



**Breakaway
Research**

August 2013

Grant Craighead | Research Manager
gcraighead@breakawayinvestmentgroup.com

Andrew McLeod | Research Analyst
amcleod@breakawayinvestmentgroup.com

Company Information

ASX Code	WLF
AIM Code	WLFE
Share Price	A\$0.29
Ord Shares	198m
Options	7.9m
Market Cap	A\$57.4m
Cash (June 13)	A\$18.7m
Total Debt	A\$10.7m
Enterprise Value	A\$49.5m

Directors

Non-Executive Chairman	John Hopkins
Managing Director	Humphrey Hale
Non-Executive Director	Jim Williams
Non-Executive Director	Don Newport
Non-Executive Director	Chris Corbett
Non-Executive Director	Michael Wolley

Substantial Share Holders

Resource Capital Fund	36.4%
Todd Corporation	19.9%
Traxys Projects	9.3%
Kevin Barry Building Services	2.2%
RMB	1.6%
Humphrey Hale	1.0%

Company Details

Address	Level 3, Suite 25, 22 Railway Road, Subiaco WA 6008
Phone	+618 6364 3776
Web	www.wolfminerals.com.au

1 Year Price Chart



Source: Bloomberg

Wolf Minerals

Development underway at Hemerdon tungsten project

Recommendation: Speculative BUY

Company Update

Key Points

- **A\$212M funding package secured**
- **GR Engineering Services commences development at Hemerdon**
- **3Mtpa operation to produce ~350,000mtu p.a. of tungsten concentrate plus ~450tpa of tin**
- **Off-take agreements in place for ~80% of total production**
- **Low operating production costs forecast at just US\$105/mtu**
- **Planned 9.25-year mine life with significant opportunity to extend**
- **First production targeted for mid-2015**
- **Estimated a NPV range of £100-£110M (A\$0.84-\$0.92/share)**

Wolf Minerals has secured finance and development of the Hemerdon Ball tungsten-tin mine is now underway. GR Engineering Services has been awarded the fixed term, fixed price contract which should see the 3Mtpa processing plant 'production ready' within 24 months.

Company Overview

Wolf Minerals (ASX: WLF, AIM: WLFE) continues to make steady progress towards the redevelopment of the world class Hemerdon Ball tungsten and tin project. The company has now secured a A\$212M funding package and has engaged GR Engineering Services to commence development of a 3Mtpa processing plant, plus associated infrastructure. The plant will be delivered as a fixed term (24 months), fixed price (£75M) contract with first production scheduled for mid-2015. The A\$139M (£85M) mining contract was also recently awarded to CA Blackwell who are expected to commence pre-strip and mine development by March 2014.

Hemerdon hosts a JORC resource of 401Mt @ 0.13% WO₃ and 0.02% Sn, placing it as the fourth largest (known) tungsten deposit in the world. A Definitive Feasibility Study (DFS), completed in May 2011, indicated robust economics based on a 3Mtpa operation over a 9.25 year life of mine.

Production is estimated at ~350,000mtu p.a. of a 65% tungsten concentrate and a further ~450tpa of tin in concentrate at C1 costs of US\$105/mtu (after tin credits) versus the current APT price of US\$417/mtu. The current mining Reserves of 26.7Mt @ 0.19% WO₃ and 0.03% Sn are bound only by the constraints of the open pit limits as per the parameters of the granted 'Planning Permission'. Significant opportunity exists to extend the mine life should approval for a larger open pit be sought in due course.



Company Update

Development Underway

A\$212M funding secured

In May 2013, Wolf Mining concluded its' fund raising initiatives, securing a total of ~A\$212M for the redevelopment of the world class Hemerdon tungsten and tin mine, located near Plymouth, in southwest England. The securing of the various funding packages was achieved in the face of adverse market conditions and is testament to the quality of the project and a first class effort by management.

EPC contract awarded to GR Engineering Services

The Engineering, Procurement, and Construction (EPC) contract for a 3Mtpa processing plant (plus associated infrastructure) was awarded to GR Engineering Services under a £75M (A\$111M) fixed price, fixed term (24 months) contract. Encouragingly, this was £2M below the envisaged cost as outlined in the DFS.

