

# Wolf Minerals

## 24/7 operations approval boost

Wolf Minerals (Wolf) has received approval to operate its processing plant on a 24/7 basis, permanently, and permission to extend mining activities to 2036. Both permissions will have a significant impact on future production at its Drakelands open-pit mine, in Devon.

The mine, which opened in September 2015, has struggled to reach planned production rates, owing to low plant recoveries caused by finer than expected ore and mechanical failures in the plant. In addition, cashflow has been affected negatively by continuing low tungsten prices on the world markets.

We visited the mine in November. Management believe that Wolf is resolving its problems in the plant. A trend of increasing quarterly ore throughput and wolfram production might support this, although performance is still below feasibility study levels. Management acknowledge that their key challenge is to improve plant recoveries.

The company produces a wolfram concentrate. Wolfram is the raw material for tungsten production, which is used mainly in cemented carbides, for cutting tools used in the mining, oil and gas and manufacturing industries. Drakelands is one of the few producers outside of China.

FY (end June)	WO <sub>3</sub> prod (kmtu)	Cash Costs (US\$/ mtu*)	Rev. (A\$m)	EBITDA (A\$m)	EBITDA margin (%)	EPS (c)
2017e	227.5	159	46.8	(17.4)	(37)	(4.48)
2018e	389.3	110	105.3	24.0	23	(0.65)
2019e	423.6	96	160.5	77.2	48	(4.36)

Source: Marten & Co, note \* mtu is an abbreviation of metric ton unit which equals 1% of a metric ton or 10kg, kmtu is 1,000 mtus and mmtu is one million mtus. 1 metric ton = 1 tonne.

## Valuation summary

A model, based on a variety of assumptions (described in more detail on page 7) and discounting cashflows at 5% per annum, suggests that the Drakelands mine has a net present value of 20.9 pence per share (US\$283m). A sum-of-the-parts NAV for Wolf, calculated on the same basis, is 16.8 pence per share. Wolf is currently trading in London at a discount to that NAV of 71%.

<b>Listed</b>	AIM, ASX
<b>Ticker</b>	WLFE LN WLF AU
<b>Base currency</b>	GBP
<b>Price</b>	4.88p
<b>Daily volume (1 year avg)</b>	315k shares
<b>1 year high</b>	11.00p
<b>1 year low</b>	4.25p
<b>1 month performance</b>	(2.5%)
<b>3 month performance</b>	(25.0%)
<b>1 year performance</b>	(54.7%)
<b>Calendar YTD perf.</b>	(45.8%)
<b>Yield</b>	Nil

## Wolf share price

Time period Dec 2014 to Nov 2016



Source: Bloomberg

<b>Net cash (AUD)</b>	35.0m
<b>NAV<sup>5%</sup>/share</b>	16.8p
<b>Discount to NAV</b>	71%
<b>Market cap (GBP)</b>	52.8m
<b>Shares outstanding (m)</b>	1,083.4

[Click here for our initiation note](#)

This note should be read in conjunction with QuotedData's [initiation report](#) of March 2016.

The glossary on the QuotedData [website](#) has explanations for many of the technical terms used in this note.

More information can also be found at the company's website: [www.wolfminerals.com.au](http://www.wolfminerals.com.au)

## Key points

- Management acknowledge a key challenge is to improve plant recoveries
- Mining permission has been extended to 2036, enabling Wolf to reschedule its debt repayments beyond 2021 (see page 2)
- Permission for a 7-day working week has been granted, which allows the company to process more ore, which could, in turn, increase future annual production (see page 2)
- The company has secured short term bridging finance and rescheduled its debt repayments (see page 3)
- Management report that all stakeholders, including the lender banks, are working together to ensure development through a difficult period
- Australian mining-focused private equity firm, Resource Capital Fund, has increased its ownership to 56% over the course of 2016
- Mining at Drakelands is transitioning to harder, coarser ore, over the next 12 months (see page 5). This is more suitable for efficient plant operation and improved recoveries.
- Wolf has identified problems in the processing circuit and is resolving them through changes in work practice and equipment modification in conjunction with the plant construction contractor, GR Engineering Services (see page 6)
- Reportedly, the mining waste facility construction is proceeding well and the new public road to the south of the facility is on schedule for completion in early 2017 (see page 7).

## Mining licence extended: 24/7 operations permission granted

On 23 November, Devon County Council extended the mine's planning permission from 2021 to 2036. This was a landmark decision that will enable the company to mine its current reserve and to adjust its debt repayment schedule to align this more closely with the improved life of the mine.

Planning permission extension to 2036 and approval for 24/7 plant operations could mean increased production and a more sympathetic debt repayment schedule

At the same time, Devon County Council granted permission for the plant to continue seven-day working on a permanent basis. The original permit restricted the crusher (and effectively the plant) to a five-and-a-half day working week, although the company has been trialling 24/7 operations since 2015.

