

# HALLGARTEN & COMPANY

## Initiation of Coverage

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## Bushveld Minerals

(AIM: BMN, OTCBB: BHSVF)

Strategy: Neutral

Key Metrics		
Price (GBP)	£0.0844	
12-Month Target Price (GBP)	£0.09	
Upside to Target	7%	
12mth hi-low GBP	£0.014 -£ 0.105	
Market Cap (GBP mn)	£68.15	
<b>Shares Outstanding (mns)</b>	807.5	
	<b>FY17</b>	<b>FY18e</b>
Consensus EPS		n/a
Hallgarten EPS		-£0.0058
Actual EPS	-£0.0028	
P/E	n/a	n/a

# Bushveld Minerals

## Transformation to Vanadium Player

- + Surging Vanadium price briefly enlivened the prospects of producers and wannabes in the sub-space
- + The purchase of the Vametco assets from Evraz propels Bushveld directly into the producer space
- + Higher Vanadium prices have enhanced the profitability of Vametco's operations with plans being implemented to increase production over the next two years
- + Trading (and financing) relationship with Wogen helps Vametco escape Glencore's tentacles
- + Upsurge in interest in VRB batteries puts Vanadium in contention to enter the rarified company of other sexy Battery Metals such as Cobalt and Lithium
- + The Mokopane project has gone from being in launch mode with a DFS to taking a secondary role. However it provides a pipeline of future production
- ✗ Process of restructuring BEE arrangement that Evraz had in place slowed the pace of integration of the new asset
- ✗ A dramatic tumble in the Vanadium price followed the spike and erased a large part of the recent gains
- ✗ South Africa's external image is always a burden for companies operating there

### Vanadium Awakens

The recent upsurge in Vanadium prices sent investors (and promoters) scrambling to find primary Vanadium mines or projects into which they could sink their teeth. The choice was poor indeed. Back in the more balmy days of the turn of the decade the potential names to conjure with were only 5 or 6 companies, with only two being advanced. The ranks have thinned further with ASX-listed producer Atlantic Ltd going bust and some of the assets of others moving on to new owners.

The recent revival has thrown focus back onto the space and Bushveld Minerals stands out (with Largo Resources) as the most prominent producers that are accessible. In this note we review Bushveld's activities and the general dynamics of the metal and the potential durability of its upsurge.

### The Word Was Given

Last decade Vanadium surfaced as a subject of interest primarily tied to the fortunes of the then-booming steel industry. It is now over five years since we did our Vanadium Review, covering the then most likely Canadian-based players in the future of Vanadium production. Now Vanadium is coming back with a vengeance for its potential in mass electricity storage devices, namely the Vanadium Redox

Battery (or VRB). At a recent Natural Resources Forum event at the London Stock Exchange, the guest speaker was Robert Friedland in nothing short of a Vanadium-induced ecstasy. Never could we have imagined the metal having such a euphoric effect.

In any case it gave the Friedland imprimatur to a metal which most metals watchers have rarely paid any attention to due to it (largely) being a by-product of the mining of other metals and, curiously, of the petroleum refining industry.

It was not just Friedland though that has latched onto this bandwagon as we have heard Vanadium name-checked at a number of recent events recently as the next best thing now that Lithium has somewhat done its dash with promoters overcooking the *soufflé*.

### **Some Background**

One sleeper in the space mainly because of its low profile due to its AIM-listing is Bushveld Minerals. It was only a wannabe with a project in South Africa's famed Bushveld complex until it leapt on the opportunity presented in the first half of this year by Evraz's sale of its producing Vametco complex in South Africa. As a result it now challenges Largo Resources (LGO.to) for investors' attention.

Bushveld was a strange amalgam, with somewhat of a ragbag of assets which until last year all had relatively equal attention paid to them as the company tried to get one, or all, of the business verticals moving forward in what has been a pretty negative market sentiment towards South Africa over the last decade. The assets were mainly in tin, coal, iron ore/titanium and Vanadium. The tin asset in Namibia has recently been hived off as AfriTin Mining (ATM.L) while the main vanadium target was a *de novo* development of the Mokopane asset in the Bushveld complex, the famed mineralogical occurrence so rich in PGMs, Chrome and Vanadium.

