(BSX \$0.465) Speculative Buy - Initiation of Coverage



Analyst	Date	Price Target
Michael Scantlebury	24 th September 2021	\$1.00/sh

Integrated battery nickel project in Vietnam

Key points

We initiate on Blackstone Minerals Limited (BSX) with a Speculative Buy recommendation, Valuation of A\$1.43/sh (~A\$490m cap) and a Price Target of A\$1.00/sh (~A\$350m cap).

- BSX is planning to develop an integrated nickel project in Northern Vietnam to produce battery grade nickel cobalt manganese (NCM) cathode pre-cursor for lithium-ion batteries in EV's.
- The Company is currently undertaking a PFS on its upstream mine and has commenced a DFS on its downstream refinery, with plans for FID in CY22.

The Ta Khoa refinery PFS (Jul'21) outlines:

- Capex of US\$491m with an All-in Cost of US\$11,997/t of NCM811 (Spot price currently ~US\$19,300/t).
- Refinery front end throughput of 400ktpa, producing ~86ktpa NCM811 precursor (~44ktpa nickel output).

Euroz Hartleys base case NPV₁₂ after tax valuation is ~A\$490m which is 60% risked (40% x NPV12).

- We assume the upsteam mine expands its throughput (450ktpa concentrator currently on care and maintenance) to 6Mtpa at Ta Tkoa for capex of US\$280m, enabling production of ~16ktpa of Ni at an AISC of US\$4.8/lb.
- The current spot price of ~US\$19,300/t for NCM811 implies a premium of ~40% (to metal input prices), increases our NPV₁₂ (60% risked) to A\$980m or A\$2.80/sh. At spot prices, on our numbers the downstream refinery alone generates after tax cash flow in the order of ~A\$680m pa (~A\$390m pa base case).

We have taken the conservative approach of risk adjusting our valuation by 60%, which aims to take into account dilution and execution risk.

- The hydromet downstream flowsheet has a low carbon intensity, which is assisted through access to abundant hydropower in Northern Vietnam.
- We believe that BSX will significantly re-rate if it is able to secure partner for its downstream refinery, which is reflected in our 'Bull Case' scenario Price Target of A\$2.40/sh (assumes 50% sell down for a fully funded downstream refinery).
 - o BSX has a MOU with South Korean cathode producer EcoPro BM +A\$10b mcap (owns 12% of BSX). The MOU is for the parties to form a JV on downstream processing.

Blackstone Minerals L	Year End 30 June	
Share Price Price Target Valuation	0.465 1.00 1.43	A\$/sh A\$/sh A\$/sh
Shares on issue Market Capitalisation Enterprise Value Debt Cash Largest Shareholder [345 162 148 0 14 DELPHI	m A\$m A\$m A\$m A\$m 18%

Production F/Cast 2023	3F	2024F	2025F
Nickel Production Kt	0	0	4
AISC (US\$/lb)	0	0	6.74
Precursor Production kt NCM811	0	0	35
AISC (US\$/t)	0	0	13871

Assumptions	2023F	2024F	2025F
Nickel Price US\$/lb	8.50	8.30	8.00
NCM 811 Price US\$/t	0	0	15005
AUDUSD	0.74	0.74	0.74

Key Financials	2023F	2024F	2025F
Revenue (A\$m)	0	0	811
EBITDA (A\$m)	0	0	64
NPAT (A\$m)	-46	-46	-53
Cashflow (A\$m)	-46	-46	18
CFPS (Ac)	-14	-14	5
P/CFPS (x)	na	na	9
EPS (Ac)	-14	-14	-16
EPS growth (%)	na	na	na
PER (x)	na	na	na
EV:EBITDA (x)	na	na	11.5
EV:EBIT (x)	na	na	na
DPS (Ac)	0.0	0.0	0.0
Dividend Yield (%)	0.0	0.0	0.0
Dividend Field (70)	070	070	070
ND:Net Debt+Equity (%)	na	na	na
Interest Cover (x)	na	na	na

Share Price Chart



Disclaimer

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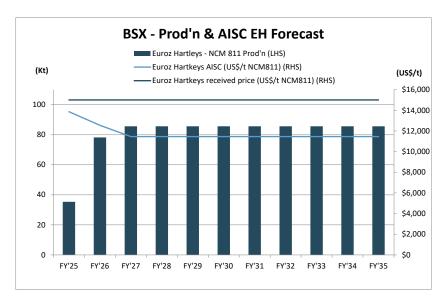
(BSX \$0.465) Speculative Buy - Initiation of Coverage



Key Variables

Val/	Sh		NCM 811 Price A\$/t (20% premium)							
	\$1.43	16,277	17,277	18,277	19,277	20,277	21,277	22,277	23,277	24,277
	15%	\$0.67	\$1.09	\$1.50	\$1.92	\$2.33	\$2.75	\$3.16	\$3.58	\$3.99
	10%	\$0.40	\$0.81	\$1.23	\$1.64	\$2.06	\$2.47	\$2.89	\$3.30	\$3.72
SD	5%	\$0.10	\$0.51	\$0.93	\$1.34	\$1.76	\$2.17	\$2.59	\$3.00	\$3.42
AUDUSD	0%	-\$0.23	\$0.18	\$0.60	\$1.01	\$1.43	\$1.84	\$2.26	\$2.67	\$3.09
A	-5%	-\$0.60	-\$0.18	\$0.23	\$0.65	\$1.06	\$1.48	\$1.89	\$2.31	\$2.72
	-10%	-\$1.00	-\$0.59	-\$0.17	\$0.24	\$0.66	\$1.07	\$1.49	\$1.90	\$2.32
	-15%	-\$1.46	-\$1.04	-\$0.63	-\$0.21	\$0.20	\$0.62	\$1.03	\$1.45	\$1.86

Euroz Hartleys Forecast	FY'2023	FY'2024	FY'2025	FY'2026
NCM811 (US\$/t)	\$0.00	\$0.00	\$15,005	\$15,005
AUDUSD	\$0.74	\$0.74	\$0.74	\$0.74



NCM811 premium over metal prices 70%



Our Share Price Sensitivity



Our Market Sensitivity

Valuation - \$1.64/sh

Target Price - \$1.00/sh

Bull Scenario - \$2.40/sh

The Company is able fund and smoothly ramp up its UBU and DBU simultaneously. BSX sells down 50% of a 400ktpa refinery leaving it fully funded. There is a faster than expected take up of EV's globally and in particular high nickel cathode batteries, leading to the NCM811 precursor premium over input metal prices being maintained at close to the spot premium of 40%.

Base Scenario - \$1.00/sh

The expected take up of EV's globally and in particular high nickel cathode batteries is in-line with our expectations, leading to the NCM811 precursor premium over input metal prices reverting to our (and BSX) assumed 20%. The Company is able to secure 3rd party ore feed.

