ASX: AVI

## ASX ANNOUNCEMENT 11 October 2012



# Scoping Study shows viability of Viscaria Project, Sweden; Outlines potential for substantial increase in economics by further resource drilling

Highlights

- Scoping Study confirms the technical and economic viability for a coppermagnetite mining operation at the Viscaria Project in Sweden, identifies a pathway to deliver significant growth to the value of the Viscaria project and validates the approach implemented by Avalon's new management team;
- Scoping Study Results indicate that a Base Case open pit mining scenario has a NPV of US\$61M (using US\$3.25/lb Cu - current Cu price is US\$3.69/lb) and will produce 9,400t of Cu and 382,000t of Fe per annum at a C1 cash cost (net of Fe credits) of US\$0.65/lb;
- Scoping Study outlines three value creation scenarios, Development Cases A, B and C, which by converting Exploration Targets to Mineral Resources have potential NPV's of US\$111M, US\$170M and US\$198M with predicted C1 cash costs of US\$0.47/lb, US\$1.03/lb and US\$1.03/lb respectively;
- At current copper prices, Development Cases A, B and C scenarios have NPV's of US\$186M, US\$272M and US\$312M respectively, with Development Case C envisaging annual Cu production of 25,500t and Fe production of 519,000t;
- A major drill program will commence in November 2012 designed to convert Exploration Targets to Mineral Resources to underpin delivery of the Development Cases as outlined in the Scoping Study;
- Drilling completed at the A and D Zone prospects earlier in 2012 showed that the copper and copper-magnetite mineralisation extends beyond the current Mineral Resource boundaries, therefore demonstrating that extending the existing Mineral Resources is possible;
- Avalon's management team has a demonstrated track record at Discovery Metals Limited and Meridian Minerals Limited of creating shareholder value by extending Mineral Resources.

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Australian resources company, Avalon Minerals Limited ('Avalon' or 'Company') (ASX: AVI) is pleased to announce the results of a Scoping Study completed on the Viscaria Project by Xstract Mining Consultants.

The Scoping Study assessed a Base Case open pit mining scenario which uses the Mineral Resources currently defined on the Viscaria Project, as well as three Development Cases to convert existing Exploration Targets into Mineral Resources through an extensional drill program.

The economic assessments used price assumptions of US\$3.25/lb copper and US\$150/t magnetite (the current copper price is US\$3.69/lb).

The Company's Managing Director Mr Jeremy Read said, "The Scoping Study demonstrates the viability of a copper-magnetite mining operation at Viscaria, but more importantly defines a clear pathway for Avalon to create significant value at the Viscaria Project through the growth of the existing Mineral Resources."

"The Development Cases assessed in the Scoping Study show that by extending the existing Mineral Resources, the Viscaria Project has the potential to produce 25,500t of Cu and 519,000t of Fe on an annual basis and potentially generate a project NPV in excess of \$300M," he added.

"Commencing in November 2012, Avalon will start a 6 month drill program, the goal of which will be to define the Mineral Resource extensions to allow our Development Cases to be delivered. Therefore, we anticipate the next 6 months will be an exciting time for Avalon," Mr Read said.

A comparison of the Base and Development Cases is given in Table 1.

## Base Case open pit mining scenario

The Base Case open pit mining scenario assessed the viability and potential value of the currently defined Mineral Resources on the Viscaria Project.

The current Mineral Resources on the Viscaria Project are defined in Table 2.

The existing Mineral Resources were subjected to open pit optimisations using the parameters outlined in Table 3.

Using these parameters, several open pit shells were generated along the near-surface trends of the A Zone, B Zone and D Zone Mineral Resources (Figure 1).

During this exercise it was established that only the D Zone Pit and the A Zone Pit-A significantly contributed to the project NPV and therefore, only these prospects were included in the Base Case open pit mining scenario. Figure 2 and Table 4 show the production profile developed for the Base Case scenario.