The increase in plant working hours means that the company is capable of increasing annual ore throughput from 3 million tonnes (Mt) to approximately 3.8Mt and, consequently, management believe it could produce an average of 377,000mtu of tungsten in concentrates for at least 10 years.

## Bridging finance secured

The Drakelands mine has struggled to reach planned production rates since commencing production in September 2015, for technical reasons, discussed in more detail below. In addition, the company has been hit by low tungsten prices on world markets since it started production.

The combination of these two factors has meant that revenue has been lower than projected with a consequent impact on cashflow and debt repayment. The company sought to address the cashflow problems in calendar 2016.

Resource Capital Fund injected £25m in cash in FY2016 and has now agreed a £20-30m bridging loan

Firstly, in April 2016, Wolf shareholders approved the establishment of a standby equity facility of up to £25 million with Wolf's major shareholder, Resource Capital Fund, which held a 42% interest at the time.

Under the terms of the standby equity facility, Resource Capital Fund subscribed for a maximum amount of £25 million at 9.19p per share, an approximate 13% premium to the share price at the time of the announcement.

The company has drawdown from the facility to support operations at Drakelands and facilitate its debt repayment. This increased Resource Capital Fund's interest in Wolf to 56.3% while increasing Wolf's total outstanding shares to 1,083 million.

Then, in October 2016, Wolf reached agreement with its major shareholders, its lenders and its concentrate offtake partners on a funding arrangement to ensure the mine can continue to ramp up operations to full commercial production.

The key points of the agreement were:

- A standstill of the senior debt covenants until Devon County Council extended the Drakelands planning permission for an expiry date beyond 2021, which has now occurred.
- The senior debt principal repayments (£64m outstanding) are deferred until January 2018 and the tenor conditionally extended until June 2023.
- A minimum £20m bridge loan facility for 12 months with Wolf's major shareholder Resource Capital Fund, which can be increased to £30m at Resource Capital Fund's discretion. If not repaid within the 12-month period, the loan switches to either a three-year subordinated convertible loan or a three-year subordinated loan. The loans will carry interest at rates between 10% and 15% per annum and may be repaid with cash or shares.

Debt repayments deferred and tenor extended to 2023

Wolf's offtake partners have agreed to the restructuring and will extend the company's supply agreements in line with the extension to the senior debt.

In addition to Resource Capital Fund's majority holding, other significant shareholders in Wolf are TTI, a wholly-owned subsidiary of Todd Corporation Ltd, a major private NZ-based company with 24.1%, and Traxys Projects LP, which is the offtake partner for the Drakelands tin production, which holds 5.1%.

## Reserves and resources

Wolf updated the Drakelands JORC-compliant reserve and resource estimates at the end of the 2016 financial year. The estimates reflect mining depletion since the 2015 estimates. Reserves and resources as at 30 June 2016 are shown in Figures 1 and 2.

**Figure 1: Reserves as at 30 June 2016**

Classification	Tonnage (Mt)	WO <sub>3</sub> grade* (%)	Sn grade* (%)	WO <sub>3</sub> contained (million mtu)
Reserves	34.0	0.18	0.03	6.12

Source: Wolf Minerals, note \* WO<sub>3</sub> is tungsten trioxide, Sn is tin

**Figure 2: Resources as at 30 June 2016**

Classification	Tonnage (Mt)	WO <sub>3</sub> grade (%)	Sn grade (%)	WO <sub>3</sub> contained (million mtu)
Measured	38.2	0.18	0.02	6.88
Indicated	18.7	0.16	0.02	2.99
Measured & indicated	56.9	0.17	0.02	9.87
Inferred	86.6	0.14	0.02	12.12

Source: Wolf Minerals

## Update on operations

### Pit development on schedule

Pit development appears to be on schedule and over the next 12 months mining will transition to coarser ore, which management says is better suited for processing

During our November site visit, it appeared that the development of the pit is progressing according to plan. Mining has switched from simple digging with a backhoe to more traditional drilling and blasting techniques, although still predominantly in softer ore. Although ground vibrations and noise levels from blasting are well below prescribed levels, Wolf is monitoring the situation after some local residents expressed concern.

Operations are concurrent in both the northern and southern ends of the pit. The exposed orebody in the pit plunges to the north. Here the mineralisation has much more haematite (iron oxide) present. Wolf is blending the ore here with the ore in the south to provide a consistent feed to the processing plant with manageable iron content.

**Figure 3: The Drakelands open pit looking north (November 2016)**



Source: Marten & Co

Figure 4: The Drakelands open pit looking south (November 2016)



Source: Marten & Co

As the pit deepens, over the next 12 months or so, management expect that mining should transition to the coarser, hard granite, which should provide a more consistent feed to the plant.

## Plant performance

Wolf produces a  $WO_3$  concentrate, the price of which is based on the price of the most commonly traded tungsten raw material. This is priced in terms of US dollars per mtu.

