



## **AVALON MINERALS**

- Key Assets:
  - Viscaria Copper Project (100%)
  - Viscaria Regional Exploration
  - HoA to acquire
     Discovery Zone from

    Hannans Reward Ltd



## **COMPANY SNAPSHOT**

### **Capital Structure**

330,873,602 shares

Share Price: \$0.085

Market Capitalisation circa A\$28M

Cash \$2.2M

### **Share Price Chart**



### **Share Register**

Abu Sahid Bin Mohamed 15.03%

Siew Mun Chuang 8.67%

Galena Fund 6.02%

Lim Heng Suan 5.33%

JP Morgan Nom 5.20%

Top 10 holders 49% of share capital

#### **Board of Directors**

Abu Sahid Bin Mohamed – Chairman

Siew Mun Chuang – Deputy Chairman

Jeremy Read – Managing Director

Seng Han Garry Goh – Non Exec Director

Paul Niardone - Non Exec Director

Siew Mun Wai - Non Exec Director



### **AVALON'S OBJECTIVES**

- Minimum of 500% increase to shareholder value within a 2-4 year time period
- Increase Viscaria Project NPV to >\$300M and IRR>30%
- Demonstrate ability to produce >25,000tpa of Cu
- Complete BFS and Permit Project for Development
- > Select development path which maximises returns for shareholders

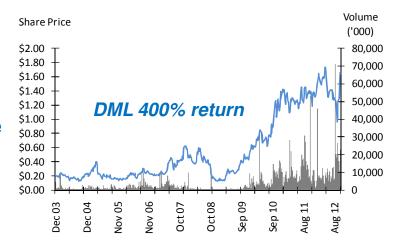


## PROVEN MANAGEMENT AND TRACK RECORD

- Jeremy Read (Managing Director) and Dr Quinton Hills (Exploration Manager) appointed in early 2012
- Demonstrated track record of exploration success and increasing shareholder wealth in small-mid cap resource companies:
  - 1. Discovery Metals (DML.ASX)
    - Founder and ex MD of DML 2003-2008;
    - Successfully secured the Boseto Project;
    - Oversaw the resource growth from 20Mt @ 1.2% Cu to 103Mt @ 1.4% Cu and financing feasibility studies;
    - Remains a Non-Executive Director; and
    - DML currently subject of a +\$800m takeover bid.

### 2. Meridian Minerals (MII.ASX)

- MD from 2009-2011;
- Secured the Lennard Shelf Lead-Zinc Project; and
- Successfully negotiated successful takeover by Chinese in late 2011.







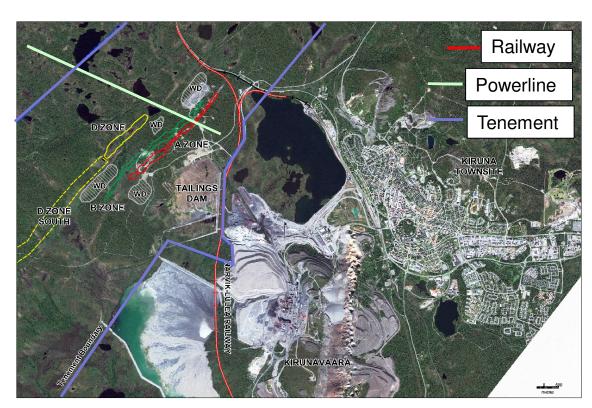
## **SWEDEN – ATTRACTIVE MINING DESTINATION**

#### **Infrastructure**

- 4km from mining centre of Kiruna (pop. 23,000)
- Nearby smelters
- Heavy haulage railway
- Ports Narvik (ice free), Luleå
- Power (3c/Kwatt hour)