Scenario	Base Case	Devt Case A	Devt Case B	Devt Case C
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
Optimum Mining Rate	2.1 Mtpa	3.0 Mtpa	3.3 Mtpa	3.1 Mtpa
Mine Life	5.5 years	5.3 years	5.6 years	5.6 years
Pre-Production Capex	USD 144 M	USD 179 M	USD 201 M	USD 212 M
Life-of-Mine Capex	USD 155 M	USD 194 M	USD 315 M	USD 350 M
C1 Cash Cost (net of Fe Credits)	US\$0.65/Ib	US\$0.47/Ib	US\$1.03/Ib	US\$1.03/Ib
NPV <sub>10% REAL</sub>	USD 61 M	USD 111 M	USD 170 M	USD 198 M
NPV at Prices + 10%	USD 114 M	USD 186 M	USD 272 M	USD 312 M
NPV at Prices - 10%	USD 8 M	USD 37 M	USD 68 M	USD 84 M

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
D 7000*	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 Zone Cu Resource	Indicated**	3,500,000	0.94	32,900
	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

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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

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

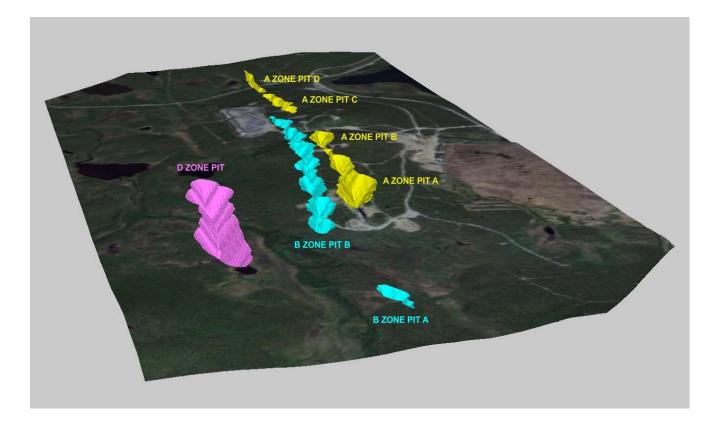
\*\* 2012 Copper Mineral Resource for D Zone above a cut-off grade of 0.4% Cu.

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

Parameter	Unit	Value	Comments
Overall pit slope angle	Degrees	55	
Copper Price	USD/t	USD7,165	USD3.25/Ib Cu
Magnetite Price	USD/t	USD150	Assumed price at end of slurry pipe
Mining Cost (ore)	USD/t	USD4.55	
Mining Cost (waste)	USD/t	USD4.55	
Mining Recovery	%	95%	
Mining Dilution	%	5%	
Motellumical Decovery	% Cu	90%	
Metallurgical Recovery	% Fe	76%	
Concentrate Crede	% Cu	25%	
Concentrate Grade	% Fe	69%	
Processing Costs	USD/t ore	USD12.04	
Admin Costs	USD/t ore	USD3.08	
Payable Copper	% Cu contained	98%	
Payable Magnetite	% Fe contained	98%	

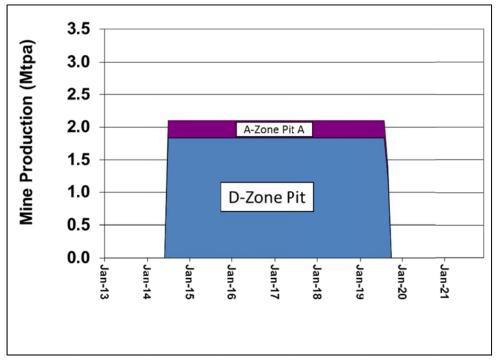
Table 3: Pit optimisation parameters





## Figure 1: Site overview showing pit optimisation shells





#### Figure 2: Base Case production profile

Table 4: Base Case production summary

Year	Tonnes Mined (kt)	% Cu	% Fe	Copper Conc Produced (kDMT)	Contained Copper (kt)	Magnetite Conc Produced (kDMT)	Contained Iron (kt)
2013							
2014	1,050	0.50	22.2	18.9	4.7	274	190
2015	2,100	0.50	22.2	37.7	9.4	549	382
2016	2,100	0.50	22.2	37.7	9.4	549	382
2017	2,100	0.50	22.2	37.7	9.4	549	382
2018	2,100	0.50	22.2	37.7	9.4	549	382
2019	1,518	0.50	22.2	27.3	6.8	396	275
2020							
Total	10,968	0.5	22.2	197	49	2,865	1,991

A summary of the economic assessment of the Base Case open pit mining scenario is displayed in Table 5.