The Drakelands processing plant has struggled to reach planned production rates.

In the financial year ended 30 June 2016, the plant treated 1.4Mt of ore to produce 57,458mtu of tungsten in concentrate. The model used to prepare the initiation note assumed 2.5Mt of ore would be treated to produce 269,000mtu of tungsten. The theoretical plant ore feed capacity is 3.8Mt/y with seven-day operations.

### The processing issues

The ramp up to full production has suffered because of processing problems with the soft granite that comprises the near-surface part of the reserves. The material is clay-like with a very fine particle size. The process plant was primarily designed to treat much coarser hard granite, which lies beneath the softer ore in the pit.

The presence of excessive fine particles has affected recoveries and hampered production

Fine particles have infiltrated the plant, reducing efficiencies, particularly in the dense media separators and thickeners at the beginning of the flowsheet, causing overload (see Figure 16 on page 18 of the initiation note for the flowsheet which shows, in a diagram, how the plant is designed to operate). Aggravating the recovery problem is the fact that fine tungsten material is leaving the circuit with the fines. Consequently, production of tungsten has failed to reach planned rates.

To reduce the presence of fine particles in the plant, the company has been forced to reduce the flow rate of ore feed, which has led to a shortfall in tonnes processed and, accordingly, concentrate produced.



A better understanding of mineralisation, a new team of process experts and a different maintenance strategy are all contributing to solving processing issues

### Measures Wolf is taking to resolve its issues at Drakelands

In mid-2016 the company gathered additional data on mineralisation and particle size distribution within the ore body through a 10-hole diamond drilling programme. Armed with this data, management continues to resolve the short-term problems by adjusting the mining schedule and processing plans.

In addition, GR Engineering Services personnel continue to work with management to rectify outstanding problems in the plant, although management cautions that it may only be in the first half of 2017 before all improvements are complete and the performance can be assessed.

In April 2016, Wolf appointed Alan Fearon as general manager at Drakelands. Mr Fearon is a metallurgical processing engineer graduate of the Camborne School of Mines, in Cornwall, and brings a wealth of international operating experience gained in Australia, New Guinea and Brazil.

In October, the company appointed Guy Cordingly as processing manager.

In addition, the company has hired new plant engineers and processing experts and has instituted a regime of preventative maintenance.

Meanwhile, the company continues to look at ways to reduce low frequency noise from vibrating equipment in the plant. This is being felt by local residents.

An improving trend in plant performance already evident

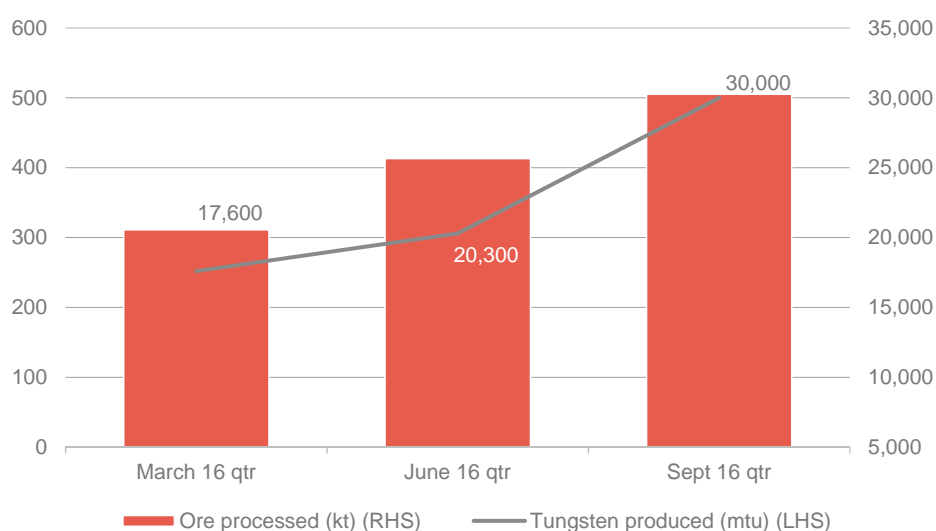
### Improvement in results

Since the beginning of 2016 the performance of the plant has improved and the September quarter saw a significant upturn in ore processed and tungsten produced.

In the three months to the end of September 2016, the plant processed a record 505,414t of ore to produce almost 30,000mtu of tungsten in concentrate, also a record.

The chart in Figure 5 shows the improving trend since the beginning of the year.

**Figure 5: Positive trend in ore processed and WO<sub>3</sub> produced**



Source: Wolf Minerals

### Mining waste facility and road construction progressing well

## Mine waste facility and road construction

The company has used mined waste rock to build the embankments for the mining waste facility.

After good progress in constructing the berms through the drier summer months, the company has now been able to reduce truck movements for the wetter winter period ahead.