### **Mokopane Project**

Bushveld's Mokopane Vanadium Project is a substantial vanadium deposit with some of the world's highest in-situ (>1.4% V<sub>2</sub>O<sub>5</sub>) and in-concentrate (2.01% V<sub>2</sub>O<sub>5</sub>) vanadium grades. The deposit is based on the same license area as the company's P-Q Iron & Titanium Project and is a layered ore body along a north-south strike and dipping at 18-22° to the west running 2 kms to the east and parallel to the P-Q Iron & Titanium Project resource.

A scoping study on the Mokopane Vanadium Project was completed in July 2014. This study was based on an operation targeting only the MML and envisaged a 30-year life of mine operation at a mining rate of 1mn tpa down to a depth of 80m. A total capital cost of US\$262mn was estimated, of which \$216.5mn would be for the processing plant. Operating costs were estimated at US\$5,995 per tonne of V<sub>2</sub>O<sub>5</sub> product, a level which (according to the company) placed the project in the first quartile of the Vanadium cost curve.

At last news there was a Pre-feasibility study underway on the Mokopane Vanadium Project. The study

is premised on only the MML resource and envisaged the aforementioned 1mn tpa run of mine operation to produce approximately 9,500 tons  $V_2O_5$ . However not much has been heard of this project and the studies since the purchase of the operating Vametco operation was acquired.

### **Vametco**

The purchase of the Vametco complex was a game-changer. This mine is situated eight kilometres to the Northeast of Brits, in the North West Province of South Africa. It is owned by Strategic Minerals Corporation (SMC) through its 75% shareholding in South African-domiciled Vametco Holdings (Pty) Ltd. Vametco Alloys is a 100% subsidiary of Vametco Holdings. The remaining 25% is held by Black Economic Empowerment shareholders, with provisions to increase this to 26%.



Vametco holds the mining rights for Vanadium and other associated minerals over Portion 1 of the farm Uitvalgrond 431 JQ and Portion 1 of the farm Krokodilwaal 426 JQ in Brits. The Vametco operations consist of an open-pit mine supplying ore to a Vanadium processing plant located on the same properties. The operation employs around 470 people.

Vametco produces two products, Vanadium nitride (Nitrovan, a patented product used in the steel industry) and Vanadium oxide (MVO or  $V_2O_3$ ). The current plant has capacity of 2,750 tonnes per annum of Vanadium in the form of Nitrovan and Vanadium Oxide. The numbers for 2015 showed Vametco Alloys producing 2,419 tonnes of Vanadium.

Bushveld claims that there is scope to expand its production capacity from 2,750 to 3,340 tonnes per annum of Vanadium through targeted de-bottlenecking interventions at limited capital expenditure.

According to Bushveld, Vametco is one of the cheapest primary producers of vanadium in the world with, in 2015, an all-in cash cost (representing all operational cash cost including general, administration and logistics costs and State royalties) of production of US\$17.33 per kg of Vanadium. In the year prior to Bushveld's move on the asset the operations were profitable, even with the lower Vanadium prices prevailing in 2015. The 2015 revenues and operating profits were ZAR629 million and ZAR 26,724 respectively

## Resource/Reserves

The JORC-compliant Ore Reserves (shown below) consist of nearly 27mn tonnes with, in the company's opinion, some of the highest in-magnetite Vanadium Pentoxide (V<sub>2</sub>O<sub>5</sub>) grades in the world, averaging of 2.55% Vanadium Pentoxide in magnetite. The Ore Reserves are claimed to be sufficient to support the operations for 24 years at current production levels.

Reserve Category	Tonnage (Mt)	Percentage Magnetics	Percentage V in magnetics	Percentage V <sub>2</sub> O <sub>5</sub> in magnetics	SiO <sub>2</sub> (%)	CaO (%)
Proven	-	-	-	-	-	-
Probable	26.77	29.76	1.63	2.55	3.55	0.43
<b>Total</b>	<b>26.77</b>	<b>29.76</b>	<b>1.63</b>	<b>2.55</b>	<b>3.55</b>	<b>0.43</b>

The Mineral Resource (JORC-compliant) is shown in the table below. The MI&I resource is in excess of 138mn tonnes with average grades of 2.1% Vanadium Pentoxide in magnetite.