## Development Case A open pit mining scenario

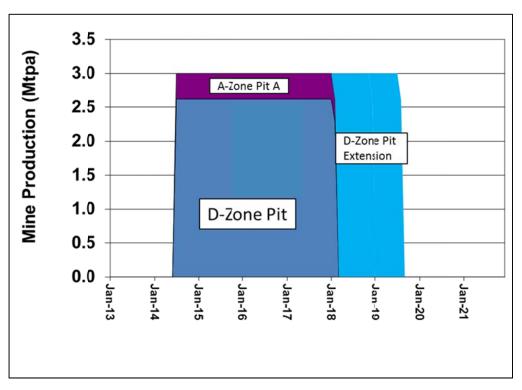
The first value creation scenario assessed was Development Case A, which includes the Base Case open pits, as well as an exploration target of extending the D Zone Mineral Resource 300m along strike and 35m in depth. It must be noted that this exploration target is conceptual in nature as there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

This exploration target is interpreted to be relatively low exploration risk because the D Zone mineralisation is open along strike and is getting higher grade and thicker at depth (see announcement to ASX on 29 August 2012). Figure 3 and Table 6 show the production profile developed for this scenario.

Base Case	D Zone Open Pit and A Zone Open Pit-A				
Tonnage and Grade	11.0 Mt @ 0.50% Cu 22.2% Fe				
Optimum Mining Rate	2.1 Mtpa				
Mine Life	5.5 years				
Pre-Production Capex	USD 144 M	Includes \$18.3M pre-strip			
Life-of-Mine Capex	USD 155 M	Excludes closure costs			
C1 Cash Cost (net of Fe Credits)	US\$0.65/Ib				
NPV <sub>10% REAL</sub>	USD 61 M	USD3.25/Ib Cu USD150/t Magnetite			
NPV +	USD 114 M	Prices + 10%			
NPV -	USD 8 M	Prices - 10%			

Table 5: Summary of the economic assessment of the Base Case mining scenario





#### Figure 3: Development Case A production profile

Table 6	Development	Case A	production	summary
Table 0.	Development	Case A	production	summary

Year	Tonnes Mined (kt)	% Cu	% Fe	Copper Conc Produced (kDMT)	Contained Copper (kt)	Magnetite Conc Produced (kDMT)	Contained Iron (kt)
2013							
2014	1,500	0.50	22.2	26.9	6.7	392	272
2015	3,000	0.50	22.2	53.9	13.5	784	585
2016	3,000	0.50	22.2	53.9	13.5	784	585
2017	3,000	0.50	22.2	53.9	13.5	784	585
2018	3,000	0.40	24.9	43.0	10.8	896	623
2019	1,968	0.38	25.4	26.9	6.7	602	418
2020							
Total	15,468	0.5	23.1	259	65	4,241	2,947



A summary of the economic assessment of the Development Case A open pit mining scenario is displayed in Table 7.

		1 3
Development Case A	Base Case + Exploration Target extend D deeper at similar grades	Zone 300m along strike and 35m
Tonnage and Grade	15.5 Mt @ 0.46% Cu 23.1% Fe	
Optimum Mining Rate	3.0 Mtpa	
Mine Life	5.3 years	
Pre-Production Capex	USD 179 M	Includes \$26.1M pre-strip
Life-of-Mine Capex	USD 194 M	Excludes closure costs
C1 Cash Cost (net of Fe Credits)	US\$0.47/Ib	
NPV <sub>10% REAL</sub>	USD 111 M	USD3.25/lb Cu USD150/t Magnetite
NPV +	USD 186 M	Prices + 10%
NPV -	USD 37 M	Prices - 10%

Table 7: Summary of the economic assessment of the Development Case A mining scenario

## Development Case B open pit/underground mining scenario

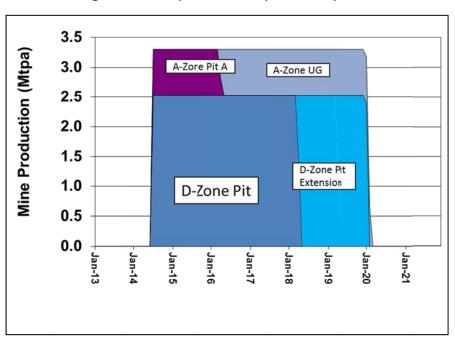
The second value creation scenario assessed is Development Case B, which includes the previously described Development Case A with the addition of an exploration target of 3.0Mt @ 2.5% Cu from the A Zone prospect area that could be mined by underground methods. It must be noted that this exploration target is conceptual in nature as there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