Development underway

The EPC contract 'go-ahead' is a pivotal point for Wolf Minerals as it marks the end of the arduous financing/planning phase and the beginning of the construction phase which will ultimately see production at Hemerdon a reality.

Bridging Finance

Wolf draw down first US\$10M of US\$75M facility

Wolf recently drew down the first US\$10M of debt from a US\$75M 'Bridging Facility' provided by RCF. These funds will primarily be used to commence the EPC contract and purchase properties around the project site. Wolf will continue to draw down funds from this facility over the next year, as and when required. Wolf also sold a 2% Royalty to RCF for US\$7M (~A\$7M). This has now been received by Wolf.

Facility to be repaid within 12 months

Under (one of) the terms of the RCF 'Bridging Facility', Wolf is required to pay back the debt within 12 months of first draw down. This essentially means that Wolf will need to raise capital (likely to be via equity) within the next 12 months.

Company valuation likely to increase as development milestones are met

The strategy of securing short term debt to finance the early stages of development is sound in Breakaway's view. Given the negative sentiment which currently exists throughout the mining sector, the company would have been forced to raise equity in a weak market and at a highly a discounted share price.

Breakaway continues to have a bullish outlook on APT (Ammonium Paratungstate) price due to the global supply and demand imbalance which currently exists. This is compounded by China's dominance in the market and obvious moves by the country to restrict exports and increase imports of tungsten concentrates. Over the next 12 months, Wolf's valuation (share price) will likely increase as development milestones are met and investors begin to view production at Hemerdon as a reality. This should provide a 'less dilutive' opportunity to raise the required funds.

Binding Off-Take Agreements in Place

Off-take agreements in place for ~80% of production

Wolf Minerals also recently signed binding off-take agreements with Austrian based 'Wolfram Bergbau und Hutten AG' (WBH) and U.S based 'Global Tungsten & Powders Corp.' (GTP). Under the terms agreed, Wolf will supply 80% of the Hemerdon project's expected average, annual tungsten concentrate output for a period of 5 years.

Pricing for the 65% tungsten trioxide concentrate will be calculated based on the prevailing APT price (with no cap or floor applied to pricing) with a discount applied to take into account treatment and refining costs.



Peer Comparison

Company	Market Cap A\$M	JORC Reserves	Planned Processing Capacity	Target Production WO ₃ (tpa)	Indicative C1 Cost/mtu A\$	Estimated Capex A\$M	Cash (Jun 13) A\$M	Development Funding Solution
Wolf Minerals	57.4	26.7Mt @ 0.19% WO ₃ for 50,730t	3Mtpa	3,500	105	160	A\$18.6M	Yes
King Island Scheelite	5.5	5.2Mt @ 0.70% WO ₃ for 3,631t	0.35Mtpa	3,500	169	133	A\$0.77M	No
Ormonde Mining	29	8.70Mt @ 0.30% WO ₃ for 26,100t	1.1Mtpa	2,270	142	65	~A\$2.0	No (Advanced Negotiations)
Woulfe Mining	33.8	13.3Mt @ 0.425% for 56,500t	1.2Mtpa	4,350	185	151	~A\$1m	No (terms agreed but deal not finalised)
Vital Metals	3.4	-	1Mtpa (assessing 3Mtpa)	3,000	NA	NA	A\$1.4M	No
Carbine Tungsten*	15.2	18Mt @ 0.14% WO ₃ for 25,200t	3Mtpa	2,600	137	55	~A\$1.3M	No
Tungsten Mining	14.2	NA	0.75Mtpa	1,540	212	56	~A\$2.3	No
Hazelwood Resources	19	25.21Mt @ 0.11% WO ₃ for 27,500t	2.3Mtpa	2,000	240	111	~A\$2.0	No
Venture Minerals	48.8	14Mt @ 0.10% WO ₃ for 14,000t (+magnetite/tin resource)	1.75Mtpa	3,300	NA (due to tin/fe credits)	198	~A\$12.2	No

Source: Breakaway Research

*Below the red line indicates a DFS on the main tungsten project **has not** been completed
Assumes a AUD/USD exchange rate 1:1

Breakaways View

One of the world's largest tungsten resources

Opportunity for Reserve upgrades

Estimated NPV of A\$0.84 – A\$0.92/share

The table above is made up of ASX listed and two foreign emerging tungsten producers (Ormonde and Woulfe). As illustrated, Wolf in now clearly in a league of their own as the only company to have the funds in place and 'development ready' to build a meaningful scale operation.