Bear Scenario - \$0.20/sh

Non-nickel battery chemistries become dominant (LFP etc), BSX is unable to secure funding and the Company focusses on the UBU alone.

Company Summary

Blackstone Minerals is focussed on creating an integrated nickel project in Northern Vietnam to produce battery NCM cathode pre-cursor for lithium-ion batteries in EV's. Metal inputs for its planned refinery will include concentrate from its own Ta Khoa mine along with 3rd party feed. BSX is looking to form partnerships to assist with the funding of the project

Disclaimer

The projections and information above is based on the set assumptions outlined. Due care and attention has been used in the preparation of this information. However actual results may vary from forecasts and any variation may be materially positive or negative. Forecasts by their very nature, are subject to uncertainty and contingencies, many of which are outside the control of Euroz Hartleys

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(BSX \$0.465) Speculative Buy - Initiation of Coverage

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Market Statistics			Ye	ear End	30 June	Profit and Loss (A\$m)		2024F	2025F	2026F
	65 A\$/sh		ectors			(+) Nickel / NCM811 revenue	0	0	811	1,958
Issued Capital Fully Paid Ord 345	· F _ m		alliday 'illiamson		E Chair MD	(+/-) Hedging Revenue (+) Interest Income	-	_	_	-
•	5.5 m 7.3 m		adoniic	1	NE Dir	(+) Other Revenue	-	_	_	_
Total Dil. FPOrd 361			aines		NE Dir	Total Revenue	0	0	811	1,958
		H Ju			NE Dir					
Market Capitalisation \$1	61 m					(-) Operating Costs (-) Dep/Armort	-	-	747 71	1,551 116
•	47 m		reholder	S		(-) Writeoff (expl'n)	_	_	-	-
· · · · · · · · · · · · · · · · · · ·	14 m	DEL			18%	(-) O/H + News Bus Dev.	-	-	-	-
Debt	\$- m	Fide	Pro BM		12% 6%	(-) Provisions	-	-	-	-
			ird & Man	aa	14%	EBITDA	0	0	64	407
		Воа		iag.	1 170	EBIT (-) Interest Expense	0 (46)	0 (46)	(7) (46)	291 (46)
A cost Valuation				A C	A C /ala	NPBT	(46)	(46)	(53)	245
Asset Valuation	5 1.8			A\$m	A\$/sh	(-) Tax	-	-	-	(37)
(+)Ta Koa Mine 90% BSX (UI (+)Ta Koa Refinery (DBU) A					0.23 1.12	(-) Minority Interest	-	-		-
(-) Corporate	iter iax inPv	ız (risked	u auj. 60%)	(37)	(0.11)	Net Profit	(46)	(46)	(53)	208
(+) Exploration				50	0.14	(+/-) Net abnormal	_	_	_	_
(+) Unpaid Capital				-	-	Net profit After Abnormal	(46)	(46)	(53)	208
(+) Cash (-) Debt				14	0.04	Cook Floor (A Coo)				
						Cash Flow (A\$m)	2023A			2026F
Total				493	1.43	Net Profit (+) WC adi.	(46)	(46)	(53)	208
Price Target				347	1.00	(+) Dep/Amort	_	_	71	116
				347	1.00	(+) Provisions & W/O	-	-	-	-
F/Cast Production (A\$m	1)	2023A	2024F	2025F	2026F	(+) Tax Expense	-	-	-	37
Ta Khoa UBU 90%						(-) Deferred Revenue (-) Tax Paid	-	-	-	37
Throughput Milled grade	Mt Ni %			1.5 0.58	6.0 0.58	Operating Cashflow	(46)	(46)	18	324
Nickel Production	Kt Ni			3.9	15.7	(-) Capex + Dev.	99	424	513	106
AISC	A\$/lb Ni			9.11	6.53	(-) Capex + Dev. (-) Exploration	3	3	313	3
AISC	US\$/lb Ni			6.74	4.83	(-) Asset Purchased	-	-	-	-
Refinery DBU 100%						(+) Asset Sale (+/-) Other	-	-	-	-
	t NCM811			200 35.4	400 78.2	Investing Cashflow	(102)	(427)	(516)	(109)
	t NCM811				16,963	(+) Equity Issues (rts,plc,opts)	575	_	_	_
	t NCM811				12,553	(+) Loan Drawdown/receivable	575	_	_	_
						(+) Loans from(to) other entities	-	-	-	-
Assumptions Nickel Price	US\$/lb	8.5	8.3	8.0	8.0	(-) Loan Repayment	-	-	-	150
NCM 811 Price (20% prem	. ,	0.5	0.3		15,005	(-) Dividends	1150	-	-	(150)
FX Rate ass'd	A\$/US\$	0.74	0.74	0.74	0.74	Financing Cashflow	1,150	-	-	(150)
Ratio Analysis (A\$m)	2	023A	2024F	2025F	2026F	Net Cashflows (+/-) FX Adj.	1,002	(473)	(498)	65 -
Cashflow (A\$m)		-46	-46	18	324	EoP Cash Balance	1,024	551	53	118
Cashflow (A\$m) Cashflow Per Share (Ac/	sh)	-46 -14	-46 -14	5	324 96	EoP Net Cash	449	(24)	(522)	(457)
Cashflow Ratio (x)	/	na	na	9	0	Balance Sheet (A\$m)	20234	2024F	2025F	2026F
Earnings (A\$m)		-46	-46	-53	208	Assets				
Earnings Per Share (Ac/s	sh)	-14	-14	-16	62	Cash	1,024	551	53	118
EPS Growth (%)		na	na	na	na	Current Receivables	2	2	81	105
P/e Ratio (x)		na	na	na	1	Other Current Assets	110	- -	-	075
Enterprise Value (A\$m)		735	735	735	616	Non-Current Assets Total Assets	119 1,145	543 1,096	985 1,119	975 1,198
EV/EBITDA (x)		na	na	12	2	iotal Assets	1,143	1,090	1,113	1,130
EV/EBIT (x)		na	na	na	2	Balance Sheet				
						Borrowing(s)	575	575	575	575
Net Debt/(Net Debt + Ec	juity) (%)	na	na	na	na	Current Accounts payable	10	21	(74)	(78)
Interest Cover EBIT Margin (%)		na na	na na	na -1%	na 15%	Other Liabilites Total Liabilties	3 588	3 599	3 504	3 500
Return on Equity (%)		-8%	-9%	-9%	30%	Net Assets	557	497	615	698
Return on Assets (%)		-4%	-4%	-5%	17%					
D	1.5					Reserves and Resources				
Dividend Payout Patio (9		0.0	0.0	0.0	0.0			Co (%)		
Dividend Payout Ratio (9 Dividend Yield (%)	/o)	0% 0.0%	0% 0.0%	0% 0.0%	0% 0.0%	Indicated 44 0.52	0.06	0.01	0.20	230
			0.070	0.070		Inferred 14 0.35	0.01	0.01	0.06	51
Dividend Franking (%)		100%	100%	100%	100%			0.0.		
			100%	100%	100%	Total 58 0.48	0.05	0.01	0.17	281

(BSX \$0.465) Speculative Buy - Initiation of Coverage

EURØZ HARTLEYS

Executive Summary

BSX is planning to develop an integrated nickel project in Northern Vietnam to produce NCM cathode pre-cursor for lithium-ion batteries in EV's. The Company is aiming to capture the pay-ability premium for NCM 811 precursor (currently close to 40% premium, we assume 20% over the life of the project), by utilising nickel concentrate from its upstream Nickel asset in Ta Khoa nickel project along with 3rd party ore feed (~65% of the refinery feed).