This exploration target is interpreted to have moderate exploration risk as its size and grade are relatively high. However, historically when the A Zone mineralisation was being



mined the average grade of ore mined was 2.5% copper and Avalon's initial assessment of the A Zone prospect indicates that there is sufficient scope for a resource of approximately 3.0Mt to be delineated.

Figure 4 and Table 8 show the production profile developed for this scenario.



#### Figure 4: Development Case B production profile

Year	Tonnes Mined (kt)	% Cu	% Fe	Copper Conc Produced (kDMT)	Contained Copper (kt)	Magnetite Conc Produced (kDMT)	Contained Iron (kt)
2013							
2014	1,650	0.60	19.4	35.9	9.0	366	254
2015	3,300	0.60	19.4	71.8	17.9	73.2	509
2016	3,300	0.81	19.4	95.9	24.0	732	509
2017	3,300	0.88	19.4	104.6	26.2	73.2	509
2018	3,300	0.88	19.4	104.7	26.2	732	509
2019	3,300	0.88	19.4	104.7	26.2	731	508
2020							



Year	Tonnes Mined (kt)	% Cu	% Fe	Copper Conc Produced (kDMT)	Contained Copper (kt)	Magnetite Conc Produced (kDMT)	Contained Iron (kt)
Total	18,468	0.8	19.4	529	132	4,091	2,843

A summary of the economic assessment of the Development Case B open pit/underground mining scenario is displayed in Table 9. Figure 5 displays the impact of various tonnages and grades for the A Zone Underground exploration target on the overall project NPV. This figure indicates that from the A Zone underground a minimum of 2.0Mt @ 2% Cu is needed to positively impact the overall Viscaria Project NPV.

Development Case B	Devt Case A + Exploration target of 3.0 Mt @ 2.5% Cu from A Zone Underground				
Tonnage and Grade	18.5 Mt @ 0.80% Cu 19.4% Fe				
Optimum Mining Rate	3.3 Mtpa				
Mine Life	5.6 years				
Pre-Production Capex	USD 201 M	Includes \$33.7 M pre-strip			
Life-of-Mine Capex	USD 315 M	Excludes closure costs			
C1 Cash Cost (net of Fe Credits)	US\$1.03/Ib				
NPV <sub>10% REAL</sub>	USD 170 M	USD3.25/lb Cu USD150/t Magnetite			
NPV +	USD 272 M	Prices + 10%			
NPV -	USD 68 M	Prices - 10%			

 Table 9: Summary of the economic assessment of the Development Case B mining scenario



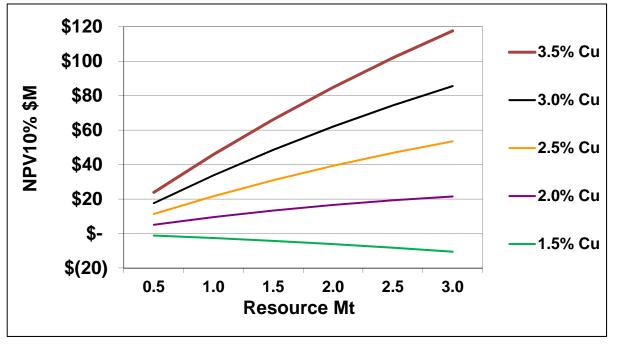


Figure 5: Impact of the additional material at various grades and tonnages from the A Zone UG

## Development Case C open pit/underground mining scenario

The third value creation scenario assessed is Development Case C, which includes Development Case B with the addition of an exploration target of 1.75Mt @ 1.6% Cu from the D Zone prospect area that could be mined by underground methods. It must be noted that this exploration target is conceptual in nature as there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

Similar to Development Case A, this exploration target is interpreted to be relatively low exploration risk because the D Zone mineralisation is getting higher grade and thicker at depth. Figure 6 and Table 10 show the production profile developed for this scenario.



