

Hemerdon DFS supports project go-ahead.

BUY

Event

- We review WLF's Definitive Feasibility Study for Hemerdon and update our investment thesis and valuation.

Analysis

- Tungsten (W) and tin (Sn) are strategic metals.**
Strategic metals are metals integral to a nation's defence, aerospace or energy industries, but domestic demand for them outstrips supply capability now or in the future. The USA and China both classify W and Sn as strategic metals and Europe and the UK have also declared tungsten a "Critical Raw Material".
- Substantial deposit of strategic metals.**
520,000t of contained WO₃ makes WLF's Hemerdon project the world's fourth largest undeveloped tungsten resource, with the added attraction of tin credits.
- Low sovereign risk; alternative to Chinese supply.**
Located in SW England, which has a mining history over centuries. Planning Approval (equivalent to a Mining Licence) is in place. 100%-owned project offering a stable source of tungsten concentrate supply.
- Long mine life with low strip ratio.**
The Planning Approval allows for an initial 9.25 year two-stage open pit mine life, with a Stage 1 strip ratio of 0.7 to 1 and LOM average strip ratio of less than 1.5 to 1. Known resources support extending the mine life to +14 years with revised Planning Approvals and with no further drilling required. Potential also exists at depth to further extend the resource base and the mine life.
- Attractive operating cost towards lower end of global peers.**
There are too few operating tungsten mines to allow a meaningful global cost curve to be developed. Operating costs of about US\$105/mtu after tin credits are forecast at Hemerdon. The 360,000mtupa CanTung mine in Canada has costs of about C\$175/mtu, to which Hemerdon compares favourably.

Earnings Impact

- Production in 2014 to meet projected market shortfalls.** The Hemerdon project should accept first ore in late 2013, ramping up to full-scale production of 345,000mtu pa by mid-2014, when the tungsten concentrate market is forecast to be in deficit and prices potentially testing US\$500/mtu WO₃.
- Four year payback period.** We forecast early operating cashflows averaging about \$60M annually. This allows 50% debt funding to be repaid in four years.

Recommendation and Price Target

- We retain our BUY recommendation.
- Until offtake is secured to de-risk the project, our 12-month price target is a range of **\$0.64 to \$0.89/share**, based on DCF analysis of the project with 50% debt funding for a project NPV₈ of \$118M and on analysis of recent comparable transactions.

26 May 2011

Company Information

Code	WLF
Last Price	\$0.350
12 Month Price Target	\$0.64
Total Shareholder Return	82.9%
Valuation	\$0.67
Shares on Issue	83.9M
Market Capitalisation	\$32.5M
Free Float	100%
Monthly Turnover	\$4.3M

Financial Summary

	FY10a	FY11e	FY12e	FY13e
Revenue (\$M)	0.0	0.0	0.0	0.0
EBITDA (\$M)	(1.8)	(1.3)	(0.3)	(1.1)
D&A (\$M)	0.0	0.0	0.0	0.0
EBIT (\$M)	(1.8)	(1.3)	(0.3)	(1.1)
Net Interest (\$M)	0.0	0.0	0.0	0.0
Tax (\$M)	0.3	0.0	0.0	0.0
Underlying NPAT (\$M)	(1.5)	(1.3)	(0.3)	(1.1)
Abnormals (\$M)	0.0	0.0	0.0	0.0
OEI (\$M)	0.0	0.0	0.0	0.0
Reported NPAT (\$M)	(1.5)	(1.3)	(0.3)	(1.1)
EPS (¢)	n/a	n/a	n/a	n/a
EPS growth (%)	n/a	n/a	n/a	n/a
CFPS (¢)	n/a	n/a	n/a	n/a
DPS (¢)	n/a	n/a	n/a	n/a
Cash (\$M)	2.1	3.7	42.4	10.9
Net Debt (\$M)	(2.1)	(3.6)	(42.4)	37.3
Net Debt / Equity (%)	n/a	(35.8)	(41.0)	34.1
Interest cover (x)	n/a	n/a	n/a	n/a
ROE (%)	n/a	n/a	n/a	n/a
ROA (%)	n/a	n/a	n/a	n/a
NTA per share (¢)	22.5	12.1	34.9	34.0
PE (x)	n/m	n/m	n/m	n/m
EV/EBITA (x)	n/m	n/m	n/m	n/m

Share Price Performance



Analyst Details

Tony Lofthouse
tlofthouse@blackswanequities.com.au

All currency is quoted in AUD unless otherwise stated

Recommendation and Price Target

- **Price Target: \$0.64 to \$0.89/share. Recommendation: BUY**

Until the project is de-risked further by delivery of satisfactory offtake arrangements, we derive a 12-month price target ranging from \$0.64/share to \$0.89/share.

This is based on a combination of DCF analysis that delivers a project NPV₈ of \$118M assuming project funding from 50% debt and 50% equity and an APT price of US\$360/mtu (currently \$460-470/mtu); and an analysis of recent comparable market transactions that support a project valuation of between \$100M and \$200M .

With the stock currently trading at \$0.35/share we are targeting a minimum 12 month total return of 83%. We retain our BUY recommendation for WLF.

- **Considerable potential to extend minelife beyond the projected 9.25 years**

WLF is a single project company, reliant on the world's fourth largest undeveloped tungsten resource, located in a stable political jurisdiction within trucking distance of end user markets.

WLF's Hemerdon project in Devon, England, has a granted Planning Approval (Mining Licence) valid until 2021. Its established resource base supports extension of its mine life for a further 5+ years (~50%), subject to additional planning approvals which we believe will be forthcoming over time and before the current Approval expires. Such extensions will require no further drilling. Additional geological potential exists to outline resources to extend the mine life still further.

Hemerdon annual production will average 345,000mtu of 65% WO₃ tungsten concentrate, which is marketable grade, together with credits of about 450tpa of tin in concentrate.

WLF is actively negotiating with potential offtake parties and has supplied samples of concentrate for evaluation. Feedback to date is positive and indications are that the concentrate falls within acceptable specifications.

WLF will need to secure offtake and indicative project finance terms in order to optimise the equity component of the £104M (A\$166M) funding for the estimated project capital cost.

- **Attractive as a strategic metal play**

Tungsten's status as a strategic metal is attracting a lot of interest in exploration and development opportunities, with several recent market transactions providing a basis upon which to evaluate WLF's resources and reserves. Hemerdon has 22M mtu WO₃ in resource category, which includes over 5M mtu WO₃ in reserves. It also has additional low grade "killas" resources that contribute a further 32M mtu WO₃.

Table 1. Comparable Market Transaction Valuation Metrics

A\$M	High	Low
Reserves	A\$226M (at \$44.50/mtu)	A\$115M (at \$22.70/mtu)
Resources	A\$385M (at \$17.50/mtu)	A\$170M (at \$7.75/mtu)
Killas (low grade resources)	A\$38M (at \$1.20/mtu)	A\$10M (at \$0.30/mtu)

Source: Blackswan Equities

This resource base constitutes significant potential value in a tight global tungsten market where prices are forecast to strengthen still further in coming years as demand continues to increase in the absence of net new mine production coming on stream.

Investment Thesis

- **Undeveloped deposit of strategic metals in a first world country close to markets**

The Hemerdon Ball (“Hemerdon”) deposit in south-west England is the fourth largest tungsten resource in the world. The proposed 9.25 year mine life contemplated by the recently released Definitive Feasibility Study is limited only by the physical constraints that form part of the recently updated Planning Approval (equivalent to a Mining Licence) that is valid for mining until 2021. Without requiring any additional drilling, the known reserve and resource base and theoretical pit optimisations based on the block models support possible mining extensions of at least four more operational years, should the company choose to seek further planning approvals.

The mineralisation has only been delineated to 230m vertical depth. Two deeper exploratory holes have indicated continuity to ~400m, so the deposit does offer potential long term upside from programs of deeper drilling. WLF has not indicated that this currently contemplated at this stage of the project’s life.

Hemerdon will produce mainly tungsten concentrates, averaging ~350,000mtu WO₃ annually, but will also have tin credits amounting to 450t - 500tpa tin in concentrates. Both tungsten and tin are strategic metals, defined as metals integral to a nation’s defence, aerospace or energy industries, but where the domestic demand for them outstrips supply capability now or in the future. The USA and China both classify W and Sn as strategic metals and in mid 2010 Europe declared tungsten a “Critical Raw Material”.

- **Extensive metallurgical testwork has validated AMAX’s previous work and demonstrated a viable process flowsheet.**

In March 2011 WLF announced that the Hemerdon Process Flowsheet had been finalised and that the results confirmed a robust, viable process flowsheet to produce on average 350,000mtu (3,500t) of wolframite tungsten concentrate per annum at a marketable grade of 65% WO₃. WLF also confirmed that metal recoveries were consistent with those determined by AMAX in its 1981 Feasibility Study, further demonstrating the technical viability of the process.

This provided the technical basis upon which to proceed to completion of the DFS.

- **DFS delivers positive results.**

Following the metallurgical and process flowsheet results, WLF has now delivered a positive DFS that indicates a Project NPV of £74M (A\$118M) for a 9.25 year mine life at a 3.0 Mtpa throughput producing approximately 350,000 mtu pa 65% tungsten and ~450 t pa 40% tin in concentrates.

The study assumed metal prices of \$360 / mtu APT (ammonium paratungstate, an accepted proxy for 65% WO₃ concentrates) and US\$30,000 / t for tin. Recent market prices for tungsten, in the form of APT, have hit highs of \$460 / mtu. Tin is currently trading at \$28,000 / t. Tungsten sales comprise ~90% of project revenues. Respected industry consultants in specialty metals, Roskill Consulting Group Ltd, has forecast an average US\$411 / mtu for nominal APT prices, basis China, for 2011 to 2015. We are comfortable that a real price of US\$360 / mtu for APT, basis Europe, is a fair and reasonable base case price for Hemerdon.

- **Planning Approval granted.**

It is unusual for a DFS to be delivered *after* Planning Approval is granted. This adds confidence to the likelihood of the project proceeding. The DFS has C1 cash costs at US\$105 / mtu (after tin credits) which places it in the lower half of current and emerging global tungsten producers outside China. Chinese costs of production are not publicly available.

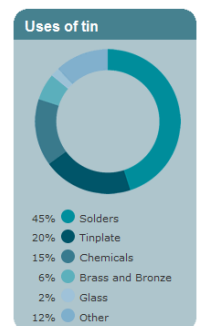
Tungsten and Tin: background to usage, pricing and properties.