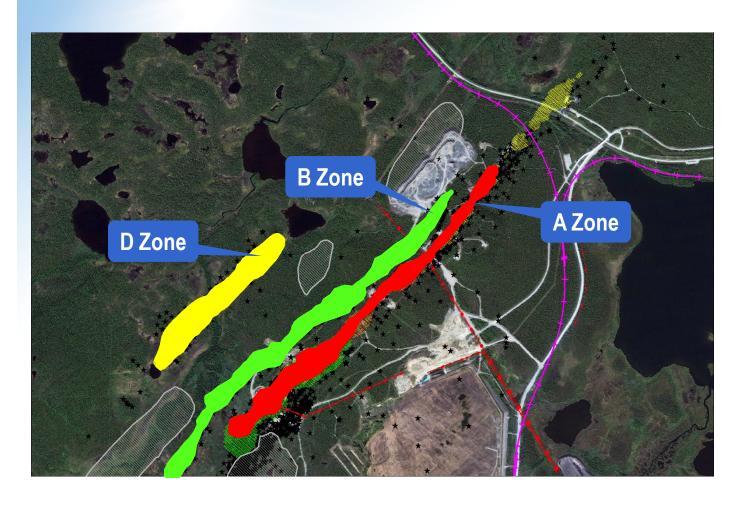
### **Sweden Sovereign Risk**

- No. 2 on Resource Stocks World Risk Survey
- No. 7 on Fraser Institute Ranking for 2011-2012
- 26.3% company tax rate decreasing to 22% with NO royalties





## **VISCARIA COPPER PROJECT RESOURCE\***



#### **A ZONE**

21.6Mt @ 1.5% Cu

Inc. 9.5Mt @ 2.7% Cu

#### **B** ZONE

19.7Mt @ 0.8% Cu

#### **D** ZONE

14.8Mt @ 26% Fe 5.4Mt @ 0.9% Cu

### **TOTAL RESOURCE**

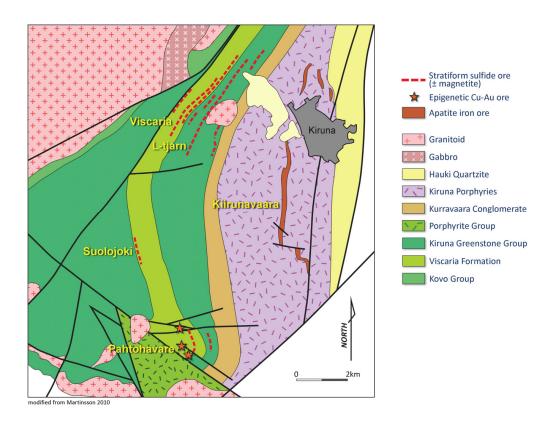
46.6Mt @ 1.0% Cu 520kt contained Cu.



<sup>\*</sup> See slide 27 for the JORC Classification of Mineral Resources

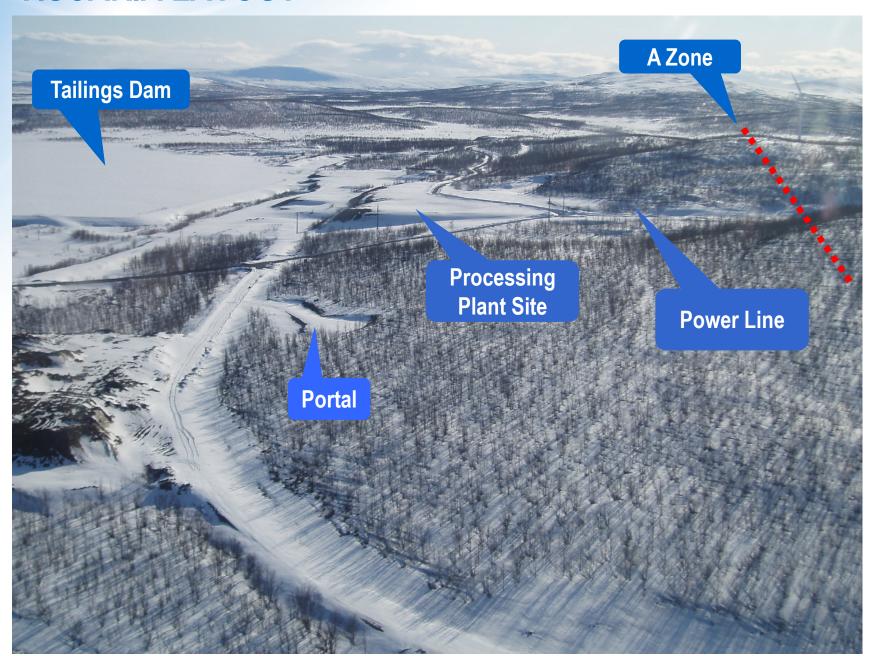
## **VISCARIA PROJECT HISTORY**

- World-class Iron Oxide Copper Gold (IOCG) and iron province.
- Discovered in the 1970's.
- 15 years historical production from 1982 to 1997 at the A Zone via combined OP/UG operation (Outokumpu). Produced a 25% concentrate.
- > Production of 12.5Mt of 2.3% Cu.
- AVI acquired Viscaria from Phelps Dodge in 2008.
- Previous focus solely on open pit potential with limited exploration done at depth.





