



**Breakaway
Research**

October 2015

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Company Information

ASX Code	AVI
Share Price (Oct. 21, 2015)	A\$0.026
Ord Shares (inc. placement)	255.2m
1 for 2 Rights*	127.60
Options & Perf. Rights	11.0m
Market Cap (UD, inc. rights)	A\$9.95m
Cash est.	A\$1.00m
Rights cash*	A\$3.40m
Enterprise Value	A\$5.91m

*assumes full rights takeup

Directors & Management

Non-Exec Chairman	Graham Ascough
CEO & Managing Director	Malcolm Norris
Non-Exec Director	Crispin Henderson
Non-Exec Director	Don Hyma
GM – Studies and Technical Services	Ray Robinson
GM – Geology	Bruce Rohrlach
CFO & Co. Secretary	Gavin Leicht

Company Details

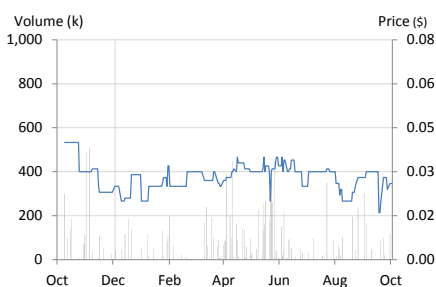
Address	9 Gardner Close Milton QLD 4064
Phone	+617 3368 9888
Web	www.avalonminerals.com.au

Significant Shareholders*

Valbonne II	11.42%
Tan Sri Abu Sahid Bin Mohamed	9.31%
Marilei International	7.69%
Phoenix Copper Limited	5.36%
Top 10	65%
Directors and Management	3.2%

*pre placement and rights

1 Year Price Chart



Source: IRESS, adjusted for share consolidation

Avalon Minerals Limited (AVI)

Solid Progress

Company Update

Recommendation: Speculative BUY

Key Points

- **Opportunity for a low capex, high grade copper start-up operation in a well proven world class mining district**
- **Scoping Study to be completed in December**
- **Drilling at Viscaria D Zone returning thick, high grade copper intersections**
- **Pipeline of highly prospective near resource and regional exploration targets**
- **Board and Management with extensive technical and operational experience**
- **Key European investors on register**
- **Rights issue currently underway**
- **Indicative risked base case valuation of \$0.12/share @ US\$3/lb Cu**

Since our February 2015 update, Avalon has continued to progress the revised Scoping Study, which is expected to be completed by the end of the year. As part of the ongoing study, the conceptual operation has been scaled down to a lower capex, 8 year, 1.2Mtpa operation, from the 10.4 year, 3.5Mtpa as presented in the August 2014 Study.

As part of the work, the Company has carried out resource expansion drilling at the Viscaria D Zone, returning excellent results, with the potential to significantly increase underground resources and extend any future mining operation. The pipeline of near resource and regional exploration targets is also prospective for additional mineralisation.

We maintain our SPECULATIVE BUY rating, with a revised base case medium term price target of \$0.12/share (using a forecast copper price of US\$3/lb, significantly higher than current levels, but aligned with forecast levels for 2018).

Key price movers will include drilling and exploration results and a positive Scoping Study.

Company Overview

Avalon is an ASX-listed minerals developer with its key project being the Viscaria Copper Project in the Kiruna mining district of northern Sweden. The Company is working towards development of the project, with a DFS expected to be completed by early 2017, and first production, of between 10,000tpa and 15,000tpa of copper concentrate in 2018, potentially coinciding with forecast improvements in copper prices.

In addition to the core project, which comprises three mineralised zones, a number of district and regional exploration licences are held, with these having excellent prospectivity, as evidenced by historic drill results that have not been followed up.



Company Update

Viscaria Copper Project Background

Introduction

Key project is the Viscaria Copper Project in northern Sweden

Current activities are concentrated on the revised Scoping Study

Avalon's key project is the Viscaria Copper Project in northern Sweden, for which the Company is working towards first production in 2018, initially with an 8-10 year, 1.2Mtpa copper only operation, producing a clean marketable concentrate. There is also the potential to produce and ship magnetite concentrate should iron ore prices improve.

Current activities are focussed on a revised Scoping Study for the copper operation, which is planned to include both open cut and underground mining. The Company expects to deliver the study by the end of 2015, with this superseding the initial 2014 study, which included the production and export of magnetite concentrate.

