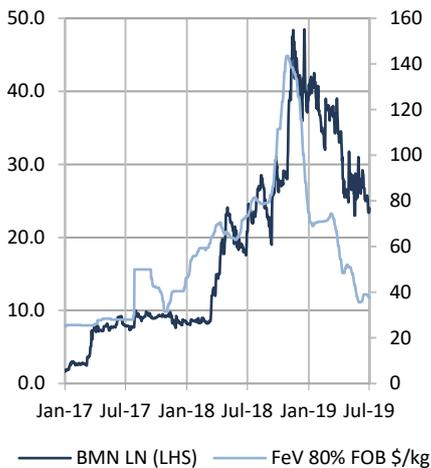


31 July 2019

#### Stock Data

Ticker	BMN LN
Share Price:	25.5p
Market Cap:	£285m

#### Price Chart



## EBITDA rises by 15% yoy as management drive down unit costs

**Bushveld Minerals** owns 74% of Vametco, an integrated vanadium mining, processing and technology business and is buying 100% of Vanchem. 26% of Vametco held by a BEE group. **Bushveld Energy** (84%) is developing vanadium redox batteries for grid use in South Africa.

- Bushveld Minerals report a significant improvement in vanadium production in the second quarter.
- Production of ferro-vanadium sold as Nitrovan rose by 14% in the quarter to 742mtV vs 649mtV in Q1 taking production to 1,392mtV through the first half.
- A series of improvements have increased production through mine scheduling enabling better quality material into the kiln together alongside better feed and recovery rates.
- **Production target:** the work means Vametco should be on target to meet current 2019 production guidance of 2,800-2,900 mtV.
- Management expect to achieve a run rate of 3,400mtV in 2020 for no additional capital cost and continue to review the timing and investment to get to >4,200mtVpa based on a name-plate capacity of 5,000mtVpa.
- **Costs fell 14%** to US\$17.40/KgV in the first half vs US\$20.2/KgV a year ago driven by higher feed rates, a weaker rand and other cost initiatives.
- **Cost guidance** remains unchanged at US\$18.90-19.50/KgV for the year as we expect the SA rand may appreciate through the second half.

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Vametco 74% & Vanchem 100%		2018A	2019e	2020e	2021e	2022e
Ferro Vanadium	US\$/kg	81.2	50.0	45.0	45.0	45.0
Vanadium sales	mtV	2573	3060	4370	5432	6422
Sales	US\$m	192.1	147.8	188.7	234.6	277.3
Operating costs	US\$m	65.0	70.6	91.9	112.2	130.8
Operating costs	US\$/kg	25.3	23.1	21.0	20.6	20.4
Operating profit	US\$m	95.2	77.3	96.8	122.4	146.5
Pre-tax profit	US\$m	86.6	68.8	91.7	118.2	141.8
Tax	US\$m	37.6	19.6	26.1	33.7	40.4
Post-tax profit	US\$m	49.0	49.2	65.5	84.5	101.4
EPS	US\$/s	2.9	4.4	5.9	7.6	9.1
PE	x	7.4	7.3	5.5	4.3	3.6
EV/EBITDA	x	4.5	4.9	3.9	3.1	2.6
EBITDA	US\$m	95.2	77.3	96.8	122.4	146.5
Free Cash Flow	US\$m		41.5	59.5	81.1	107.4
Vametco Cash Flow	US\$m	74%	50.2	51.3	60.7	75.2
Vanchem Cash Flow	US\$m	100%	-8.6	8.2	20.5	32.3

SP Angel forecasts: Figures based on 100% of Vametco plant. Bushveld now hold an effective 74% of the Vametco plant. Bushveld hold 100% of Vanchem. \*An SP Angel mining analyst and nomad have visited the Vametco in South Africa.

\*SP Angel acts as Nomad & Broker to Bushveld Minerals.

