

AVI.asx Speculative Buy

AVALON MINERALS LIMITED

PFS Demonstrates Value of Expanded Case

Avalon Minerals Limited ("Avalon", "AVI", "Company") has completed its prefeasibility study ("PFS") for its Viscaria copper-magnetite project in Sweden. The PFS has demonstrated that Base Case throughput rates of 1.5Mtpa (over 10years) and 3.0Mtpa (over 5 years) are robust, though the 3.0Mtpa case has better economics. In addition, due to the prospectivity of Zone D, there is good potential to develop the mine using the 3.0Mtpa concept, but with a 10 year mine life.

BFS commenced, production targeted early 2013

The PFS into the development of Viscaria is positive, though demonstrates the substantial value-add by having the higher production rate over the 10 year mine life. Consequently, we expect the Development Case to be the most likely outcome, as we consider delineating an additional 15Mt of open pit material along the 5km of D Zone strike is relatively low risk.

The Company has committed to commencing a bankable feasibility study ("BFS") focussing on the 3.0Mtpa production rate, with a view to commencing production in early CY2013.

The PFS has highlighted the good potential to generate solid cashflows for a sustained period of time, with good minelife upside. Based on the numbers in the PFS, we estimate annual operating cashflow of:

- ~US\$35m for the 1.5Mtpa Base Case scenario,
- ~US\$71m for the 3.0Mtpa Base Case scenario and
- ~US\$64m for the 3.0Mtpa Development Case.

Dual revenue stream enhances viability

The mix of magnetite and copper in the Viscaria orebody provides for dual revenue streams, reducing revenue risk and providing good co-credits. Using AVI's commodity price assumptions, copper generates ~60% of the revenue, with the magnetite the balance. Separating the copper and magnetite is relatively straight forward using well understood and common technology.

The Company has ready buyers for both concentrates, with its very close proximity to the LKAB iron ore plant (the likely buyer for the magnetite concentrate), adds a significant bonus in terms of transport costs.

More drilling soon

Near term, Avalon intends to undertake infill and extensional drilling on the existing Zones, as well as along strike drilling of Zone D. This drilling will give significant insight into the potential for minelife extensions.

Price Target of 58cps

We have generated a sum of parts valuation for Avalon of 58cps. This includes a probability weighted valuation for Viscaria of 37cps, which takes into account the different development as well as funding scenarios. The Company is trading at a significant discount to this price target and we recommend Avalon Minerals Limited as a Speculative Buy.

Share Price (last): 0.22 Price Target 0.58

Brief Business Description:

Junior Explorer/Developer

Hartleys Brief Investment Conclusion

Promising Copper-Iron Ore projects in Sweden

Issued Capital:	152.3m
- diluted	152.4m
Market Cap:	\$32.7m
- diluted	\$32.8m
Cash (Est)	\$4.1m
EV	\$28.6m

Main Projects

Viscaria FeO, Cu Adak FeO, Cu, Pb, Zn

Board & Management

Mr David McSweeney (Exec Chair)
Mr Andrew Munckton (CEO)
Tan Sri Abu Sahid Mohamed (Non-Exec.
Mr Stephen Stone (Non-Exec. Dir.)
Mr Gary Steinepreis (Non-Exec. Dir.)

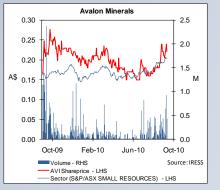
Top Shareholders:

Mr Abu Sahid Bin Mohamed	19.9%
David McSweeney	9.1%
HSBC Custody Noms Aust	8.5%

Company Address:

91 Havelock Street West Perth WA 6005

Resources	kt Cu	586
	kt Fe Metal	2,415



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Hartleys has provided corporate advice within the past 12 months and continues to provide corporate advice to Avalon Resources Limited. See back page for full disclosure.

KEY PFS OUTCOMES

SCENARIOS

Base Case

Three scenarios examined covering two different plant capacities

- 1.5Mtpa for 37,800tpa of copper concentrate and 362,400tpa of iron concentrate over 10 years; or
- 3.0Mtpa for 75,700tpa of copper concentrate and 725,000tpa of iron concentrate over 5 years.

Development Case

• 3.0Mtpa for 63,300tpa of copper concentrate and 735,000tpa of iron concentrate over 10 years.

