



**Breakaway
Research**

September 2014

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Company Information

ASX Code	WRM
Share Price	A\$0.02
Ord Shares + rights	190.6m
Market Cap A\$	A\$3.8m
Cash (31 June 14)	A\$1.9m
Total Debt	A\$0m
Enterprise Value	A\$1.9m

Directors & Management

Non-Exec Chairman	Brian Phillips
Managing Director	Geoff Lowe
Non-Executive Director	Peter Lester
Exploration Manager	Rohan Worland

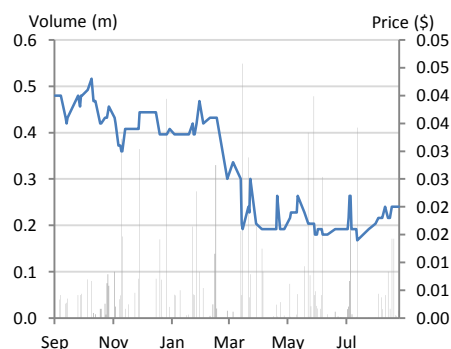
Substantial Share Holders

Avalon Ventures Corp	42.0%
Greenstone Property	8.1%
Titeline Services Pty td	3.2%
Silverstone Investment	2.7%
Top 20	70%

Company Details

Address	24 Skipton Street Ballarat Victoria VIC 3350
Phone	+613 5331 4644
Web	www.whiterockminerals.com.au

1 Year Price Chart



White Rock Minerals (WRM)

*Set to test the highly prospective
copper porphyry target*

Recommendation: Speculative BUY

Company Update

Key Points

- **White Rock to test 'company making' copper porphyry potential at Mt Carrington**
- **Significant widths of near surface copper mineralisation in quartz-sulphide veins interpreted to control the margins of the porphyry at depth**
- **A\$ 200,000 grant by NSW government supplements A\$1 million exploration budget over next 12 months**
- **NSW grant provides confidence of WRM's geological interpretation**
- **Updated Scoping Study demonstrates robust cashflow achievable by developing gold dominant resources first**
- **Significant exploration potential with ~70 targets still to be tested**

White Rock has already identified meaningful open pitable gold and silver resources at its Mt Carrington project, however, the Company is now set to test a highly prospective copper porphyry target at depth, below the identified gold-silver resources. A \$200k grant by the NSW government provides further confidence as to the calibre of the target and will supplement the \$1 million budget already allocated by the Company.

Investment Thesis

White Rock Minerals was recently awarded a A\$200,000 grant by the NSW government to assist with the exploration of a highly prospective copper porphyry target at the Mt Carrington project. Previous drilling intersected significant widths of near surface copper mineralisation in quartz sulphide veins. These veins are hosted by structures interpreted to control the margins of a potentially significant porphyry ore body at depth.

White Rock has allocated A\$1 million (plus the A\$200,000 grant) to explore the porphyry target which will consist of deep penetrating geophysics and gravity surveys and a 4,500m drill program of 4-6 drill holes (reaching a maxim depth of 1,400m) to be carried out over the next 12 months. A new copper discovery within the licence area would be a 'game changer' for the Company.

White Rock also recently released an updated Scoping Study, designed to assess the viability of initially developing the two gold dominant, open pitable deposits of Strauss and Kylo within the Mt Carrington central Mining Leases. The study has highlighted robust cashflow potential based on an initial 3.4 year operation processing 0.8Mtpa of ore for production of ~30,000oz of gold per annum. The low CAPEX estimate of A\$20.6M and an assumed average realised gold price of A\$1400/oz support a pre-tax NPV₁₀ of A\$15.5M (A\$0.08/share).



Project Review

The Mt Carrington Project is located on the New England Fold Belt in northern New South Wales, close to the regional town centres of Casino and Tenterfield and adjacent to the Bruxner Highway.