## **VISCARIA LAYOUT**



## **EXPLORATION STRATEGY**

- ➤ Understand controls on high grade (>2% Cu) mineralisation.
- Initial 2,000m drill program has identified resource growth potential exists.
- Scoping Study has outlined technical and economic viability of open pit and underground operations.
- Intensive drill program planned to commence at A and D Zones to double high grade (>2%
  Cu) mineral resources.
- Test high priority regional exploration targets.
- > Fully permit project including environmental approvals.



### **SCOPING STUDY OUTCOMES\***

- Project is viable at \$3.25/lb Cu and US\$150/t Fe pellets.
- 'Base Case' NPV of A Zone and D Zone open pits currently stands at US\$61M.
- > Three 'development cases' expected to be underwritten by resource growth following planned 25,000m drill program and have the potential to add up to ~\$140m in value:
  - 1. 'Development Case A' D Zone open pit extension increases NPV by US\$50M
  - 2. 'Development Case B' A Zone underground adds US\$59M to NPV
  - 3. 'Development Case C' D Zone underground adds US\$28M to NPV
- Acquisition of Hannans Reward 'Discovery Zone' Mineral Resource:
  - adds 4 years to mine life
  - achieves copper production of 25,000tpa
  - adds up to \$100M to NPV
- Lower quartile C1 cash cost Cu producer after Fe credits (US\$0.61/lb).
- > Pathway defined to deliver project NPV of >\$300M following upcoming drill program.
- > 10% increase to Cu and Fe prices increases NPV to \$442M.



<sup>\*</sup> Refer to the Company's ASX release dated 11 October 2012 detailing Scoping Study Results. Development Cases A, B, and C contain exploration targets - refer to slide 29.

# SCOPING STUDY ANALYSIS (US\$3.25/lb Cu, US\$150/t Fe)

Scenario	Base Case	Devt Case A	Devt Case B	Devt Case C	Devt Case D	
Tonnage and Grade	11.0 Mt @ 0.50% Cu 22.2% Fe	15.5 Mt @ 0.46% Cu 23.1% Fe	18.5 Mt @ 0.80% Cu 19.4% Fe	20.2 Mt @ 0.86% Cu 20.0% Fe	28.2Mt @ 0.7% Cu, 24.7% Fe	
Optimum Mining Rate	2.1 Mtpa	3.0 Mtpa	3.3 Mtpa	3.1 Mtpa	3.5 Mtpa	
Mine Life	5.5 years	5.3 years	5.6 years	5.6 years	9.5 years	
Annual Copper Production	9,400 t	13,500 t	26,200	25,500	24,800	
Annual Iron Production	382,000 t	585,000	509,000	519,000	919,000	
Pre-Production Capex	USD 144 M	USD 179 M	USD 201 M	USD 212 M	USD 193M	
Life-of-Mine Capex	USD 155 M	USD 194 M	USD 315 M	USD 350 M	USD 369M	
C1 Cash Cost (net of Fe Credits)	US\$0.65/lb	US\$0.47/lb	US\$1.03/lb	US\$1.03/lb	US\$0.61/lb	
NPV <sub>10% REAL</sub>	USD 61 M	USD 111 M	USD 170 M	USD 198 M	USD 298 M	
NPV at Prices + 10%	USD 114 M	USD 186 M	USD 272 M	USD 312 M	USD 442 M	
NPV at Prices - 10%	USD 8 M	USD 37 M	USD 68 M	USD 84 M	USD 153M	