- **Tungsten - strong, hard and high temperature.**

- Used in applications that incur high wear and tear in high temperatures situations.
- Tungsten carbide ("cemented carbide") used in high performance cutting and drilling tools.
- Steel additive for extra hardness and higher temperature performance in steel cutting tools.
- Common uses: filaments in light globes; heating elements in other electrical appliances.
- Space technology due to high melting point (3,400°C) and high resistance to corrosion.
- Military application in armour-piercing ammunition due to its hardness and density.
- Tungsten carbide is an effective neutron reflector - used in nuclear applications.

- **Tin - clean and green.**

- Main use is as tin solder in electronic circuitry and in joining pipes or sheet metal. It has replaced lead as it has no noticeable toxic effects.
- Tin plate remains a common application to prevent corrosion.
- Bonds well with other metals so used in alloys (bronze; pewter).
- Tin chemicals are used as catalysts, as fire retardants, in cement, as glass coatings, and as anti-microbial agents.
- High technology applications: lithium ion batteries; fuel cells (catalyst to improve efficiency).
- Replaces lead shot in shotgun cartridges as the fallen pellets do not toxify the wetlands.



- **Tungsten minerals.**

Tungsten occurs as two main ore minerals:

- **Wolframite** (manganese-iron tungstate (Mn,Fe)WO₄)
Quartz veins and pegmatites associated with granites, as at Hemerdon.
- **Scheelite** (calcium tungstate CaWO₄)
Usually formed in limestone skarns near granites.

- **Grade.**

Most ores contain less than 1.5% WO₃. Usual range is about 0.1-0.4% WO₃. Traded concentrates are based on 65% WO₃, so most ores require beneficiation (upgrading by the removal of waste materials).

- **Processing.**

All tungsten ores need to be processed to saleable end-products. There are two principal products: APT and ferro-tungsten.

1. Most tungsten concentrates are chemically processed to APT. The scheelite or wolframite is dissolved, purified by precipitation and filtration, and then undergoes solvent extraction or ion exchange. High purity APT is then crystallised out.
2. Adding wolframite to coke in an arc furnace can allow smelting to produce ferro-tungsten (FeW).

These specialist processes are outside the miners' expertise and hence the need for offtake partners. The main players are:

- Plansee Group (which acquired Global Tungsten Powders) in Europe;
- Wolfram-Bergbau (acquired in 2009 by Sandvik) in Europe;
- HC Starck, specialising in tungsten and tungsten alloys in Europe;
- Eramet, a specialist in metallurgical and steel alloys based in Europe; and
- Kennametal in the US.

- **Downstream Products.**

APT can then be converted to other tungsten products by further processes.

- Tungsten trioxide (WO_3) which is bright yellow and so used as a pigment in paints. It is also used in air pollution catalysts.
- Tungsten Blue Oxide is the first stage product on the way to tungsten metal or tungsten carbide powders.
- Tungstic Acid (H_2WO_4) is a fine yellow powder used in the manufacture of ultrafine tungsten and tungsten carbide powders.
- Ammonium Metatungstate (AMT) is a highly soluble white powder. It is used in producing catalysts for various organic reactions.
- Tungsten metal powder is the first stage product for the manufacture of cemented carbides.
- Tungsten carbide powder is the next intermediate in this process to manufacture cemented carbides.

- **End-Use Products.**

There are two principal end-use products:

- **Cemented Carbides.** Known as “hardmetals”, these are basically very fine tungsten carbide powders that are “cemented” into a cobalt or nickel alloy substrate to form high hardness and temperature tolerant high-tech tools, high-wear parts, mining tools, and for other engineering applications.
- **Ferro-tungsten.** This is a master alloy used in producing tungsten steels, valued for their hardness and temperature tolerance.

- **Pricing**

A usual proxy for tungsten prices is Ammonium Paratungstate, or “APT”, the most commonly traded tungsten product. Prices for APT or WO_3 concentrates relate to the WO_3 content. WO_3 concentrates are the main mining product and generally average 65% WO_3 . APT and WO_3 each chemically contain the same amount of tungsten metal and so their pricing can be roughly interchanged, subject to calculations below.

- APT and concentrate are quoted in US\$ / metric tonne unit: 1 mtu = 10kg of product.
- Concentrates run at 65%-75% WO_3 and so 1 dry metric tonne (1dmt) concentrate at 65% WO_3 contains 65mtu WO_3 .
- APT is the general reference price (currently ~US\$460/mtu).
- Concentrates vary in composition and APT is pure, so concentrates tend to attract discounts of 15%-30% to the APT price.
- WO_3 contains 79.3% W metal.

Thus with APT at US\$460/mtu, a 65% concentrate at a 20% discount equates to US\$[460 *(1-20%)] = US\$368/mtu = US\$36,800/t of shipped concentrate.

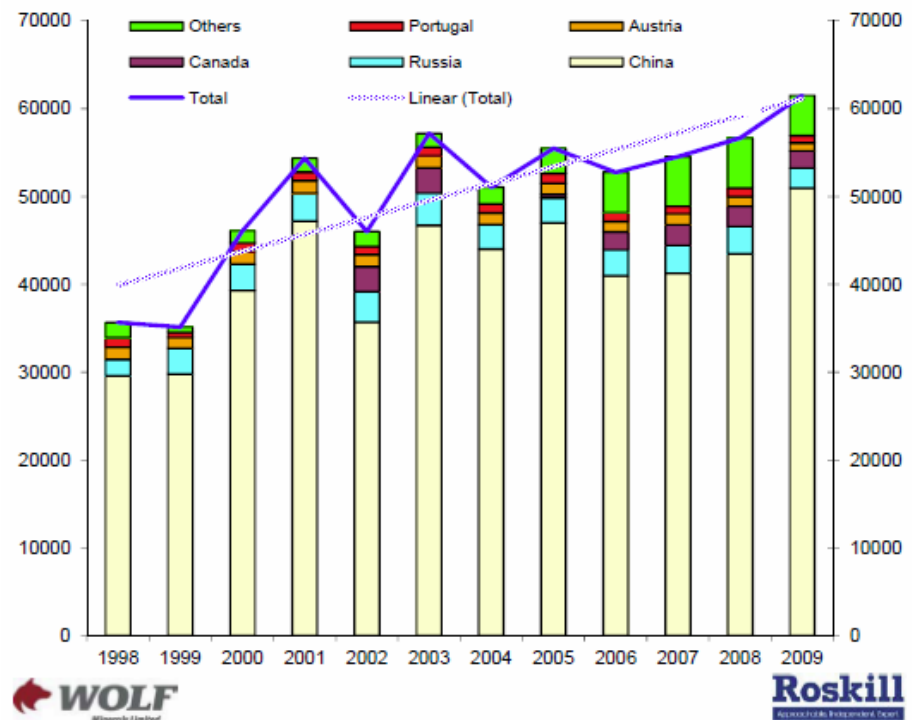
Tungsten Price Outlook

- **Roskill Tungsten Market Study**

London-based international metals and minerals research and forecasting group Roskill Consulting Group Ltd (“Roskill”) was engaged by WLF to assess the global market outlook for tungsten.

- Roskill forecast the global demand for tungsten for the period from 2010-2015 to increase from 55,550t of elemental tungsten in 2009 to 88,500t W in 2015. In terms of WO₃ this equates to 70,050t (7.005 million mtus) growing to 111,601t (11.160 million mtus): a 59% increase that represents an 8% annual growth rate.
- Primary tungsten mine output is not matching this rate, growing from 44,956t WO₃ in 1998 to an estimated 77,580t WO₃ in 2009, when demand had suffered from the effects of the Global Financial Crisis. This represents an annual growth rate over that 11 year period of 5.1%.

Figure 1. Mine production of elemental tungsten (t W) by main countries.



Source: ITIA, Wolf Minerals, Roskill

- An evaluation of possible new sources of mine production includes Newcrest’s O’Callaghans deposit in Western Australia close to Telfer. A January 2011 British Geological Survey report on Tungsten suggests that the deposit could be producing 4,800t of WO₃ concentrate per year for at least 8 years from 2013. Newcrest’s AGM presentation in October 2010 showed O’Callaghans as being in “Concept / Prefeasibility” stage. The deposit is under 350m of cover and has very complex metallurgy. We cannot foresee production from O’Callaghans before 2016 at the absolute earliest.
- North American Tungsten Corporation Ltd, the Western World’s largest producer of tungsten concentrates, reports forecast operating costs at its flagship CanTung mine in Canada, which has 4 years ore remaining, at an average C\$149/t milled which equates to C\$176/mtu for its forecast 357,500mtu pa production.

- Northern American Tungsten's other major deposit is MacTung, which is currently targeting production from about 2015, assuming approvals processes and construction of the planned 7,450tpa WO₃ (5,900tpa W) operation experience no delays. Mactung's forecast operating cost in 2009 dollars at the time of the technical study was a LOM average of \$101 / mtu.
- The largest use for tungsten is in the downstream product cemented carbides (hardmetals) used in drill bits and cutting tools. This sector commands approximately 54% of consumption. The next largest consumer with 27% is the sector using tungsten as a hardener in steels and alloys.
- Tungsten demand correlates closely to economic output with tungsten demand in one year reflecting growth in GDP from the previous year. This reflects the industrial nature of the usage of downstream tungsten products.
- China is the major global player, accounting for some 62% of total world consumption in 2009. With Chinese demand expected to grow by about 7% pa over the longer term, consistent with the continuing industrialisation of that country, and the absence of immediate new mine production, the indications are for a tungsten supply deficit in the next few years. This will be accentuated for Western World end-users as China protects its domestic tungsten production and limits exports of metallic tungsten to downstream, value-added products and aggregate tonnages. Any delays in commissioning proposed new developments will also add upward pressure to prices.
- Roskill's November 2010 study for WLF was when APT prices were at US\$285-US\$290 / mtu. Based on its demand forecasts, and the current market pricing that has seen APT prices jump to US\$460 / mtu, Roskill foresees prices above US\$450 / mtu in 2015, with the possibility of the price testing US\$500 / mtu if new supply fails to reach the market in expected timeframes.