Located on the New England Fold Belt, close to existing infrastructure



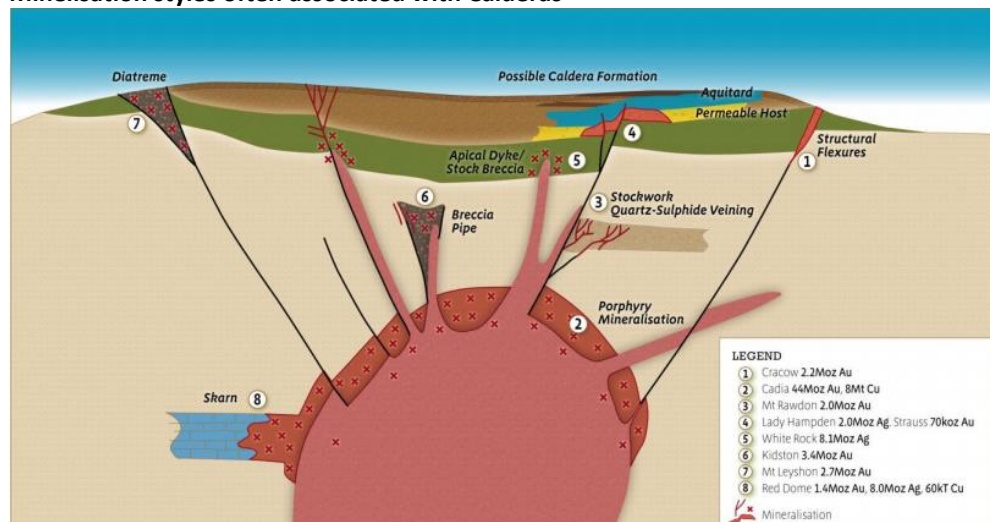
Source: White Rock Minerals

Caldera's are often sites of intense geothermal activity

White Rock's project is located over Permian Drake Volcanics and covers the 'Drake Quiet Zone' which has been interpreted to be a collapsed volcanic caldera. Caldera's are often sites of intense geothermal activity, making them potential sites to host ore deposits. Examples include the Emperor Gold Mine in the Tavua Caldera (Fiji, +10M oz Au), Creede (Colorado, 80Moz Ag) and Round Mountain (Nevada, 10Moz Au).

The image below illustrates a 'collapsed caldera' with associated mineralisation styles and relative locations of example deposits.

Mineralisation styles often associated with Calderas



Source: White Rock Minerals



The 'Drake Quiet Zone' caldera has a diameter of ~20km and hosts multiple targets prospective for gold, silver, copper and zinc. The mineralised zones exhibit a broad mineral zonation, with Au-Cu at the hottest central part of the caldera, grading through gold dominant mineralisation and then to silver dominant at the cooler periphery. The zonation implies increasing temperature of ore fluids and proximity to a potential porphyry source at depth.

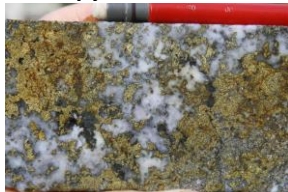
Historical mining targeted the copper rich quartz veins

Historical mining carried out in the 1800's focused on open pit and shallow underground mining, primarily targeting copper from quartz-chalcopyrite veins. Relatively shallow drill campaigns within the Central Mt Carrington leases have intersected zones of supergene copper mineralisation as well as quartz-chalcopyrite veins, reinforcing the copper prospectivity at depth. Drill results include:

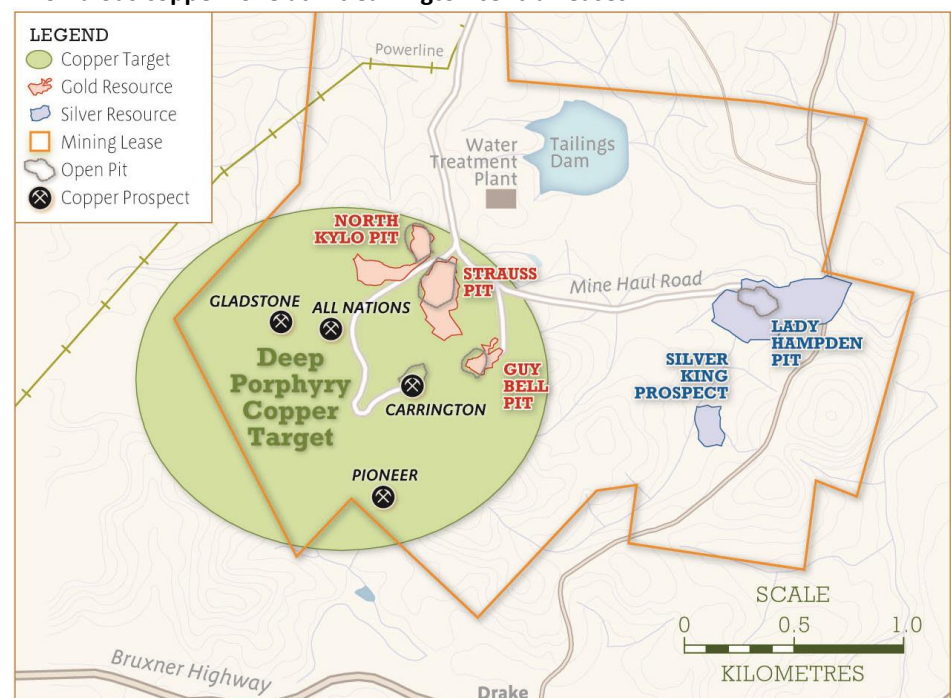
- 45m @ 0.88% Cu from 40m (supergene, Gladstone)
- 18.6m @ 5.9% Cu from 52m (primary vein, All Nations)
- 10.1m @ 6.3% Cu from 88.0m (primary vein, All Nations)