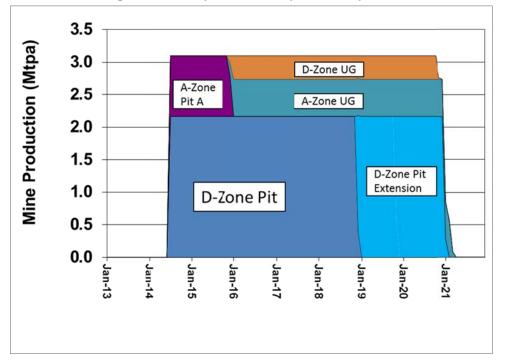


Figure 6: Development Case C production profile

Table 10:	Development	Case C	production	summarv
			p	

Year	Tonnes Mined (kt)	% Cu	% Fe	Copper Conc Produced (kDMT)	Contained Copper (kt)	Magnetite Conc Produced (kDMT)	Contained Iron (kt)
2013							
2014	1550	0.67	17.7	37.2	9.3	308	214
2015	3100	0.67	17.8	75.2	18.8	619	430
2016	3100	0.92	20.8	102.2	25.5	746	519
2017	3100	0.92	20.8	102.2	25.5	746	519
2018	3100	0.91	20.8	102.1	25.5	746	519
2019	3100	0.92	20.8	102.2	25.5	746	519
2020	3042	0.90	20.7	98.8	24.7	728	518
2021	126	2.12	4.6	9.6	2.4	5	3
Total	20,218	0.9	20.0	629	157	4,643	3,227



A summary of the economic assessment of the Development Case C open pit/underground mining scenario is displayed in Table 11. Figure 7 displays the impact of various tonnages and grades for the D Zone Underground exploration target on the overall project NPV. This figure indicates that from the D Zone underground, a minimum of 1.75Mt @ 1.6% Cu is needed to positively impact the overall Viscaria Project NPV.

Development Case C	Devt Case B + Exploration Target of 1.75 Mt @ 1.6% (	6% Cu from D Zone Underground			
Tonnage and Grade	20.2 Mt @ 0.86% Cu 20.0% Fe				
Optimum Mining Rate	3.1 Mtpa				
Mine Life	5.6 years				
Pre-Production Capex	USD 212 M	Includes \$34.6 M pre-strip			
Life-of-Mine Capex	USD 350 M	Excludes closure costs			
C1 Cash Cost (net of Fe Credits)	US\$1.03/Ib				
NPV <sub>10% REAL</sub>	USD 198 M	USD3.25/Ib Cu USD150/t Magnetite			
NPV +	USD 312 M	Prices + 10%			
NPV -	USD 84 M	Prices - 10%			

Table 11: Summary of the economic assessment of the Development Case C mining scenario



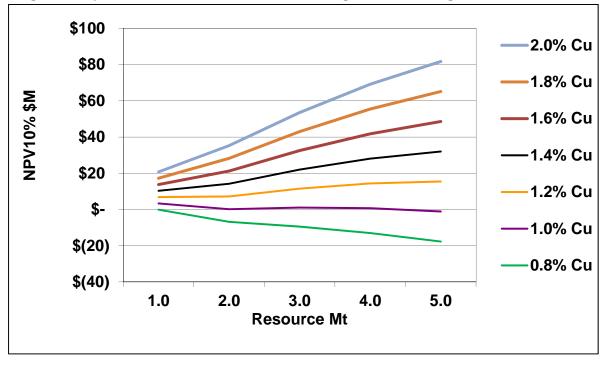


Figure 7: Impact of the additional material at various grades and tonnages from the D Zone UG

#### **Cost and Revenue Assumptions**

The capital costs used in each of the mining scenarios have been summarised in Table 12, the operating costs assumptions in Table 13 and the revenue assumptions in Table 14. Copper cash operating costs for each mining scenario in comparison to other copper producers is displayed in Figure 8.

The C1 copper cash operating costs, net of iron credits, for the Base Case and Development Case A open pit mining scenarios are predicted to be in the lower quartile of copper producers, while the Development Case B and Development Case C open pit/underground mining scenarios have C1 copper cash operating costs that are intermediate in comparison.