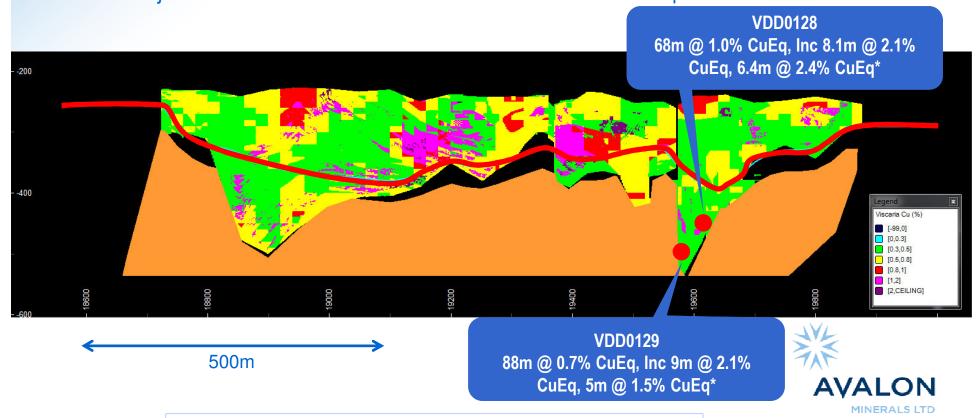
## **DEVELOPMENT CASES – RESOURCE EXTENSIONS**

Parameter	Tonnage and Grade	Mineral Resource Extension	How
Base Case	11.0 Mt @ 0.5% Cu, 22.2% Fe		
Development Case A	15.5 Mt @ 0.46% Cu, 23.1% Fe	4.5 Mt @ 0.38% Cu, 25.4% Fe	D Zone +300m strike, 35m depth
Development Case B	18.5 Mt @ 0.80% Cu, 19.4% Fe	3.0 Mt @ 2.5% Cu	Extend A Zone underground 300- 500m depth
Development Case C	20.2 Mt @ 0.86% Cu, 20.0% Fe	1.75 Mt @ 1.6% Cu, 26% Fe	Extend D Zone below 175m depth
Development Case D	28.2 Mt @ 0.70% Cu, 24.7% Fe	8 Mt @ 0.3% Cu, 36.8% Fe	Discovery Zone Acquisition



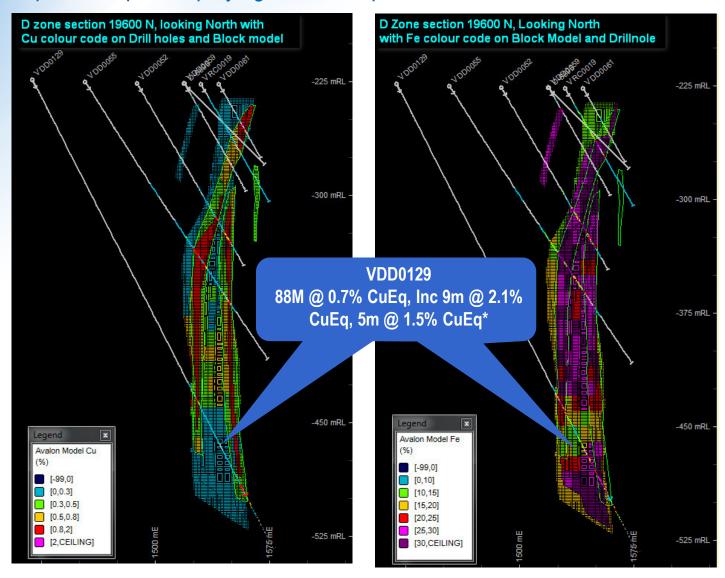
## **D ZONE EXTENSIONS (DEPTH AND STRIKE)**

- Open Pit:
  - Objective is to extend resource 300m along strike and 35m down dip.
  - Resource base will increase from 9.6Mt to 14.1Mt.
- > Underground:
  - Objective is to extend resource a further 150m further down dip.



## **D ZONE CROSS-SECTION (Copper and Iron)**

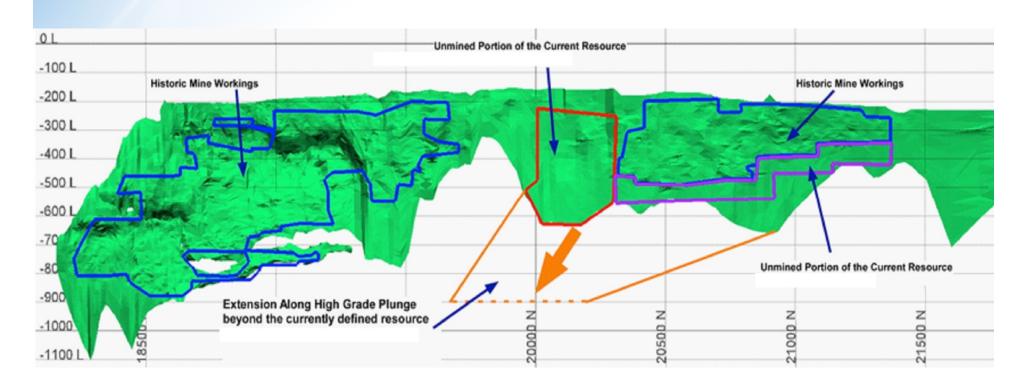
Open at depth, displaying extension potential.