Hemerdon, currently hosts one of the world's largest tungsten deposits, comprising a JORC-compliant Resource of **401Mt @ 0.13% WO₃ and 0.02% Sn** of which ~117Mt lies within the Measured and Indicated categories. Of this Resource, 26.7Mt is in mining Reserves and significant potential exists for upgrades in the future. Mineralisation has been delineated to ~200m vertical depth and is likely to grow substantially at depth through deeper drilling. AMAX tested this potential with the completion of two deep exploration holes which demonstrated a continuity of mineralisation to a depth of ~400m (with mineralisation still open). This will be further tested in due course.

DFS indicates robust economics

The positive May 2011 DFS was based on 9.25 year mine life (limited only by the existing planning permission) with a throughput rate of 3Mtpa to produce 350,000mtu per annum (3,500t) of a wolframite tungsten concentrate with a grade of 65% WO₃ and a further ~450tpa of a 40% tin concentrate. The estimated LOM strip ratio is 1.5:1.

The DFS indicated a project NPV of £74M (A\$ 122M or A\$0.62/share) and assumed an APT price of US\$360/mtu and a tin price of US\$30,000/t. Cash costs (after tin credits) were estimated at US\$105/mtu. Current APT and tin pricing is US\$417/mtu and US\$21,000/t respectively. Based on commodity price sensitivity analysis, **Breakaway estimates a current NPV range of between £100-£110M (A\$0.84-\$0.92/share).**



Hemerdon Financial Parameters

In May 2011, Wolf Minerals completed a Definitive Feasibility Study (DFS) of the Hemerdon project, which follows on from an extensive feasibility study undertaken in 1982 by previous operators AMAX Exploration.

DFS completed in May 2011

The updated DFS outcomes are outlined in the table below:

Hemerdon DFS key financial outcomes – Ungeared post tax at an 8% discount rate

1mtu=10kg

3Mtpa processing plant

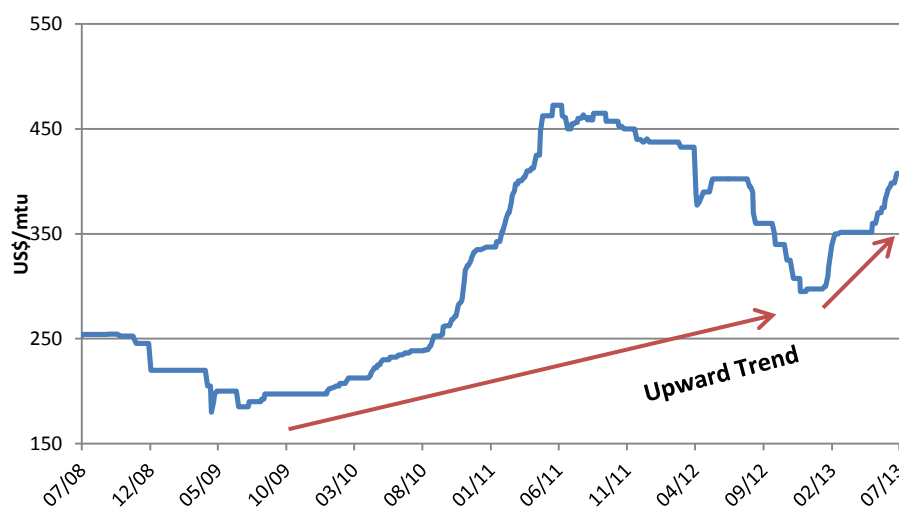
Parameter	Units	Metric
Tungsten Price (APT)	US\$/mtu	US\$360
Tin Price	US\$/tonne	\$30,000
Total LOM Tungsten Production	mtu	3,188,874
Annual Tungsten Production	mtu/annum	345,000
Total LOM Tin Production	Tonnes	4,268
Annual Tin Production	Tonnes/annum	462
Capital Expenditure (CapEx)	£M	£104
Sustaining Capex	£M	Included in OpEx
LOM Operating Costs	US\$/mtu	US\$122
C1 Costs after tin credits*	US\$/mtu	US\$105
DFS Mine Life	Years	9.25
Annual Ore Throughput	Tonnes	3,000,000
Operating Cashflow - LOM	£M	£338
Net Cashflow - LOM	£M	£188
EBITDA p.a.	£M	£29
Project NPV	£M	£74
Project IRR	%	21
Capital Payback	Years	3.25