The project is located adjacent to LKAB's Kiruna Iron Mine and is ideally situated with respect to infrastructure. The LKAB Kiruna operations include the world's largest underground iron ore mine, a concentration plant and pelletising facilities. LKAB produced 23.1Mt of blast furnace and direct reduction pellets, and 2.1Mt of magnetite fines concentrate in 2013 from Kiruna and its other operations at Malmberget and Svappavaara. LKAB rail product 170km to Narvik (~20Mtpa) and 250km to Lulea on the Gulf of Bothnia (~5Mtpa).

Project Location Map



Source: Avalon Minerals



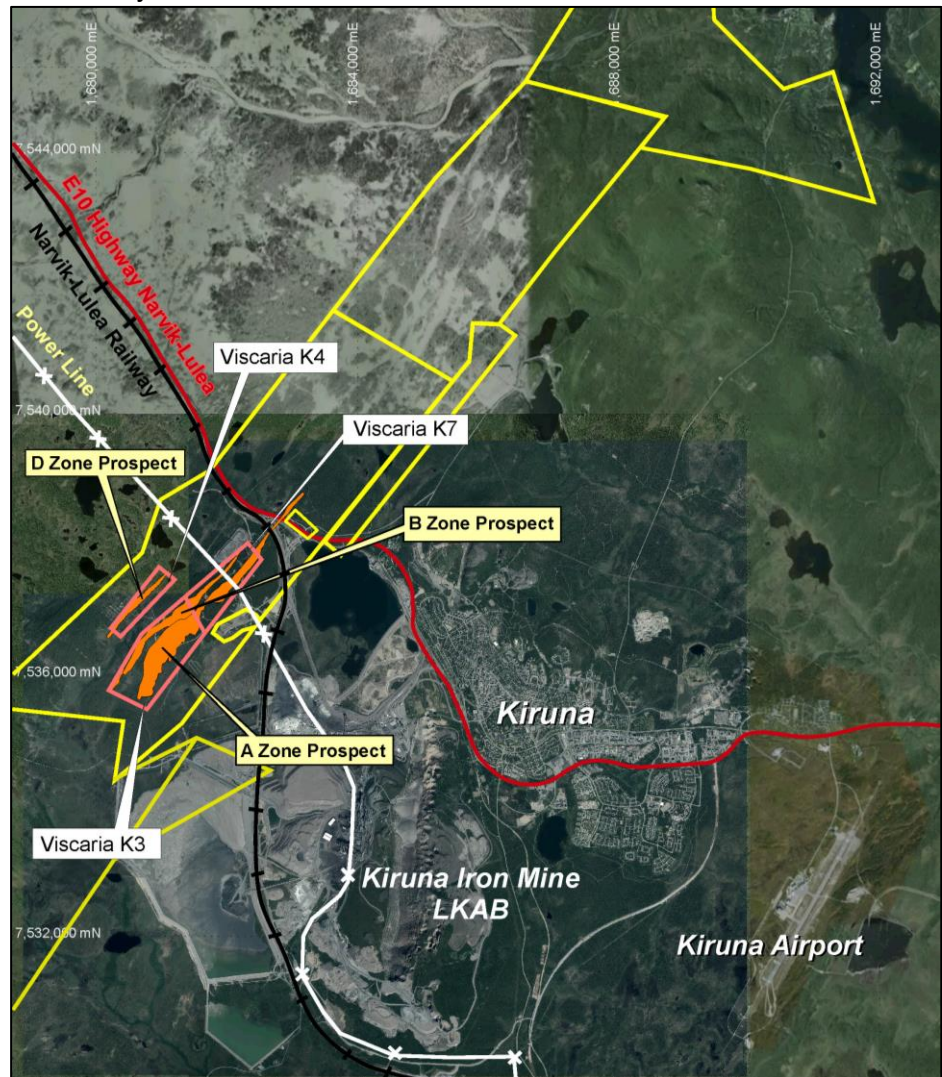
Tenure

The Viscaria Project comprises three defined resources; A, B and D Zones all located on granted Mineral Exploitation Concessions (“MEC”). The Company has recently terminated the agreement to acquire the Discovery Zone from Hannans Reward (ASX: HNR), with a \$1 million deposit now due to be refunded.

Granted MEC’s include Viscaria K3, Viscaria K4 and Viscaria K7, which cover the A, B and D Zones. K3 and K4 expire on 16/1/2037. K7 was granted subsequent to our last note, on 27th November 2014.

Viscaria Project Area

Viscaria includes three main mineralised zones, which are on Exploitation Licences



Source: Avalon Minerals

In addition twelve exploration permits are held 100% by Avalon.

Resources

JORC 2012 compliant copper resources of **54.9Mt @ 1.11% Cu** are detailed below. This does not include iron resources of **25.6Mt @ 26.5% Fe** at D Zone, which partially overlaps the copper resources. Resources are robust, with over 50% in the Measured and Indicated categories.