The Company is due to release its upstream mine PFS in the DecQ CY21. We assume that the upstream mine expands its current 450ktpa concentrator (care and maintenance) to 6Mtpa at Ta Tkoa for capex of US\$280m, producing ~16ktpa of Ni at an AISC of US\$4.8/lb, with the nickel concentrate consumed in the downstream refinery. The Company's previous Scoping Study (October 2020) envisaged a capex of US\$356m for a 6mtpa concentrator throughput but this also included US\$109m for the refinery, as BSX was yet to split the UBD and downstream refinery.

The Company has approved the first phase of pilot plant work in conjunction with a DFS for the downstream refinery. The pilot plant will aim to produce both NCM622 and NCM811 pre-cursor, with first product expected early CY22, we assume the product will be sent to potential offtake partners.

BSX is looking to take advantage of the abundant supply of cheap green (hydropower) energy in Northern Vietnam along with its planned use of a hydrometallurgical pressure oxidation (POX) flow sheet as opposed to the more commonly used carbon intensive pyrometallurgical flow sheet (smelter). We believe that this greener flow sheet should assist the Company in potentially partnering out its refinery (downstream refinery), which we believe will significantly de-risk the project not only from a funding (US\$491m capex July PFS) but also operational perspective. We believe that over time there is potential for a premium to be paid for low carbon nickel units as many car manufacturers attempt to reduce their carbon footprint.

BSX has a MOU with one of the largest cathode producers in South Korean Company EcoPro BM (owns 12% of BSX) which has +A\$10b mcap. The MOU was signed in 2019 is for the parties to form a JV on downstream processing in Vietnam. EcoPro BM subsequentially invested A\$6.8m into BSX which was at a 62% premium at the time. We see the potential for BSX to form further partnerships on downstream processing, which could significantly de-risk the project.

We assume Ta Khoa Nickel Project upstream mine ramps up concentrate production in time for the Refinery needs (downstream refinery). Company assumes CY24 production, we are conservative and assume first production in CY25 from both the upstream mine and downstream refinery.

The downstream hydrometallurgical process that BSX plans to use should be amenable to a range of nickel concentrates/feedstocks, this has the potential to further expand their nickel to NCM precursor margins. We have assumed BSX will purchase traditional nickel concentrates in our model.

The Company is aiming to capture the pay-ability premium for NCM811 precursor

The Company is due to release its upstream mine PFS in the DecQ CY21

The pilot plant will produce first product in early CY22.

Potential premium to be paid for low carbon nickel units

BSX has a MOU with one of the largest cathode producers in South Korean Company EcoPro BM (owns 12% of BSX) which has +A\$10b mcap.

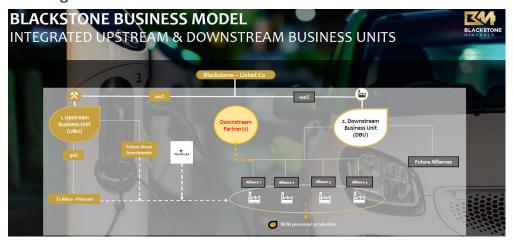
We assume first production in CY25 from both upstream mine and downstream refinery

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(BSX \$0.465) Speculative Buy - Initiation of Coverage

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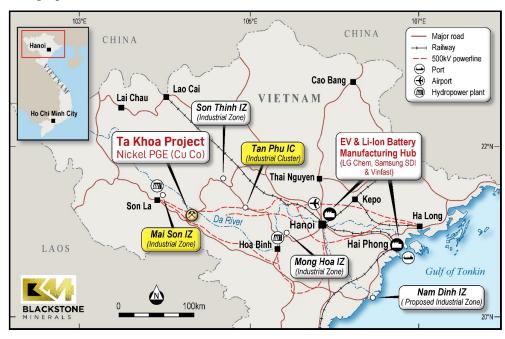
BSX integrated business model



Source: BSX

The Ta Khoa Nickel-Copper-PGE Project is located 160 km west of Hanoi in the Son La Province of Vietnam.

BSX project location



Source: BSX

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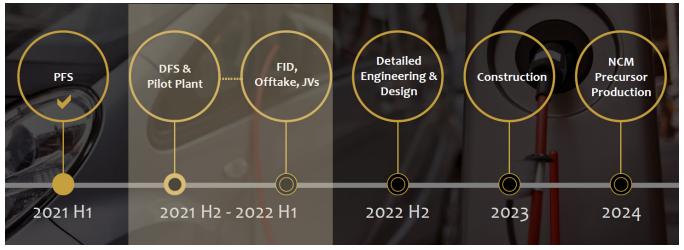
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Key Catalysts

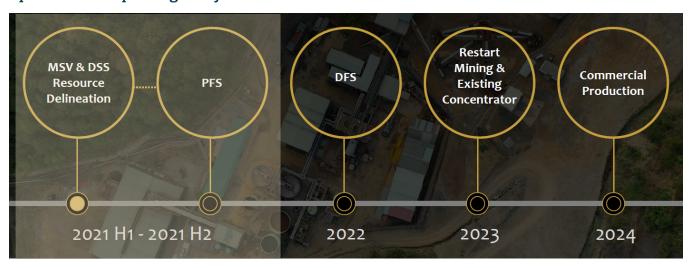
- PFS on the upstream mine due to be released due to be released DecQ CY21.
- DFS on the downstream refinery due to be released due to be released 1H CY22.
- FID, offtake and potential JV partnering downstream refinery all due in CY22.
- Phase 1 pilot plant, first product due early CY22.
- Ongoing drill results from the Ta Khoa Nickel Project.
- The Ta Khoa Nickel Project upstream mine ramps up concentrate production in time for the Refinery needs (downstream refinery).
 The Company assumes CY24 production, we are conservative and assume first production in CY25 from both the upstream mine and downstream refinery.