Table 2. Forecast tungsten price, China APT

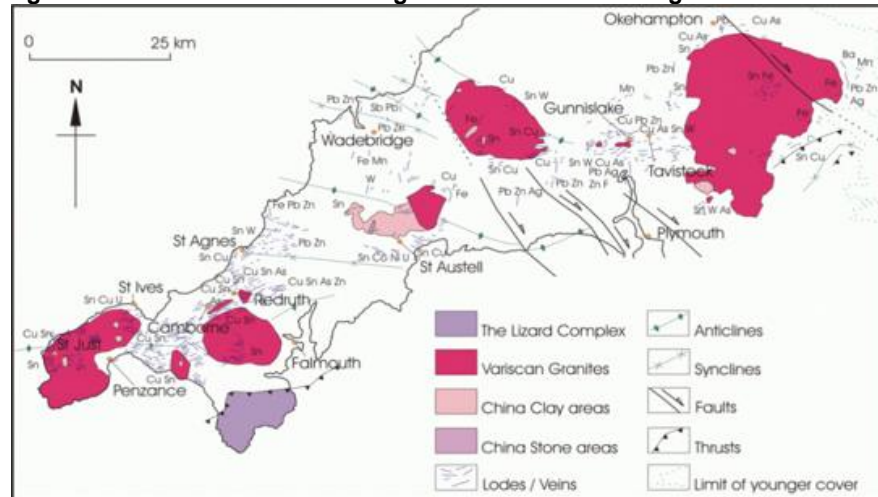
	US\$/mtu
2010	245
2011	415
2012	475
2013	400
2014	370
2015	395

Source: Roskill forecast - Tungsten Market Study for Wolf Minerals

Hemerdon Ball Tungsten and Tin Project – Background

- Stable political setting, long history of mining.**
 Hemerdon Ball is located 10km north-east of Plymouth, a port on the coast in south-west England, making it a low sovereign risk operation.

Figure 2. Mineralisation and mining occurrences in SW England



Source: www.poldark-mine.co.uk/geology

SW England has a long history of mining, mainly associated with its many granites (shown in red in the map above). Hemerdon Ball is the Sn, W occurrence just above the “u” of “Plymouth”.

- The deposit was discovered in 1867. It was in production from 1917-1919 during the Great War but closed after the war-related demand for tungsten fell. It remained closed until WW2 raised demand again and production recommenced in 1943-1944, at which time operations ceased.
- International miner AMAX spent over £20 million from 1977 to increase the resource base and construct a 260m decline to access fresh rock for metallurgical testwork for its comprehensive feasibility study. Over 14,000m of diamond drilling was carried out in this program.
- AMAX also built a pilot gravity plant and in 1981 submitted its initial planning application. In 1986 it finally received Devon County Council approval, but falling commodity prices over the 5-year delay had made the project uneconomic, leading to AMAX withdrawing from the project in 1993.
- North American Tungsten PLC took control of the asset in 1997 but with tungsten prices remaining depressed, it disposed of its interest in 2003. Wolf acquired the assets in December 2007 and since then Hemerdon has been its single focus.

▪ **Development Timetable**

The delivery of the DFS has allowed WLF to establish a target timeline to production.

The timeline allows for Planning Permission stipulated conditions such as construction of the link road and mine access road prior to site access.

Figure 3. Indicative Project Timeline

	Milestone	2011		2012				2013				2014		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
1	Board approval for total project expenditure		◆											
2	EPC contract awarded for processing facilities		◆											
3	Link road constructed and adopted			◆										
4	Plant earthworks completed					◆								
5	Major equipment installations completed							◆						
6	Plant commissioning commences									◆				
7	Plant accepts first ore										◆			
8	Plant operating at design capacity												◆	

Source: Wolf Minerals

Work in Progress

▪ **Environmental approval.**

The submission to the Environmental Agency is a consultative process. WLF to date has completed several iterations and is close to lodging the final draft. The submission comprises several components and those that remain to be finalised include:

- Water abstraction and discharge licence.
This work is being completed by consultant Aquaterra. Monitoring and recording seasonal water flow rates in the Tory Brook, one of the project’s principal water sources in the early development years, was one aspect that could not be accelerated.
- Waste dump licence.
In progress.
- Baseline monitoring.
In progress - recording noise, dust, etc over time.

▪ **Link road tender.**

WLF is currently evaluating a number of tenders submitted for the construction of the link road that Planning Submission stipulates needs to be built before site access is permitted.

▪ **EPC contract tender.**

Tenders are being sought for the Engineering, Procurement and Construction contract.

▪ **Project finance.**

Initial discussions have already been held with a number of potentially interested banks.

▪ **Offtake discussions.**

Concentrate samples from the AMAX testwork days have been supplied to several potential offtakers for evaluation. To date feedback has been positive although it is considered likely that the parties will seek samples from WLF’s pilot process circuit prior to a final decision.

Hemerdon Project – Geology and Ore Reserves

- **Geology**

The Hemerdon tungsten-tin deposit is a stockwork and sheeted greisen vein system hosted in and around a dyke-like body of porphyritic granite known as the Hemerdon Ball granite. The country rock around the granite are slates of Upper Devonian age with minor basic volcanic rocks. The mineralised area extends some 600m x 400m within the granite although the mineralisation does extend in to the adjoining metasedimentary rocks (known as Killas).

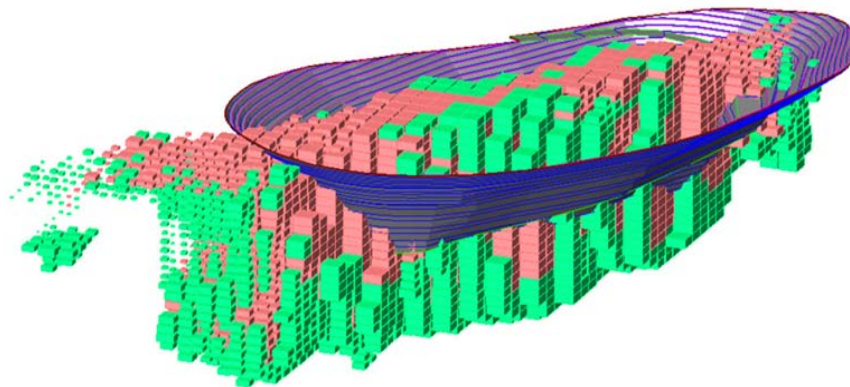
The mineralisation is in the form of wolframite (tungsten) and cassiterite (tin). There is minor arsenopyrite noted in the mineralogy and gangue minerals include quartz and tourmaline..

- **Simple Geometry and Low Strip Ratio**

Pit optimisations and the subsequent detailed pit designs were constrained by the pit rim, which is a physical boundary clearly defined and stipulated in the planning permission.

A two stage development is envisaged for the open pit, which upon completion will measure approximately 800m x 450m x 200m. The stage one mineralisation is from surface which will result in a very low stripping ratio of 0.7 to 1. The life of mine strip ratio is anticipated to remain low at about 1.5 to 1.

Figure 4. Measured (pink) and Indicated (green) Mineral Resource block model of the deposit with initial pit design superimposed.



Source: Wolf Minerals

Because of the soft nature of the weathered granites, geotechnical reviews resulted in pit wall angles that range between 35° and 44°. This is a prudent safety measure reflecting the less competent nature of the wall rocks, particularly in the weathered environment (for reference, pit wall angles in many open-cut goldmining operations in the Eastern Goldfields of Western Australia are generally in the order of 55°).

▪ **Ore Resources and Reserves**

The Mineral Resource estimate was prepared by respected consultant SRK Consulting in Perth. Cube Consulting of Perth calculated an initial open pit mining reserve in December 2008.

Mineral Resources were based on over 25,400m of drilling from 315 holes on 50m grid. The granite domains were interpreted from geological logging of the drillholes and grades from 5m composite samples within the interpreted domains. Ordinary Kriging was used to establish grade within a block model.

The Mineral Resource estimate is calculated at a 0.063% WO₃ cutoff grade, which equates to a 0.05% W grade.

Table 3. Mineral Resources (100% Project Basis)

Classification	Mt	WO ₃ (%)	Sn (%)	Contained WO ₃ (mtu)	Contained tin (t)
Measured	76.8	0.15	0.02	11,520,000	15,360
Indicated	40.3	0.13	0.02	5,240,000	8,060
Measured and Indicated	117.1	0.14	0.02	16,760,000	23,400
Inferred	284.2	0.13	0.02	36,950,000	56,800
Measured, Indicated and Inferred	401.4	0.13	0.02	53,700,000	80,200

Mineral resources are inclusive of the ore reserves

Source: Blackswan Equities, Wolf Minerals (errors due to rounding)

The open pit reserves that provide the basis of the proposed operations considered in the DFS are constrained by the physical limits of the pit rim defined in the Planning Permission. Ore reserves remain outside the planned pit dimensions and constitute significant potential for expanded operations beyond the end of the current mine plan.

The Ore Reserve is also calculated at a 0.063% WO₃ cutoff (0.05% W grade equivalent).

Table 4. Ore Reserves

Classification	Proven			Probable			TOTAL			Contained WO ₃ (mtu)	Contained tin (t)
	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	3,834,000	6,390
Soft Granite	4.6	0.19	0.03	0.9	0.21	0.03	5.5	0.21	0.03	1,155,000	1,650
Total	23.5	0.19	0.03	3.2	0.19	0.03	26.7	0.19	0.03	4,990,000	8,000

Source: Blackswan Equities, Wolf Minerals (errors due to rounding)

▪ **Potential for mine life to extend beyond the DFS plan**

The resource to reserve conversion ratio suggests mining beyond the 9 years contemplated in the DFS: the mining reserve comprises just 11.4% of the WO₃ contained in the resource.

▪ **Exploration Potential**

The geometry of the Hemerdon property does not offer significant exploration potential. We consider the greatest upside lies in the potential for future planning permission revisions as the mine progresses to allow the pit outline to expand and access more ore and contained metal.