JORC 2012 Viscaria Copper Resources – 0.4% Copper Cut-off

Resource	Classification	Tonnage (t)	Cu Grade (%)	Cu Metal (t)
A Zone Copper	Measured	14,439,000	1.70	240,000
	Indicated	4,690,000	1.20	57,200
	Inferred	2,480,000	1.00	25,500
	Subtotal	21,609,000	1.50	322,700
B Zone Copper	Measured	123,000	1.30	1,600
	Indicated	4,118,000	0.70	29,700
	Inferred	15,410,000	0.80	118,700
	Subtotal	19,651,000	0.80	149,000
D Zone Copper	Measured	1,000,000	1.25	12,000
	Indicated	4,200,000	1.02	43,000
	Inferred	8,500,000	0.96	81,000
	Subtotal	13,600,000	1.00	136,000
Overall Cu	Measured	15,562,000	1.63	253,600
	Indicated	13,008,000	1.00	129,900
	Inferred	26,390,000	0.85	225,200
	Total	54,860,000	1.11	607,700

Source: Avalon Minerals

Current MI & I Copper Resources of 54.9Mt @ 1.11% Cu

Recent Events

Introduction

Recent work has concentrated on progressing the Scoping Study

Avalon has made considerable progress since our February 2015 update, with the Scoping Study being steadily advanced. Site work has largely been concentrated on increasing the resource base, and has included extensional diamond drilling at the Viscaria D Zone, and continuing work over a number of near resource and regional exploration targets.

In addition the Company continues to progress the development studies, with the scheduled December 2015 completion of the Scoping Study still on track. Work is also continuing on the Environmental and Social Impact Assessment (“ESIA”) for the proposed operation.

Key events (in reverse chronological order as announced to the market) include:

- Placement and rights issue (October 16, 2015)
- Viscaria ESIA and Project Planning Update (12 October, 2015)
- Termination of Discovery Zone agreement (October 9, 2015)
- High grade intersections at Viscaria D Zone (September 21, 2015)
- Assessment of exploration opportunities (September 10, 2015)
- Ongoing Viscaria D Zone drilling results
- Ongoing regional exploration results.

Placement and Rights Issue

Placement and rights issue to raise up to \$3.8m

The Company is currently undertaking a capital raising, through the placement of 14.85 million shares at \$0.027/share to raise \$401,000 (completed), and a 1 for 2 non-renounceable rights issue of 127.6 million shares at \$0.027/share, to raise a further \$3.4 million. Funds raised will be used to complete the Viscaria Scoping Study and for working capital. The rights issue has a record date of October 26, 2015, and closes on November 9, 2015.

Viscaria D Zone Drilling

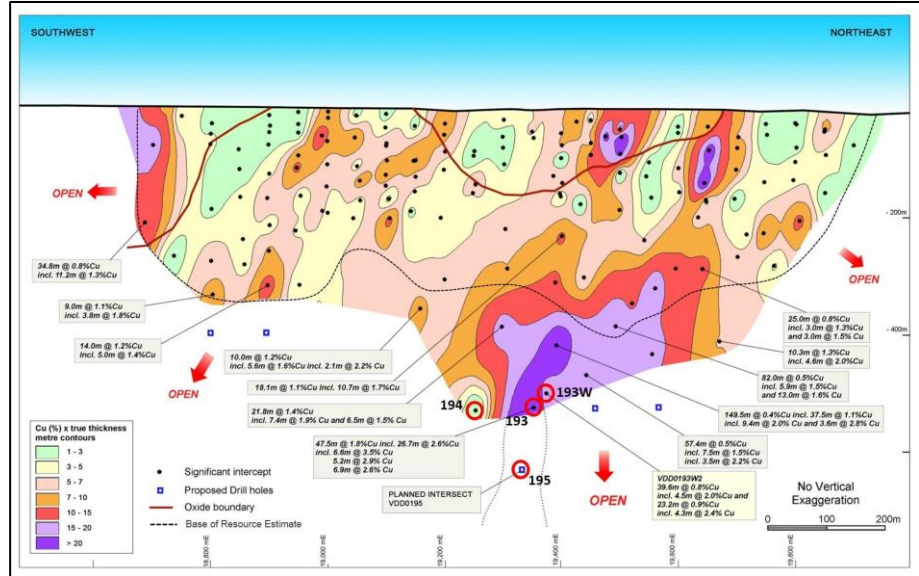
Diamond drilling in the current D Zone programme has returned very encouraging results, with the hole VDD 193 returning the highest grade intersection to date. Hole

Drilling at D Zone has returned very positive result, with mineralisation open in all directions

VDD 193W, a wedge off VDD 193 also returned a broad intersection of 39.6m @ 0.8% Cu, as detailed below, with VDD 194 defining the southern edge of the high grade shoot defined in VDD 193.