FINANCIALS

The capital expenditure requirements vary from ~US\$123m for the 1.5Mtpa Base Case through to ~US\$160m for the Development Case.

Fig. 1: Viscaria Capital Costs (US\$m)

	PFS E	Base Case	PFS Development Case
	10 Years	5 Years	10 Years
Mine Site Costs	2.7	2.7	3.3
Process Plant Costs	80.7	105.4	105.4
Infrastructure Costs	5.1	5.1	5.1
Owner's Costs	10.0	10.7	13.0
Total Project Capital Costs	98.5	123.9	126.8
Sustaining Capital	14.0	4.0	16.0
Contingencies	10.5	17.6	17.6
Total Project Capital Allowance	123.0	145.5	160.4

Source: Avalon Minerals Limited

Average annual revenue varies from US\$89.3m (Base Case, 1.5Mtpa) to US\$178 (Base Case, 3.0Mtpa).

Fig. 2: Viscaria Operating Unit Costs (US\$/t)

rig. 2. Viscaria Operating Offit Costs (05\$/t)				
	PFS B	ase Case	PFS Development Case	
	10 Years	5 Years	10 Years	
Mine Site Operating Costs	17.34	17.16	14.80	
Processing Cost	13.00	13.00	13.00	
Transport, Treatment and Refining Costs – Mine to Plant – Sweden	2.37	2.37	2.03	
Administration and Royalties	3.77	3.19	2.41	
Total Average Production Cost	36.48	35.72	32.24	

Source: Avalon Minerals Limited

Operating costs are between US\$36.48/t (Base Case, 1.5Mtpa) reducing to US\$32.24/t for the Development Case due to economies of scale.

Fig.	3:	Financial	Eval	luation
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		PFS Base Case	PFS Development Case	
	Unit	10 Years	5 Years	10 Years
Revenue	US\$m	893.0	893.0	1613.0
Project NPV ₁₀ after tax	US\$m	37.7	45.8	125.6
Project IRR after tax	%	20.0	24.8	33.4
Payback period	Years	4.2	2.9	2.9
Life of Mine Cash Surplus after tax	US\$m	148.0	129.0	356.0

Source: Avalon Minerals Limited

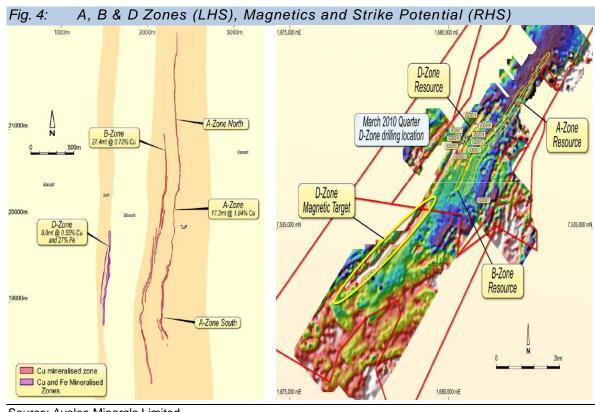
Note: The PFS used a copper price of US\$2.50/lb, US\$95.9/t for iron concentrate and EUR:USD of 0.75.

As expected, the Project NPV₁₀ and IRR were significantly better for the Development case than both Base Case scenarios.

Open pit mining only considered on Zones A, B & D

OPERATIONS

All mining is to be via open pits on the A, B & D Zones, with processing to involve conventional crushing, grinding, flotation and magnetic separation, producing a copper concentrate and a magnetite concentrate.



Source: Avalon Minerals Limited

RESOURCES

Global resource base of 66Mt of ore

The global resource base for the Viscaria project is ~66Mt across three different mineralisation styles. Note that of the ~66Mt of resources, the PFS only considers mining ~15Mt for the Base Cases, or 30Mt for the Development Case. This large difference between global resource and material mined is due to a large portion of the resource being too deep to be accessible via open pit mining. This potentially allows for the Company to investigate underground mining of some of the higher

grade deeper material at some point in the future. However, the underground potential was not considered as part of the PFS.

Skarn mineralisation currently has smallest resource, but largest growth potential Currently the Skarn mineralisation within the D Zone has the smallest resource (9Mt), however, it remains open along strike for ~5km, and exploration success along this Zone will determine the likelihood for the Development Case. Avalon has an exploration target for this Zone of 30 – 50Mt of ore, of which an additional 15Mt over the current Resource would enable the progression of the Development Case.