Overflow rejects, from dense media separation, are being used to help compact the dam walls. The tailings dam floor is fully lined to ensure integrity and the dam is already in operation. Tailings from the initial classification and separation circuits at the plant are pumped into the dam and, after settling, clear water is recycled for use back in the plant.

The facility is located to the north west of the eventual pit outline and its future development plan requires Wolf to construct a new public road to replace a five-kilometre section of Lee Moor Road. Construction of the new road is in progress and is on track for completion in early 2017, at a total cost of £7.5 million.

### Assumed annual maximum ore throughput increased to 3.8Mt

## Updated mine modelling and production forecasts

Following the extension to the mine licence period and the approval of 24/7 plant operations, the model has been adjusted to increase the assumed rate of the annual ore throughput (base case) to 3.8Mt (from 3.0Mt with no additional capital spending). It has also been assumed that the mine life is extended to 2027 (10 years), based on estimated reserves only.

### Lower metal recovery rates assumed from feasibility study levels for the next five years and a more gradual production ramp up has been modelled

However, to reflect the problems with recoveries that the plant has been experiencing, the assumed metal recovery rates from feasibility study levels, for the next five years, have been lowered and a more gradual production ramp up has been modelled.

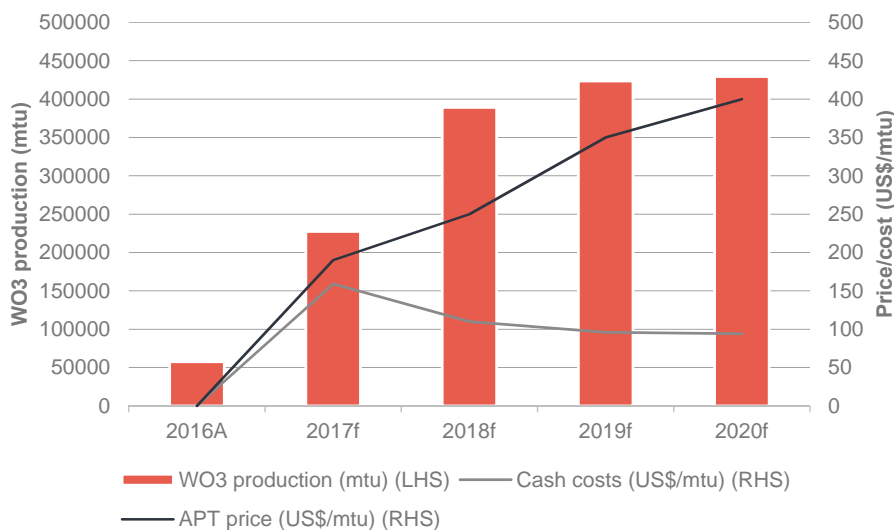
Average tungsten production ( $WO_3$  in concentrate) is estimated to be 377,000mtu/y, with a peak production of 449,000mtu in FY2022.

Life of mine cash costs are estimated at US\$100/mtu. A long-term price for ammonia paratungstate (APT – the main product of the processing plant) of US\$450/mtu has been assumed, with the price reaching this level in 2021. The price is assumed to improve gradually from US\$190/mtu for FY2017. The model used in the initiation note assumed a price of US\$450/mtu in 2020, see page 30 of the initiation note).

The tin price has performed strongly this year rising from approximately US\$13,000/t to over US\$22,000/t. A long-term price of US\$20,000/t has been used in the model.

The model also assumes that Wolf draws down the minimum £20m from the bridging finance arranged by Resource Capital Fund in November 2016 and that this loan then converts to a subordinated loan, which is repaid after three years.

**Figure 6: Base case WO<sub>3</sub> production, cash costs and APT prices**



Source: Marten & Co      \* Wolf did not publish any unit cost data for FY2016 as the mine has yet to establish commercial production

## Valuation

The model suggests a base case NAV<sup>5%</sup> for Wolf of 16.8p per share

As a base case scenario, Wolf has been valued on a sum-of-the-parts basis taking into account the after-tax net present value (NPV), at a discount rate of 5%, of the Drakelands mine.

**Figure 7: Base case valuation model for Wolf**

	US\$m	£m	Pence per share
Drakelands NPV <sup>5%</sup>	283	227	20.9
Net debt	(56)	(45)	(4.1)
<b>NAV</b>	<b>228</b>	<b>182</b>	<b>16.8</b>

Source: Marten & Co      £/US\$ exchange rate = 1.25

The base case analysis leads to an NPV<sup>5%</sup> for the Drakelands mine of 20.9 pence per share (US\$283m) and an NAV for Wolf of 16.8 pence per share, meaning that Wolf is currently trading in London at a discount to this estimated NAV of 71%.

The NAV per share estimate has fallen since the initiation note was published. This could be explained by lower projected recoveries in the plant, a longer timeframe for a pickup in market prices than assumed in the original model and the larger number of shares outstanding. This is despite the weakness of the pound against the US and Australian dollars.