Anomalous copper zone at Mt Carrington central leases

Primary quartz-chalcopyrite vein



Source: White Rock Minerals



Source: White Rock Minerals

The quartz-chalcopyrite veins themselves represent high grade copper targets however due to the size and frequency of these veins (due to limited drilling campaigns), they were never prioritised by previous explorers.

Significant copper porphyry potential at depth

The revised geological interpretation of the Mt Carrington lease provides a strong case to test for a deeper porphyry source, however, Breakaway is mindful the porphyry source (if identified) may be at considerable depth (>500m) which may affect the economic viability of mining. Significant potential also exists for identification of further high grade Cu-Au veins extending upward from the porphyry source, providing a valuable secondary target for the Company.



Upcoming Drilling Campaigns

Majority of drilling within 100m from surface

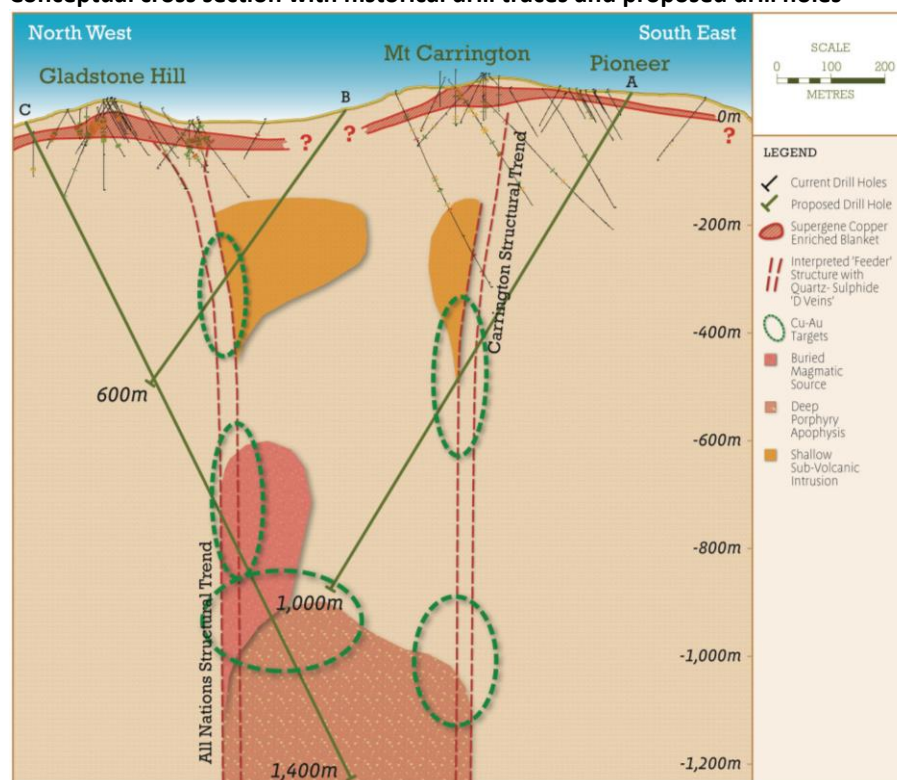
WRM receive A\$200k grant to test porphyry target

Upcoming 'deep penetrating' geophysics and 4,500m drill program planned

The majority of the drilling carried out to date within the licence area has been within the 100m depth range, however, limited drilling has reached ~400m depth.

White Rock was recently awarded a A\$200,000 grant by the NSW government to test the copper (and gold) potential at depth within the 500m-1000m zone, below Mt Carrington's existing shallow gold and silver resource base. This grant supports the existing A\$1 million exploration budget already allocated by the Company.

Conceptual cross section with historical drill traces and proposed drill holes



Source: White Rock Minerals

Phase 1 of exploration will see White Rock undertake a 'deep penetrating geophysics program' designed to better define drill targets ahead of a second phase 4,500m drill program of 4-6 holes. These two phases are expected to be carried out over the next 12 months.