Fig. 5: Globai	l Resou	ırces for Vis	caria				
Mineralisation	Zone	Category	Mt	Cu %	Fe %	Cu Metal ('000t)	Fe Metal ('000t)
Skarn	D	Inferred	9	0.55	26.9	49	2,415
	Zone	Category	Mt	Cu %	Zn %	Cu Metal ('000t)	Zn Metal ('000t)
VMS	Α	Measured	6.7	2.47	-	165	-
	Α	Indicated	4.1	1.76	-	73	-
	Α	Inferred	6.5	1.24	-	80	-
	В	Inferred	27.4	0.73	-	200	-
		Sub Total	44.7	1.16		518	
Tailings Dam		Inferred	12.5	0.27	0.22	34	27
			Mt	Cu Metal ('000t)	Fe Metal ('000t)	Zn Metal ('000t)	
Grand Total			66.2	586	2,415	27	

Source: Avalon Minerals Limited

VALUATION

Valuation examines three production scenarios and three commodity price scenarios We have undertaken a number of valuations of Viscaria, using the three different production scenario's as well as a number of different pricing scenarios. We assume construction commences in CY2012, with first production commencing in 1Q CY2013. Note we have chosen to undertake all valuations in US\$ as all costs are given in US\$, and converting back to AUD only adds another variable that complicates the valuation.

Fig. 6: Production Scenarios Inpu	uts			
		PFS Bas	se Case	PFS Development Case
Input	Unit	10 Years	5 Years	10 Years
Annual Plant Throughput	Mtpa	1.5	3.0	3.0
Copper mined grade	% Cu	0.7%	0.7%	0.6%
Annual copper concentrate produced	ktpa	37.8	75.7	63.6
Copper concentrate grade	% Cu	25%	25%	25%
Annual copper metal produced	ktpa	9.5	18.9	15.9
Magnetite mined grade	% Fe	20%	20%	23%
Annual magnetite concentrate produced	kdmtpa	362.4	725.0	735.0
Magnetite concentrate grade	% Fe	69.5%	69.5%	69.5%
Annual magnetite metal produced	ktpa	251.9	503.9	510.8
Total material mined	Mt	15.5	15.5	30.0
Capex (incl. contingencies)	US\$m	123.0	145.5	160.4
Opex	US\$/t	36.5	35.7	32.2
Discount rate	%	10%	10%	10%

Source: Avalon Minerals Limited

Fig. 7: Commod	lity Price Inputs						
		Unit	FY2012	FY2013	FY2014	FY2015	FY2016 on
Hartley's Forecasts	Copper	US\$/lb	3.50	3.25	2.88	2.31	2.00
	Iron Ore - Concentrate	US\$/dmtu	203	196	172	148	126
	Iron Ore - Concentrate	US\$/t	141	136	120	103	88
		Unit	LOM				
AVI Prices	Copper	US\$/lb	2.50				
	Iron Ore - Concentrate	US\$/dmtu	138.0				
	Iron Ore - Concentrate	US\$/t	95.9				
		Unit	LOM				
Spot Prices	Copper	US\$/lb	3.76				
	Iron Ore - Concentrate	US\$/dmtu	182.4				
	Iron Ore - Concentrate	US\$/t	126.7				

Source: Avalon Minerals Limited, Hartley's estimates

Note that for the iron ore concentrate price, we back calculated a pseudo spot concentrate price using the Steel Index 62% Fe Fines Spot Price Index and adding a 10% concentrate premium.

Using the above commodity price and production scenarios generates the following cashflows as seen in Figure 8. Note that these cashflows are at an operational level only incorporating capital and operating cashflows, and do not take into account funding arrangements.

Fig. 8: Different Scenario Cash Flows **BC 1.5 Annual Cashflow** DC 3 Annual Cashflow **BC 3 Annual Cashflow** 100 100 100 50 US\$m US\$m US\$m -50 Hartleys Prices Hartleys Prices AVI Prices AVI Prices

Source: Hartley's estimates

Note: BC = Base Case, 1.5 = 1.5Mtpa, 3 = 3Mtpa, DC = Development Case

Solid to excellent cashflows, depending on plant size and commodity prices

As can be seen from the cashflow charts, the spot prices generate the best outcomes for each project; however, we consider the likelihood of this pricing regime as low given that the current high prices are unlikely to be sustained over 10 years. However, the charts do give a feel for Viscaria's leverage to higher metals prices. The difference between the cashflow for the Hartley's prices and the AVI PFS prices is not dramatic, and over the life of the project, the cumulative cashflow difference is negligible.