In addition to the base case, an “optimised pit model” has been compiled which brings in additional resources not included in reserves. Earlier this year, Wolf performed a pit optimisation to assess the “potentially minable” resource beyond the current pit design assuming that the restrictions on the pit surface circumference are lifted.

Now that the Devon County Council has given permission for the company to mine beyond the life of the existing reserves, the company may get separate permission to expand the pit footprint and thus may be able to exploit most of the measured and indicated resources and, say management, extend the life by approximately four years from the base case of 10 years.



The model suggests an optimised pit adds four years to life of mine and results in a NAV of 19.7p per share

Using measured and indicated resources, an optimised pit model suggests a total of 50.4Mt at grades of 0.15% tungsten and 0.02% tin, which generates the following NPV and NAV (see Figure 8).

This evaluation results in an increase in NAV to 19.7p per share.

**Figure 8: Optimised pit valuation model for Wolf**

	US\$m	£m	Pence per share
Drakelands NPV <sup>5%</sup>	323	258	23.9
Net debt	(56)	(45)	(4.1)
NAV	267	214	19.7

Source: Marten & Co

£/US\$ exchange rate = 1.25

Note that the optimised pit study was an internal exercise by Wolf, although it was based on the then latest JORC-compliant resource estimate and used by consultants Micon and BDO in an independent report published in March 2016.

In addition to the resources modelled above, Drakelands has 86.6Mt of inferred resources which have not been included in any valuations.

## Sensitivity analysis

A 5% discount rate has been assumed in the base case model, but for comparison Figure 9 shows NAV values at other discount rates.

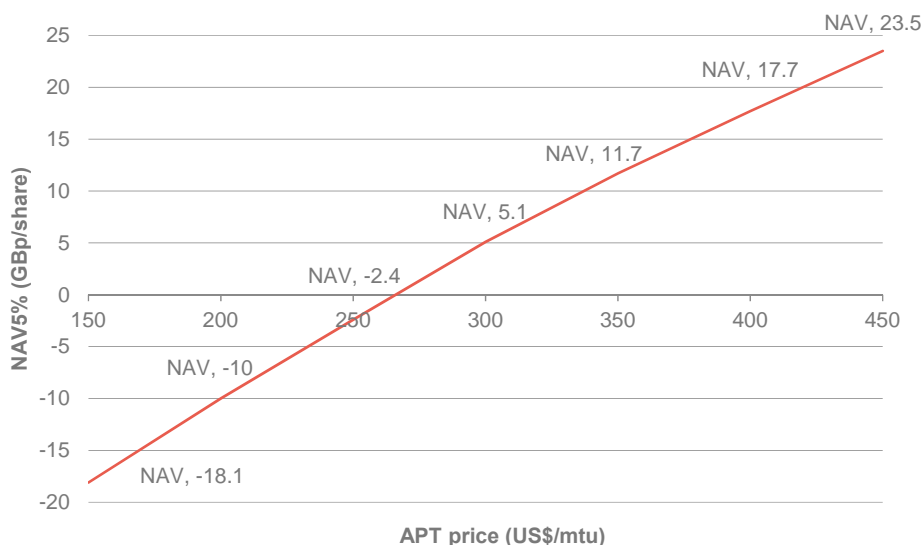
**Figure 9: NAV at various discount rates**

Discount rate	NAV (pence per share)
5%	16.8
8%	11.7
10%	8.8

Source: Marten & Co

The model has also been stress-tested against volatility in the APT price, which is arguably the most critical variable as far as project profitability is concerned and is also extremely pertinent given the current low market prices. As Wolf is a single-asset company, its NAV relates directly and exclusively to the fortunes of the Drakelands mine.

**Figure 10: Wolf NAV at various APT prices**



Source: Marten & Co

The model suggests that Wolf may require long-term APT prices towards US\$300/mtu to achieve a positive NAV

Figure 10 shows the company's NAV at various APT prices.

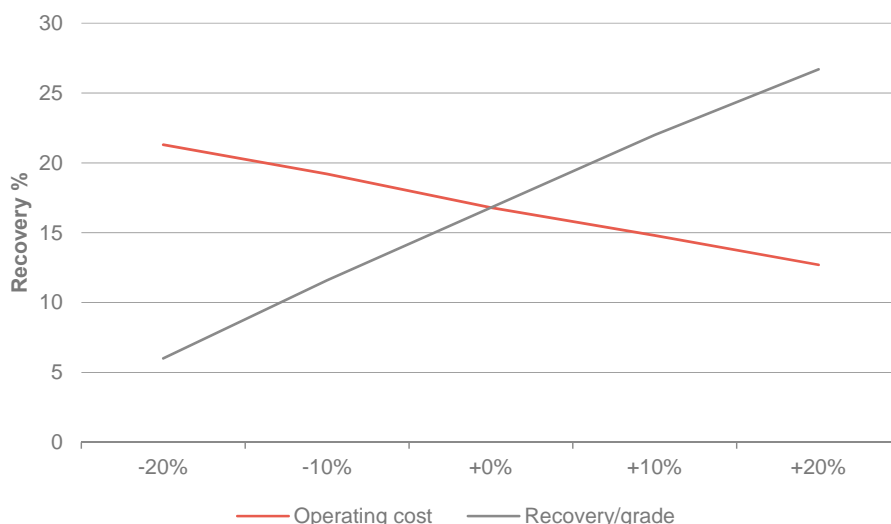
The chart in Figure 10, indicates that, according to the model, Wolf will require long term APT prices towards US\$300/mtu to achieve a positive NAV.