## A ZONE DRILLING HAS INDICATED OPEN AT DEPTH

- A Zone Extensional Drilling 2 holes, 2 high grade intersections
- > Potential for additional mineralisation







- Discovery Zone acquisition
  - Binding HoA signed with Hannans Reward for total payment of \$4m subject to completion of due diligence
  - Current JORC of 10.9Mt @
    0.3% Cu and 38.7% Fe\*
  - 10kms (trucking distance) from Viscaria
  - Potential to add up to \$100m in value and bring overall project potential NPV to \$300m#
  - Extend proposed mine life to 9.5 years

\*See slide 27 for the JORC Classification of Mineral Resources. # See ASX release dated 11 October 2012 detailing Scoping Study Results.



## **DISCOVERY ZONE MINERALISATION SIMILAR TO D ZONE**



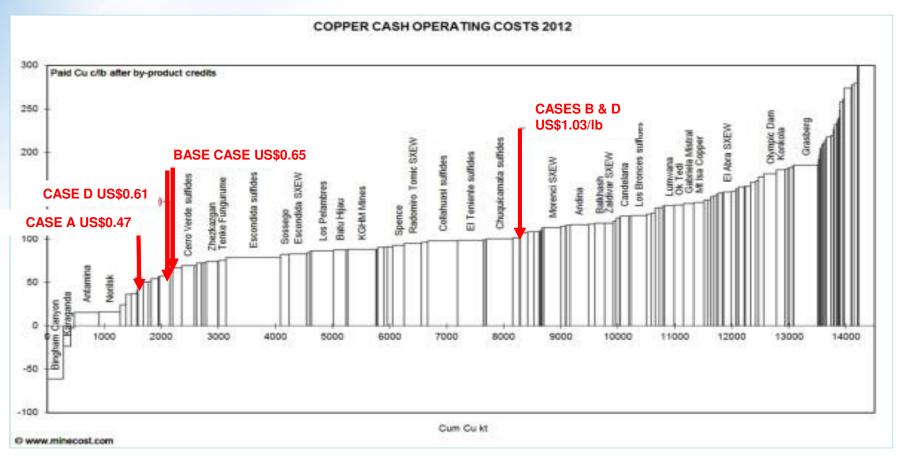
Discovery Zone Cu-Fe



D Zone Cu-Fe



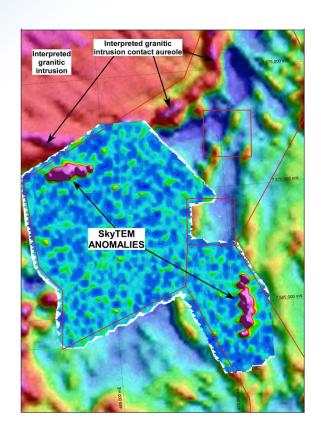
## HIGHLY COMPETITIVE C1 CASH COST PROFILE

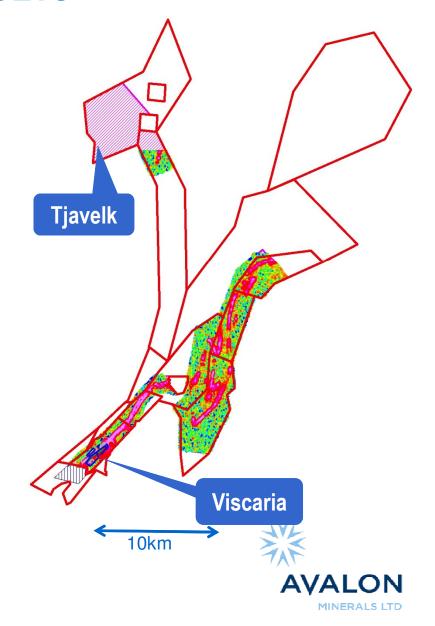




## **REGIONAL EXPLORATION TARGETS**

- Viscaria Regional Exploration
  - 720km² tenure, 100km of cumulative strike
- > Heli-EM to define drill targets
  - High quality targets defined





