.00	80.00	90.00	100.00
USD/ZAR rate	12.00	31	46	62	78	94	109	125
	13.00	33	48	64	80	96	111	127
	14.00	35	50	66	82	97	113	129
	15.00	36	52	67	83	99	114	130
	16.00	37	53	69	84	100	116	131

*Our base-case NAV assumes a long-term FeV price of US\$40/kg from 2021 Source: ARC estimates

Figure 4: Risked NAV (GBP) sensitivity to V price (flat from 2019*) and discount rate

		Ferrovanadium price (US\$/kg V)						
		40.00	50.00	60.00	70.00	80.00	90.00	100.00
Discount rate	15%	24	35	46	57	68	79	90
	12%	30	43	56	70	83	97	110
	10%	35	50	66	82	97	113	129
	8%	41	60	79	97	116	135	153
	5%	56	81	107	132	157	182	208

*Our base-case NAV assumes a long-term FeV price of US\$40/kg from 2021 Source: ARC estimates

Summary operating and financial forecasts

Figures 5-9 below and over page summarise our base-case operating and financial forecasts, updated to incorporate Bushveld's revised 2018 operational guidance for Vametco and our adjusted vanadium pricing assumptions.

Figure 5: Summary Vametco operational forecasts and macro assumptions

		2017*	2018E	2019E	2020E	2021E
Vanadium production	t	2,649	2,625	3,750	4,375	5,000
V ₂ O ₅ equivalent	t	4,729	4,687	6,694	7,810	8,926
Vanadium sales	t	2,721	2,625	3,750	4,375	5,000
Ferrovanadium market price assumption	US\$/kg V	32.60	80.00	66.67	53.33	40.00
Received basket price (Nitrovan and FeV)	US\$/kg V	30.13	77.60	64.67	51.73	38.80
Total cash costs (including royalties)	US\$/kg V	21.02	29.70	23.90	21.71	19.31
Operating cash margin	%	30	62	63	58	50
All-in costs (including depreciation)	US\$/kg V	21.57	31.10	25.34	23.06	20.37
All-in margin	%	28	60	61	55	47
South African Rand	ZAR:USD	13.30	13.00	14.00	14.00	14.00
GB Sterling	USD:GBP	1.29	1.30	1.30	1.30	1.30

*Bushveld did not assume majority control of Vametco until end 2017

Source: ARC estimates

Figure 6: Summary Bushveld Minerals consolidated income statement

Year-end 31 Dec		2017*	2018E	2019E	2020E	2021E
Revenue	£m	2.2	156.7	186.5	174.1	149.2
Cost of sales	£m	(1.1)	(51.7)	(60.6)	(65.2)	(66.6)
Other income	£m	0.0	1.0	1.1	1.1	0.9
Selling & distribution costs	£m	(0.2)	(7.3)	(9.0)	(8.8)	(8.2)
G&A costs	£m	(3.9)	(5.4)	(5.2)	(5.2)	(5.2)
Other expenses	£m	(0.0)	0.7	0.0	0.0	0.0
Operating profit/(loss)	£m	(3.0)	94.0	113.0	96.0	70.2
Net finance costs	£m	(0.8)	(0.7)	(0.4)	(0.4)	(0.2)
Impairments	£m	(0.5)	0.0	0.0	0.0	0.0
Share of profit/(loss) from associates*	£m	3.6	0.0	0.0	0.0	0.0
Tax	£m	(0.0)	(26.3)	(31.8)	(42.7)	(39.9)
Net profit/(loss)	£m	(0.7)	67.0	80.8	52.9	30.1
Minority interests	£m	(0.3)	(17.6)	(21.2)	(14.0)	(8.1)
Attributable net profit/(loss)	£m	(1.0)	49.4	59.5	38.9	22.0

*Bushveld did not assume majority control of Vametco until end 2017

Source: ARC estimates

Figure 7: Summary Bushveld Minerals consolidated cash flow statement

		2017*	2018E	2019E	2020E	2021E
Operational CF before WC changes	£m	(2.9)	69.8	85.4	57.8	34.4
Working capital changes	£m	(1.1)	(19.0)	(0.4)	0.2	1.9
Cash flow from operations	£m	(4.1)	50.8	85.0	58.0	36.3
Capex	£m	0.0	(9.5)	(10.3)	(6.0)	(2.3)
Other	£m	3.3	(17.3)	(2.0)	(1.6)	(27.3)
Cash flow from investing activities	£m	3.3	(26.8)	(12.3)	(7.6)	(29.5)
Equity issue and warrant exercises	£m	1.7	18.6	0.0	0.0	0.0
Net borrowings	£m	6.4	(5.1)	0.0	0.0	0.0
Dividends to minorities	£m	0.0	0.0	0.0	(23.8)	(30.9)
Other	£m	0.0	(0.7)	(0.4)	(0.4)	(0.2)
Cash flow from financing activities	£m	8.1	12.8	(0.4)	(24.2)	(31.1)
Increase/(decrease) in cash	£m	7.3	36.8	72.3	26.2	(24.4)

*Bushveld did not assume majority control of Vametco until end 2017

Source: ARC estimates

Figure 8: Summary Bushveld Minerals consolidated balance sheet

		2017*	2018E	2019E	2020E	2021E
Cash	£m	7.2	44.0	116.3	142.5	118.1
P,P&E	£m	32.9	39.5	45.7	47.1	45.3
Intangible assets	£m	45.1	45.9	46.3	46.3	46.3
Other assets	£m	33.8	49.0	46.8	46.7	44.6
Total assets	£m	119.1	178.4	255.1	282.6	254.3
Payables	£m	15.0	10.4	31.7	38.8	21.7
Debt	£m	5.8	0.0	0.0	0.0	0.0
Other liabilities	£m	18.8	54.0	37.5	35.9	34.3
Total liabilities	£m	39.6	64.5	69.2	74.7	56.0
Shareholders' equity	£m	52.5	69.4	120.1	151.8	165.1
Non-controlling interests	£m	27.0	44.5	65.8	56.0	33.1
Total equity	£m	79.5	113.9	185.9	207.8	198.3
Total liabilities & equity	£m	119.1	178.4	255.1	282.6	254.3

*Bushveld did not assume majority control of Vametco until end 2017

Source: ARC estimates

Figure 9: Key financial measurements and ratios

		2017E*	2018E	2019E	2020E	2021E
EBITDA	£m	0.7	96.8	117.1	100.5	74.3
EBITDA margin	%	30	62	63	58	50
EBIT	£m	0.1	94.0	113.0	96.0	70.2
EBIT margin	%	3	60	61	55	47
EPS	GBp	(0.1)	5.0	5.4	3.5	3.2
Net profit margin	%	na	32	32	22	15
Free cash flow	£m	(0.8)	24.0	72.7	50.4	6.7
Net cash/(debt)	£m	1.4	44.0	116.3	142.5	118.1
EV/EBITDA (fully consolidated)	x	na	4.1	3.4	4.0	5.4
EV/EBITDA (equity attributable)	x	na	5.6	4.6	5.4	7.3
P/E	x	na	7.2	6.7	10.2	11.5

*Bushveld did not assume majority control of Vametco until end 2017

Source: ARC estimates

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