Breakaway's View

The discovery of a major copper porphyry system at depth within the already granted Mt Carrington Mining Lease would be a game changer for White Rock, significantly enhancing the calibre of the project.

Discovery of copper at depth would be a 'game changer'

The geological interpretation appears highly plausible in Breakaway's view, however, we are further encouraged by the NSW grant of A\$200,000 from which White Rock was selected following rigorous independent assessment and was selected as a preferred applicant amongst numerous explorers within NSW.



Updated (2014) Scoping Study – Gold and Silver

In 2012, White Rock undertook a Scoping Study designed to assess the economics of mining and processing the gold and silver resources already identified at Mt Carrington.

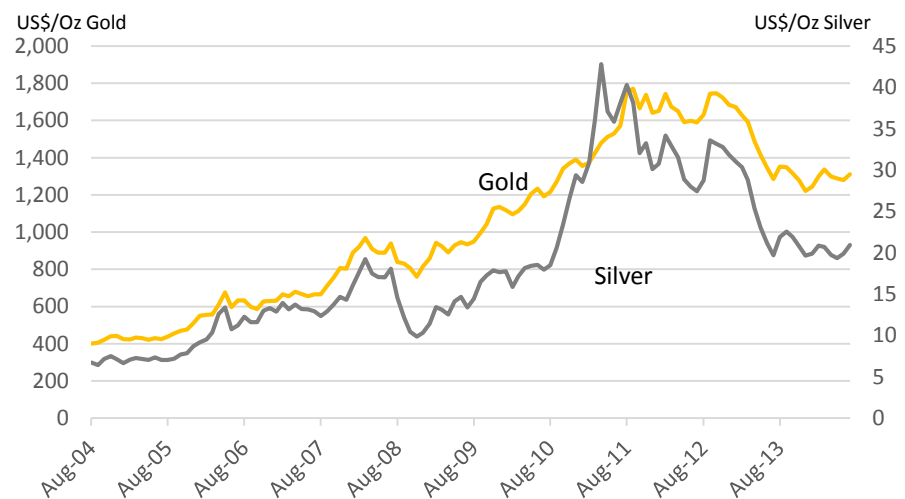
Meaningful gold dominant and silver dominant deposits already identified

The current JORC Resource incorporates eight epithermal gold-silver resource zones having been delineated in two groups; a silver rich group which contains 12.2Mt @ 58g/t Ag (22.8Moz Ag, 64koz Au in four deposits) and a gold rich group which contains 6.6Mt @ 1.3g/t Au (275koz Au, 639koz Ag in four deposits).

The Scoping Study assumed a gold price of \$1,500/oz and a silver price of \$30/oz which were appropriate price estimates at the time. However, since 2012 gold has softened from a high of US\$1,746/oz to a current price of ~US\$1210/oz (a decrease of 30%) while silver has retreated from a 2012 high of US\$33.20/oz to a current price of US\$17.50/oz (a decrease of 47%).

10 Year Historical Gold and Silver Price Chart – US\$/oz

Silver price has corrected further than the gold price



Source: Breakaway Research and Index Mundi

The pronounced correction in the silver price has provided the impetus for White Rock to revise the development approach of the Mt Carrington project which will now likely proceed in a 3 stage process:

Development now planned in 3 stages

Stage 1:

- Develop the higher confidence gold resources at Strauss and Kylo first
- Resource of 2.7Mt @ 1.4g/t Au, 3g/t Ag for 122koz Au and 260koz Ag (66% Indicated, 34% Inferred)
- Envisaged 0.8Mtpa plant to produce ~30kozpa of gold @ C1 cost of ~A\$875/oz
- Significant infrastructure and Mining Leases in place substantially reduces project risk, upfront capital costs and lead time to production

Stage 2:

- Development of lower confidence gold resources at Guy Bell, Red Rock
- 1.8Mt @ 1.2g/t Au for 67koz (Inferred)
- Minimal development required (haul roads) – will use the same processing route as Stage 1
- Infill drilling required to upgrade resources to reserves



Stage 3:

- Development of the silver resources
- Optimised in-pit resources of 2.9Mt @ 86g/t Ag (8Moz) & 0.4g/t Au (37koz)
- Modest plant reconfiguration and site development
- Infill drilling required to upgrade resource to reserves
- Flexibility to commence silver production sooner on satisfactory silver price

Stage 1

Stage 1 focuses on the development of gold resources first

White Rock initially envisage developing a low cost, open pit, gold-only operation with development focused on the gold rich Strauss and Kylo deposits, which together host 4.8Mt @1.4g/t Au and 2.8g/t Ag (~60% of the Company's total gold resource).