Hemerdon Tungsten Project – Operational Overview

Processing Flowsheet

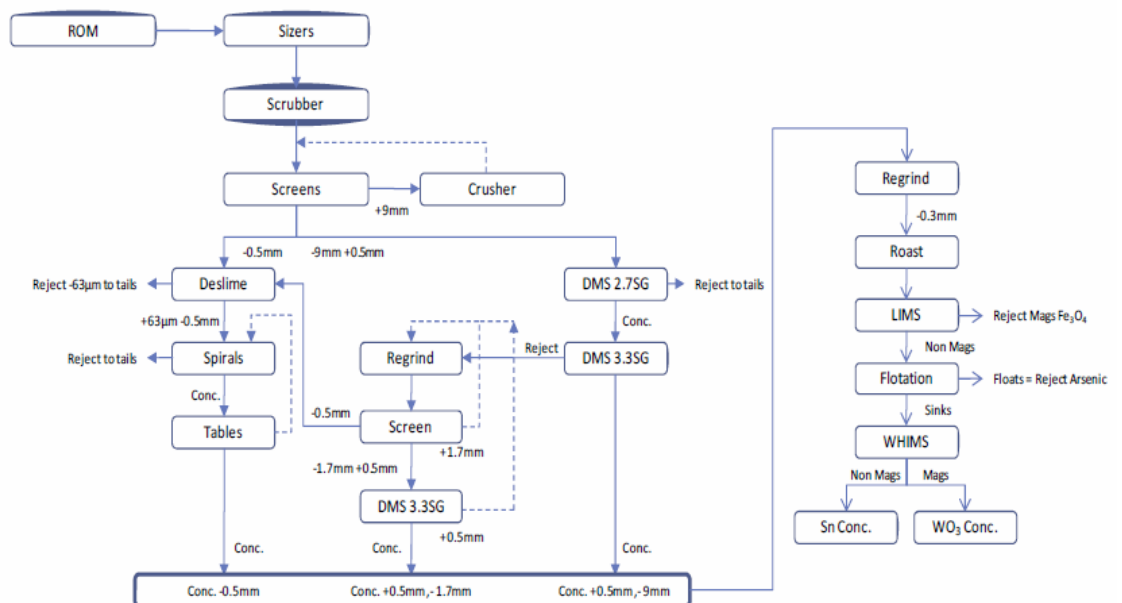
AMAX conducted extensive metallurgical testwork to deliver a functional process flowsheet in its 1981 Feasibility Study. WLF based its recent study largely on the work carried out by AMAX.

WLF's metallurgical representatives, Coffey Mining (Coffey), in conjunction with G.R. Engineering Services (GRES), confirmed the proposed flowsheet to be technically viable and able to produce, on average, 350,000mtu (3,500t) of wolframite tungsten concentrate per annum at a grade of 65% WO₃. This is the standard commercially marketable grade for tungsten concentrates.

The testwork was undertaken at Ammtec's laboratory in Perth.

Respected industry consultants Coffey and GRES developed the flowsheet based on AMAX's Feasibility Study and on extensive associated technical documents and records from previous production in World War 1 and 2. The consultants were also able to contact the metallurgist responsible for preparing much of the AMAX work, and other acknowledged experts in the field of gravity separation. The combination of all these different source of information has delivered a very robust result. The incorporation of modern equipment to minimise fines generation and improve mineral separation has helped to optimise the final concentrate grade.

Figure 5. Process Flow Sheet



Source: Wolf Minerals

The mineralogy of the Hemerdon deposit contains some arsenopyrite. WLF continues to compare and contrast alternative approaches to maintaining the arsenic content of the concentrate within the specification limits: a small roaster and/or a flotation circuit towards the end of the process flowsheet. The volume of material at this late stage of the process is relatively small: anticipated at about 5,400tpa or ~1,000t per week. This would only require a very small roaster or float circuit and so would have no material impact on capital costs.

The granites of south-western England contain some radioactive minerals. The radiation levels of the tungsten concentrate produced from Hemerdon fall within acceptable limits specified by potential offtake parties. Concentrate samples have been supplied to potential offtakers for grade and compositional evaluation. WLF has received no adverse comments.

▪ **Metal Recoveries**

The Hemerdon granite has a weathering profile that extends to 30m-40m from surface. The weathering degrades the granite to a soft, relatively friable, clay-rich material. The tungsten and tin mineralisation is hosted in greisen veining within a steeply dipping granite body. The result is two distinct ore types: soft weathered granite near surface and harder fresh granite at depth.

The metallurgical testwork and ore reserve calculations recognise these distinct geological domains and the process flowsheet has been tailored accordingly. WLF has confirmed and replicated the tungsten recoveries achieved by AMAX.

Table 5. Recoveries From Different Ore Types

Ore Type	WO ₃	Sn
Weathered granite	58%	65%
Fresh granite	66%	55%

Source: Wolf Minerals

The process flowsheet will deliver a 65% WO₃ concentrate and a 40% Sn concentrate. This will result in annual production for sale of approximately 350,000mtu of WO₃ in concentrate and about 500tpa of tin in concentrate.

Hemerdon Tungsten Project – Development Plan

▪ **Planning Permission Sets Hemerdon Apart**

Few, if any, other potential new tungsten mine developments (outside China) have development planning permission in place. This puts Hemerdon in a unique position as a potential provider of tungsten concentrates to an offtake market that currently has an availability shortfall of stable sources of upstream (concentrate) product.

The current planning permission for mining at Hemerdon extends to 2021. We believe that the risk of extensions to the planning permission being refused is negligible. As WLF demonstrates responsible operational performance, consistent with its approach to the approval process, we believe that WLF and its Hemerdon operation will establish itself as a valuable and welcome corporate contributor to the local community and economy.

▪ **Concentrator and Plant Design**

The metallurgical testwork and process flowsheet design identified the unit operations required:

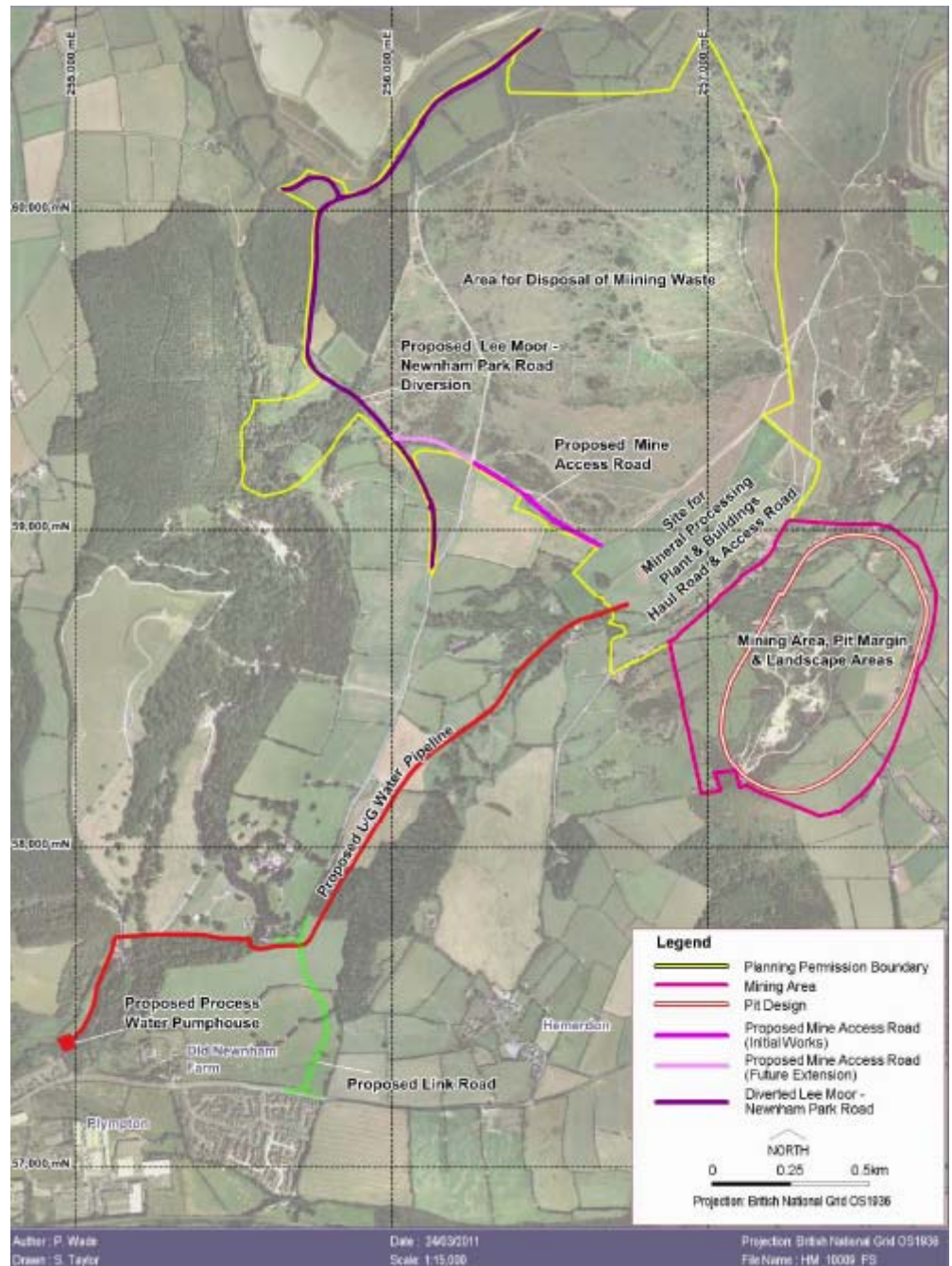
- Crushing, screening and scrubbing;
- Dense media separation;
- De-slime and gravity separation;
- Concentrate processing;
- Tailings thickening and disposal.

The design of the plant is based on three shifts per day, six days per week operations, as per the approved planning permission.

WLF has also excavated 56t of ore to be processed to provide further concentrates for use in final equipment selection for the processing plant.

WLF is establishing a Project Management Team to advance the project.

Figure 6. Plan of Key Civil Works



Source: Wolf Minerals

▪ **Infrastructure**

Hemerdon is in an area of highly developed infrastructure so there are limited requirements for standalone equipment:

Power: To be provided from the local grid.

Water: Water for the process plant will be from a number of sources:

- Recovered water from the Tailings Management Facility (TMF) through a decant, pump and underdrainage system;
- Pit water (dewatering and local rainfall - which averages ~1,400mm per year)
- Local sumps for run-off collection;

- Tory Brook. The brook runs at about 500 litres per second. The mine's maximum requirement from the brook is 3 litres per second and this demand will decrease over time as more decant water becomes available from the TMF. Tory Brook already acts as a water supply for the Lee Moor kaolin operations upstream of Hemerdon. Lee Moor discharges into Tory Brook.

WLF has used consultants Aquaterra to conduct the hydrology and hydro-geological studies for project development, the project's ongoing water requirements, and the necessary baseline monitoring and other studies required for the Environmental Licence application.