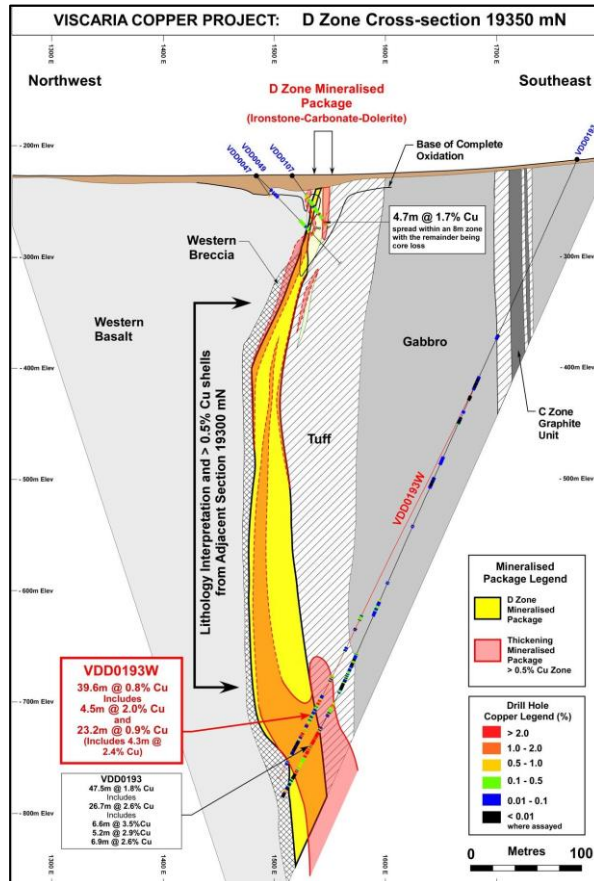
Assay results from VDD 193 returned a broad interval of 73.26m @ 1.29% Cu from 535.25m, including a number of higher grade intervals including 26.7m @ 2.6% Cu from 546.6m. Details are shown in the long section and cross section below, and true widths are estimated as being ~60% of the reported downhole widths.

D Zone long section, with 2015 drilling annotated



Source: Avalon Minerals

D Zone cross section 19350 mN



Hole VDD 193 has intersected thick, high grade copper

Source: Avalon Minerals



Importantly, the drilling indicates the potential for a thick, high grade southwest plunging zone from around 400m depth, with this open down plunge, and which could significantly add to the current D Zone Mineral Resource of 13.6Mt @ 1% Cu. Hole VDD 195 is in progress at the time of writing this report.

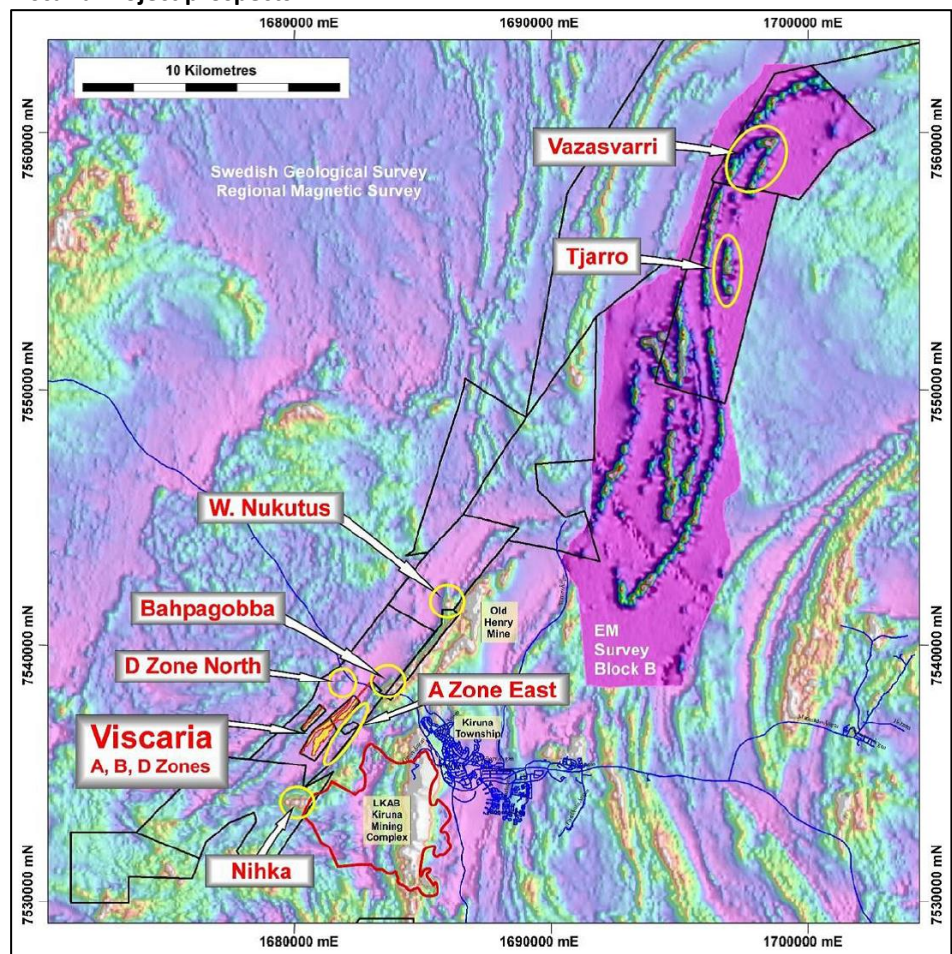
This high grade copper is hosted in the main ironstone package, and is not included in the current Mineral Resource. Mineralisation is still open in all directions, and the results of drilling indicate that there also may be the potential for additional high grade shoots.