Downstream refinery upcoming catalysts



Source: BSX

Upstream mine upcoming catalysts



Source: BSX

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Valuation & Price Target

We initiate on Blackstone Minerals Limited (BSX) with a Speculative Buy recommendation and a Valuation of A\$1.43/sh (-A\$490m). Our base case valuation is a NPV $_{12}$ after tax (60% risked or 40% x NPV $_{12}$). We note the upside in our valuation utilising the spot prices for NCM811 (pay-ability 40% over metal input prices), our NPV $_{12}$ Valuation increases to -A\$980m NPV $_{12}$ after tax, which clearly highlights the upside if the current spot pay-ability premium for NCM811 can hold around the current levels. Purchase of nickel concentrate at a conservative payability of 80% (compared to industry average -75%), with cobalt (make up quantities) and manganese purchased at spot prices (100% pay abilities).

We have a more conservative Price Target of A\$1.00/sh (-A\$350m) which assumes a NPV $_{12}$ after tax (73% risked or 22% x NPV $_{12}$), the higher risk adjustment aims to take into account the current study level accuracy of both the upstream mine (SS) and the downstream refinery (PFS) along with the other risks associated with the project. We will look to reduce our risk adjustment as the BSX de-risks the project, some of these milestones may include: upstream mine PFS, downstream refinery DFS, input concentrate offtake, NCM811 precursor offtake, both downstream refinery and upstream mine permitting. We note that the potential JV partnering of downstream refinery would be a major derisking catalyst for BSX and we would expect a major re-rating in the stock if this was to occur, which is highlighted in our Bull Case Scenario of A\$2.40/sh.

Our Valuation and Price Targets are both speculative in nature, given the numerous assumptions in our model.

Valuation of A\$1.43/sh

Price Target of A\$1.00/sh

Bull Case Scenario of A\$2.40/sh

Euroz Hartleys SOTP Valuation

ASSET VALUATION	A\$m	A\$/sh
(+) Ta Koa Mine 90% BSX (upstream mine) After Tax NPV ₁₂ (risked adj. 60%)	81	0.23
(+) Ta Koa Refinery (downstream refinery) After Tax NPV ₁₂ (risked adj. 60%)	386	1.12
(-) Corporate	(37)	(0.11)
(+) Exploration	50	0.14
(+) Unpaid Capital	-	-
(+) Cash	14	0.04
(-) Debt	-	-
Total	493	1.43

Source: Euroz Hartleys

Euroz Hartleys SOTP Price Target

ASSET VALUATION	A\$m	A\$/sh
(+) Ta Koa Mine 90% BSX (upstream mine) After Tax NPV ₁₂ (risked adj. 72%)	55	0.16
(+) Ta Koa Refinery (downstream refinery) After Tax NPV ₁₂ (risked adj. 72%)	265	0.77
(-) Corporate	(37)	(0.11)
(+) Exploration	50	0.14
(+) Unpaid Capital	-	-
(+) Cash	14	0.04
(-) Debt	-	-
Total	347	1.00

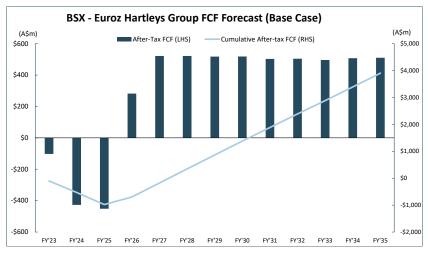
Source: Euroz Hartleys

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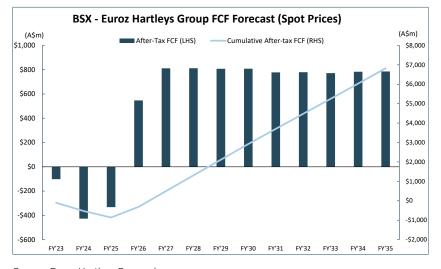
Euroz Hartleys Group Free Cash Flow utilising 20% premiums for **NCM811**



Even with base case of 20% premiums for NCM811, the company generates substantial cashflows

Source: Euroz Hartleys Research

Euroz Hartleys Group Free Cash Flow utilising spot (40%) premiums for NCM811



Very strong cashflows at current NCM811 prices

Source: Euroz Hartleys Research

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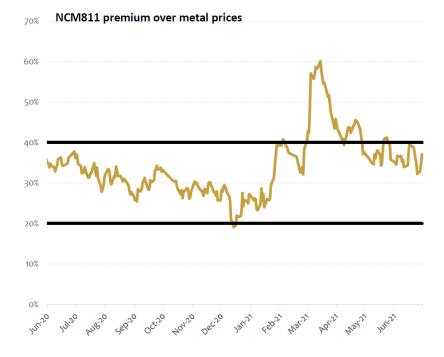
EURØZ HARTLEYS

Our BSX valuation model is most sensitive to the input concentrate payabilities and the pay-ability premium which it receives for its NCM811 pre-cursor.

- We estimate that our assumptions are more conservative than the Company's ~75% pay-ability for nickel concentrate and 93% payability for cobalt (make up quantities). Pay-ability and discount rates (NPV₈ vs NPV₁₂ (after tax)) explain the vast majority of difference between the Company's and our NPV calculation.
- BSX's strategy is to capture the pay-ability premium for NCM 811 precursor (currently close to 40% premium). We assume a 20% premium over the 10-year of the project, in-line with the Company's estimate.

Pay-ability and discount rates explain the vast majority of difference between the company's and our NPV calculation.

NCM811 Precursor premium over metal prices



Source: BSX

(BSX \$0.465) Speculative Buy - Initiation of Coverage

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Funding

Short/medium term: BSX finished the JunQ with A\$14m in cash, which we assume will provide some funding towards ongoing exploration, downstream refinery DFS/pilot plant work and the upstream mine PFS. Although further funding will be required especially for the phase 2 pilot plant which is 1:25 of the full-scale size, which we estimate to cost in the order of ~A\$50m and has been accounted for in our model.

Longer term: We model that BSX will require total funding for both its and downstream refinery in the order of ~A\$1.15b in FY23 (US\$280m for upstream mine and US\$550 for downstream refinery), assuming that BSX funds both projects 100%. We assume that the Company will be able to fund the project through a mix of debt and equity (we assume 50:50 debt equity in our model), although we note the Company's strategy is to JV/alliance its downstream refineries which will assist with the funding solution.

We note the recent news that China's GEM plans to build a complex of NCM precursors and LFP refineries in Jingmen city (LINK). The complex is estimated to produce "80ktpa capacity for ultra-high nickel NCM precursors, 50ktpa for LFP, 100ktpa for iron phosphate, 15ktpa for high-purity lithium carbonate and 20ktpa for high-purity manganese sulphate." GEM's capital expenditure is estimated at US\$431m which gives us confidence around BSX's capital expenditure of US\$491m for 86ktpa of NCM.

We have taken the conservative approach of risk adjusting our valuation by 60%, which aims to take into account the large funding requirement.