## **Future Resource Definition Program**

The Scoping Study results show that the conversion of the exploration targets assessed in Development Case A, B and C to Mineral Resources has the potential to grow the NPV of the Viscaria Project significantly from USD\$61M to USD\$198M using a copper price of US\$3.25/lb.

Therefore, over the next six months Avalon plans to complete an extensive resource definition drill program focussed on assessing the potential of these exploration targets to deliver the tonnage and grade assumed in various Development Cases detailed in the Scoping Study. Drilling conducted earlier in 2012 and reported to the ASX between March – July 2012, demonstrated that the existing copper and copper-magnetite mineralisation extends beyond the current boundaries of the A and D Zone Mineral Resources. This



drilling proved the concept that it is probable that the A and D Zone Mineral Resources will be able to be extended.

Given the Company management team's past record with Discovery Metals Limited and Meridian Minerals Limited for increasing project Mineral Resources and creating value, Avalon has the expertise to execute this strategy and significantly increase the value of the Viscaria Project.

Item	Base Case USD M	Devt Case A USDM	Devt Case B USDM	Devt Case C USDM	Comments
Process Plant	111.7	138.3	146.5	141.1	Scalable on production capacity
Pit D site establishment	2.5	2.5	2.5	2.5	Includes provision of site services and access roads
Pit A site establishment	1.7	1.7	1.7	1.7	
Underground Mine Establishment, De-watering & Rehabilitation	-	-	56.0	56.0	
New Underground Development	-	-	45.0	82.5	
Studies and Test work	5.0	5.0	5.0	5.0	
Pre-Strip	18.3	26.1	33.7	34.6	
Tailings Storage Facility	5.0	5.0	5.0	5.0	
Replacement Capital	11.0	15.5	19.7	22.1	
Closure Costs	-	-	-	-	Not Included
Total	155	194	315	350	

Table 12: Capital Cost assumptions



#### Table 13: Operating Cost assumptions

Parameter	Unit	Value	Comments
Mining Cost (ore)	USD/t	USD4.55	
Mining Cost (waste)	USD/t	USD4.55	
Processing Costs	USD/t ore	USD12.04	Variable - assumes 40% fixed costs and 12.04/t @ 1.5Mtpa
Admin Costs	USD/t ore	USD3.08	
Copper Conc. Transport	USD/DMT conc	15.75	Assumes local smelter
Magnetite Conc. Transport	USD/DMT conc	1.50	Assumes slurry pipe to LKAB

#### Table 14: Revenue assumptions

Parameter	Unit	Value	Comments
Overall pit slope angle	Degrees	55	
Copper Price	USD/t	USD7,165	\$3.25/lb Cu
Magnetite Price	USD/t	USD150	For 69% Fe magnetite pellets
Mining Recovery	%	95%	
Mining Dilution	%	5%	
Metallurgical Recovery	% Cu	90%	
Metanurgical Recovery	% Fe	76%	
Concentrate Grade	% Cu	25%	
concentrate Grade	% Fe	69%	
Payable Copper	% Cu contained	98%	
Payable Magnetite	% Fe contained	98%	
Copper Conc. Treatment charge	c/lb Cu	45	
Copper Conc. Refining charge	c/lb Cu	4.5	
	USD/dmt	28	
	%	0.75	



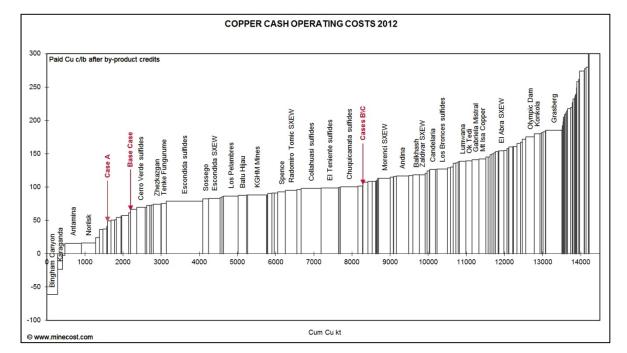


Figure 8: Copper Cash Operating Costs for each mining scenario in comparison to other copper producers

## For further information please visit www.avalonminerals.com.au or contact:

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#### **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 Base Case includes material from Inferred Mineral Resources and therefore, exploration drilling and reestimation 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.