Kiruna Greenstone Belt Exploration Potential

Work has identified a number of near resource and regional prospects

Work to date, including a data review, geophysics, auger drilling and diamond drilling has identified a number of prospective targets within the Company's tenement package, as shown in the figure below. These provide excellent potential to increase the resource inventory in the overall Viscaria Project, and hence extend the mine life for any future operation.

Viscaria Project prospects



Source: Avalon Minerals

West Nukutus Iron Oxide Copper Prospect

West Nukutus is an IOC target, comprising a large bedrock copper anomaly

West Nukutus, located some 5km northeast of Viscaria, forms a prominent north trending magnetic anomaly, oblique to the general northeast strike.

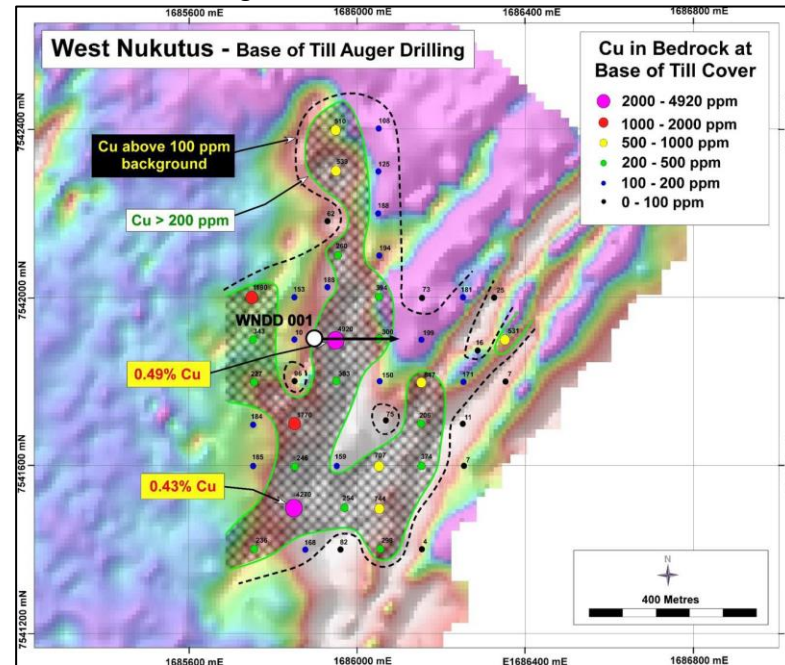
Initial work by Avalon included base of till bedrock auger drilling (the prospect is covered by up to 15m of glacial till), which returned up to 0.49% copper and anomalous gold (with visible chalcopyrite in 18 of 49 holes), and defined a +200ppm copper anomaly 1km long and 300m wide, and is open along strike and to the west.



This was followed up by drillhole WNDD001, which intersected up to 0.45% copper in a number of narrow intervals (within broader intervals of anomalous copper) in altered mafic volcanics – this targeted the peak geochemical anomaly, and was located north of the peak magnetic signature.

Further interpretation and drilling is planned to test this large iron oxide copper (“IOC”) prospect.