Strauss and Kylo JORC Resource

Resource Category	Deposit	Tonnes	Gold grade (g/t)	Gold ounces	Silver grade (g/t)	Silver ounces
Indicated	Strauss	1,240,000	1.4	57,000	3.8	153,000
	Kylo	1,590,000	1.2	59,000	2.6	133,000
	Sub-Total	2,830,000	1.3	116,000	3.1	286,000
Inferred	Strauss	1,260,000	1.4	56,000	2.6	104,000
	Kylo	760,000	1.5	35,000	1.8	43,000
	Sub-Total	2,020,000	1.4	91,000	2.3	147,000
Total	Strauss	2,500,000	1.4	113,000	3.2	257,000
	Kylo	2,350,000	1.3	95,000	2.3	176,000
	Total	4,850,000	1.4	208,000	2.8	433,000

Source: White Rock Minerals

Strauss and Kylo host ~60% of total gold resource

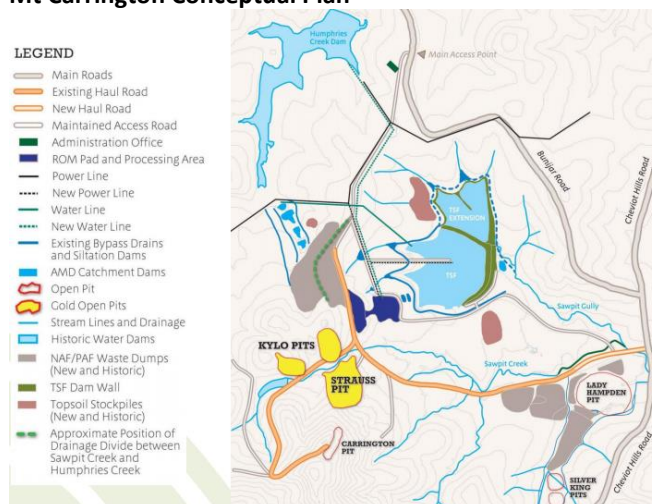
A pit optimisation study (assuming a gold price of A\$1400/oz and a silver price of A\$22/oz) demonstrated ~2.7Mt @ 1.39g/t Au and 2.96g/t Ag of ore would be available for processing, with an overall strip ratio of 1.35:1. It is, however, important to note that the optimisation study was carried out on indicated and inferred resources and as such, will require additional drilling data to support conversion to 'ore reserves'.

Mining, Processing and Metallurgy

Targeting gold production of 30,000ozpa

White Rock envisage a 0.8Mtpa processing plant, giving 'Stage 1' of development a mine life of 3.4 years to produce a total of 93,000oz of gold.

Mt Carrington Conceptual Plan



Source: White Rock Minerals

Substantial infrastructure already exists



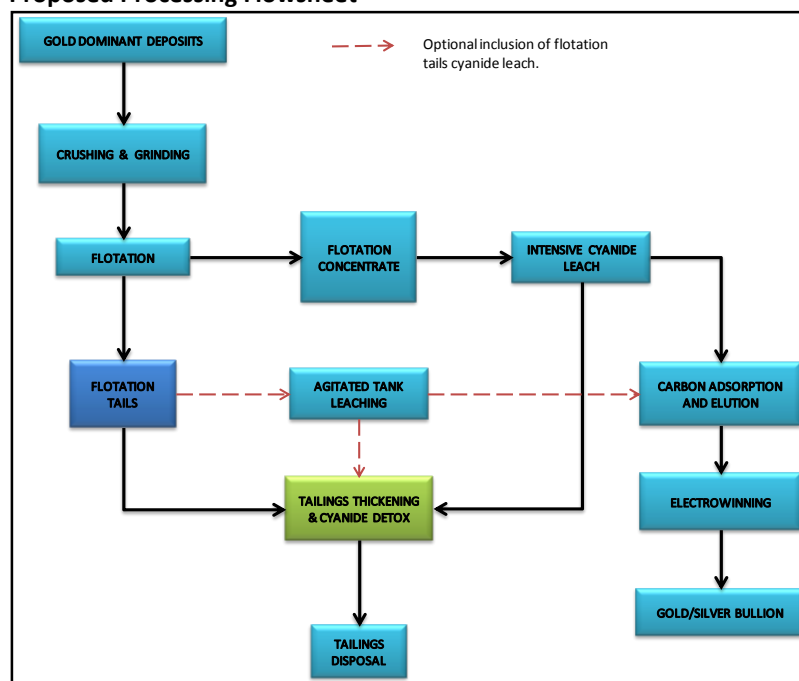
The surface oxide portions of the Strauss and Kylo deposits were both mined in the 1980's, leaving the current sulphide resource exposed at surface. Metallurgical testwork and flowsheet studies undertaken to date indicate a relatively straight forward milling and flotation circuit would be required to produce a rougher concentrate which would be subsequently re-ground and treated in an intensive leach process to recover the precious metals. The gold and silver recoveries using this processing route are estimated at 76% and 34% respectively. While silver recoveries are low, the grade of silver ore entering the plant is low and as such, recovery of silver concentrate constitutes a negligible portion of the initial 'Stage 1' revenue.