Fig. 9:	Viscaria Valuation Matrix, (all values in US\$m)				
	AVI prices	Hartley's Prices	Spot Prices		
BC 1.5	43.5	25.4	182.8		
BC 3	63.1	65.5	235.6		
DC 3	124.4	94.5	373.4		

Source: Hartley's estimates

As can be seen from our valuation matrix, the project valuations at Spot Prices are significantly higher than using the Hartley's and AVI prices, confirming what was seen in the cashflow charts.

3Mtpa plant AVI's preferred option, with exploration success to drive minelife The AVI PFS and our modelling both demonstrate that the 3Mtpa Base Case generates significantly more value than the 1.5Mtpa Case. Consequently, the Company has chosen to pursue the 3Mtpa plant option. We see the Development Case as effectively an expanded 3Mtpa Base Case, pending exploration success on the D Zone.

FUNDING SCENARIOS

In addition to the above valuation matrix, we have overlain a funding scenario analysis for Viscaria. Our funding scenarios examine each development scenario being funded by 100% debt, a 50:50 debt:equity split, and 100% equity. The analysis only uses Hartley's Prices forecast for simplicity.

Fig. 10: Funding Valuation Scenarios (Using H	artley's price fo	recasts)	
	BC 1.5	BC 3	DC 3
NPV (A\$m)	25.4	65.5	94.5
Cost of Equity	10%	10%	10%
Start-up Capital Requirement (A\$m) incl. contingency	109.0	141.5	144.4
Capital spending begins	Jun-12	Jun-12	Jun-12
100% funded with debt			
Assumed annual principle repayments (A\$m)	22.7	60.6	29.8
assumed interest rate	8%	8%	8%
NAV (NPV of project + funding) (A\$m)	27.4	67.3	98.6
NAV / share (A\$)	0.18	0.44	0.65
50% funded with debt & 50% equity			
Assumed capital raising price (A\$)	0.23	0.23	0.23
NAV (NPV of project + funding) (A\$m)	74.9	129.7	161.5
new shares	237.0	307.6	313.9
NAV / share (A\$)	0.19	0.28	0.35
100% funded equity at current price			
Assumed capital raising price (A\$)	0.23	0.23	0.23
NAV (NPV of project + funding) (A\$m)	122.4	192.2	224.4
new shares	363.0	363.0	363.0
NAV / share	0.20	0.25	0.29
00% funded equity at higher price (share price 20.0% dis	count to 1year ahea	nd NAV)	
Assumed capital raising price (A\$)	0.05	0.28	0.46
NAV (NPV of project + funding) (A\$m)	122.35	192.2	224.4
new shares	2170.37	510.9	312.5
NAV / share (A\$)	0.05	0.29	0.48
Assumed probabilities			
100% funded with debt	0%	25%	30%
50% funded with debt & 50% equity	45%	40%	40%
100% funded equity at current prices	10%	10%	5%
00% funded equity at share price that is a 20.0% discount o 1year ahead NAV	45%	25%	25%
Funding Risk NAV - Dec 10	0.13	0.32	0.47
Project Scenario Probability	5.0%	50.0%	45.0%
Probability weighted valuation for Viscaria (cps)			0.37

Source: Hartley's estimates

As can be seen by our analysis, the best NAV is generated by using 100% equity funding. However, whilst the NAV may be maximised, the NAV/share can actually

reduce due to the dilutionary effect of the new shares issued. Obviously this will be significantly affected by the issue price.

Probability weighted valuation for Viscaria is 37cps

In determining our share price valuation for Viscaria, we have weighted the probability of each project scenario by the probability for the different funding scenarios. Using this weighting system, we derive a valuation price per share for Viscaria of 37cps.

When combining this value with the other valuation components of the Company, we derive a sum of parts valuation for Avalon Minerals Limited of 58cps.