The sensitivity of the model of the Drakelands mine to changes in other key metrics such as operating costs, plant recoveries and the grade of the ore being fed into the processing plant (head grade) has also been tested.

The company's NAV appears to be most sensitive to variations in recovery and grade

Of these metrics, the model suggests the company's NAV is most sensitive to variations in recovery and head grade.

**Figure 11: Sensitivity of Drakelands NPV to changes in key metrics**

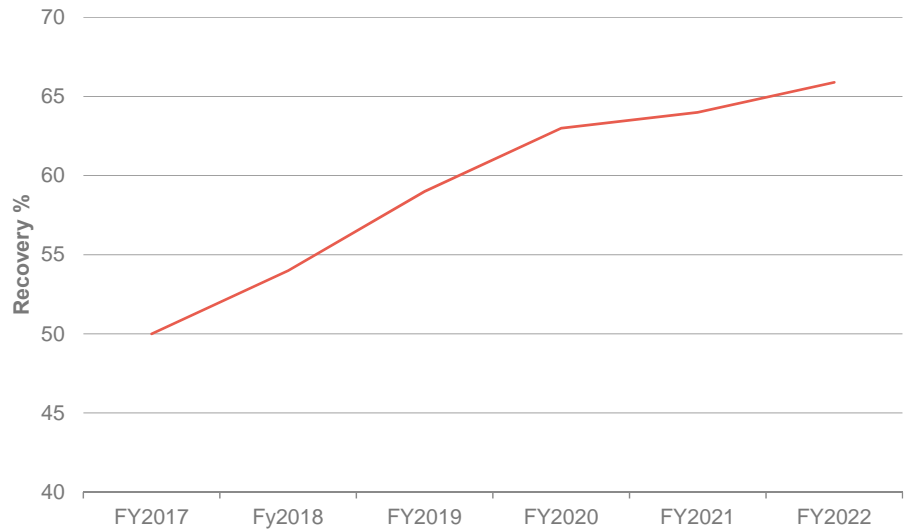


Source: Marten & Co

Improving recoveries is a key challenge

The mine model reflects a gradual improvement in the problems that the plant has experienced over its first year of operation with recovery rates only expected to attain maximum levels after about five years.

Figure 12: Projected recovery



Source: Marten & Co

Figure 12 might suggest that improving recoveries is the company's key challenge over the next few years.

## Tungsten prices

APT prices remain depressed but the model assumes a long term average price of US\$450/mtu

European APT prices rose throughout the first half of 2016 to reach the US\$195-205/mtu range by the end of June. After softening again to US\$180-195/mtu in September, the APT price recovered once again to the US\$195-205/mtu range in October.

Wolf's management think that the current oversupply situation in the market will tighten as less material is exported from China, and little in the way of significant new supply from projects comes on stream, while demand should pick up if forecast GDP growth materialises. However, this may take some time to come to fruition.

On this basis, the projected price for FY17 used in the model has been lowered to US\$190/mtu (from US\$300/mtu) and a gradual annual improvement assumed until the APT price reaches a long-term average price of US\$450/mtu by 2021.

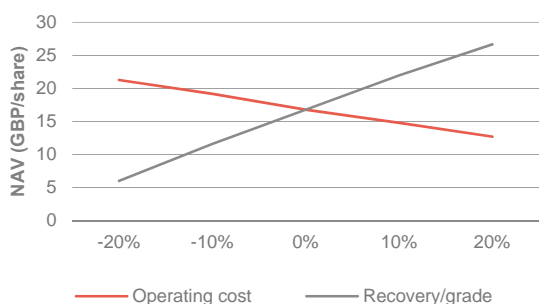
Note that the model assumes Wolf receives a 20% discount to the ruling APT price.