*C1 Costs include mining, processing, site administration and royalties
Source: Wolf Minerals

The two charts below show the five year historical price (China) for APT (Ammonium Paratungstate) and tin in USD. The APT price can be used as a proxy for the trends in a 65% WO₃ concentrate price (produced by Wolf).

APT Price Chart – June 2008 – July 2013

Tungsten price on an upward trend despite falling commodity prices elsewhere



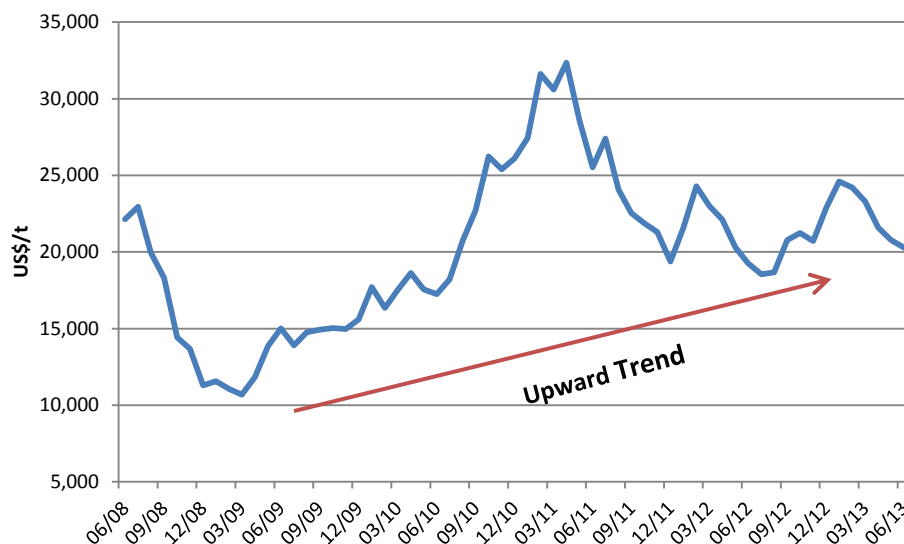
Source: Bloomberg

This upward trend is set to continue with an ongoing shortfall in forecasted supply (against demand) of tungsten concentrate.



LME Tin Price Chart – June 2008 – June 2013

Tin price corrected by 30% from recent highs



Source: Indexmundi

Tungsten accounts for ~90% of revenue

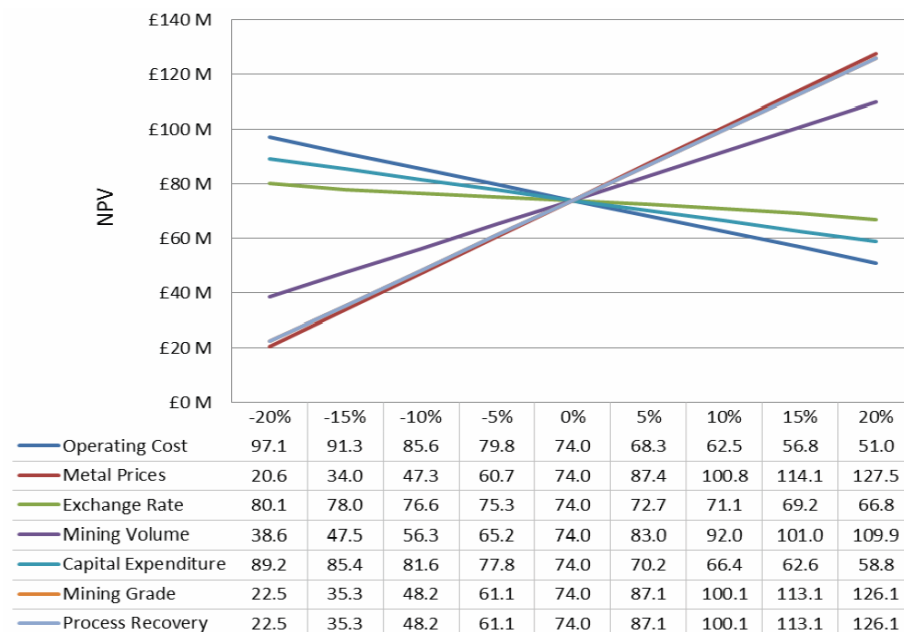
The DFS outcomes in the table above are based on a US\$360/mtu APT price and a \$30,000/t tin price. Assuming these commodity prices and steady state production, WO₃ attributable revenue would account for ~90% (~US\$100M) while tin attributable revenue would account for the remaining 10% (~US\$11M), for a total estimated annual revenue of ~US\$ 111M. (Wolf would expect to receive ~80% of the prevailing APT and Tin price after TC/RC charges).