AVI Sum of Parts valuation is 58cps

Fig. 11: Hartley's Sum of Parts Valuation		
Component	A\$m	cps
Viscaria - probability weighted Valuation	56.8	0.37
Adak Project	10.0	0.07
Exploration	20.0	0.13
Cash	5.0	0.03
Forwards	0.0	0.00
Corporate Overheads	(6.7)	(0.04)
Total Debt	0.0	0.00
Tax Losses	0.0	0.00
Options & Other Equity	2.8	0.02
Total	88.0	0.58

Source: Hartley's estimates

SUMMARY

Positive PFS, with dual revenue stream

The PFS into the development of Viscaria demonstrated that the project has the ability to generate solid cashflows for a sustained period of time. The mix of magnetite and copper at Viscaria provides for a dual revenue stream, reducing revenue risk and providing good co-credits.

3Mtpa plant the focus

The Company has indicated it is pursuing the 3Mtpa plant, with pending exploration to test for the potential of a ten year life rather than five.

BFS commenced, production planned early CY2013 With the success of the PFS, the Company has committed to commencing a BFS focussing on the 3.0Mtpa production rate, with a view to commencing production in early CY2013. In addition to updates on the progress of the DFS, we expect that the infill and extensional drilling at Viscaria should provide good insights into the potential for resource upgrades and minelife extensions, particularly on the key D Zone mineralisation.

We have an initial valuation for Avalon Minerals of 58cps, and rate the Company as a Speculative Buy.