Upstream Mine Capital Cost estimate (note that the BSX scoping study included the NCM refinery which we have included in our downstream refinery capex)

Capital Cost Estimate		Blackstone Resources 6Mtpa (Scoping Study Oct'20)	Euroz Hartleys 6Mtpa (exlcuding refinery)
Mining	US\$m	55.3	60
Infrastructure	US\$m	19.5	20
Processing	US\$m	78.7	107
Refining	US\$m	108.9	
Project Execution	US\$m	24.7	25
Owners Costs	US\$m	19.9	20
Contingency	US\$m	49.0	49
Total	US\$m	356	280

Source: BSX (Scoping study Oct'20), Euroz Hartleys Research

Downstream Refinery Capital Cost estimate

Capital Cost Estimate	!	Blackstone Resources	Euroz Hartleys
		400ktpa (PFS Jul'21)	400ktpa
Process Plant	US\$m	245	270
Site Infrastructure	US\$m	16	20
Residue Storage	US\$m	8	10
Owners Direct	US\$m	43	50
EPCM	US\$m	51	51
Owners Costs	US\$m	47	50
Contingency	US\$m	82	99
Total	US\$m	491	550

Source: BSX (PFS Jul'21), Euroz Hartleys Research

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We model that BSX will require total funding for both its and downstream refinery in the order of ~A\$1.15b in FY23

China's GEM is gbuilding a complex of NCM precursors and LFP refineries for US\$431m.

(BSX \$0.465) Speculative Buy - Initiation of Coverage

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Why Blackstone?

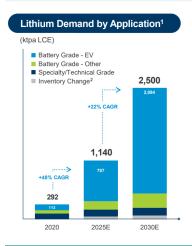
- The battery metal space is expanding at rapid pace, with EV penetration rates increasing (see Albemarle's latest EV production forecast chart below).
- Bottlenecks are already starting to appear in EV supply chains, highlighted with NCM811 current ~40% premium.
- BSX has world class partners in:
 - EcoPro BM: 2nd largest shareholder with 12% of BSX, +A\$10b mcap and is currently the world's largest cathode producer with customers including Samsung and SK Innovation.
 - BSX singed a MOU in 2019 with EcoPro BM for the parties to form a JV on downstream processing in Vietnam. EcoPro BM subsequentially invested A\$6.8m into BSX which was at a 62% premium at the time.
 - Trafigura: one of the largest physical commodities trading groups in the world.
 - BSX signed a LOI relates to a potential agreement for Trafigura to supply nickel and cobalt products to BSX, in respect of the production by Blackstone of downstream products for the downstream refinery.
 - Korea Development Bank (KDB) along with BurnVoir Corporate Finance (BurnVoir) acting as debt advisors.
- Access to cheap green hydropower located in Northern Vietnam, allowing low carbon nickel units to be produced.
- Favourable tax incentives (corporate tax rate 0-4 years 0%, 5-13 years 5%, 14-15 10% and +15y ears at 20% for the downstream refinery)
- The electric vehicle industry is growing at an accelerating rate that is increasingly focussed on the carbon intensity footprint of their inputs.
 BSX has is focussed on delivering low carbon nickel-based products for use in the EV's batteries.

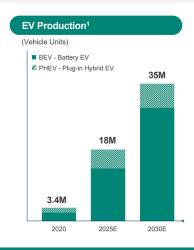
Battery metal space is expanding at rapid pace

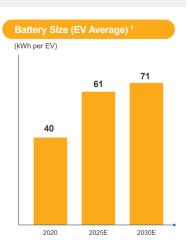
EcoPro BM: 2nd largest shareholder with 12% of BSX, +A\$10b mcap and is currently the world's largest cathode producer with customers including Samsung and SK Innovation

Albemarle's latest EV production forecast.

Lithium Demand Driven by EV Penetration and Battery Size







Strong EV demand growth is expected to continue through the decade

Source: Albemarle

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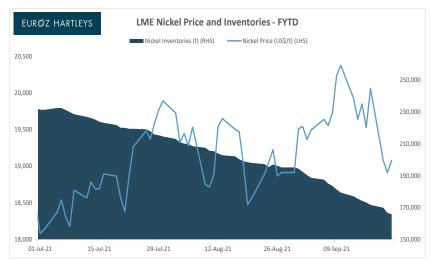
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Nickel market

Nickel's primary use is for stainless steel production, although with a growing use in the cathode component of lithium-ion batteries. The global market for nickel is currently ~2.5Mtpa, with ore primarily sourced from either laterite or sulphide deposits. Current estimates is that the battery industry currently consumes ~5% (~125ktpa) of the global nickel supply but is forecasted to rapidly grow to +1Mtpa in demand by 2030, especially as batteries move towards nickel dominant chemistries (ie NCM 811) to increase energy density.

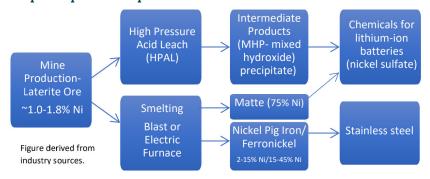
Talking nickel supply chains wouldn't be complete without mentioning Tsingshan Nickel plans in Indonesia to convert its Nickel Pig Iron (NPI) plants to produce nickel sulphate which early this year (Mar'21) spooked the market. We note that this source of nickel is envisaged to be one of the most carbon intensive forms of nickel units due to its extensive use of coal in processing route and that it not mentioning the environmental impacts that the laterite mines (the ore source for Tsingshan Nickel processing plants) have on the Indonesian archipelago. We believe that it is unlikely Western OEM's will want to utilise these nickel units in the medium to long term, especially as the carbon footprints of supply chains come into focus.

Current estimates is that the battery industry currently consumes ~5% (-125ktpa) of the global nickel



Source: Bloomberg LME

Simplified production process for nickel in Indonesia



Source: U.S. International Trade Commission

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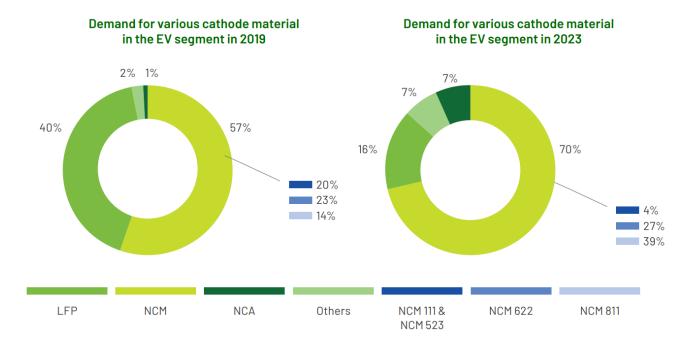
NCM market

The NCM market would appear to be moving towards more nickel dominant cathodes due to their superior energy density characteristics. With current market forecasts putting NCM811 as the dominant chemistry going forward. There is risk with these forecasts as battery chemistries are constantly evolving and that if the nickel price continues to increase then substitution becomes a risk. A few examples of subisition include the Lithium Iron Phosphate batteries, which are popular in entry level EV's due to their cheap cost but lack energy density. VW announced on its "Power Day" in March 2021 that high Mn (low Ni) batteries would be the best cost to value for future mainstream vehicles.