West Nukutus drilling

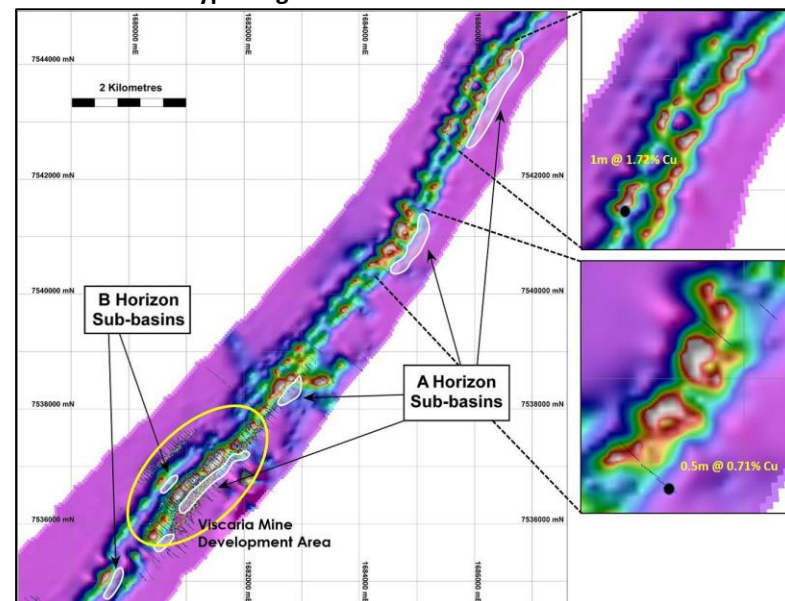


Source: Avalon Minerals

Viscaria A Zone type targets

The Viscaria A Zone, for which Avalon has a Mineral Resource of 21.6Mt @ 1.5% Cu, is a volcanogenic hosted massive sulphide (“VHMS”) deposit, which commonly occurs in clusters or camps of deposits. A zone was previously mined by Outokumpu, with 12.5 Mt @ 2.3% Cu being extracted.

Viscaria A Zone type targets



Source: Avalon Minerals



A number of VHMS targets have been identified, with similar geophysical features to Viscaria A Zone

There has only been minimal exploration for further VHMS targets in the Viscaria area – this has been partly due to a common exploration tool, electro-magnetic (“EM”) surveying, being hampered by strong responses by graphitic horizons, which mask direct responses due to massive sulphide mineralisation. However the deposits can be associated with thicker graphitic units, representing sub-basins.

Avalon has undertaken a conceptual targeting study in the immediate vicinity of A Zone and over the broader Viscaria belt, and has defined a number of targets that will be drill tested. These include interpreted sub-basins marked by adjacent high amplitude EM anomalies, including areas in which historic drilling has returned up to 1.7% copper over narrow intervals.

Nikha

Copper has been intersected in drilling at the Nikha IOC target

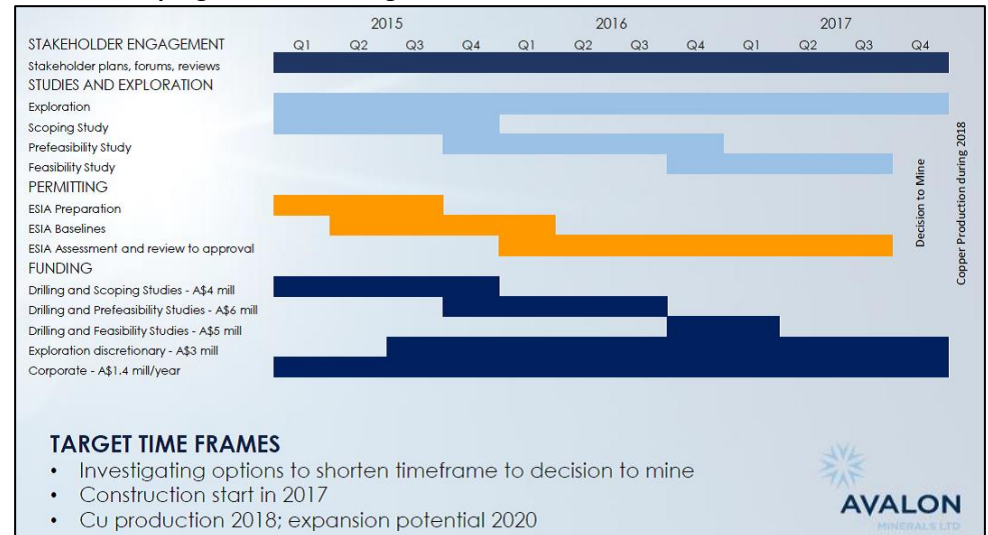
Base of till auger and diamond drilling at the Nikha target, located immediately to the south of Viscaria, has identified a potential IOC target, with geology, alteration and mineralisation typical of these styles of systems. Diamond drillhole NDD001 intersected narrow zones of up to 0.18% copper associated with sulphide veinlets with trace chalcopyrite.