Workforce: A total workforce of ~100 staff is anticipated, most of whom will be recruited locally. In addition, it is expected that the contract miner will employ approximately 130 people for its operations. During the plant construction phase a further 150 to 250 people are anticipated.

▪ **Operational Risks**

WLF is exposed to the usual principal risks experienced by any mining company developing an asset: funding, commodity price movements, foreign exchange rate fluctuations, offtake.

The detailed studies that WLF has conducted in preparing its DFS have demonstrated operational viability and confirmed the findings of the similar studies undertaken by AMAX 30 years ago. Although the usual commissioning and technology risks exist, we believe that the similar results achieved by the two studies combined with the cross-checking and review process carried out by respected consultancies has gone a long way towards mitigating these risks.

Table 6. Risks Summary

Risk Area	Description
Construction risk	<p>The principal risk relating to construction is the possibility of a UK workforce not keeping to the EPC contractor's timetable. There has not been a new hard rock mine development in the UK for some considerable time and the EPC contractor's timetable is likely to reflect its experiences in jurisdictions that are more familiar with new mine constructions.</p> <p>The mitigant to this risk is the employment pressures in south-west England. We consider it likely that there will be competition for places on the Hemerdon construction and operational workforces which will help the contractor meet its timetable.</p>
Technology risk	<p>The key variables to WLF's ability to achieve its forecast recoveries and concentrate specifications will be the fine-tuning associated with a process flow sheet that includes gravity, dense media separation, high and low intensity magnetic separation, and roasting and flotation stages.</p> <p>The mitigants to this technology scale-up risk are:</p> <ol style="list-style-type: none"> 1) the relatively small masses of material involved at the tail end of the process; 2) the extensive metallurgical testwork carried out by WLF, and previously AMAX, and the involvement of industry experts in the field at all stages of the testing, combine to provide a wealth of expertise with which to address and quickly resolve any issues that may arise.

Risk Area	Description
<p>Permitting risk</p>	<p>The main risk for a new mine is the granting of a mining license. WLF is probably unique in that it has its "Mining Licence" already granted, in the form of the updated Planning Approval from the Devon County Council and the UK Government Secretary of State that was received in January 2011.</p> <p>WLF conducted its application for a modification order through a consultative process that required numerous iterations and draft submissions to the relevant departments. The result was that when the final version was lodged, all issues had been covered.</p> <p>Although time-consuming, this approach ensured that all issues relevant to the regulatory agencies could be clearly identified, addressed, and resolved logically and effectively.</p> <p>This is significant in that it has established WLF's bona fides with the relevant agencies whilst allowing WLF an insight into the most efficient way to address the process. This will be material as and when WLF seeks approval to extend the current open pit rim outline to allow access to reserves that currently fall outside the mine plan.</p>
<p>Environment risk</p>	<p>The principal environmental risks to be considered include water-related issues, wildlife, impact on local communities, and mineralogical issues relating to deleterious elements in the ore.</p> <p>As described above in "Permitting risk", WLF has conducted an extensive and comprehensive process to address all environmental considerations, many of which were assessed as part of the Updated Planning Approval.</p> <p>Consultants Aquaterra were engaged to assess, evaluate and report on all issues pertaining to water supply and water management. We understand that the latest draft of the Aquaterra report has been given to the relevant departments for review and comment, prior to lodgement of the final submission to the Environment Agency for approval.</p> <p>WLF is also commencing additional baseline monitoring and studies in preparation for any future decision to seek approval to extend the open pit, as the current approval allows mining to 2021.</p> <p>The presence of arsenopyrite and minor radioactive minerals in the granite have raised concerns with the uninformed. The fact that WLF has its Updated Planning Approval indicates that any such "issues" have been addressed and deemed not to be issues. WLF has also declared that two potential offtake partners have evaluated concentrate samples and have not declared them to be outside acceptable, marketable, specifications.</p>
<p>Offtake risk</p>	<p>Tungsten does not trade in a terminal market. Tungsten cannot be hedged. Consequently the commodity pricing risk attaching to specialty metals such as tungsten, and to a lesser extent tin, in concentrates, is material to the ability to obtain bank finance.</p> <p>WLF has already supplied samples to potential offtake partners and their feedback has been positive. Reliable, sustainable tungsten concentrate from stable Western World sources is in short supply. End users have clearly stated their desire to secure sources such as Hemerdon. We believe this largely mitigates the offtake risk.</p>

Risk Area	Description
Land access risk	<p>As part of the Planning Approval, WLF must acquire 11 properties that are located on the development site.</p> <p>WLF is finalising option agreements with the relevant landowners and anticipates completion shortly. Purchase will be completed before the processing plant foundation are constructed. There are no delays anticipated as discussion are well advanced and the WLF development proposals have been through a full public consultation process where any relevant issues could be raised. All such issues have been addressed and resolved.</p>
Funding risk	<p>Funding for tungsten mines is not a common resource funding proposition. Tungsten does not trade in a terminal market and cannot be hedged. Also the amount of capital requiring funding is significant.</p> <p>We believe this risk is mitigated by a number of factors:</p> <ol style="list-style-type: none">1) the nature of tungsten as a strategic metal in a market controlled by China, but where Western end-users have a need for a new, stable and secure source of supply;2) the potential for offtakers to become active participants in the debt funding to secure offtake;3) the experience that WLF has in the resource-lending sector through non-executive director Mr Don Newport;4) the buoyant tungsten price and the solid price outlook based on forecast supply shortages.

Source: Blackswan Equities

Hemerdon Tungsten Project – Financial Parameters

Capital Costs

Process plant and related infrastructure costs were developed from first principles by GRES. Quotations for equipment and construction materials were provided by UK and European companies.

The capital cost has been estimated on the basis of a fixed-price EPC contract for plant and infrastructure, including the contractor's margin.

Land purchase costs have been provided by licensed valuers.

Owners costs have been developed in consultation with the various project consultants.

Contingencies have been determined on a line by line basis for all costs, including consideration of macroeconomic factors, to give a total contingency of 9.8% of the capital base estimate.

Table 7. Capital Expenditure Requirements

Item	£ M	A\$M <i>(at GBP1.0 = AUD1.6)</i>
Process Plant	65.4	104.6
Infrastructure	8.5	13.6
Land Purchases	10.5	16.9
Owners Costs	10.4	16.6
Contingency	9.3	14.9
Total	104.1	166.6

Source: Blackswan Equities, Wolf Minerals (errors due to rounding)

Operating Costs

The DFS derived an average LOM C1 cash cost of the Hemerdon project of US\$105 / mtu after tin credits. Forecast tin revenues represent less than 10% of total project revenues. Although quoted as C1 costs, WLF has included items such as royalties that are usually C3 components.

The dense media separation stage is the largest single cost component of the process plant, although the three broad phases of: 1) crushing and screening; 2) dense media separation; and 3) concentrate preparation, each represent about 30% of the total operating cost. This is in line with expectations.

Annual mining cost is broadly on a par with the annual processing cost in the early years of operation, reflecting the low waste to ore stripping ratio: 0.7 to 1 for the Stage 1 pit, rising to 1.5 to 1 for Life of Mine. During Stage 2 pit development the ratio of mining costs to processing costs changes to about 60/40.

WLF is also contemplating the sale of aggregates as road metal or ballast. After first pass crushing and screening of the granite to liberate the cassiterite and wolframite, WLF will have a stockpile of crushed and sized aggregate. The sale of this material could contribute, for no cost, about £1 million annually which is not incorporated in the financial analysis of the project.

- **Tax and Royalties**

WLF's DFS has benefited from the British Government's recent decision to reduce corporation tax rates from 28% to 26% from April 2011 and then by a further percentage point per annum in each of the following three years, taking it down to 23% in 2014 and beyond.

There is a 2% royalty payable to landowners on metals sales.

- **Project Financing**

The DFS forecasts a total funding requirement of £104M (A\$166M). WLF has already had discussions with a number of potential project finance banking groups, under guidance from WLF non-executive Director Don Newport, whose long-standing experience of providing corporate and project finance to the resources sector during his time at Barclays and Standard Banks will serve WLF well in identifying suitable financiers and negotiating suitable terms.

WLF has appointed Perth-based Optimum Capital Pty Ltd as its financial advisor to arrange project funding. Optimum's principals have extensive experience in providing financial services and advice to a range of resource companies in Australia and overseas.

- **Marketing and Off-take**

WLF has signed an Exclusive Global Agency Agreement with International metals trader Traxys Europe ("Traxys") to introduce and facilitate offtake agreements with end users and to distribute wolframite concentrates.

The Agency Agreement is for a term of 6 years from 1 February 2011. WLF will pay Traxys as its agent a commercially competitive fee (1.6%) on wolframite sales to its offtake customers.

WLF also has an offtake agreement with Traxys for 100% of the tin concentrates at spot market prices.

WLF has already commenced discussions with a number of potential offtake partners and has supplied several with samples of concentrate for evaluation. To date feedback has been positive and WLF remains confident of securing one or more offtakers. Given that tungsten cannot be hedged, we believe that securing offtake is key to securing project finance. The financial strength of many of the logical potential European offtakers (Plansee, Wolfram Bergbau/Sandvik, HC Starck) is such that any offtake with one of these such companies would be viewed positively by financiers as acceptable counterparty risks.

WLF's proximity to the European end-users is also a positive as transport and delivery would be straightforward and involve no double-handling in transit.

Valuation Methodology and Sensitivities

Discounted Cash Flow

The DFS contemplates a 3.0 Mtpa throughput operation for Hemerdon commencing production in 2014 and initially operating for 9.25 years to produce an annual average of 345,000mtu WO₃ and 450t tin in concentrates.

The production parameters provided by WLF in its DFS deliver an ungeared post tax NPV at an 8% annual discount rate of £74M using APT prices of US\$360 / mtu and tin prices at \$30,000/t.

Using an exchange rate of A\$1.60 = £1.00 (currently 1.52), the NPV translates to \$118M.

Capital costs are estimated at £104M (\$166M). This represents a significant funding requirement for a company capitalised at ~A\$40M.

Given the strategic nature of tungsten and the presence of several end-users in Europe who would benefit from the addition of a new, stable, long-life source of supply right on their doorstep, we believe that WLF may be able to secure direct funding from an offtake partner in the order of \$25-\$35M equivalent.