We note the recent news that China's GEM plans to build a complex of lithium NCM precursors and LFP refineries in Jingmen city (LINK). The complex is estimated to produce "80ktpa capacity for ultra-high nickel NCM precursors, 50,000 t/yr for LFP, 100ktpa for iron phosphate, 15ktpa for high-purity lithium carbonate and 20ktpa for high-purity manganese sulphate." At a capital expenditure of US\$431m which looks low compared to BSX's capital expenditure of US\$491m for 86ktpa of NCM. We also note that GEM has agreed to sell +170kt of NCM to EcoPro BM during CY21-23.

There is risk with these forecasts as battery chemistries are constantly evolving and that if the nickel price continues to increase then substitution becomes a risk

Forecast demand of various cathode materials in the EV market



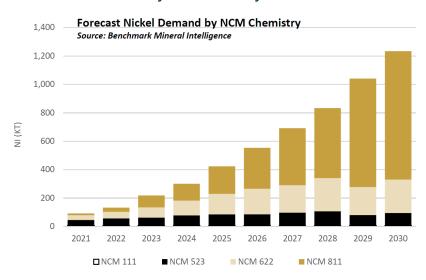
Source: Australian Government: Department of Industry, Innovation and Science

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Forecast Nickel demand by NCM chemistry



Source: BSX, Benchmark Mineral Intelligence

Battery Chemistries defined by leading lithium producer Albermarle

Developing Novel Materials to Enable Next Generation Battery Performance

Legacy	Advanced	Next Generation
Established Technologies in Use (Current) e.g., LFP and higher cobalt chemistries	New Technologies in Commercialization (~2020-2025) e.g., NMC 622, NMC811 and higher nickel chemistries	New Technologies in Development (2025+) e.g., Li metal anode, solid-state
Low \$100's/kwh ¹	20-40% improved energy density & improved costs ¹	2x energy density, ½ cost1



MAKING THE WORLD SAFE AND SUSTAINABLE 1Based on management estimates



▲ ALBEMARLE®

Source: Albemarle

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Downstream Refinery flow sheet

BSX has produced battery grade NCM811 precursor at bench lab scale, showing that its downstream refinery flowsheet is capable of producing on spec product suitable for lithium-ion batteries. The Company plans on utilising a Pressure Oxidation (POX) process which extracts the nickel and cobalt sulphide from the 400ktpa of concentrate (grading 11.5%, Ni 0.3%, 1.1% Cu) via two POX autoclaves. Copper is extracted via solvent extraction. A Mixed Hydroxide Precipitation (MHP) stage is then undertaken to form an intermediate product. The nickel sulphate solution is then blended with the cobalt strip liquor and fresh manganese and cobalt sulphate reagents to make up NCM stock solution, before being precipitated as NCM811.

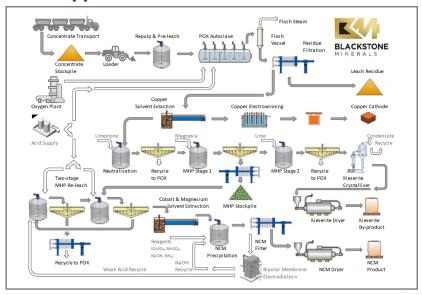
BSX has produced battery grade NCM811 precursor at bench lab scale

Hydromet vs Pyromet vs HPAL

	Ta Khoa – Pressure Oxidation Typical High Pressure Acid Le (POX) - Hydrometallurgy (HPAL) - Hydrometallurgy		Pyromet (Smelter)	
Typical Feed Ni grade, %	~10	0.8-1.5	>10	
Mineral Type	Sulfide concentrate from sulfide ore	Oxide – laterite ore	High grade Ni ore, typically sulfide ore	
Extraction process conditions	150-210 degree C, high pressure oxygen	250-270 degree C high pressure steam and high acid	1100-1700 degree C furnace - Energy intensive + Coke	
Capital investment	Low – exotic material not required for construction	Very High – exotic material, acid plant, steam boiler, very large equipment need for high tonnage	Low-Medium	
Technology	Mature since 1960s – low risk	Since 1990s – high risk	Mature – low risk	
Ore Sensitivity	Robust	Sensitive with acid consumption	Sensitive with Arsenic, Magnesium, and sulfur	
Waste Residues	Low or net neutral solid residue mass –potential to be repurposed	Approximately 200% solid generated in tailing storage facility	Low, hard residue slag	

Source: BSX

PFS refinery process flowsheet



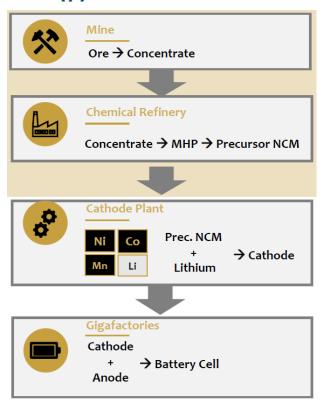
Source: BSX Nickel Day Presentation

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Nickel supply chain



Source: BSX Nickel Day Presentation

Corporate Tax Schedule

Vietnam has favourable corporate tax incentives for the refinery, assuming it is located within an Industrial zone/Industrial Cluster, although BSX is still yet to decide on the location of the refinery. We have assumed corporate tax rate in-line with the Company guidance. Favourable tax rates for the downstream refinery

Favourable corporate tax rate for the downstream refinery

Years of Operation	%	Corporate Tax Rate
0-4	%	0%
5-13	%	5%
14-15	%	10%
>15	%	20%

Source: BSX

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Upstream Mine

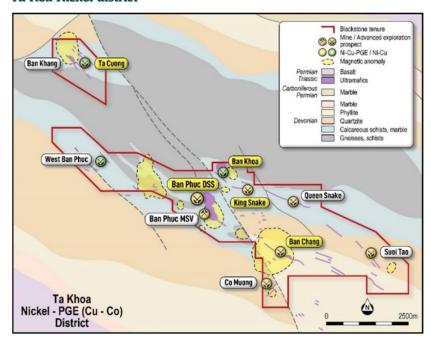
BSX upstream assets at the Ta Khoa include the 450ktpa concentrator (currently on care and maintenance) which includes an existing resource at the Ban Phuc DSS deposit (58Mt at 0.48% Ni for 281Kt of Ni), amenable to bulk mining at increased throughputs (4-6Mtpa). The Ban Phuc DSS orebody is likely to grow with recent intercept including 153m at 0.5% Ni. Regional prospectivity looks strong with 25 massive sulphide veins (MSV) and disseminated sulphide (DSS) targets identified. The Company owns 8 diamond drill rigs enabling cheap drilling rates. We are confident that BSX will be able to fill our forecasted 6Mtpa plant for 10years at our assumed head grade of ~0.5% Ni through its existing Ban Phuc deposit and exploration success. Some of the more advanced prospects/targets include:

- Ban Chang with infill drilling underway and maiden Q4 2021, (MSV orebody). Will be included in the upstream mine PFS.
- Ban Khoa potential look-alike of Ban Phuc DSS orebody (recently included intercepts of) Will be included in the upstream mine PFS.
- King Snake (MSV) currently being infilled drilled. Will be included in the upstream mine PFS.
- Taipan (Ta Cuong), initial drill hole intercepted 20.4m at 1.35% Ni, drilling ongoing.

to fill our forecasted 6Mtpa plant for 10years at our assumed head grade of ~0.5% Ni through its existing Ban Phuc deposit and exploration success

We are confident that BSX will be able

Ta Koa Nickel district



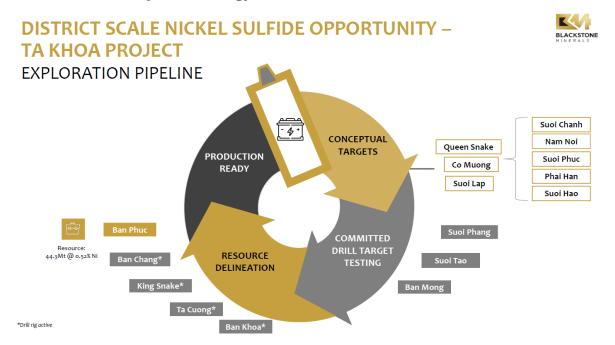
Source: BSX

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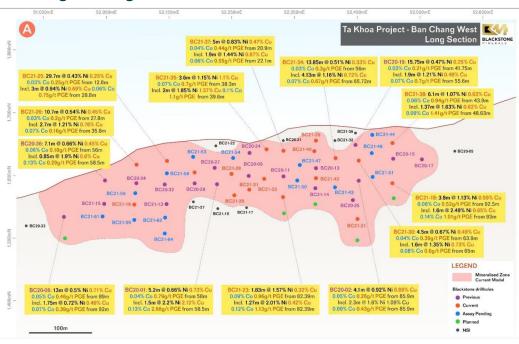


BSX Ta Koa Nickel Exploration strategy



Source: BSX

Ban Chang West Long Section



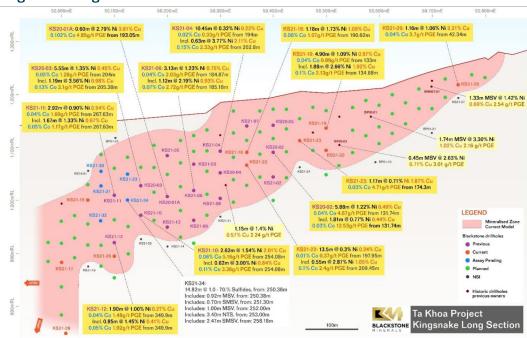
Source: BSX

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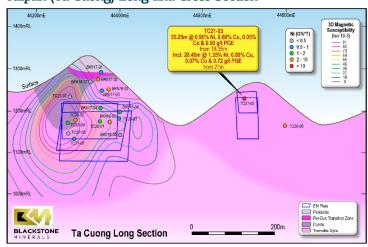


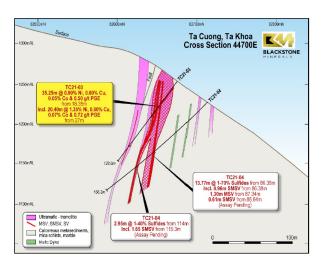
King Snake Long Section



Source: BSX

Taipan (Ta Cuong) Long and Cross Section





Source: BSX

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Upstream Mine - Ta Khoa Project history

BSX acquired a 90% stake in the Ta Khoa nickel project in Mid-2019, for total consideration in the order of ~A\$1.5m (cash and shares). The Ta Khoa project includes the Ban Phuc underground nickel mine which operated from 2013-2016. Historical production was focussed on the massive sulphide vein (MSV), at Ban Phuc. The previous owners spent US\$136m on the mine and a 450ktpa nickel concentrator, although the mine did not generate cashflow as the Vietnam Government has a 20% export royalty on concentrates, this along with low nickel prices led the mine being placed on care and maintenance.

High export royalties prevented previous owners from generosity cashflow

Ta Khoa processing plant 450ktpa



Source: BSX

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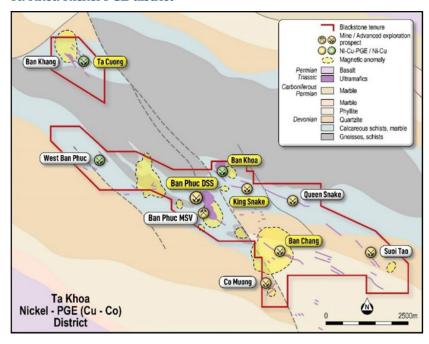
Upstream Mine - Ta Khoa Geology

The Ta Khoa Nickel Project is located within Song Da Rift zone of Northern Vietnam. The Song Da Rift is a major crustal suture zone which forms part of a greater system of deep continental rifting. This major structure continues north into China where it is associated with a series of comparable magmatic Ni-Cu-PGE deposits e.g. Baimazhai, Qingquanshan, Limahe and Yangliuping.

We note that BSX is exploring for both sulphide vein (MSV) targets along with broader disseminated sulphide with exploration to date successfully discovery both styles within the tenement package.

- Veins of high-grade massive Ni-Cu-Co (±PGE) sulphide in metasedimentary wall rocks adjacent to ultramafic intrusions, with locally developed low-grade disseminated copper-nickel mineralisation marginal to the MSV; and
- Disseminated low-grade nickel or nickel-copper mineralisation (DSS) in basin-shaped cumulate layers, often near the base and walls of ultramafic intrusions.

Ta Khoa Nickel PGE district



Source: BSX

Ta Khoa Mineral Resource

Ban Phuc Maiden Resource	Mt	Ni (%)	Cu (%)	Co (%)	Pd (g/t)	Pt (g/t)	S (%)	Ni (t)	Cu (t)	Co (t)	Pd (oz)	Pt (oz)
Indicated Resources	44	0.52	0.06	0.01	0.11	0.09	0.45	230,000	27,000	5,800	160,000	130,000
Inferred Resources	14	0.35	0.01	0.01	0.03	0.03	0.13	51,000	1,600	1,100	12,000	15,000

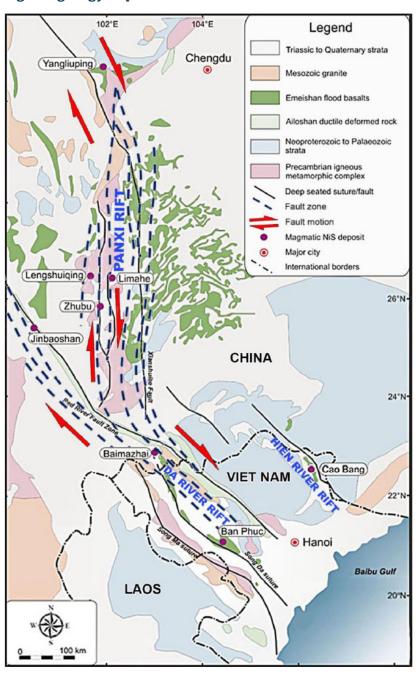
Source: BSX

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Regional geology map



Source: BSX

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Risks

Market Risk - General market risk.