Since the completion of the DFS in May 2011, the tin price has reduced by ~30% to US\$20,000/t. While this may seem dramatic, tin production is expected to account for ~3% of total revenue. The project is much more sensitive to the APT price which is currently US\$ 417/mtu and currently on an upward trend.

The chart below illustrates a DFS sensitivity analysis based on a ±0-20% swing in six key operating parameters and indicates that the project economics are most sensitive to metal prices, recovery and mining volume.

Valuation most sensitive to metal prices and recovery rates

DFS Sensitivity Analysis



Source: Wolf Minerals



Project Summary

Hemerdon Tungsten and Tin Project

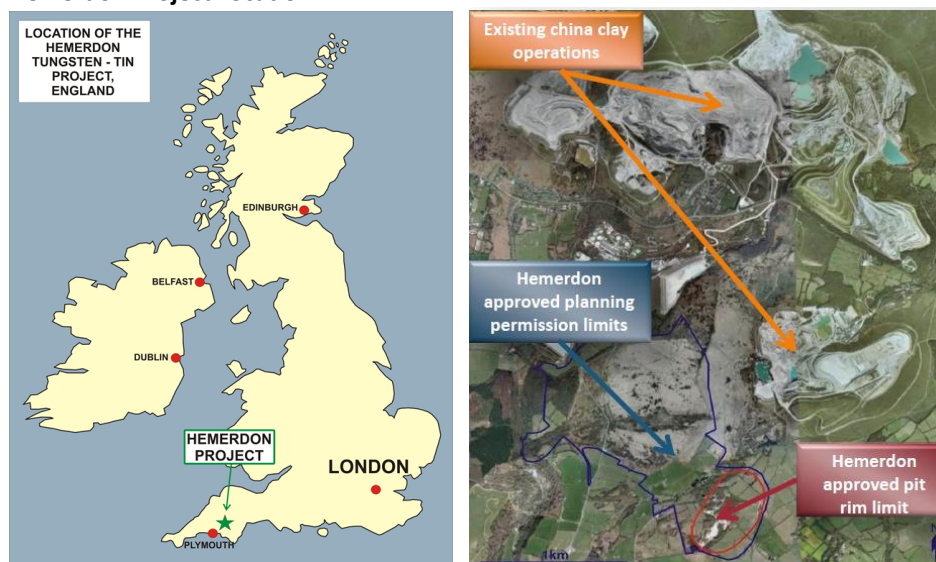
Project History

The Hemerdon Project is located ~10km North East of Plymouth, in Devon, UK. The site is well serviced by existing infrastructure and borders existing open pit clay mining operations.

Historical production during the World Wars

An extensive wolframite (tungsten) and cassiterite (tin) deposit was first discovered at Hemerdon in the 1860's; however, it wasn't developed until ~1914 (World War I), when tungsten demand was extraordinarily high due to the requirements for the metal in armaments. Sporadic commercial production continued until the completion of World War II (1945) at which point the mine was closed. **Only 250,000 tonnes of ore was excavated during the war periods which is equivalent to just one month of modern mining.**

Hemerdon Project Location



Source: Wolf Minerals

Extensive feasibility study completed in 1981

During 1977-81, TSX listed 'AMAX' undertook a significant exploration program within the project area, completing 532 drill holes for 25,400m. AMAX also completed a comprehensive feasibility study and secured 'Planning Permission' (a Mining Licence) at the project which is valid until 2021 (outlined in blue in the image above). However, due to a drop in the tungsten price, the project was placed on hold.