Resource Category	Tonnage (Mt)	Percentage Magnetics	Percentage V in magnetics	Percentage V <sub>2</sub> O <sub>5</sub> in magnetics	SiO <sub>2</sub> (%)	CaO (%)
Measured + Indicated	35.17	29.63	1.62	2.49	3.7	0.53
Inferred	103.45	29.59	1.42	1.97	2.69	0.47
<b>Total</b>	<b>138.62</b>	<b>29.6</b>	<b>1.47</b>	<b>2.1</b>	<b>2.95</b>	<b>0.48</b>

These Ore Reserves and Resources are based on the Competent Person's Report from April 2016 prepared by VBKom. In the company's opinion this signals there is scope to increase the reserve base by targeted exploration of the inferred resources.

The company claims there is continuation along strike of the Vametco mine's deposit with similar Vanadium grades to the mine. The deposit contains outcropping mineralisation. Bushveld claims that this gives potential for an extension of the life of operations and presents cheaper near-surface ore for the Vametco processing plant.

## The Transaction

Bushveld first signed an exclusivity agreement signed with Evraz in April 2016, in respect of the potential acquisition of Evraz's 78.8% economic interest in Strategic Minerals Corporation (SMC), a holding company for a group of companies which held the Vametco vanadium mine and plant.

At the time SMC's capital structure comprised A, B and C shares.

- 97,047 Class A shares issued, all held by Evraz. Class A shares earn normal dividend distributions but have no voting rights
- 100 Class B shares issued, 75 of which are held by Evraz (with 25 held by Sojitz Corporation, a minority co-investor in SMC). Class B shares are not eligible for dividends but have full voting rights

- 26,167 Class C shares issued, all held by Sojitz Corporation. Class C shares are eligible for dividend distributions but have no voting rights

Bushveld agreed to acquire all of Evraz's shareholding in SMC in two tranches, together with a potential additional earn out payment:

- **Tranche 1:** an initial 23.0 per cent economic interest in SMC (being 30 per cent of the A class shares in issue, and 24 per cent of the B class shares in issue) for a cash consideration of US\$4,682,073 payable by 17 June 2016
- **Tranche 2:** a further 55.8% economic interest in SMC (being the balance of the class A shares in issue and 51 per cent of the class B Shares in issue) for a cash consideration of US\$12,524,836
- **Earn out:** an annual earn out payment following completion of Tranche 2, based upon the Vanadium price breaching an agreed minimum threshold price. This is potentially payable between 2018 and 2025 up to an annual maximum amount of US\$1.5mn and a cumulative maximum amount of US\$5mn

All marketing and off-take contracts between the SMC group and the Evraz group were to be either terminated or prior to completion of the Tranche 2.

### **The BEE Component**

As veterans of the South African scene are aware the requirement for a BEE partner is always an issue with transactions such as that undertaken by Bushveld. In this case it was made somewhat more complex because the BEE partner of Evraz (Avacap Consortium) had to be replaced with a new partner (Jaxson 640) and as a result the funding of the original partner had to be unwound and the new partner financed.

Jaxson 640 is led by Bill Chipane, an investment professional with more than ten years in the metals and mining investment banking experience. He is well known to Bushveld Minerals and has been a consultant to the group for some time. Jaxson 640 together with the local communities, on whose land the Vametco mine deposit and processing plant are located, will now hold a 26% shareholding in Vametco.

Jaxson meanwhile assumed its share of the existing debt of approximately ZAR 39.5 million (US\$ 3.04 million) historically incurred in establishing the existing BEE shareholding in Vametco.

In line with the South African way of doing things these days Bushveld agreed a vendor funding arrangement with Jaxson 640 in which Bushveld provided Jaxson 640 with funding of ZAR 8,522,103 (US\$655,189) to enable it to complete the transaction. The funding was provided in the form of a vendor loan and will be repaid to Bushveld from dividends due to Jaxson 640 from Vametco over a period of five years. The total outlay by Bushveld in respect of the BEE transaction was ZAR 16,200,087

(US\$ 1,245,480).

Avacap Consortium's nominated directors on the board of directors of Vametco and Vametco Alloys (Proprietary) Limited resigned and were replaced by Jaxson 640 nominees.

### **Operational Metrics**

The six months to 30 June 2017 saw production levels similar to 2016 with 1,441 tonnes of Vanadium produced. During the period Vametco commenced a multi-phased expansion project to increase annual production to more than 5,000 mt of Vanadium over the next three years.