## **DEVELOPMENT TIMELINE**

	Q3 2012	Q4 2012	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016
Initial Drill Program		/														
Scoping Study		/														
Major Drill Program to increase High Grade Copper Resources																
Drill Program to test Regional Targets																
Complete BFS																
Finance Project																
Construction																
Production Commences																



### **OBJECTIVES FOR UPCOMING DRILL PROGRAM**

- Increase D Zone resource base by 4.5Mt to 15.5Mt
- 3Mt @ 2.5% Cu defined at A Zone (underground mining)
- Assess underground mining potential at D Zone
- Increase mine life to +10 years
- Confirm mineral resources to underpin +US\$300M project NPV
- Test best regional exploration targets
- > 25,000m of drilling, budget \$10M
- > Set to commence in November 2012, complete by June 2013



### SUMMARY

- Objective is to achieve +500% value creation within 2-4 years
- Management with proven track record
- Sweden a Top 10 mining destination with excellent infrastructure
- Clear pathway defined, potential to increase Viscaria Project NPV to +\$300M
- Low risk Mineral Resource extension drill program defined
- Acquisition of the Discovery Zone Cu-Fe Mineral Resource has the potential to add \$100M in value
- > High quality regional exploration targets to be tested
- > Aggressive drill program set to commence to define additional resource
- Abundant news flow



## CONTACT

Jeremy Read jeremy.read@avalonminerals.com.au Mobile: +61 409 484 322

ASX Code: AVI

www.avalonminerals.com.au



## **APPENDIX: SCOPING STUDY ECONOMIC PARAMETERS**

Parameter	Unit	Value		
Overall pit slope angle	Degrees	55		
Copper Price	US\$/t	US\$7,165		
Magnetite Price	US\$/t	US\$150		
Mining Cost (ore)	US\$/t	US\$4.55		
Mining Cost (waste)	US\$/t	US\$4.55		
Mining Recovery	%	95%		
Mining Dilution	%	5%		
Metallurgical Recovery	% Cu	90%		
Metallul gical Recovery	% Fe	76%		
Concentrate Grade	% Cu	25%		
Concentrate Grade	% Fe	69%		
<b>Processing Costs</b>	US\$/t ore	US\$12.04		
Admin Costs	US\$/t ore	US\$D3.08		
Copper Con Freight	US\$/DMT	US\$15.75		
Payable Copper	% Cu contained	98%		
Payable Magnetite	% Fe contained	98%		



## **APPENDIX: PRICE OF FE PELLETS**





# **MINERAL RESOURCES**

Resource Name	JORC Classification	Tonnes (t)	Cu Grade (%)	Cu Metal (t)
	Measured	14,439,000	1.66	239,000
A 7ana*	Indicated	4,690,000	1.22	57,000
A Zone*	Inferred	2,480,000	1.03	26,000
	Subtotal	21,609,000	1.49	322,000
	Measured	123,000	1.33	2,000
5.7 *	Indicated	4,118,000	0.72	30,000
B Zone*	Inferred	15,410,000	0.77	118,000
	Subtotal	19,650,000	0.76	150,000
D 7	Indicated**	3,500,000	0.94	32,900
D Zone Cu Resource	Inferred**	1,870,000	0.80	14,960
	Subtotal	5,370,000	0.89	47,860
Overall Cu	Total	46,629,000	1.01	519,860

Resource Name	JORC Classification	Tonnes (t)	Fe Grade (%)	Fe Mass Recovery (%)	Fe Metal (t)	
D Zone	Indicated***	9,470,000	25.90	31.3	2,964,110	
Fe Resource	Inferred***	5,320,000	25.60	30.8	1,638,560	
Overall Fe	Total	14,790,000	25.80	31.1	4,602,670	

<sup>\* 2011</sup> Mineral Resources for A Zone and B Zone are reported above a cut-off grade of 0.4% Cu.



<sup>\*\* 2012</sup> Copper Mineral Resource for D Zone above a cut-off grade of 0.4% Cu.

<sup>\*\*\* 2012</sup> Iron Mineral Resource for D Zone above a cut-off grade of 15% Fe Mass Recovery.