Figure 13: Wolf Minerals summary

Asset valuation summary		
Base case: sum of the parts valuation – November 2016	US\$m	Pence per share
Drakelands NPV <sup>5%</sup>	283	20.9
Cash	26	
Debt	(82)	
Net debt	(56)	(4.1)
<b>NAV</b>	<b>228</b>	<b>16.8</b>

Optimised pit case: sum of the parts valuation – November 2016		
US\$m	Pence per share	
Drakelands NPV <sup>5%</sup>	323	23.9
Cash	26	
Debt	(82)	
Net debt	(56)	(4.1)
<b>NAV</b>	<b>267</b>	<b>19.7</b>

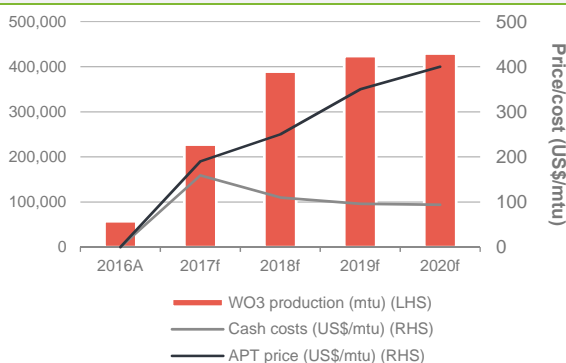
Sensitivity of Wolf NAV to changes in key metrics



WLFE share price (pence per share)



Production summary



Tungsten reserves and resources (2016)	Mt	WO <sub>3</sub> (%)	WO <sub>3</sub> (mmtu)
<b>Reserves</b>	<b>34.0</b>	<b>0.18</b>	<b>6.12</b>
Measured resources	38.2	0.18	6.88
Indicated resources	18.7	0.16	2.99
<b>M&amp;I resources</b>	<b>56.9</b>	<b>0.17</b>	<b>9.87</b>
Inferred resources	86.6	0.14	12.12

Y/E 30 June, all figures in A\$m unless otherwise stated					
Model assumptions	2016A	2017e	2018e	2019e	2020e
<b>Tungsten (APT) price (US\$/mtu)</b>	N/A	190	250	350	400
<b>Price received (US\$/mtu)</b>	N/A	152	200	280	320

Production summary					
	2016A	2017e	2018e	2019e	2020e
<b>Hard granite</b>					
Tonnes milled (kt)	N/A	45	3,000	3,600	3,720
Head grade (% WO <sub>3</sub> )	N/A	0.19	0.19	0.19	0.18
Recovery (%)	N/A	50	54	59	63
<b>Soft granite</b>					
Tonnes milled (kt)	N/A	2480	838	200	80
Head grade (% WO <sub>3</sub> )	N/A	0.18	0.18	0.17	0.15
Recovery (%)	N/A	50	54	59	63
<b>Total milled (kt)</b>	<b>1,404</b>	<b>2,525</b>	<b>3,838</b>	<b>3,800</b>	<b>3,800</b>
<b>Tungsten production (kmtu)</b>	<b>57.5</b>	<b>227.5</b>	<b>389.3</b>	<b>423.6</b>	<b>429.4</b>
<b>Tin production (t)</b>	<b>48.0</b>	<b>300</b>	<b>580</b>	<b>700</b>	<b>720</b>
C1 cash costs (US\$/mtu)	N/A	159	110	96	94
AISC (US\$/mtu)	N/A	264	175	160	159

Y/E 30 June, all figures in A\$m unless otherwise stated

Profit & loss					
	2016A	2017e	2018e	2019e	2020e
<b>Revenues</b>	<b>8.6</b>	<b>46.8</b>	<b>105.3</b>	<b>160.5</b>	<b>185.9</b>
Cost of production	(38.5)	(55.5)	(70.4)	(70.1)	(70.1)
G&A	(5.4)	(4.7)	(4.7)	(4.7)	(4.7)
Royalty	N/A	(1.9)	(4.2)	(6.4)	(7.4)
Other	N/A	(2.0)	(2.0)	(2.0)	(2.0)
<b>EBITDA</b>	<b>(35.3)</b>	<b>(17.4)</b>	<b>24.0</b>	<b>77.2</b>	<b>101.6</b>
D&A	(11.5)	(23.6)	(23.6)	(23.6)	(23.6)
Interest	(10.6)	(7.5)	(7.4)	(6.3)	(5.3)
Taxation	-	-	-	-	-
<b>Net income</b>	<b>(57.4)</b>	<b>(48.5)</b>	<b>(7.0)</b>	<b>47.2</b>	<b>72.7</b>
Ave shares outstanding (million)	841	1,083	1,083	1,083	1,083
<b>EPS (cents)</b>	<b>(7.54)</b>	<b>(4.48)</b>	<b>(0.65)</b>	<b>4.36</b>	<b>6.71</b>

Abridged balance sheet					
	2016A	2017e	2018e	2019e	2020e
Cash & equivalents	35.0	40.5	37.6	89.1	132.6
Fixed assets	300.1	258.7	235.1	211.5	187.8
<b>Total assets</b>	<b>343.2</b>	<b>306.7</b>	<b>280.3</b>	<b>308.1</b>	<b>328.0</b>
Current liabilities	57.1	57.1	57.1	57.1	57.1
Long term liabilities	95.8	158.6	137.2	115.9	94.5
<b>Total liabilities</b>	<b>152.9</b>	<b>215.7</b>	<b>194.3</b>	<b>173.0</b>	<b>151.6</b>
Total liabilities and shareholders' equity	343.2	306.7	280.3	308.1	328.0