COVID - General Covid risks remain ongoing.

Securing Nickel/Cobalt offtake - We note that as the battery metal space heats up, demand for concentrates will become intense and we suspect that competition for desirable concentrates will increase, hence our conservative assumption of 80% pay-abilities for nickel concentrate. The pay-abilities at which BSX can purchase these inputs will be crucial to the margins and therefore cashflows that BSX can generate in its downstream refinery.

Commodity Price - BSX will be exposed to numerous commodity prices including the NCM 811 pre-cursor. But also, commodity input costs as BSX will be purchasing nickel ore concentrate, cobalt sulphate and manganese sulphate.

Securing JV Partner for the downstream refinery - Given the large capex for the downstream refinery we believe that it would be favourable for BSX to secure a partner/s. In our view this would significantly de-risk the project from not only a funding but also an operational perspective.

Funding risks - We model that BSX will require total funding for both its upstream mine and downstream refinery in the order of ~A\$1.15b in FY23. Which is a significant amount of capital given BSX's current market capitalisation which is why securing a JV is all the more important.

Operational and ramp up risk - We assume that BSX will be able to secure permits for both the upstream mine and downstream refinery. We also assume that that both business units will be able to ramp production up with issues.

Changing battery chemistry - the market is currently moving towards increasing nickel content NCM 523 > NCM 622 > NCM 811 and we assume that this trend continues. There is a risk that Lithium Iron Phosphate (LFP) chemistry could potentially impact the forecasted NCM 811 market share in the future along with other battery chemistry/ technology.

Foreign Exchange Risk - BSX reporting currency is AUD, however the Company operates largely in Vietnam and is exposed to foreign exchange risk arising from exposure to the Vietnamese Dong. Adverse foreign exchange fluctuations may negatively impact forecast cash flows.

We have taken the conservative approach of risk adjusting our Valuation by 60% (40% x NPV_{12} After Tax), we have a more conservative Price Target of A\$1.00/sh (~A\$350m) which assumes a NPV₁₂ after tax (73% risked or 22% x NPV₁₂) the higher risk adjustment aims to take into account the current study level accuracy of both the upstream mine (SS) and the downstream refinery (PFS) along with the other risks associated with the project.

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Directors (taken from Company's website)

Hamish Halliday - Non-Executive Chairman

Qualifications: BSc (Geology), MAusIMM

Geologist with over 20 years corporate and technical experience, founder of Adamus Resources Limited, a A\$3M float which became a multi-million ounce emerging gold producer.

Scott Williamson: Managing Director

Qualifications: BEng (Mining), BCom, MAusIMM

Mining Engineer with a Commerce degree from the West Australian School of Mines and Curtin University, over 10 years' experience in technical and corporate roles in the mining and finance sectors.

Andrew Radonjic: Non-Executive Director

Qualifications: BAppSc (Mining Geology), MSc (Mineral Economics), MAusIMM

Mine Geologist and Mineral Economist with over 25 years experience with a focus on gold and nickel exploration, instrumental in three significant gold discoveries north of Kalgoorlie, Executive Director of Venture Minerals Limited and co-lead the discovery of the Mount Lindsay Tin-Tungsten-Magnetite deposits.

Alison Gaines: Non-Executive Director

Qualifications: Bachelor of Laws and a Bachelor of Arts (hons) from the University of Western Australia, a Graduate Diploma Legal Practice from Australian National University and is an Honorary Doctorate of the University and Master of Arts (Public Policy) from Murdoch University.

Alison has over 20 years of experience as a director in Australia and internationally. She has experience in the roles of Board Chair and board committee chair, particularly remuneration and nomination and governance committees. Alison is the Managing Director of Gaines Advisory P/L and was recently global CEO of international search and board consulting firm Gerard Daniels, with a significant mining and energy practice.

Hoirim Jung: Non-Executive Director

Qualifications: BEcon

Mr Jung has almost a decade of financial management experience, specifically in financing and feasibility studies for new projects. He began his career with KPMG Samjong Accounting Corporation, one of Korea's 'big four' accounting firms, providing advisory services for various M&A transactions. He then moved to Atinum Partners, where he was involved with investments in the oil and gas industry and managed the invested assets in North America.

In 2016, he joined EcoPro where his accomplishments include the securing of finance for precursor business from foreign investors, as well as successfully dealing with the initial public offering of subsidiary EcoPro BM (KOSDAQ: 247540). Mr Jung's skill set includes corporate strategy, capital raises, and business development. He holds a Bachelor of Economics from Seoul National University, and has a qualification with the Korean Institute of Certified Public Accountants (KICPA).

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Dividends

Company does not currently have recurring revenues and therefore no capacity to pay dividends.

Balance sheet

BSX had a cash balance of A\$14.3m at the end of the JunQ.

The Company has no debt.

Currency

BSX is an A\$ denominated company.

Balance Date

BSX reports on a Jun 30 FY.

Top 20 shareholders

The 20 largest shareholders, as per the 25th of September 2020 include:

Shareholder	Number	% held of issued capital
CITICORP NOMINEES PTY LIMITED	53	17.07%
DELPHI UNTERNEHMENSBERATUNG AKTIENGESELLSCHAFT	23	7.55%
J P MORGAN NOMINEES AUSTRALIA PTY LIMITED	21	6.74%
HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED	20	6.42%
DEUTSCHE BALATON AKTIENGESELLSCHAFT	16	5.01%
TA KHOA MINING LIMITED	9	2.77%
CS THIRD NOMINEES PTY LIMITED	7	2.34%
<hsbc 13="" a="" au="" c="" cust="" ltd="" nom=""></hsbc>	7	2.11%
MR HAMISH PETER HALLIDAY	6	1.93%
MRS CANDICE MARIE WILLIAMSON	5	1.45%
SYMORGH INVESTMENTS PTY LTD	4	1.36%
<symorgh a="" c="" fund="" super=""></symorgh>	4	1.29%
NATIONAL NOMINEES LIMITED	4	1.26%
MR HAMISH PETER HALLIDAY	4	1.13%
BNP PARIBAS NOMINEES PTY LTD	3	1.04%
<ib au="" drp="" noms="" retailclient=""></ib>	3	1.00%
MRS LENORE THERESA RADONJIC	2	0.78%
MR MAXIMILIAN FRANCIS LUDOWICI	2	0.77%
MS KIRI MARGUERITE DORJI	2	0.72%
MR CRAIG ANDREW PARRY	2	0.70%

Source: BSX annual report 2020



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