HARTLEYS RESEARCH COVERAGE LIST

	Name	Ticker	Last Price*	M. CAP (A\$m)	EV (A\$m)	Research Recommendation	Industry
	Oil & Gas						
. '	Woodside Petroleum Ltd	WPL	43.92	34,264	38,442	Buy	Major
. 1	Nexus Energy Ltd	NXS	0.460	441	719	Speculative Buy	Developer / Explorer
	Aurora Oil and Gas Ltd	AUT	1.40	386	342	Buy	Producer / Developer
. (Carnarvon Petroleum Ltd	CVN	0.475	326	296	Buy	Producer / Explorer
. '	Tap Oil Ltd	TAP	0.950	149	88	Buy	Producer / Explorer
i. (Cooper Energy Ltd	COE	0.450	132	36	Buy	Producer / Explorer
. (Otto Energy Ltd	OEL	0.085	91	68	Buy	Explorer / Producer
3.	Amadeus Energy Ltd	AMU	0.245	74	117	Buy	Producer / Explorer
9. :	Strike Energy Ltd	STX	0.220	72	70	Buy	Explorer / Producer
10.	European Gas Ltd	EPG	0.320	64	128	Speculative Buy	Producer / Explorer
11.	Red Fork Energy Ltd	RFE	0.400	55	47	Speculative Buy	Explorer / Producer
	FAR Ltd	FAR	0.068	45	35	Speculative Buy	Explorer / Producer
	Oilex Ltd	OEX	0.185	41	24	Speculative Buy	Explorer / Producer
	Entek Energy Ltd	ETE	0.120	27	18	Speculative Buy	Producer / Explorer
	Sun Resources NL	SUR	0.075	25	22	Speculative Buy	Explorer / Producer
			Sub-Total	36,191	40,451		
ļ	Resources						
	Riversdale Mining Limited	RIV	10.89	2,052	1,784	Speculative Buy	Coal
	Atlas Iron Limited	AGO	2.600	1,404	1,219	Buy	Iron Ore
	Western Areas NL	WSA	6.31	1,129	1,308	No Rating	Nickel
	Intrepid Mines Limited	AU	1.690	723	676	Speculative Buy	Gold
	Integra Mining Limited	IGR	0.595	450	434	Speculative Buy	Gold
	Silver Lake Resources Limited	SLR	2.500	447	416	Buy	Gold
		CAH	2.090	340	320	•	
	Catalpa Resources Limited					Buy	Gold
	Dominion Mining Limited	DOM	2.870	296	315	Speculative Buy	Gold
	Beadell Resources Limited	BDR	0.455	283	228	Speculative Buy	Gold Developer (Brazil)
	Jabiru Metals Limited	JML	0.500	276	235	Buy	Zinc-Copper
11. (Gold One International Limited	GDO	0.335	270	344	Neutral	Gold
	Tanami Gold NL	TAM	0.930	241	233	Speculative Buy	Gold
3.	Focus Minerals Ltd	FML	0.058	166	172	Speculative Buy	Gold
14.	Magma Metals Limited	MMW	0.645	105	85	Speculative Buy	PGM-Cu-Ni
5. I	Kasbah Resources Limited	KAS	0.330	78	75	Speculative Buy	Tin
l6. I	Peninsula Minerals Ltd	PEN	0.038	62	53	Buy	Uranium
17. (Centaurus Metals Ltd	CTM	0.080	48	41	Speculative Buy	Iron Ore
18. `	YTC Resources Limited	YTC	0.285	47	38	Buy	Gold & Base Metals
19. (Cortona Resources Limited	CRC	0.220	42	42	Speculative Buy	Gold
20.	Hazelw ood Resources Ltd	HAZ	0.190	36	31	Speculative Buy	Tungsten
21.	Emmerson Resources Limited	ERM	0.175	36	23	Speculative Buy	Gold
22.	Shaw River Resources Limited	SRR	0.175	35	28	Speculative Buy	Manganese
23.	Ausquest Limited	AQD	0.150	34	8	Speculative Buy	Junior Explorer
24.	Avalon Minerals Linited	AVI	0.220	34	29	Speculative Buy	Copper/Iron Ore
	Ferrum Crescent Limited	FCR	0.190	30	28	Speculative Buy	Iron Ore
	Geopacific Resources NL	GPR	0.550	21	18	Speculative Buy	Gold
	Orion Gold NL	ORN	0.023	17	13	Speculative Buy	Gold
						Speculative Buy	
	Impact Minerals Limited	IPT	0.115	14	9		Uranium
9.	Southern Gold Limited	SAU	0.083	12	8	Speculative Buy	Gold
	Industrials		Sub-Total	8,460	8,019		
	Industrials West Australia News Hdgs Ltd	WAN	7.10	1 6/15	1,920	Rusy	Media
	-			1,645		Buy	
	Monadelphous Group Limited	MND	15.960	1,373	1,241	Buy	Mining Services
	Fleetw ood Corporation	FWD	11.65	629	622	Neutral	Consumer & Mining Service
	Ausdrill Limited	ASL	2.22	581	680	Buy	Mining Services (Drilling &
	Clough Limited	CLO	0.825	561	621	No Rating	Oil & Gas Services
	Mermaid Marine Ltd	MRM	2.83	527	661	Speculative Buy	Oil & Gas Services
7.	Macmahon Holdings Limited	MAH	0.680	499	455	Buy	Mining & Civil Construction
3	Austal Limited	ASB	2.41	453	464	Speculative Buy	Capital Goods
). I	NRW Holdings Ltd	NWH	1.760	442	482	Buy	Mining & Civil Construction
0.	Matrix Composites &	MCE	5.27	385	379	Buy	Oil & Gas Services
1.	Decmil Group Limited	DCG	2.18	270	222	Buy	Mining & Civil Construction
	Imdex Ltd	IMD	1.14	221	257	Buy	Oil & Gas / Mining Drilling
	Cash Converters Internat.	CCV	0.560	213	197	Buy	Retail & Consumer Finance
	RCR Tomlinson Ltd	RCR	1.350	178	201	Buy	Mining & Industrial Services
	Lycopodium Limited	LYL	4.30	166	151	Buy	Mining & Industrial Services
						•	-
	VDM Group Limited	VMG	0.465	98	116	Buy	Mining & Civil Construction
	Neptune Marine Ltd	NMS	0.210	91	129	Speculative Buy	Oil & Gas Services
	Sw ick Mining Services Ltd	SWK	0.365	86	113	Speculative Buy	Mining Services (Drilling)
	LogiCamms Limited	LCM	1.25	75	68	Buy	Resource Services
	Pacific Energy Ltd	PEA	0.310	58	106	Buy	Mining Services / Pow er
20.							

Source: IRESS, Hartleys Research. * 13 Oct 2010

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Hartleys Recommendation Categories

No Rating No recommendation.

Buy Share price appreciation anticipated

Speculative Buy Share price appreciation anticipated but it is higher

risk than a "Buy". For the share price to rise it may be contingent on the outcome of an uncertain or

distant event.

Neutral Take no action. Stock is already trading near the

share price target and there are no foreseeable

near term catalysts.

Reduce / Take Stock is trading above the share price target and

profits there is a near term negative catalyst that could

cause temporary weakness.

Sell Significant price depreciation anticipated

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