Cash flow					
	2016A	2017e	2018e	2019e	2020e
Cash from operations	(24.9)	(24.9)	19.9	74.2	99.6
Cash from investing activities	(30.6)	(1.4)	(1.4)	(1.4)	(1.4)
Cash from financing activities	56.7	31.7	(21.4)	(21.4)	(54.8)
<b>Net cash at end</b>	<b>35.0</b>	<b>40.5</b>	<b>37.6</b>	<b>89.1</b>	<b>132.6</b>

Profitability and valuation					
	2016A	2017e	2018e	2019e	2020e
EBITDA margin (%)	(410%)	(37%)	23%	48%	55%

Note that financial tables above are summaries and totals may not always agree

## Previous research publications

Readers interested in further information about Wolf Minerals may wish to read QuotedData's initiation note, *New strategic metal producer*, published on 3 March 2016. The contents pages have been reproduced below. You can read the notes by clicking on them below or by visiting our website, [www.quoteddata.com](http://www.quoteddata.com).

### New strategic metal producer – 3 March 2016

<b>4</b>	<b>Investment highlights</b>
4	Production
4	Market situation
4	Company
<b>5</b>	<b>Introduction</b>
<b>5</b>	<b>Investment case</b>
5	Wolf transitions from developer to producer
6	Figure 1: Overview of the Drakelands mine
6	Potential production increase
7	Large reserve with resource upside
7	Figure 2: Plan of Drakelands mining permit area
8	Strategic importance
8	High profile
8	Supportive major shareholder
<b>9</b>	<b>Valuation</b>
9	Figure 3: Base case valuation model for Wolf
9	Figure 4: 4 Mt/y production case valuation model for Wolf
<b>10</b>	<b>Comparative valuation</b>
10	Figure 5: EV/t WO <sub>3</sub> for major world tungsten developing companies
11	Figure 6: M&I resource tonnes and WO <sub>3</sub> grade of major world projects
11	Figure 7: Production and cash costs: tungsten mines & development projects
<b>12</b>	<b>Sensitivity analysis</b>
12	Figure 8: Project NPV and company NAV at various discount rates
12	Figure 9: Project NPV at various APT prices
13	Figure 10: Sensitivity of Drakelands NPV to changes in key metrics
<b>13</b>	<b>Drakelands mine</b>
13	Location
13	Ownership
14	Brief history
14	Geology and mineralisation
<b>15</b>	<b>Reserves and resources</b>
15	Figure 11: Resources used in 2011 feasibility study
15	Figure 12: Reserve estimate for 2011 feasibility study

15	Figure 13: Updated reserves March 2015
16	Figure 14: Updated resources March 2015
16	Feasibility study
16	Mine financing and development
17	Mining and processing
17	Figure 15: Shovel and ore loading operations in the Drakelands pit
18	Figure 16: Drakelands plant flowchart
18	Mine modelling and production forecasts
19	Figure 17: Model assumptions and parameters
19	Figure 18: Capital cost breakdown
19	Figure 19: Base case LOM C1 cost breakdown
20	Figure 20: Base case ore processing schedule (kt/y)
20	Figure 21: Base case tungsten production and costs
20	Commercial arrangements
21	<b>Capital structure</b>
21	Figure 22: Major shareholders
21	<b>Directors and management</b>
21	The board
22	Executive team
22	<b>Tungsten market</b>
22	Uses
23	Demand
23	Figure 23: Forecast tungsten consumption (t)
24	Figure 24: Distribution of world cemented carbide production, 2013
24	Supply
25	Figure 25: Tungsten mine production – actual and forecast (t)
25	China – seeking to uplift prices
26	Future primary supply
27	Figure 26: Potential supply from projects yet to secure financing
28	Figure 27: Major world (outside China) tungsten mines and projects
28	Prices
30	Figure 28: Historic and forecast APT prices (US\$/mtu)
30	<b>Risks</b>
30	Prices
30	Grade and recovery
30	Single asset
31	Exchange rates
31	Water management
31	Permitting
32	Figure 29: Wolf summary



# QuotedData

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123a Kings Road, London SW3 4PL  
0203 691 9430

[www.quoteddata.com](http://www.quoteddata.com)

Registered in England & Wales number 07981621,  
135a Munster Road, London SW6 6DD

Edward Marten  
(em@martenandco.com)

Bonnie Hughes  
(bh@martenandco.com)

Christopher Bunstead  
(cb@martenandco.com)

Resources analyst - Paul Burton  
(pb@martenandco.com)

James Carthew  
(jc@martenandco.com)

Matthew Read  
(mr@martenandco.com)

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