Reported revenue in the period improved markedly from 2015 and 2016, largely due to increased Vanadium prices. During the first half of 2017, EBITDA increased to ZAR85.5 million (US\$6.5 million).

In an operational update on Vametco Alloys' performance in the September 2017 quarter it revealed that it had produced 669 tonnes of Vanadium in the quarter. During the period, revenue increased by 29% and EBITDA by 69%, compared to the June 2017 quarter, aided by the rising Vanadium price. The first phase of the Vametco multi-phased expansion project was achieved in the quarter, during which Vametco reached an annual production run rate of 3,035 tonnes of Vanadium. The subsequent two phases of expansion will increase capacity to 3,750 tpa of Vanadium by June 2018 and to over 5,000 tpa by the end of 2019.

### **Restructuring**

As a result of the move on Vametco the "new" Bushveld has resolved to be a more focused entity. The tin assets were demerged into a separate listing on the AIM. This leaves the energy project in Madagascar as the prime non-Vanadium activity. In that activity, in 5 April 2017, Bushveld announced the signing of a Memorandum of Understanding between its wholly-owned subsidiary, Lemur Holdings, and Sinohydro Corporation Limited, a subsidiary of Power China Limited. The MoU gave both companies exclusive rights to work with each other on the development of an initial 60MW independent power producer coal power plant and associated 200 kilometre transmission line in southern Madagascar.

The longer term strategy here is unclear but a spin-out at some point, when this gains critical mass, should not be discounted.

### **Accounting Issues**

Companies that try and play games of "now you see it, now you don't" with financials on nascent operations have long been a concern of ours and are a guaranteed way of gaining either a **Neutral** or **Short** rating. Considering that Bushveld have been in control of the assets of Vametco for some time now the most recent published results' paucity of detail gives us cause to wonder.

Understandably as a non-revenue-generating company the top-line has long consisted of expenses and no sale revenue. However this has now changed and yet the company is still refraining from revealing its

(consolidated) top-line revenues instead reporting Vametco's performance as "share of profits of an associate". These amounted to a not inconsiderable GBP1.19mn in the period. Exactly the amount of time covered by this profit share is not clear. There are few clues related to the revenues covered, the costs associated therewith, the financing costs, the sales volumes and therefore the margins.

<b>Bushveld Minerals</b>			
FY ending 28 Feb			
	<b>FY16</b>	<b>FY17</b>	<b>1H18</b>
Administrative expenses	(1,556,216)	(1,550,087)	(249,275)
Operating Loss	(1,556,216)	(1,550,087)	(249,275)
Other Income	41,152	31,445	22,834
Finance Income	77,992	1,093	1,098
Finance Costs	(351,206)	(202,518)	
Impairment of tin assets			(7,658,273)
Share of profit from associate			1,190,566
Pre-tax Loss	(1,788,278)	(1,720,067)	(6,693,050)
Pertaining to Shareholders	(1,699,000)	(1,705,920)	(6,693,050)
Minorities	(89,278)	(14,147)	-
	<u>(1,788,278)</u>	<u>(1,720,067)</u>	<u>(6,693,050)</u>
EPS	-£0.0039	-£0.0028	-£0.0088

The non-cash item relating to the AfriTin spin-out was the thing that tipped the company into the red in 1H18, otherwise the company would have been reporting its first positive bottom line. The drop in administrative expenses was also worth noting. Was the tin operation that expensive to administer? It's also unclear as to why the financing costs should have disappeared with the tin operation (or for some other reason?). Additionally why were these results not consolidated considering that Vametco is majority owned by Bushveld?

The next six month results will include significantly more months of Vametco's inclusion. Already we know its September quarter was a strong improvement on the equivalent period in 2016. We also know that the Vanadium price surge occurred after that quarter. Thus 2H18 results should be strongly higher.

### Trading Arrangements

Having a trading arrangement is not absolutely vital but if it brings cash with it (or at least access to a credit line) then it is welcome. It is useful to note that Largo Resources has long had such an accord with Glencore for its Vanadium production. In late March 2017, Bushveld announced that it had signed a definitive Sales and Marketing Agreement with the London-based trading house, Wogen Resources Limited. While not as well-known as its larger brethren in the trading community, Wogen is regarded as



one of the leading players in the specialty metals space.