We have considered traditional debt and equity funding on a 50/50 basis and a 60/40 basis for 100% of the capital requirement with equity raised at the current share price of A\$0.40. We believe this to be a reasonable base case scenario because project finance is likely to be conditional on offtake being in place and the announcement of any offtake arrangement would deliver a share price re-rating prior to any equity raising.

Sensitivity Analysis

We have run sensitivities on key input variables including: the tungsten (APT) price; the WO₃ head grade; the process recovery rate; Operating Expenditures; and Capital Expenditure.

Table 8. Key Valuation Sensitivities

LOM APT WO₃ Price (US\$/mtu)	-20%	-10%	\$360	+10%	+20%
Hemerdon Project NPV (A\$M)	32.9	75.7	118.5	161.2	204.0
WLF Valuation (\$/share)	0.37	0.57	0.64	0.77	0.91
LOM Head Grade (%WO₃)	-20%	-10%	0.18%	+10%	+20%
Hemerdon Project NPV (A\$M)	35.9	77.2	118.5	160.1	201.7
WLF Valuation (\$/share)	0.38	0.51	0.64	0.77	0.90
LOM Process Recovery (%)	-20%	-10%	66%	+10%	+20%
Hemerdon Project NPV (A\$M)	35.9	77.2	118.5	160.1	201.7
WLF Valuation (\$/share)	0.38	0.51	0.64	0.77	0.90
LOM Operating Costs (US\$/mtu)	-20%	-10%	\$105	+10%	+20%
Hemerdon Project NPV (A\$M)	155.3	136.9	118.5	100.1	81.6
WLF Valuation (\$/share)	0.75	0.70	0.64	0.58	0.52
LOM Capital Expenditure	-20%	-10%	£104M	+10%	+20%
Hemerdon Project NPV (A\$M)	142.7	130.6	118.5	106.3	94.0
WLF Valuation (\$/share)	0.71	0.68	0.64	0.60	0.56

Source: Blackswan Equities

▪ **Scenario Sensitivity Analysis**

We have also run upside and downside scenarios combining variations to the key inputs.

Table 9. Scenario Analysis.

	Upside 2	Upside 1	Base	Downside 1	Downside 2
Tungsten Price	+ 10%	+ 5%		- 5%	- 10%
Tungsten Grade	+ 10%	+ 5%		- 5%	- 10%
Tungsten Recovery	+ 10%	+ 5%		- 5%	- 10%
Operating Expenditure	- 10%	- 5%		+ 5%	+ 10%
Capital Expenditure	- 10%	- 5%		+ 5%	+ 10%
Project NPV (A\$M)	\$256.0	\$187.5	\$118.4	\$62.4	\$5.7
WLF Valuation (\$/share)	\$1.07	\$0.86	\$0.64	\$0.46	\$0.28

Source: Blackswan Equities

The dilutionary impact of the combination of:

- 1) the significant capital expenditure requirement of A\$166M;
- 2) WLF's relatively small current market capitalisation of \$37M; and
- 3) raising equity at the current WLF price of \$0.40

results in a DCF analysis post equity finance (50% debt, 50% equity) that values the project at **\$0.64/share**.

WLF also ran an upside tungsten price scenario at US\$415/mtu for the 9.25 year minelife. This delivered a project NPV of £114M (A\$182M), equating to a value of **\$0.84/share** based on funding provided by 50% debt and 50% equity.

An additional upside case using US\$360/mtu, 60% debt, equity raised at \$0.50/share and extension of the Hemerdon mine life to 14 years, values the project at **\$1.10/share**.

We also examined the potential return if the project was entirely funded by equity:

Table 10. Project Funding by 100% Equity.

	On Issue	Base Case		Upside Case	
		Valuation	Return	Valuation	Return
Equity raised at \$0.35	583.8	\$0.49	39%	\$0.60	71%
Equity raised at \$0.40	524.4	\$0.54	36%	\$0.67	66%

Source: Blackswan Equities

Breakeven analysis indicates that the project can withstand a 33% fall from the base case APT price of US\$360/mtu, to a level at approximately 50% of the current APT price.

Given the uncertainty about the eventual project funding mix, we believe the most appropriate method of assessing WLF is to ascribe a valuation range.

The Recent Market Transaction analysis (see following section) delivers a range of \$100M-\$200M as a reasonable value for Hemerdon in its current form. Fully diluted this represents \$0.89-\$1.79/share. Based on this and the DCF project analysis, until offtake is secured and the resultant funding mix determined, we consider **\$0.64/share to \$0.89/share** to be appropriate.

▪ **Recent Transaction Comparisons**

There have been several tungsten-related transactions in recent months that also provide a guide to how the market is currently valuing tungsten operations. We consider three that we believe offer valid yardsticks against which to assess the value of the Hemerdon asset if it were to be sold in the current tungsten market environment.

Two examples of transactions involving early stage exploration properties were also reviewed but the valuations applied basically to potential, yielding A\$0.30 - \$1.20 / mtu for theoretical resource targets within areas of known mineralisation. The mineralised hornfelsed Devonian slates known as "Killas" that are adjacent to the main body of mineralisation may be comparable.

The transactions against which Hemerdon can be compared are detailed below.

1) Heemskirk Consolidated Ltd.

Los Santos Tungsten Mine (100%)

12 April 2011: Heemskirk executed an agreement to vend this mine into a new TSX float.

Consideration: US\$14M cash, 15% equity in the new company and a 10% call warrant that if exercised would take Heemskirk to 22.7% of the new entity.

The aggregate value of the transaction is reported at an estimated US\$20M.

Los Santos operation:

- production: ~60,000mtu WO₃ per annum
- grade: 0.32% - 0.36% WO₃
- operating costs: US\$203/mtu in Dec 2010, reducing to US\$182 in Mar 2011;
- recoveries: low at 56%;

Resources at 30 Sep 2010 (inclusive of reserves):

Measured Indicated and Inferred: 4.571Mt at 0.26% WO₃ for 1,170,000mtu WO₃ contained.

Reserves at 30 Sep 2010:

Proven and Probable: 1.114Mt at 0.43% WO₃ for 479,020mtu WO₃ contained.

Production in Dec 2010 and Mar 2011 quarters: 30,000mtu

Notional valuations:

US\$44.50 / mtu Reserves (US\$20M / (0.479Mmtu-0.03Mmtu))

US\$17.50 / mtu Resources (US\$20M / (1.170Mmtu-0.03Mmtu))

2) Planet Metals Ltd

Wolfram Camp Tungsten Project (100%)

11 May 2011: Planet announced the sale of this project to diversified German resource company Deutsche Rohstoff for a combination of cash and equity.

Consideration: \$3.5M cash, A\$3.5M worth of shares in Deutsche Rohstoff.

The aggregate value of the transaction is reported at an estimated A\$7M.

Wolfram Camp assets:

150,000tpa throughput processing plant, currently on care and maintenance.

Resource Estimate:

Indicated and Inferred: 1.42Mt at 0.60% WO₃ and 0.12% Mo for 852,000mtu WO₃ contained.

Notional valuation:

US\$ 8.20 / mtu Resources (US\$7M / 0.852Mmtu)

3) Ormonde Mining plc

Barruecopardo Tungsten Project (10%)

04 April 2011: Ormonde announced the consolidation of its interest in the project through its acquisition of the remaining 10% stake held by its JV partner.

Consideration: €2.8M cash, equivalent to A\$3.8M at €1.00 = A\$1.35.

The aggregate value of the transaction is A\$3.8M, valuing 100% of the asset at A\$38M.

Resource Estimate:

Indicated and Inferred: 10.9Mt at 0.45% WO₃ for 4,905,000mtu WO₃ contained.

Potentially mineable material after pit optimisations (“quasi-reserves”):

3.9Mt at 0.43% WO₃ for 1,677,000mtu WO₃ contained.

Notional valuation:

US\$22.70 / mtu “Reserves” (US\$38M / 1.677Mmtu)

US\$ 7.75 / mtu Resources (US\$38M / 4.905Mmtu)

4) Wolf Minerals Ltd

Hemerdon Tungsten Project (100%)

Resources (inclusive of reserves):

Measured Indicated and Inferred: 144Mt at 0.15% WO₃ for 22,000,000mtu WO₃ contained.

Killas (M,I+I) 254Mt at 0.13% WO₃ for 32,000,000mtu WO₃ contained

Reserves (within the constrained Planning Permission pit outline):

Proven and Probable: 26.7Mt at 0.19% WO₃ for 5,073,000mtu WO₃ contained

Table 11. Recent Market Transaction Valuation Matrix

A\$ / mtu	Los Santos	Wolfram Camp	Barruecopardo
Reserves	\$44.50	n/a	\$22.70
Resources	\$17.50	\$8.20	\$7.75
Exploration targets	\$1.20 - \$0.30		

Source: Blackswan Equities, Company Reports

Based on these notional valuations we can derive a theoretical range of potential values for Hemerdon in its current stage of development based on the reserves and resources.

Table 12. Hemerdon: Value Guidelines Based on Recent Market Transactions

A\$M	High	Low
Reserves	A\$226M (at \$44.50/mtu)	A\$115M (at \$22.70/mtu)
Resources	A\$385M (at \$17.50/mtu)	A\$170M (at \$7.75/mtu)
Killas (low grade resources)	A\$38M (at \$1.20/mtu)	A\$10M (at \$0.30/mtu)

Source: Blackswan Equities

Hemerdon is not yet in production and is a lower grade deposit than many others around the globe, but it has a mining licence and it has scale. It still requires development funding. The known reserves can add a further 50% to the mine life with a revised planning approval. Rising tungsten prices potentially render the Killas resources commercial. Taking all these factors into account, we consider **\$100M to \$200M** to be a reasonable range of values for Hemerdon based on recent market transactions.

▪ **Sector Peer Comparison**

There are few listed Western tungsten producers. There are no ASX-listed tungsten producers. Peer comparisons are not straightforward as most companies with tungsten properties also have other mineral interests at various stages of advancement.

- The table below illustrates the wide range of project attributes in the tungsten space. WLF is the only ASX-listed pure tungsten play that can deliver into the projected concentrate supply deficit. King Island is re-visiting its options now that the Chinese partner that previously controlled the development decisions has relinquished its position. Venture is primarily a tin project with tungsten and magnetite co-product credits.