**Bushveld Cont...**

- **H1 EBITDA** was US\$48.6m vs US\$42.4m a year ago with margins > 50% due to the focus on unit costs, relatively good ferro-vanadium prices and weaker SA rand.
- **H1 Revenue** was US\$74.3m in H1 vs US\$81.2m a year earlier when ferro-vanadium prices were higher.
- **H1 ferro-vanadium prices** were 14% lower yoy at US\$56.3/KgV.
- Both sales and EBITDA benefit from a relatively strong ferro-vanadium price and the lag in pricing from December 2018 which feeds through into Q1 this year
- Vametco also successfully completed wage and benefit negotiations with the AMCU union to run from 1 July 2019 to 20 June 2022
- **Bushveld Energy** - Electrolyte Plant EIA on track to be completed this year with samples sent to vanadium battery companies for testing.
- **Electrolyte rental:** The financing of VRFB's through the leasing of vanadium in the electrolyte has got off to a rapid start with the implementation of a first rental contract with Sandbar in the US through Avalon Battery Corporation. Bushveld management are also working on a dedicated vanadium electrolyte rental fund.
- **Eskom VRFB project** continues to run following upgrades made to the VRFB battery. The battery passed a series of manufacturer and Eskom site acceptance tests in January and February. The battery will have peak output of 450kWh and is co-owned by Bushveld Energy and the IDC.
- **Vametco based Solar Mini-Grid Project:** procurement to start in next few months following assessment of grid connections and local environment. Solar farms to supplement grid power are seeing significant growth in South Africa due to unreliable and increasingly expensive grid supply.
- **Vanchem:** The deal has yet to receive approval from the South African competition commission.
- Good progress is reported and the company is confident of meeting the 31 October date for completion with additional debt finance to come from local banks.
- **Lemur:** revised BFS on the coal mining project including both surface and underground mining to start this quarter.
- **JSE listing delayed** till 2020 pending auditing of the Vanchem business as required for any listing.
- **Ferro-vanadium prices** rose in China last week by 2.8% to US\$36-38/KgV. Ferro-vanadium prices held steady in Europe at US\$30-31.05/KgV. (FastmarketsMB)
- **Valuation:** The fall in unit costs raises our valuation for Vametco and Vanchem following its acquisition to 92p/s from 90p/s. We value Bushveld's ownership of Bushveld Energy at 8.8p/s and we have adjusted our valuation on the other assets within the group to 5.4p/s..

**Conclusion:** It is remarkable that improvements at Vametco mean the business has almost met our full-year EBITDA forecast in the first half.

While we expect current ferro-vanadium prices to lead to lower margins though the second half, unit cost reductions should serve to offset much of the reduction.

Our post-tax profit for the year raises to US\$50.0m from US\$43.6m for the year assuming received ferro-vanadium prices average US\$50/KgV for the year.

The fall in the pound-dollar rate also makes the figures look even better in Sterling terms.

**Vanadium price assumption:**

- We assume Ferro-vanadium prices for 2019 to \$50/kgV from \$60.4/kgV in response to the fall in ferro-vanadium prices to around US\$36/kgV FOB China. For 2020 we assume \$45/kgV and we maintain our longer term price forecast at \$45/kgV.
- We still see vanadium demand and prices rising in China in response to better compliance with the legislation introduced in November last year despite rumours of significant by-product vanadium coming into the market.
- Demand for vanadium electrolyte for Vanadium Redox Flow Batteries VRFBs should increasingly support our estimate price assumptions particularly with Bushveld Energy's new vanadium electrolyte having found its first customer.
- While demand for vanadium for electrolyte may be price sensitive we see the invention of new lease finance structures for the vanadium in VRFB's as enabling the financing of VRFBs at higher vanadium price levels going forward.

**Bushveld Energy:**

- Bushveld's vanadium rental financing service should accelerate the planning and ordering of new VRFB systems to support South Africa's power grid.
- Critically it should reduce the cost of financing and spread the cost of the vanadium in the electrolyte over a longer period rendering the cost of vanadium less critical.
- We are raising our valuation for Bushveld Energy to US\$149m as we see the 'VRFB' business as offering a practical solution for the storage of growing solar and wind power in South Africa. This assumes a relatively low margin on electrolyte sales for VRFB batteries and a more normal project finance type cost for VRFB unit sales.
- While there are other battery solutions on offer, many of these suffer from high parasitic losses, high component renewal costs or increased risk of outright failure leaving VRFB's as the preferred grid-scale storage solution for power utilities.
- ADROIT market research forecast CAGR growth of 8.3%pa for grid power storage in Europe to hit \$1.11bn by 2025 with VRFBs expected to account for 83.8% of the total market share.
- Bushveld Energy aims to participate in 1,000 MWh of opportunities in Africa by 2020 and there is sufficient current demand in the market for vanadium electrolyte to support the installation of a 200 MWh capacity facility in South Africa.
- We have cautiously assumed a more modest market of just 300,000MWh in 2021 and for Bushveld to be involved in the development of around half the VRFB installations and electrolyte sales.
- Bushveld's current VRFB jv is being trialled at ESKOM should have a peak output of 450kWh as a single unit. It should be relatively simple to roll out multiple units to support the rapid growth in wind and solar farms being installed in South Africa as ESKOM moves to supplement its ageing coal-fired infrastructure.

*\*SP Angel act as Nomad and broker to Bushveld Minerals.*

*Note: Bushveld Minerals controls and holds an effective 84% of Vametco and has agreed to buy 100% of Vanchem.*

*\*An SP Angel mining analyst and nomad have visited the Vametco vanadium mine and processing facilities in South Africa.*

*\*SP Angel act as Nomad and broker to Bushveld Minerals*

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Recommendations are based on a 12-month time horizon as follows:

Buy - Expected return >15%

Hold - Expected return range -15% to +15%

Sell - Expected return < 15%