Approved 'mining lease' constrains the size of the open pit

In 2007, Wolf Minerals acquired the project via an option agreement for a 40 year lease, and commenced validating the historical drill data and updating the feasibility study. An infill drill program was also carried out, upgrading the resource to the JORC standard of Measured and Indicated and then to Proven and Probable mining Reserves, which fit within the open pit limits outlined in red in the above image (the approved pit rim limit).



JORC Resources and Reserves

Wolf Minerals currently has a total JORC resource of 401Mt @ 0.13% WO₃ and 0.02% Sn of which ~117Mt is Measured and Indicated.

Third largest tungsten deposit in the world

Category	Tons (Mt)	WO ₃ grade (%)	Sn Grade (%)
Measured	76.8	0.15	0.02
Indicated	40.3	0.13	0.02
Subtotal	117.1	0.14	0.02
Inferred	284.2	0.13	0.02
Total	401.4	0.13	0.02

**Resource estimated using a cut-off grade of 0.063% WO₃
Source: Wolf Minerals*

Within the 401Mt resource, Wolf Minerals has a proven and probable (mining) Reserve of 26.7Mt with the majority of the Reserves in the Proven category. At a production rate of 3Mtpa, Wolf has enough reserves in place for a 9.25 year life of mine.

JORC Reserves

Mining reserve constrained by open pit boundaries

Reserves	Proven			Probable			Total		
	Mt	WO ₃ %	Sn %	Mt	WO ₃ %	Sn %	Mt	WO ₃ %	Sn %
Granite	18.9	0.18	0.03	2.4	0.18	0.03	21.3	0.18	0.03
Soft-Granite	4.6	0.19	0.03	0.9	0.21	0.03	5.5	0.21	0.03
Total	23.5	0.19	0.03	3.2	0.19	0.03	26.7	0.19	0.03

Source: Wolf Minerals

Mining Operations

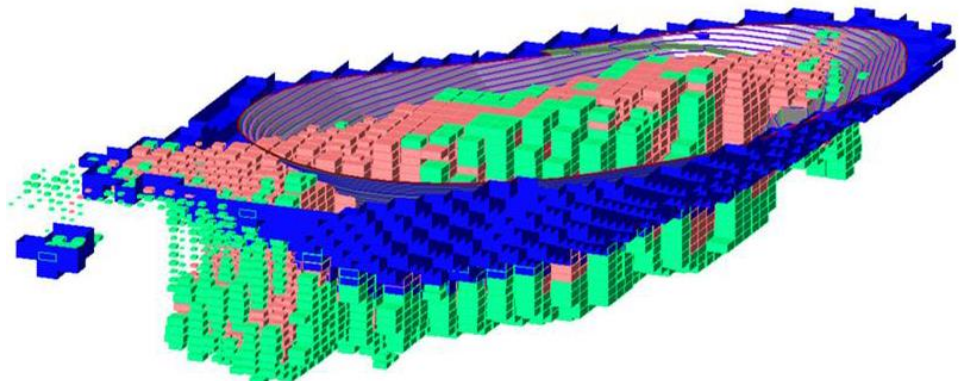
Low Strip ratio of 1.5:1 over life of mine

The open pit optimisation and overall pit design is constrained only by the open pit boundaries, which is a physical boundary as defined in the approved 'Planning Permission'.

Mining will commence as a two-stage development. Stage one envisages mining from surface resulting in a very low waste to ore strip ratio of 0.7:1. The strip ratio increases to 1.5:1 over the life of mine, which is still regarded as low. The final pit dimensions are expected to be ~800m long, 450m wide and 200m deep.

Hemerdon Open Pit Design

Pink – Measured Resource, Green- Indicated Resource



Source: Wolf Minerals



Mineralisation hosted within two domains

Mineralisation within the Hemerdon deposit is hosted within two mineralogical domains that have been classified as **Soft Granite** and **Hard Granite**. The Soft Granite material (which extends to ~30-40m below surface) tends to be a clayey and kaolinised material (as a result of weathering), whilst the fresh Hard Granite material is a more competent material from the deeper 'fresh rock' sections.