Table 13. Tungsten companies and resources

Company Exchange	Mkt Cap A\$M	Project	Location	Resources	Other factors
Newcrest NCM.ASX	29,445	O'Callaghans	WA	Inf : 59Mt @ 0.29% WO ₃ for 170,000t WO ₃	Global gold, copper major. No valid comparison to pure tungsten plays.
Venture VMS.ASX	84	Mt Lindsay	Tas	Inf : 8.6Mt @ 0.28% WO ₃ for 24,080t WO ₃	Tin project primarily, with tungsten and magnetite co-products.
NA Tungsten NTC.TSX	81	CanTung, MacTung	Canada	I+I: 2.62Mt @ 0.94% WO ₃ for 28,020t WO ₃ I+I: 44.9Mt @ 0.85% WO ₃ for 383,000t WO ₃	CanTung producing - 4 years left MacTung in pre-development
Ormonde ORM.AIM	62	Barruecopardo	Spain	I+I: 10.9Mt @ 0.45% WO ₃ for 49,050t WO ₃	Commencing production 2012/13
Hazelwood HAZ.ASX	49	Big Hill	WA	MII : 16.2Mt @ 0.16% WO ₃ for 25,426t WO ₃	Ferrotungsten production JV in Vietnam
Wolf WLF.ASX	37	Hemerdon	England	MII : 410Mt @ 0.13% WO ₃ for 522,000t WO ₃	Dedicated high tonnage, low grade tungsten play with tin credits (80,000t contained tin)
King Island KIS.ASX	22	Dolphin	Tas	I+I : 15.9Mt @ 0.66% WO ₃ for 105,550t WO ₃	Tungsten play with Tasmanian base metals.
Vital VML.ASX	18	Watershed	Qld	Ind : 15.1Mt @ 0.46% WO ₃ for 69,300t WO ₃	Principal focus is now gold exploration in Burkina Faso
Icon III.ASX	14	Mt Carbine	Qld	Inf : 9.6Mt @ 0.2% WO ₃ for 19,200t WO ₃	Diverse exploration plays.
Antipa AZY.ASX	14	Citadel, Magnum	WA	No resource yet established	Exploration potential at Citadel, Magnum
Thor THR.ASX	8	Molyhil	Qld	MII : 3.8Mt @ 0.32% WO ₃ for 12,000t WO ₃	Re-evaluating the 2007 Feasibility Study.
Paradigm PDM.ASX	4	White Rock	NSW	Inf : 0.26Mt @ 0.7% WO ₃ for 1,800t WO ₃	Divesting its NSW exploration properties.

Source: Blackswan Equities, Company Reports

Wolf Minerals – Company Background

- **Project Portfolio**

WLF floated on the ASX in February 2007 on the back of several grass roots exploration properties in eastern Australia. WLF subsequently acquired the Hemerdon assets which have been the company's main focus since.

- **Capital Structure**

The Company floated on 23.5M shares and has retained a relatively tight capital structure with 84M shares currently on issue. On a fully diluted basis there are up to 111.8M shares, with option exercise prices ranging from \$0.17 to \$0.88/share.

- **Listings**

WLF initially listed on the Australian Securities Exchange in February 2007 after raising A\$3,000,000 from an issue of 15 million shares at \$0.20.

Table 14. Substantial Shareholders

Shareholder	Ownership
Resource Capital Fund V LP (undiluted)	17.3%
Traxys Projects LP	10.0%
RMB	3.8%
Board and Management	~15%
Top 20 Shareholders	51.8%

Source: Blackswan Equities, Wolf Minerals

- **Board of Directors**

Wolf's Board consists of seven senior members with extensive experience in the mining sector. Most hold a modest equity interest in WLF through shares and/or options, which reaffirms their commitment to the Company. Chris Corbett is the Board representative of major shareholder Resource Capital Funds and as such holds no personal equity stake in the company. We consider the Board and management team contributes an appropriate mix of experience and relevant qualifications and skill-sets to take the Hemerdon tungsten-tin project through the construction phase and into a successful operating mine.

Table 15. Board Members

Name	Position	Profile
John Hopkins	Non-Executive Chairman	Mr Hopkins is a lawyer with over 35 years experience as a barrister and solicitor. A Fellow of the Australian Institute of Company Directors, he has been a board member of more than a dozen public listed companies (both in Australia and Canada) across the industrial and resource sectors, through which he has gained extensive experience in the finance and development of resource projects in different jurisdictions. Previous senior positions include Chairman of Ghanaian gold miner Adamus Resources Limited.

Name	Position	Profile
Humphrey Hale	Managing Director	Mr Hale is a exploration and mining geologist with over 16 years of experience in exploration, resource development and mine feasibility roles for mining and exploration companies in various commodities. He spent five years with an exploration and mining consultancy, gaining experience in multiple commodities, before taking on management of near-mine exploration for AngloGold Ashanti, including a major feasibility study for an underground mine.
Jim Williams	Non Executive Director	Mr Williams is a mining engineer with extensive global experience in open pit and underground mining engineering over many years. Most recently he was the founding Head of Mining for Fortescue Metals Group before retiring in May 2007. He has worked in Australia, Zambia, South Africa and SE Asia, principally in bulk mining operations. He has served as mining engineer for Bechtel in Australia, principal mining consultant for Minproc Engineers and CEO of Laverton Gold. He ran his own mining consultancy for many years during which time he reviewed over 20 feasibility studies for major international banks. He is currently also a director of Cleveland Mining Company Limited.
Don Newport	Non Executive Director	Mr Newport has over 35 years of banking experience with 25 years spent in the mining and resources sector. He joined Barclays Bank in 1972 and in the mid-80s moved across to head up BZW's mining sector team, which then became Barclays Capital, the investment banking division of Barclays. He has led many significant mining corporate and project financings including base and precious metals, coal, smelters and allied infrastructure facilities both as arranger and as advisor. His most recent position was head of Standard Bank's global mining finance business. His intimate understanding of the European resource finance sector and his network of contacts there is of immense value to Wolf.
Chris Corbett	Non Executive Director	Mr Corbett is an engineer with finance qualifications with extensive experience of mine development, production and construction through his time with contractor Byrncut Mining. He has also worked for Wesfarmers Ltd in its corporate and divisional business development roles. Mr Corbett is the board representative of Wolf's principal shareholder, Resource Capital Fund V LP. He has spent the past 13 years in mining, corporate business development and investment management.

Name	Position	Profile
Jonathan Downes	Non Executive Director	Mr Downes is a geologist with over 14 years experience in the minerals industry in various geological and corporate capacities. He has experience in nickel, gold and base metals and has been closely involved with numerous private and public capital raisings. He was a founding director of Hibernia Gold (now Moly Mines) and Siberia Mining Corporation. He is currently a director of Ironbark Zinc and a non-executive director of Corazon Mining.
Adrian Byass	Non Executive Director	Mr Byass is a geologist with over 14 years experience in the minerals industry in various mining, resource estimation and mine development roles. He was a founding director of Hibernia Gold (now Moly Mines) and Siberia Mining Corporation. He is currently Managing Director of Ironbark Zinc and a non-executive director of Corazon Mining.

Source: Blackswan Equities, Wolf Minerals

▪ **Management Team**

Mr Rupert McCracken, Project Manager, has over 25 years experience in the development, construction and commissioning of mineral processing plants for engineering groups including Bechtel, Transfield and Minproc; and more recently for mining companies including Comet Resources, Ticor South Africa, BHP Billiton and prior to joining Wolf, at Resolute Mining where he successfully completed their Syama Gold Plant in Mali.

Adam Redhead (Project Engineer) was most recently with Icon Engineering and has over 15 years engineering experience, much of it in the schedule-orientated oil and gas sector.

Richard Lucas is Wolf's newly-appointed CFO and Company Secretary. Previously CFO of the Geotech Group, Richard's experience includes roles as Commercial Manager with Lihir Gold and as a Director of PWC.

Wolf Minerals Ltd (WLF)

Shares on Issue	83.9M
Market Capitalisation	\$32.5M
Year End	30-June

Equity Valuation, Price Target, 12 Month Return

Equity Valuation	A\$M	A\$/share
Hemerdon	118.0	0.64
Exploration	0.0	0.00
Hedging	0.0	0.00
Corporate	(7.0)	(0.06)
Debt	0.0	0.00
Cash	2.1	0.02
Unpaid Capital	8.52	0.08
NPV	\$121.7M	\$0.67/sh
Real Discount Rate		8.0% pa

12 Month Price Target	
NPV (P/NPV: 0.95x)	\$0.64/sh

12 Month Return	
Capital Return	82.9%
Dividend Yield	n/a
12 Month Total Return	82.9%

Production & Commodity Prices (Nominal Terms)

Key Assumptions	FY10a	FY11e	FY12e	FY13e
Tungsten (US\$/mtu)	n/a	n/a	n/a	360
Tin (US\$/t)	n/a	n/a	n/a	30,000
AUD/GBP	1.60	1.60	1.60	1.60

Hemerdon Production	FY10a	FY11e	FY12e	FY13e
Tungsten	0.00	0.00	0.00	0.00
Tin	0.00	0.00	0.00	0.00
Total Cash Cost (US\$/mtu)	n/a	n/a	n/a	n/a

Financial Ratios

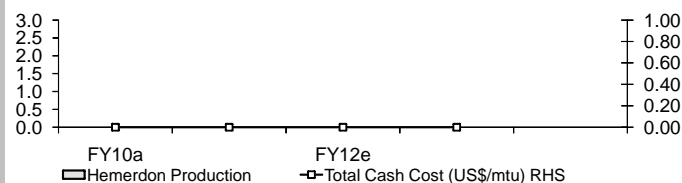
Earnings & Cash Flow Multiples	FY10a	FY11e	FY12e	FY13e
EPS	n/a	n/a	n/a	n/a
EPS Growth	n/a	n/a	n/a	n/a
P/E	n/a	n/a	n/a	n/a
EV/EBIT	n/a	n/a	n/a	n/a
EV/EBITDA	n/a	n/a	n/a	n/a
GCFPS	n/a	n/a	n/a	n/a
P/GCF	n/a	n/a	n/a	n/a
FCFPS	n/a	n/a	n/a	n/a
P/FCF	n/a	n/a	n/a	n/a