Nikha is located over a magnetic anomaly similar to, but significantly larger than, that at Viscaria D Zone.

Work Programme and Budgets

The planned timetable and budget is shown in the figure below. The Company is fully funded to the end of the Scoping Study (on the basis of the announced Rights Issue), however subsequent to completion it will require an estimated further A\$13 million to complete the Definitive Feasibility Study, due in early 2017.

Avalon work programme and budget



Source: Avalon Minerals

Corporate

Subsequent to our last update, in addition to the current placement and rights issue as detailed earlier, the Company has raised \$2.51 million through placements to existing major shareholders and new professional investors. This included 83.5 million shares at \$0.025/share announced in March, and a subsequent 12m shares being placed with a new European investor at \$0.035/share, announced in June.



A number of key personnel appointments have been made. These include the appointment of Dr. Bruce Rohrlach as General Manager - Geology, and Mr. Gavin Leicht as CFO and Company Secretary. Mr. Paul Niardone has retired as a non-executive director

Valuation

We have updated our valuation of Avalon, based on a conceptual 1.2Mtpa, 8 year copper only operation, as being considered in the current revised Scoping Study (due out later this year), and a significantly smaller scale operation than that as presented in the August 2014 Scoping Study, and used in the valuation in our February 2015 update report.

The valuation is summarised in the table below – the per share valuation of \$0.117 is based on a full take up of the current rights issue.

We have a risked base case valuation of \$0.12 per share

Avalon valuation

Component Valuations	NPV (US\$m)	NPV (A\$m)	Risk Multiplier	Risked (A\$m)	Risked /Share	Method
Viscaria Pre Tax Cash Flow	\$53 m	\$76 m	34%	\$26 m	\$0.068	DCF, 8% DR
Extra Mine Life - 5 Years	\$47 m	\$67 m	10%	\$7 m	\$0.018	DCF, 8% DR
Exploration	\$5 m	\$7 m	100%	\$7 m	\$0.019	DCF, 8% DR
Consolidated Project	\$105 m	\$150 m	26%	\$40 m	\$0.104	
Cash (est)	\$3.5 m	\$5 m	100%	\$5 m	\$0.013	Current
Company Valuation	\$109 m	\$155 m	29%	\$45 m	\$0.117	
Prices	AUDUSD	0.7	Cu Price	\$3.00/lb	Shares	382.8 m

Source: Breakaway analysis

We note this is significantly lower than our previous valuation of \$0.52/share – this is due to the smaller scale of the proposed operation, and no credits for magnetite production. Magnetite production however is a possibility should iron ore prices improve

Drilling shows the potential for extra resources to be delineated

We do see upside in the base case, 8 year valuation, as represented by our extra mine life and exploration figures. Drilling at D Zone shows the potential for additional resources to be delineated, and in addition there is a reasonable chance of discoveries of economic mineralisation in the Company's exploration package. We have applied a lower risk multiplier in our valuation of potential additions to reflect the higher risk.

DCF model parameters and outcomes – 100% basis, pre-tax, pre-financing – \$US

Parameter	Result	Notes
PRODUCTION PARAMETERS		
Total Mined	9.7Mt	Includes 3.5Mt underground and 6.2Mt open cut
LOM	8.3 years	
Mining Rate	1.2 mtpa	5 years at 1.57% Cu
LOM Head Grade	1.23% Cu	Weighted average
Metallurgical Recovery	90% - Cu	
LOM Concentrate Production	428kt Cu	25% copper con
Base Case Metals Prices	Cu - \$3/lb	Forecast long term prices
Strip Ratio	6.3:1	Weighted average of three open pits
OVERALL FINANCIALS – UNGEARED, 100% BASIS – \$US		
LOM Net Smelter Return	\$637m	
Peak EBITDA	\$40m	
Total Free Operating CF	\$234 m	After initial capex
IRR	20%	
Extra Mine life FCF	\$25mpa	Average modelled life of mine FCF is \$30mpa