### **ADDITIONAL INFORMATION AND ATTRIBUTION**

#### **Copper Equivalent Formula**

- \*% CuEq = % Cu + ((%Fe x Fe price US\$/tonne x Fe recovery)/(Cu price US\$/tonne x Cu recovery)
- Cu price US\$/tonne = \$7,163.00 (US\$3.25/lb)
- Cu Recovery = 90%
- Fe price US\$/tonne = \$144.93 (calculated from US\$100 Net Price per tonne of magnetite concentrate containing 69% Fe)
- Fe Recovery = 70%

Results from extensive metallurgical test work completed by Avalon Minerals Limited indicates that both copper (Cu) and iron (Fe) have a reasonable potential to be recovered from the mineral resource contained within the Viscaria Project.

#### **Assay Results**

**VDD0128:** 68.5m @ 0.6% Cu and 28.2% Fe (1.0% CuEq) from 177m.

8.1m @ 1.5% Cu and 39.2% Fe (2.1% CuEq) from 189.9m (down hole) including 5.1m @ 2.1% Cu and 42.0% Fe (2.8% CuEq)

8.0m @ 1.5% Cu and 33.0% Fe (2.0% CuEq) from 216.0m (down hole) including 6.4m @ 1.8% Cu and 34.5% Fe (2.3% CuEq)

**VDD0129**: 88.3m @ 0.4% Cu & 22% Fe (0.7% CuEq), from 229.7m including:

16.3m of 0.5% Cu and 24.4% Fe (0.9% CuEq) from 229.7m (down hole) including 5.0m @ 1.0% Cu and 30.6% Fe (1.5% CuEq)

17.0m of 1.3% Cu and 23.3% Fe (1.6% CuEq) from 300.0m (down hole) including 9.0m @ 1.8% Cu and 23.0% Fe (2.1% CuEq)



### **ADDITIONAL INFORMATION AND ATTRIBUTION**

#### **Competent Persons Statement**

The information in this report that relates to Mineral Resources and exploration targets is based upon information reviewed by Mr Jeremy Read BSc (Hons) who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Read is a full time employee of Avalon Minerals Ltd and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Read consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. The Mineral Resource estimate for the D Zone Prospect was compiled and prepared by Stefan Mujdrica (MAusIMM) of Xstract Mining Consultants who is a Competent Person as defined by the Australasian Code for the reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) 2004 Edition and who consents to the inclusion in this report of the matters based on the information in the form and context in which it appears.

The Mineral Resource estimate for A and B Zones was compiled and prepared by Dr Bielin Shi (MAusIMM, MAIG) of CSA Global Pty.Ltd. who is a Competent Person as defined by the Australasian Code for the reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) 2004 Edition and who consents to the inclusion in this report of the matters based on the information in the form and context in which it appears.

The Scoping Study results were compiled and prepared by Tim Horsley (MAusIMM) of Xstract Mining Consultants who is a Competent Person as defined by the Australasian Code for the reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) 2004 Edition and who consents to the inclusion in this report of the matters based on the information in the form and context in which it appears.

The mineral resource estimate for the Discovery and Tributary Zones is effective from 13 January 2012 and has been prepared by Mr Thomas Lindholm, MSc of GeoVista AB, Luleå, Sweden acting as an independent "Competent Person". Mr Lindholm is a Fellow of the Australasian Institute of Mining and Metallurgy (Member 230476). Mineral resources of the Rakkuri iron deposits have been prepared and categorised for reporting purposes by Mr Lindholm, following the guidelines of the JORC Code. Mr Lindholm is qualified to be a Competent Person as defined by the JORC Code on the basis of training and experience in the exploration, mining and estimation of mineral resources of gold, base metal and iron deposits.

The Base Case includes material from Inferred Mineral Resources and therefore, exploration drilling and re-estimation may result in changes to the economically minable portion of the Mineral Resources

Development Cases A, B and C includes material that has not yet been discovered or defined and is considered an exploration target.

#### **JORC – Exploration Targets**

it is common practice for a company to comment on and discuss its exploration in terms of target size and type. The information relating to exploration targets should not be misunderstood or misconstrued as an estimate of Mineral Resources or Ore Reserves. hence the terms Resource(s) or Reserve(s) have not been used in this context, the potential quantity and grade is conceptual in nature, since there has been insufficient work completed to define them beyond exploration targets and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