In late August 2017, Bushveld announced that it had agreed with Wogen to retire in full the US\$3 million prepayment facility and to simultaneously increase the Vametco working capital facility by same amount from US\$6 million to US\$9mn. Two days later it was announced that the working capital facility governed by the definitive Sales & Marketing Agreement with Wogen would be increased from US\$9mn to US\$11mn with immediate effect.

The working capital facility is tied to a sales and marketing agreement with Wogen and is an inventory and receivable financing arrangement with a five-year term, which began in March 2017, and it will be renewable by mutual agreement.

Wogen can market the unit's Nitrovan product globally on an exclusive basis over the term of the agreement, except for in Japan and Taiwan which are covered by a separate exclusive arrangement with Sojitz Noble Alloys Corporation.

### **Moving into Downstream VRB Manufacture**

With its long-running electricity issues South Africa would appear to be a problem area but also it represents an opportunity. Bushveld Energy and the IDC (a South African government entity) have been working together on a techno-economic study on a Vanadium electrolyte production plant to be located in South Africa.

The study results highlighted that:

- Bushveld can manufacture electrolyte on a cost-competitive basis, thereby allowing it to compete both regionally and globally
- A scalable plant can be configured with an initial annual production capacity of 200-400MWh
- The estimated initial capital expenditure for the plant of ZAR130 million (US\$9.7 million), of which more than 75% comprises balance of plant
- There is scope to reduce the capital expenditure further through co-locating the electrolyte plant at the Vametco processing facility

The most significant driver of costs (upwards of 70%) is the vanadium feedstock, making locally available, low-cost supply a critical success factor and natural competitive advantage for South Africa.

On 21 November 2017, Bushveld announced that its 84%-owned subsidiary, Bushveld Energy, had confirmed its first VRFB deployment in South Africa. The system will be deployed with Eskom. This follows Eskom's identification of the need for potentially up to 2,000MW of additional, daily balanced energy storage within the existing grid. The project is co-developed by Bushveld Energy and the IDC and will allow Eskom to test the VRFB. The VRFB commissioning is expected in the first half of 2018.

## Financing

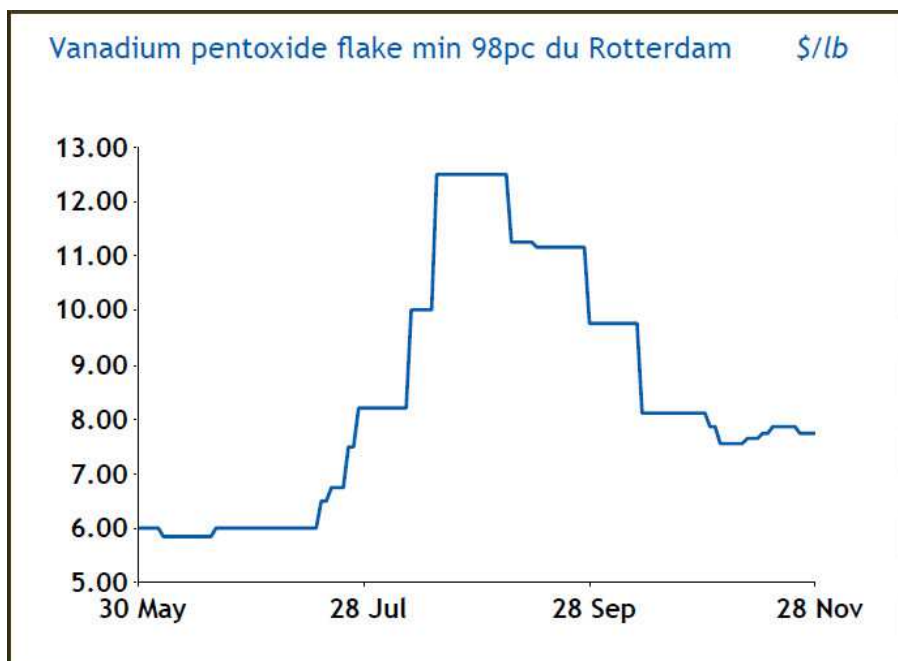
In June 2017 Bushveld closed a financing arrangement with Barak Fund SPC Limited. Following the US\$11mn bridge loan settlement announcement on 8 June 2017, BVL advised that it had paid the outstanding US\$961,010 in fees and interest to Barak. This completed payment of all outstanding obligations to Barak in terms of the bridge loan facility agreement.