DCF model parameters and outcomes - continued

UNIT FINANCIALS (All Figures in \$US)		
Opex/tonne of ore	\$39	\$2.50/tonne ore mining, \$2.50/tonne waste mining, \$3.00/ROM tonne G & A, \$10.50 LOM ROM tonne processing Copper con transport – \$7/tonne Copper TC - \$70/tonne, RC - \$0.07/lb
Royalties and Taxes/t ore	\$0.70	A, B, D Zones – 1% NSR Royalty
LOM Capex/t ore	\$11	Based on estimate of \$US110 initial capex
Sustaining Capex/t ore	\$2	
Total Cost/t ore	\$53	
Revenue/t ore	\$66	Based on copper price of \$3/lb, Magnetite fines price of \$53/tonne FOB
Margin/t ore	\$12	
Copper cash cost of production	\$1.68/lb	

Source: Company, Breakaway analysis

The table below shows the sensitivity of the unrisks base case operation and additional mine life to changes in parameters. The current copper price, at US\$2.35/lb is around 20% lower than that used in our modelling.

Viscaria Project NPV sensitivity

	Copper Price	Recovery	Opex	Capex
-20%	-\$11 m	-\$3 m	\$173 m	\$141 m
-10%	\$46 m	\$50 m	\$138 m	\$121 m
0%	\$101 m	\$101 m	\$101 m	\$101 m
10%	\$157 m	\$153 m	\$65 m	\$79 m
20%	\$214 m	\$206 m	\$30 m	\$54 m

Source: Breakaway analysis

Breakaway's View

In Viscaria, Avalon has what we still consider a quality project; however it will be reliant on copper prices of at least \$3.00/lb to be viable. It is located in a known mining district with well-established infrastructure and services. Vitrally, for any possible future magnetite concentrate production there is ready access to rail and bulk commodities export ports.

The Company continues to make good progress on the Scoping Study, and the recent results from hole VDD 193 are exceptional, opening up the underground potential (and the potential for a significant resource upgrade) at Viscaria D Zone. This is supported by the pipeline of quality exploration targets that have the potential to add resources (and mine life) to any future operation.

The Company is severely discounted by the market; unfortunately in the current tight market this is a common issue with companies with advanced projects that may need considerable funding in the medium term.

The following peer comparison shows the relative market values of a number of ASX listed copper developers and producers. Here we have used EV/In-ground value as the comparison metric – this does show the capacity for value increase, however it is an indicative metric only and should be used with care.



Avalon Minerals peer group

Company	Location	Last Price AUD	EV Undiluted (\$m)	Equity Resource (Kt)	CuEq Grade (%)	IGV/t resource	EV/t Resource	EV/IGV	Key Project Stage	Metals (all resources)
Finders Resources	Indonesia	\$0.130	\$83.3	14,515	1.78%	\$128	\$5.74	4.48%	Production, Expansion	Cu, Au, Ag
Tiger Resources	DRC	\$0.076	\$237.0	69,730	1.39%	\$100	\$3.40	3.41%	Production	Cu, Co
Hillgrove Resources	South Australia	\$0.195	\$46.1	31,290	0.93%	\$67	\$1.47	2.19%	Production	Cu, Au, Ag
Avanco Resources	Brazil	\$0.063	\$86.4	35,050	2.31%	\$167	\$2.47	1.48%	Development	Cu, Au
Hot Chili	Chile	\$0.150	\$64.0	189,730	0.55%	\$40	\$0.34	0.85%	DFS	Cu, Au, Mo
Hannans Reward	Sweden	\$0.003	\$1.7	2,300	2.18%	\$157	\$0.74	0.47%	Scoping	Cu, Au
Avalon Minerals	Sweden	\$0.026	\$5.2	63,860	1.08%	\$78	\$0.08	0.10%	PFS	Cu, Au
Rex Minerals	South Australia	\$0.083	\$7.4	337,000	0.95%	\$69	\$0.02	0.03%	DFS	Cu, Au
Altona Mining	Queensland	\$0.095	\$4.0	287,900	0.61%	\$44	\$0.01	0.03%	DFS	Cu, Au

Source: Company releases, Breakaway analysis, IRESS

Funding over the next year or so is critical, and is a key risk for the Company. Following completion of the Scoping Study (which hopefully will be fully funded through the rights issue) it is estimated that additional expenditure of around A\$13 million will be required to take the Project through to a decision to mine.

However having supporting major European investors on the register may help in providing finance for upcoming activities.

Given the above we continue to rate Avalon as a medium to long term **SPECULATIVE BUY**. We view the Company as undervalued – even using highly risked project valuations, with key price drivers including positive results from drilling and exploration, progress on project studies, permitting and any recovery of sentiment in the copper market.

*We rate Avalon as a
SPECULATIVE BUY*



Analyst Verification

We, Grant Craighead and Mark Gordon, 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 Avalon 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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