Balance Sheet

	FY10a	FY11e	FY12e	FY13e
Gearing (Debt/Equity)	0.6%	0.2%	0.0%	44.1%
Gearing (Net Debt/Equity)	-27.8%	-35.8%	-41.0%	34.1%
EBIT Interest Cover	n/a	n/a	n/a	n/a
ROE	n/a	n/a	n/a	n/a
ROA	n/a	n/a	n/a	n/a
NTA Per Share	22.5¢	12.1¢	34.9¢	34.0¢

Dividends

	FY10a	FY11e	FY12e	FY13e
Dividend Per Share	n/a	n/a	n/a	n/a
Dividend Yield	n/a	n/a	n/a	n/a
Dividend Franking	n/a	n/a	n/a	n/a
Dividend Payout Ratio	n/a	n/a	n/a	n/a



Analyst: Tony Lofthouse | +61 8 9346 0315 | tlofthouse@blackswanequities.com.au

Recommendation: BUY

Date	26 May 2011
Share Price	\$0.35/share
12 Month Target Price	\$0.64/share

Income Statement

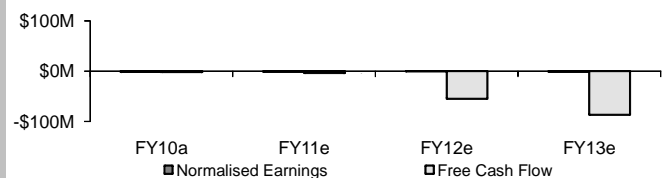
Full Year Summary (A\$M)	FY10a	FY11e	FY12e	FY13e
Sales Revenue	0.0	0.0	0.0	0.0
EBITDA	(1.8)	(1.3)	(0.3)	(1.1)
Depreciation & Amortisation	(0.0)	(0.0)	0.0	0.0
EBIT	(1.8)	(1.3)	(0.3)	(1.1)
Net Interest Expense	0.0	0.0	0.0	0.0
Profit Before Tax	(1.8)	(1.3)	(0.3)	(1.1)
Income Tax Expense	0.3	0.0	0.0	0.0
Underlying NPAT	(1.5)	(1.3)	(0.3)	(1.1)
Abnormal Items	0.0	0.0	0.0	0.0
Minority Interests	0.0	0.0	0.0	0.0
Reported NPAT	(1.5)	(1.3)	(0.3)	(1.1)
Normalised Earnings	(1.5)	(1.3)	(0.3)	(1.1)

Cash Flow Statement

Full Year Summary (A\$M)	FY10a	FY11e	FY12e	FY13e
EBITDA	(1.8)	(1.3)	(0.3)	(1.1)
Inc/(dec) in Working Capital	0.1	(0.5)	0.0	1.2
Exploration & Other Items	1.2	(0.1)	0.0	(0.8)
Operating Cash Flow	(0.5)	(1.9)	(0.3)	(0.7)
Capital Expenditure	(1.4)	(1.8)	(54.5)	(85.9)
Other		(0.0)	0.0	0.0
Free Cash Flow	(1.8)	(3.7)	(54.8)	(86.6)
Equity Raised	3.8	5.3	93.5	7.0
Dividends Paid	0.0	0.0	0.0	0.0
Inc/(Dec) in Borrowings	0.0	(0.0)	0.0	48.2
Financing Cash Flow	3.8	5.2	93.5	55.1
Effects of Exchange Rates		0.0		
Movement in Net Cash	1.9	1.5	38.7	(31.5)
Cash at End Period	2.1	3.7	42.4	10.9
Net Cash/(Debt)	2.1	3.6	42.4	(37.3)

Balance Sheet

Full Year Summary (A\$M)	FY10a	FY11e	FY12e	FY13e
Cash	2.1	3.7	42.4	10.9
Receivables	0.1	0.2	0.2	0.2
Inventory	0.0	0.0	0.0	0.8
Property, Plant & Equipment	0.7	0.7	16.5	60.7
Exploration Expenditure	5.2	5.9	20.9	52.1
Mine Development		0.0	4.8	13.5
Other		0.0	19.0	20.7
Total Assets	8.2	10.5	103.7	158.9
Payables	0.7	0.3	0.3	1.4
Debt	0.0	0.0	0.0	48.2
Provisions	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0
Total Liabilities	0.7	0.3	0.3	49.6
Net Assets	7.5	10.2	103.4	109.3
Shareholders' Equity	10.3	15.6	109.1	116.1
Reserves	1.4	0.2	0.2	0.2
Retained Profits	(4.2)	(5.5)	(5.9)	(6.9)
Minority Interests		0.0	0.0	0.0
Total Shareholders' Equity	7.5	10.2	103.4	109.3



Sales		Email	Telephone
Michael Bartley	Investment Advisor	mbartley@blackswanequities.com.au	+61 8 9346 0352
Brian Bates	Head of Retail Desk - Senior Investment Advisor	bbates@blackswanequities.com.au	+61 8 9346 0314
Paul Berson	Senior Investment Advisor	pberson@blackswanequities.com.au	+61 8 9346 0328
Rebecca Bugg	Dealers' Assistant	rbugg@blackswanequities.com.au	+61 8 9346 0345
Michael Bowden	Senior Investment Advisor	mbowden@blackswanequities.com.au	+61 8 9346 0307
James Clement	Institutional Investment Advisor	jclement@blackswanequities.com.au	+61 8 9346 0347
Paul Cooper	Investment Advisor	pcooper@blackswanequities.com.au	+61 8 9346 0316
Nick Dempster	Senior Investment Advisor	ndempster@blackswanequities.com.au	+61 8 9346 0357
Phil Grant	Senior Investment Advisor	pgrant@blackswanequities.com.au	+61 8 9346 0306
Tony Kenny	Executive Director - Senior Investment Advisor	tkenny@blackswanequities.com.au	+61 8 9346 0302
Guy Lyons	Institutional Investment Advisor	glyons@blackswanequities.com.au	+61 8 9346 0331
Tim Lyons	Executive Chairman	tlyons@blackswanequities.com.au	+61 8 9346 0324
Jamie Mann	Senior Investment Advisor	jmann@blackswanequities.com.au	+61 8 9346 0301
Elise Ntoumenopoulos	Dealers' Assistant	entoumenopoulos@blackswanequities.com.au	+61 8 9346 0330
Rob Pass	Investment Advisor	rpass@blackswanequities.com.au	+61 8 9346 0370
Ben Rattigan	Investment Advisor	brattigan@blackswanequities.com.au	+61 8 9346 0323
Duncan Relf	Dealers' Assistant	drelf@blackswanequities.com.au	+61 8 9346 0322
Jessica Ridley	Executive Assistant	jridley@blackswanequities.com.au	+61 8 9346 0313
Tim Weir	Executive Director - Senior Investment Advisor	tweir@blackswanequities.com.au	+61 8 9346 0303
Steve Wood	Senior Investment Advisor	swood@blackswanequities.com.au	+61 8 9346 0305
Research		Email	Telephone
Tony Lofthouse	Research Analyst - Resources	tlofthouse@blackswanequities.com.au	+61 8 9346 0315
Rob Martino	Research Analyst - Industrials	rmartino@blackswanequities.com.au	+61 8 9346 0317
Mark Savich	Research Analyst - Resources	msavich@blackswanequities.com.au	+61 8 9346 0320
Peter Tu	Research Analyst - Resources	ptu@blackswanequities.com.au	+61 8 9346 0321
Corporate		Email	Telephone
Alex Eastwood	Senior Corporate Advisor	aeastwood@blackswanequities.com.au	+61 8 9346 0355
Tom Loh	Senior Corporate Advisor	tloh@blackswanequities.com.au	+61 8 9346 0353
Administration		Email	Telephone
Tracey Everitt	Compliance Executive	teveritt@blackswanequities.com.au	+61 8 9346 0327
Karen Kernaghan	Manager - Portfolio Administration	kkernaghan@blackswanequities.com.au	+61 8 9346 0371
Grant Ormerod	Chief Operating Officer - Financial Controller	gormerod@blackswanequities.com.au	+61 8 9346 0341
Amanda Cabban	Receptionist	acabban@blackswanequities.com.au	+61 8 9346 0338

Research Disclaimer

This research has been prepared by Blackswan Equities Ltd ABN 26 129 623 383 ("Blackswan"), holder of Australian Financial Services Licence No. 331703, for exclusive use by its clients. This document must not be copied either in whole or in part or distributed to any other person. If you are not the intended recipient, you must not use or disclose the information in this research in any way. Nothing in this research shall be construed as a solicitation to buy or sell any security or product, or to engage in or refrain from engaging in any transaction. This research contains general advice only and does not take into account your objectives, financial situation or needs.

This report is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction outside Australia where such distribution or availability or use would be contrary to law or regulation or which would subject Blackswan to any registration or licensing requirement within such jurisdiction.

Before acting on this general advice you should consider the appropriateness of the advice having regard to your situation. We recommend you obtain financial, legal and taxation advice before making any financial investment decision. The price of securities can and does fluctuate. This research is based on information obtained from external sources which we believe to be reliable however Blackswan makes no representation or warranty that it is accurate, complete or up to date. All historical information is sourced from ASX company releases. Opinions expressed are subject to change without notice.

No officer, employee, or agent of Blackswan accepts any liability whatsoever for any direct, indirect, consequential or other loss arising from any use of this research and/or further communication in relation to this research. Blackswan officers, employees, or agents may have interests in the financial products referred to in this report by acting in various roles including adviser, underwriter or dealer, arranger, holder of principal positions, or broker. Further, they may buy or sell those securities as principal or agent and, as such, may effect transactions which are not consistent with the recommendations (if any) in this research. Blackswan or its associates may receive fees, brokerage or commissions for acting in those capacities and the reader should assume this is the case. Blackswan both managed and acted as corporate advisor to Wolf Minerals Limited in relation to the A\$2 million capital raising and subsequent share split and bonus option issue in September 2010 and the A\$3.4 million capital raising in March 2011, for which it received fees at agreed commercial rates. Blackswan was also issued with 500,000, 2 year options exercisable at \$0.40 per share (23.5 cents post split) and 500,000, 2 year options exercisable at \$0.50 per share (29.4 cents post split). Blackswan as principal, its directors and staff may have participated in the capital raising.

This research accurately reflects the personal views of the responsible analyst about the subject securities. The responsible analyst is employed by Blackswan under Australian Financial Services Licence No. 331703 and receives compensation based on overall revenues of Blackswan. Analyst disclosure of interests relevant to this report: the analyst holds shares in Wolf Minerals Ltd.