In late September 2017, Bushveld announced that it had raised £8mn of unsecured convertible bonds from UK-based funds, Atlas Capital Market and Atlas Special Opportunities. The first tranche of £4.5mn was issued on 22 September 2017.

## Vanadium Dynamics

After a long period of somnolence the Vanadium price quite literally took off in the second half of 2017. The prime motor was a mooted change in Chinese specifications for Vanadium use in steel alloys for construction use. This had been a prospect dangled over the market five years ago after a series of devastating Chinese earthquakes, but had then retreated. The background music was the far more sexy mass adoption of Vanadium Redox Battery technologies for storage of electricity (particularly from solar and wind generation). This was not an immediate or real impetus for Vanadium Pentoxide demand despite all the chatter.

However, as the chart below showed the price in the second half of 2017 went into the stratosphere, if only briefly.



In a case of easy come/easy go the price then tumbled back to earth though still comfortably 30% above its long-term average during this decade. We had warned at the time of the surge that any Chinese decision was revocable if prices went too high and that may have been the impetus for the decline. At current levels though there is no need for the Chinese to shift from their original decision to adopt a higher Vanadium component in construction steels.

More conspiratorial minds suggested that the price tumble was due to Glencore not liking the price rise. In theory as a trader Glencore makes money on the spread and in theory the same percentage spread on a higher price means more income. However it could also be the case that Glencore (which admitted, during its 2015 travails, that it could not hedge Vanadium) did not have guaranteed supplies for sales contracts written at lower prices and was thus caught short.

Additionally the rise of new producers or changing trading arrangements at existing producers might have threatened Glencore's dominance of the Vanadium trading space. Glencore's own production of Vanadium had been negatively impacted in the first half of 2017 when it announced that it had produced 10% less Vanadium owing to lower kiln availability and maintenance on their evaporation plant. So Glencore wins if prices are up or down but it potentially loses out long term if dominance of the trading space escapes it.

## **Risks**

Amongst these, for Bushveld, are:

- Vanadium price risk
- Labour and governmental issues must always be considered in the South African context
- Funding of the Mokopane project

The issue of prices is more important than anything else. The Vametco operation was picked up cheaply because profitability was so marginal for so long in the Vanadium space, with the great losses at Largo Resources and the demise of Atlantic Ltd proving the point. Prices have retreated from their recent highs but have created a higher base. The picture looks good for greater demand from VRBs, just not yet.

South Africa is always a land of doubts in the minds of investors but despite this the country's mining industry trundles onwards and still dominates many of its traditional mineral/metal categories. Relations seem to be good with labour at Vametco and the switching of the BEE partner seems to have gone through seamlessly, so for the short term at least it seems to be "all quiet on the Western Front".

Profitability from Vametco could pay for the development of Mokopane. We would expect that Mokopane would not be given serious consideration for financing and development without a strong price uplift for Vanadium prices that was sustained for a significant period. In that circumstance Mokopane would be deemed one of the few "oven-ready" Vanadium projects that could be contemplated for a kickstart and would thus attract major funders, possibly from China.

## Conclusion

That Bushveld is not so well known outside the AIM circles (and even within those circles) is no surprise, as the company does not have promotion as one of its strong suits. After examination of the most recent accounts (post-acquisition of Vametco) neither can we attest to the company becoming very transparent in accounting terms. In effect the financial results of Vametco were kept well under wraps in the latest six-month results.

The strategy of buying Vametco was a timely and admirable one. Even Vanadium's enthusiasts could not have seen the massive uplift that the metal experienced in a brief window in the second half of 2017. Much of the gain was given back but the long-term dynamic is good on both the demand side (steel alloys and moreover VRBs) but also on the supply side (with an absence of new primary mines and a long period of underinvestment in exploration and development). The Vametco buy was thus perspicacious and potentially synergistic later on should Mokopane develop momentum as a new primary mine. This positions Bushveld to become a "Vanadium major". A side benefit might also be the cracking of Glencore's vicelike grip on the metal's trading patterns.

Despite these positives the opaque accounting practices cannot help but cause us concern and as such we can only afford Bushveld a **Neutral** rating despite the propitious outlook for the Vanadium market and therefore we are positing a twelve-month target price of GBP0.09 until further transparency is offered by the management.



## Important disclosures

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