~76% gold recovery rate anticipated

Conventional processing flowsheet

Simple modifications to process silver rich ore

Proposed Processing Flowsheet



Source: White Rock Minerals

Importantly, the flow sheet is suitable for the future development of the Guy Bell and Red Rock gold deposits and allows for relatively simple modifications to treat ore from the silver rich deposit of White Rock, Lady Hampden and Silver King, where the silver recoveries are significantly better.

The total Stage 1 cash costs are estimated to be A\$30.52/tonne milled (or A\$875/oz gold produced) as summarised in the table below:

Costs equate to A\$875/oz gold

Item	Cost per tonne milled
Mining	~\$10.00/t milled
Processing	~\$13.73/t milled
Administration	~\$2.11/t milled
Labour	~\$4.68/t milled
Total C1 costs	~\$30.52/t milled

Source: White Rock Minerals

Contract mining will likely ensue

White Rock envisage utilising contract miners to operate the mine with an estimated work force of ~40 staff, serviced by the nearby townships.



Capital Costs

Low CAPEX estimate of A\$20.6M, supported by existing infrastructure

White Rock estimate total 'Stage 1' CAPEX of ~A\$20.6M would be required for additional site infrastructure and pre mine development. This low CAPEX estimate is supported by the significant infrastructure which already exists, providing an estimated savings of A\$20M.

Upfront CAPEX

Item	CAPEX
Processing Plant (0.8Mtpa)	~\$14.5M
Mine Pre-development	~\$1.2M
Tailings Storage Facility upgrade	~\$1.8M
Site Infrastructure and first fills	~\$3.1M
Total	~\$20.6M

Source: White Rock Minerals

Opportunity exists for further cost savings for the Company should a suitable second hand plant be identified (or if a new plant is purchased outside of Australia).

Financial Summary

The economic evaluation of Stage 1 development has been carried out as part of the revised 2014 Scoping Study. The key financial outcomes of this study are outlined below:

Financial Summary pre-tax	
NPV ₁₀ (pre-tax)	A\$ 15.5M
IRR (pre-tax)	51%
Undiscounted Cash Flow (pre-tax)	A\$ 25.3M
Net Revenue	A\$ 132.2M
Total Capital Cost	A\$ 20.6M
Total Operating Cost	A\$ 83.4M
Payback (years)	1.4 years
Mine Life – Stage 1	3.4 years
C1 Cash Cost (including Ag credit; ex royalties)	A\$875/oz Au

Source: White Rock Minerals

*Pre tax NPV₁₀
A\$15.5M
(A\$0.08/share)*

NPV is for Stage 1 only

The pre-tax NPV₁₀ of 'Stage 1' is A\$15.5M and assumes a gold price of A\$1,400/oz (vs. current gold price of A\$1,360/oz). This valuation however, makes no allowance for the other five defined deposits and the significant exploration potential which still exists (copper porphyry target and the +70 additional 'shallow' targets identified).

Breakaway's View

Feasibility studies likely to commence once copper porphyry target tested

White Rock's decision to revise the development approach and initially focus on production from the gold dominant resources makes perfect sense in Breakaway's view. The 2014 Scoping Study has demonstrated robust economics for a start-up 30,000ozpa gold operation at a low capital cost of ~ A\$20.6M. Importantly, as the silver price increases, silver production can be brought on stream with minimal further capital outlay.

However, given the potential scale and prospectivity of the copper porphyry target below the gold and silver resources, feasibility studies are likely to become a secondary focus until the potential of this target is better understood.



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 White Rock Minerals and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

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