Different ore types produce different recoveries

Metallurgical test work undertaken on these zones in the original feasibility study by AMAX and re-tested again by Wolf has indicated that recoveries vary between the rock classifications.

Anticipated Recoveries from ore type

Ore Type	WO ₃	Sn
Weathered soft granite (0-35m)	58%	65%
Fresh hard granite (35m – open)	66%	55%

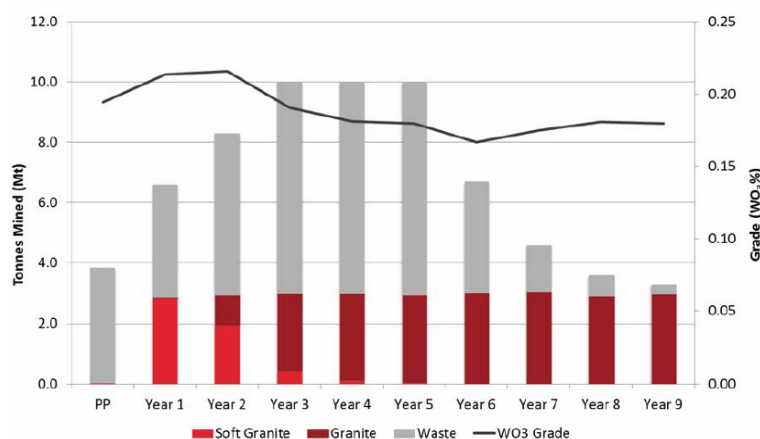
Source: Wolf Minerals

Envisaged 3Mtpa processing plant to produce 3,450t of WO₃

Wolf envisages a 3Mtpa processing facility targeting production of a wolframite (tungsten) concentrate containing **345,000mtu (~3,450t) of WO₃** and **462t of tin** in concentrate per annum. At current pricing, this would generate revenue of ~US\$ 142M per annum.

Higher recoveries from 'hard' granite

Hemerdon Production Schedule



Source: Wolf Minerals

Exploration Potential

Opportunity to significantly extend mine life

Opportunity exists to extend the mine life through a pit cut-back beyond the approved pit limits as well as the potential to steepen the final pit walls. This provides scope for an additional ~5 years' ore production, increasing the life of mine to ~14 years.

The current pit design envisages an open pit with a maximum depth of ~200m. AMAX completed two exploratory drill holes that have indicated continuity of mineralisation to a depth of ~400m and with mineralisation still open at depth. Wolf is reviewing a longer term option to mine this deeper ore through underground mining with a decline from the base of the open pit.

Development to Date

First piece of major infrastructure completed

Wolf completed the first major piece of infrastructure required for the development of the Hemerdon project. A 600m public access 'Link Road' was opened in July 2012. Site works are set to begin imminently now that funding has been secured and GR Engineering Services have been given the 'go ahead' to begin construction of the processing plant and associated infrastructure.



Analyst Verification

We, Grant Craighead and Andrew McLeod, as the Research Analysts, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

Disclosure

Breakaway Investment Group (AFSL 290093) may receive corporate advisory fees, consultancy fees and commissions on sale and purchase of the shares of Wolf Minerals and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

Disclaimer

Any observations, conclusions, deductions, or estimates of figures that have been made by Breakaway Research and the Breakaway Investment Group in this report should not be relied upon for investment purposes and the reader should make his or her own investigations. This publication has been issued on the basis that it is only for the information and exclusive use of the particular person to whom it is provided. Any recommendations contained herein are based on a consideration of the securities alone. In preparing such general advice no account was taken of the investment objectives, financial situation and particular needs of a particular person. Before making an investment decision on the basis of this advice, investors and prospective investors need to consider, with or without the assistance of a securities adviser, whether the advice is appropriate in light of the particular investment needs, objectives and financial circumstances of the investor or the prospective investor. Although the information contained in this publication has been obtained from sources considered and believed to be both reliable and accurate, no responsibility is accepted for any opinion expressed or for any error or omission that may have occurred therein.

Breakaway Investment Group

AFSL 290093 ABN 84127962387

T+61292621363

F+61292792727

PO Box H116 Australia Square

Sydney, NSW 2001

Suite 505, 35 Lime Street,

Sydney, NSW 2000